Location of the headquarters in Luhden

All profiles are produced in accordance with the medium EN 12020-2 standard:

Linearity:	0,35 mm/m
Max. torsion:	0,35 mm/m
Angular torsion:	0,2 mm/40 mm
Parallelity:	0,2 mm
Alloy:	EN AW 6063-T66
Anodizing quality:	E6 EV1, 25-40 µm other qualities by inquiry.

Clean room classification:

VDI 2083, class 4
ISO 14644-1, class 6
US Federal Standard 209E, class 1.000
QLZ,QLZE, ELHZ and ELVZ

Mechanical efficiency, positioning and repeating accuracy are coordinated in an optimal way.

We offer the complete automation technology in a modular system together with a wide range of accessories.

Our positioning modules can be combined to all positioning duties. They are constructed by computer-aided design and so very user-oriented.

Industrie Forum Design Hannover

Design Award Winner 2000

explosion protection certificates
II 2G EEx c IIB T4
II 3D T125°C
for the positioning system ELZ 40 - 125 by ATEX 95

Fraunhofer IPA TESTED DEVICE Lineareinheit QLZ 80 Report No. BA 0005-171

Hauseigener Teststand / Inhouse test stand

If you have any questions, please do not hesitate to contact our engineers. We offer a comprehensive customer service, including advisory service and presentations at your premises or in our company.

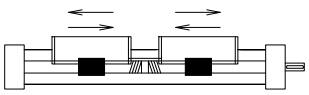
EDV-Arbeitsplatz / EDP workplace

Product line overview

Positioning system
EGT/EGK 30, 40, 60, 80

Mechanical system with plastic prismatic guides. System is driven by an integrated trapezoidal thread or ballscrew.

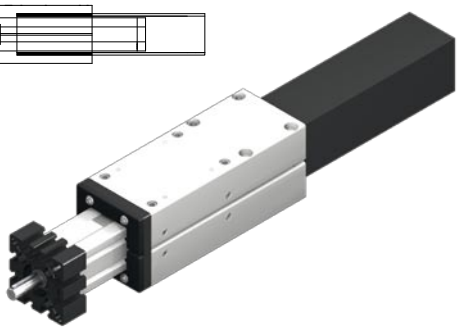
Variation:



Repeating accuracy:
Trapezoidal thread: ± 0,2 mm
Ballscrew: ± 0,025 mm
Velocity:
Trapezoidal thread: v ≤ 0,5 m/s
Ballscrew: v ≤ 1 m/s

Positioning system
EGTH/EGKH 40, 60, 80

Mechanical telescopic system with plastic prismatic guides. System is driven by an integrated trapezoidal thread or ballscrew. Result is a telescopic movement.

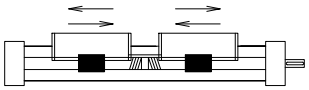


Repeating accuracy:
Trapezoidal thread: ± 0,2 mm
Ballscrew: ± 0,025 mm
Velocity:
Trapezoidal thread: v ≤ 0,5 m/s
Ballscrew: v ≤ 1 m/s

Positioning system
ELT/ELK 30, 40, 60, 60S, 80, 80S,100, 125

Mechanical system with roll guides outside of profile. System is driven by an integrated trapezoidal thread or ballscrew.

Variation:

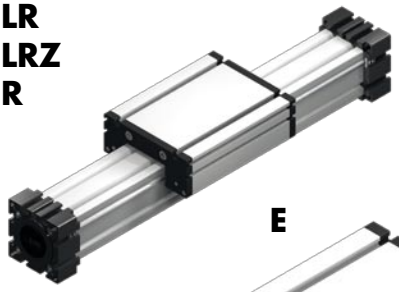


Repeating accuracy:
Trapezoidal thread: ± 0,2 mm
Ballscrew: ± 0,025 mm
Velocity:
Trapezoidal thread: v ≤ 0,5 m/s
Ballscrew: v ≤ 1 m/s

Non-driven positioning systems
ELR 30, 40, 60, 60S, 80, 80S, 100, 125
ELRZ 30, 40, 60, 60S, 80, 80S, 100, 125
ER 30, 40, 60, 60S, 80, 80S, 100, 125

Mechanical system with roll guides outside of profile.

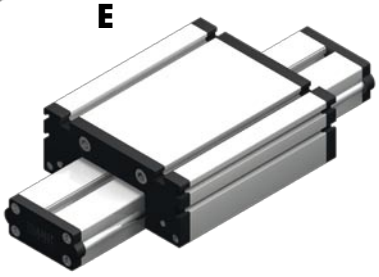
ELR
ELRZ
ER



E 40, 60, 60S, 80, 80S

Mechanical system with roll guides outside of profile.

E



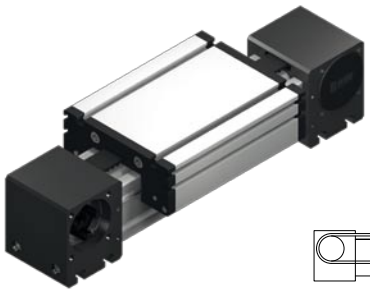
UL 40, 60, 80

Mechanical system with roll guides inside of profile.

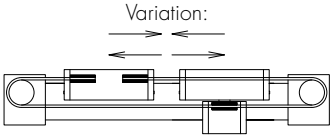
Velocity:
v ≤ 10 m/s

UL

Product line overview



Variation:



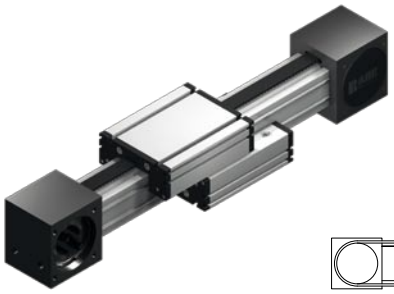
Positioning system
ELZ/ELZex 30, 40, 60, 60S, 80, 80S, 100, 125

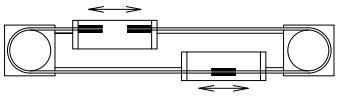
Mechanical system with roll guides outside of profile. System is belt driven.
ELZex like ELZ. The positioning system is suitable for use according to the intended purpose in potentially explosive areas (see ATEX 95 marking).

Positioning system
MLZ 60, 60S, 80, 80S, 100

Mechanical system with roll guides outside of profile.
The system is driven by a belt that is guided inside the profile.

Repeating accuracy:
± 0,1 mm
Velocity:
v ≤ 10 m/s (ELZex: v ≤ 1m/s, MLZ: v ≤ 8 m/s)

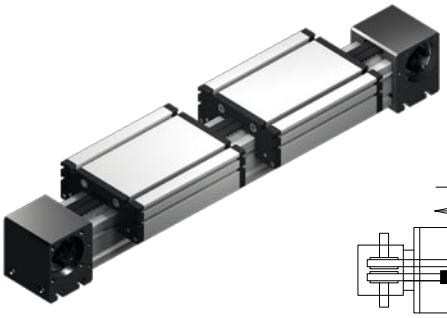


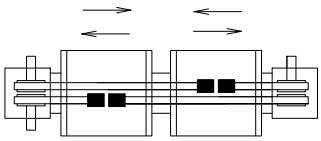


Positioning system
ELZG 30, 40, 60, 60S, 80, 80S

Mechanical system with 2 roll guides outside of profile. System is driven by one rotating timing belt. At each end of this belt a carriage is fixed. Result is two carriages moving in opposite direction over the complete length of the leading the profile.

Repeating accuracy:
± 0,1 mm
Velocity:
v ≤ 10 m/s

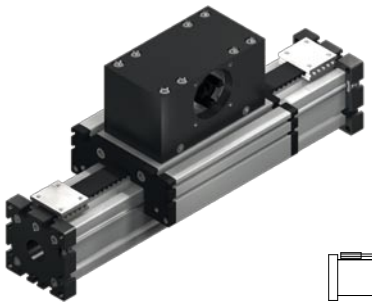


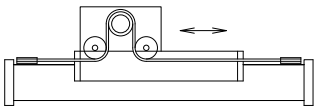


Positioning system
ELZZ 60, 60S, 80, 80S, 100, 125

Same function as ELZ, but each carriage with separate drive. Divided pulleys have separate bearings, so two parallel moving belts are connected each with one carriage.

Repeating accuracy:
± 0,1 mm
Velocity:
v ≤ 5 m/s

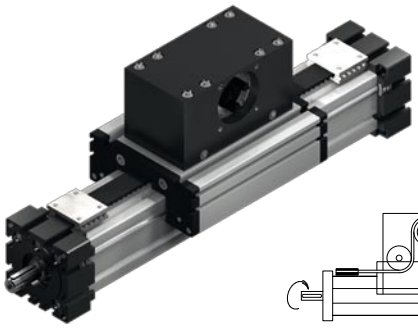


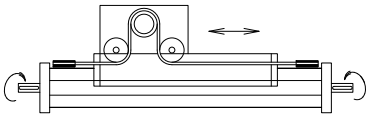


Positioning system
ELSZ 30, 40, 60, 60S, 80, 80S, 100, 125

Same function as ELZ, but with driven carriage.

Repeating accuracy:
± 0,1 mm
Velocity:
v ≤ 6 m/s





Positioning system
ELSD 40, 60, 60S, 80, 80S, 100

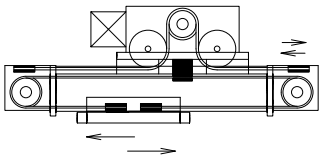
Same function as ELSZ. An additional turning shaft is integrated into the leading profile. Grippers and other components can be adapted to the shaft.

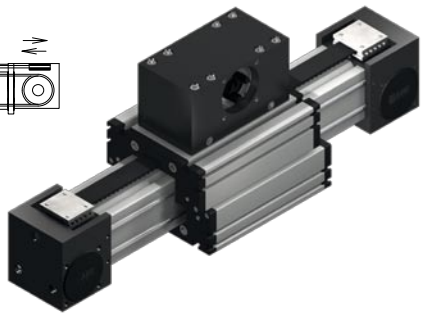
Repeating accuracy:
± 0,1 mm
Velocity:
v ≤ 6 m/s

Product line overview

Positioning system
ELZT 40, 60, 60S, 80, 80S, 100

Same function as ELZ. Two carriages are moving in different directions. Result is a telescopic movement.

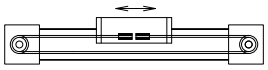




Repeating accuracy:
± 0,1 mm
Velocity:
v ≤ 6 m/s

Positioning system
ELHZ 60, 60S, 80, 80S, 100, 125

Mechanical system with roll guides outside of profile. System is driven by an internal belt. Position of shaft is horizontal to the carriage.

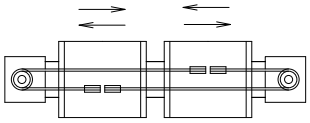


Repeating accuracy:
± 0,1 mm
Velocity:
v ≤ 8 m/s

Positioning system
ELVZ 60, 60S, 80, 80S, 100, 125

Mechanical system with roll guides outside of profile. System is driven by an internal belt. Position of shaft is vertical to carriage.

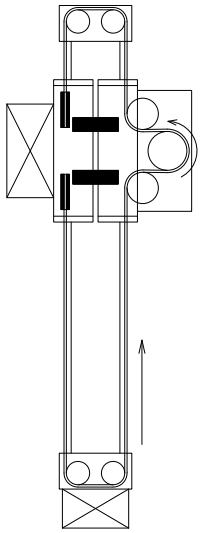
Variation:



Repeating accuracy:
± 0,1 mm
Velocity:
v ≤ 8 m/s

Positioning system
ELFZ 60S, 80S, 100, 125

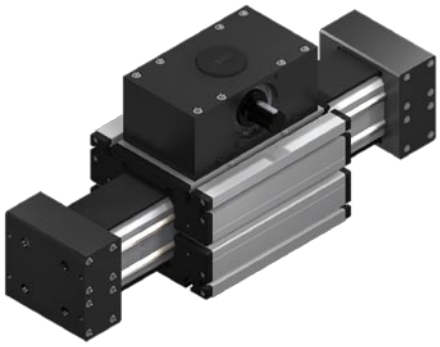
Special lifting system with roll guides outside of profile. System is driven by one rotating timing belt with one drive. The function corresponds to a simple pulley block.



Repeating accuracy:
± 0,1 mm
Velocity:
v ≤ 4 m/s

Positioning system
ELFZex 60S, 80S, 100, 125

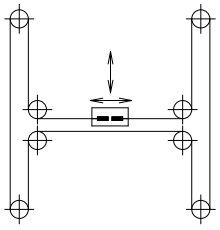
Special lifting system with roll guides outside of profile. System is driven by one rotating timing belt with one drive. The function corresponds to a simple pulley block. This system is additionally ATEX95 certified.



Repeating accuracy:
± 0,1 mm
Velocity:
v ≤ 1 m/s

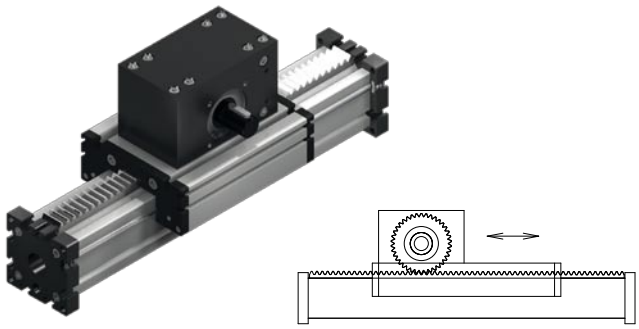
Positioning system
ELZU 30, 40, 60, 60S, 80, 80S, 100

Surface portal, consisting of 2 Y-axes and 1 X-axis, driven by one rotating belt. This belt runs around different deflection pulleys. Positioning is achieved by two motors. The coordinate is diagonal to the deflection points of the Y-axes.
Advantage: Only small masses are moved, so that high acceleration can be realized.



Repeating accuracy: ± 0,1 mm
Velocity: v ≤ 6 m/s
Acceleration: max. 20 m/sec²

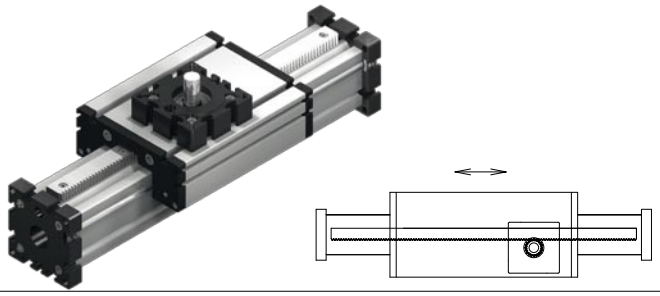
Product line overview



Positioning system
ELZA 40, 60, 60S, 80, 80S, 100

Same function as ELSZ. A rack is mounted onto the leading profile. A pinion gear is fitted to the carriage.

Repeating accuracy:
± 0,2 mm
Velocity:
v ≤ 3 m/s



Positioning system
ELZQ 60, 80, 80S

Special lifting unit with function as ELZA. High dynamic and accuracy is achieved by a precision rack and pinion.

Repeating accuracy:
± 0,1 mm
Velocity:
v ≤ 3 m/s

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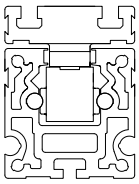
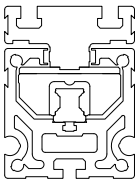
QL



QS



Positioning system
QSZ 60, 80, 100, 125

Mechanical system with an integrated ball rail inside of profile. System is driven by a timing belt which is guided within the profile. This unit is suitable for cleanroom applications (Clean room classification: VDI 2083, class 4; ISO 14644-1, class 6; US Federal Standard 209E, class 1.000

Positioning system
QSRZ 60, 80, 100, 125

Same function as QSZ, but without drive.

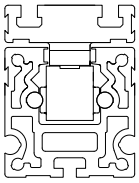
Positioning system
QLZ 60, 80, 100

Mechanical system with roll guides inside of profile. System is driven by a belt which is guided within the profile.

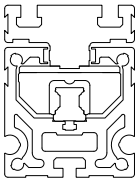
Repeating accuracy:
± 0,1 mm

Velocity:
v ≤ 6 m/s

QL



QS



Non-driven positioning system
QLR 60, 80, 100

Mechanical system with roll guides inside of profile.

Non-driven positioning system
QSR 60, 80, 100, 125

Mechanical system with an integrated ball rail inside of profile.

Velocity:
v ≤ 6 m/s

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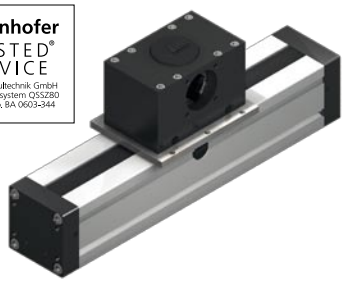
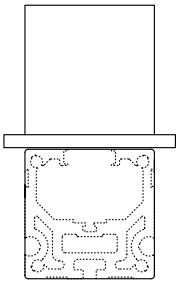




Positioning system
QSSZ 60, 80

Same function as QSZ, but with driven carriage.

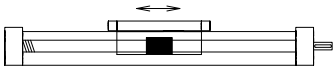
Repeating accuracy:
± 0,1 mm
Velocity:
v ≤ 6 m/s

Product line overview

Positioning system
QST/QSK 60, 80, 100

Mechanical system with an integrated ball rail inside of profile. System is driven by an integrated trapezoidal thread or ballscrew.

Repeating accuracy:
Trapezoidal thread: ± 0,2 mm
Ballscrew: ± 0,025 mm
Velocity:
Trapezoidal thread: v ≤ 0,5 m/s
Ballscrew: v ≤ 1 m/s



Non-driven positioning system
QSSR 60, 80, 100

Mechanical system with an integrated ball rail inside of profile.

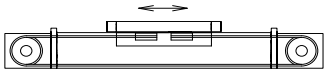
Positioning system
DLZ 120, 160, 200

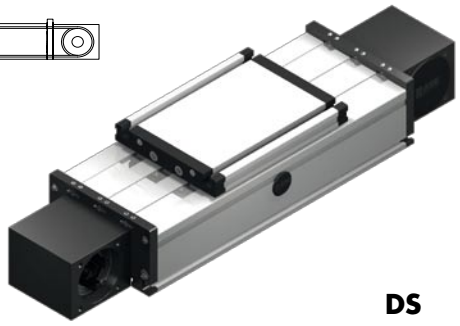
Mechanical system with roll guides inside of profile. System is driven by an internal belt.

Positioning system
DSZ 120, 160, 200

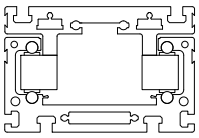
Mechanical system with a double integrated ball rail inside of profile. System is driven by an internal belt.

Repeating accuracy:
± 0,1 mm
Velocity:
v ≤ 6 m/s

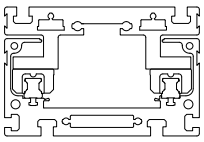




DL



DS



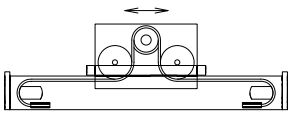
Positioning system
DLSZ 120, 160, 200

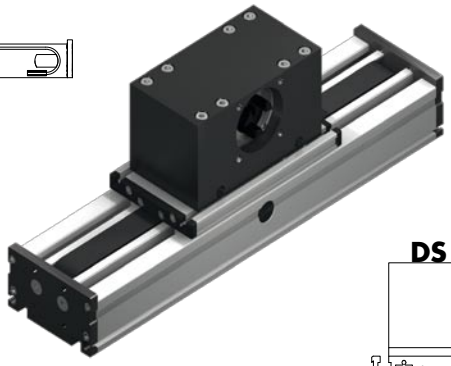
Mechanical system with roll guides inside of profile.
Same function as DLZ but with driven carriage.

Positioning system
DSSZ 120, 160, 200

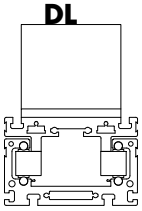
Mechanical system with a double integrated ball rail inside of profile.
Same function as DSZ but with driven carriage.

Repeating accuracy:
± 0,1 mm
Velocity:
v ≤ 6 m/s





DL



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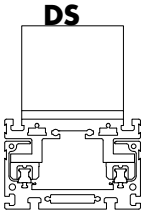
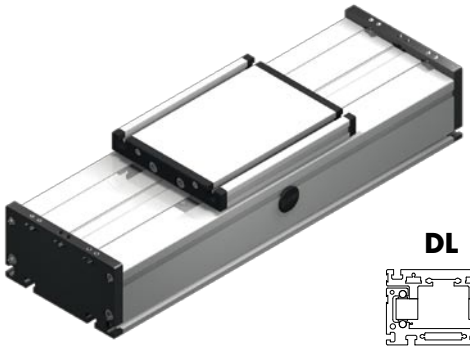


Positioning system
DLVZ 120, 160

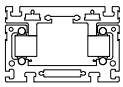
Mechanical system with roll guides inside of profile. System is driven by an internal belt. Position of shaft is vertical to carriage.

Repeating accuracy:
± 0,1 mm
Velocity:
v ≤ 6 m/s

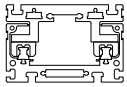
Product line overview



DL



DS

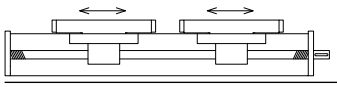


Positioning system
DLR 120, 160, 200
Mechanical system with double roll guides inside of profile.

Positioning system
DSR 120, 160, 200
Mechanical system with double roll guides inside of profile.

Velocity:
v ≤ 6 m/s

Variation:



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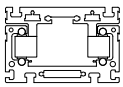

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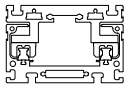


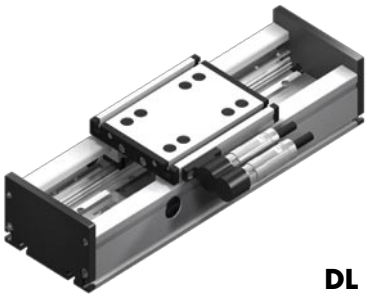
Positioning system
DLT/DLK 120, 160, 200
Mechanical system with double roll guides inside of profile. System is driven by an integrated trapezoidal thread or ballscrew.

Positioning system
DST/DSK 120, 160, 200
Mechanical system with a double integrated ball rail inside of profile. System is driven by an integrated trapezoidal thread or ballscrew.

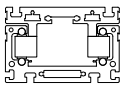
Repeating accuracy:		**Velocity:**
Trapezoidal thread:	± 0,2 mm	v ≤ 0,5 m/s
Ballscrew:	± 0,025 mm	v ≤ 1 m/s

Positioning system
DLZA 120, 160, 200
Rack and pinion system for high dynamic operations.

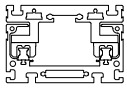
Repeating accuracy:
± 0,2 mm
Velocity:
v ≤ 3 m/s



DL



DS

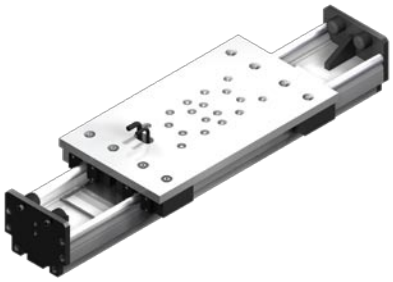


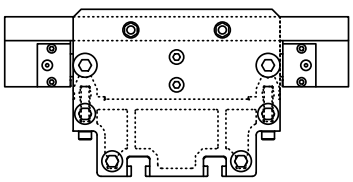
Positioning system
DLM/DLVM 120, 160, 200
Mechanical system with double roll guides inside of profile. Driven by linear motor.

Positioning system
DSM 160, 200

Mechanical system with a double integrated ball rail inside of profile. Driven by linear motor.

Repeating accuracy:
± 0,1 mm
Velocity:
v ≤ 8 m/s





Positioning system
ALLM 203, 204
Mechanical system with roll guides outside of profile.
Driven by linear motor.

Non-driven positioning system
ALLR 203, 204
Mechanical system with roll guides outside of profile.

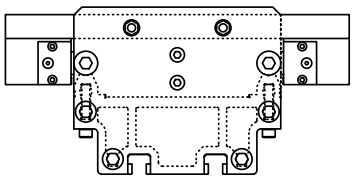
Repeating accuracy:
± 0,05mm
Velocity:
v ≤ 8 m/s

Product line overview

Positioning system
ALLZ 203, 204

Mechanical system with roll guides outside of profile.
Belt driven

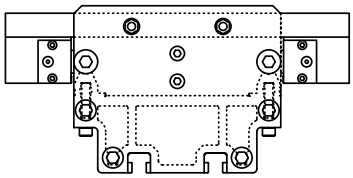
Repeating accuracy:
± 0,1mm
Velocity:
v ≤ 5 m/s



Positioning system
ALLZQ 203, 204

Mechanical system with roll guides outside of profile.
Rach and pinion driven

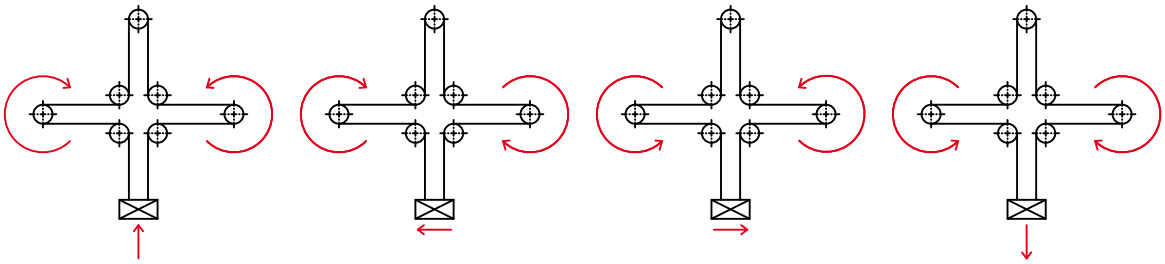
Repeating accuracy:
± 0,1mm
Velocity:
v ≤ 5 m/s



Positioning system
ELZI 40, 60

X/Z gantry consisting of a double guide in the horizontal X level and a vertical Z axis. The unit is driven by a rotating belt, which remains connected through various deflection points.

Repeating accuracy:
± 0,1 mm
Velocity:
v ≤ 5 m/s



Positioning system
DSB 200

Mechanical system with a double integrated ball rail inside of profile, wich can absorbed the high moments. The drive is a highly dynamic short stroke linear motor.

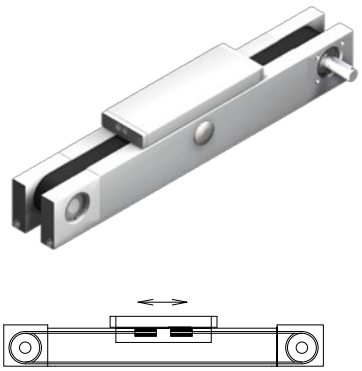
Repeating accuracy:
± 0,1 mm
Velocity:
mass dependent

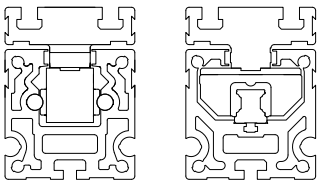
Positioning system
ELBZ R800

Based on the EL series. This bow system is available with a radius of min. 800 mm. The system is driven by a carriage on an external belt.

Repeating accuracy:
± 0,1 mm
Velocity:
v ≤ 1 m/s

Product line overview





Fraunhofer IPA TESTED DEVICE Lineareinheit QLZ 80 Report No. BA 0005-171

Positioning system QSZE 60, 80, 100

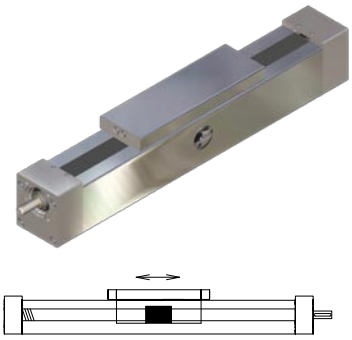
Like QSZ, but enclosed with a stainless steel casing and components.

product design award 2011

Positioning system QLZE 60, 80, 100

Like QLZ, but enclosed with a stainless steel casing and components.

Repeating accuracy:
± 0,1 mm
Velocity:
v ≤ 4 m/s



Fraunhofer IPA TESTED DEVICE Lineareinheit QLZ 80 Report No. BA 0005-171

Positioning system QST/KE 60, 80, 100

Like QST/K, but enclosed with a stainless steel casing and components.

Repeating accuracy:
Trapezoidal thread: ± 0,2 mm
Ballscrew: ± 0,025 mm
Velocity:
v ≤ 0,5 m/s
v ≤ 1 m/s

Positioning system RHT/K 80 A

Mechanical system with internal guides. System is driven by an integrated trapezoidal thread or ballscrew. The guiding and drive elements are integrated into a Alumium housing. The piston rod is made of hardened and ground steel or Stainless steel.

Positioning system RHT/K 80 V

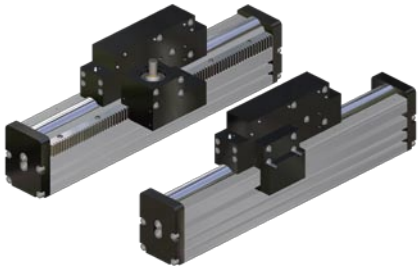
Like RHT/K 80A, but enclosed with a stainless steel housing.

Repeating accuracy:
± 0,1 mm
Velocity:
v ≤ 0,2 m/s

Positioning system HDT/K 16

Combined lifting/rotating unit, for sorting light-weighted components very quickly.

Repeating accuracy:
± 0,1 mm
Velocity:
v ≤ 1 m/s



Positioning system SLTR/SLTZA 30, 50

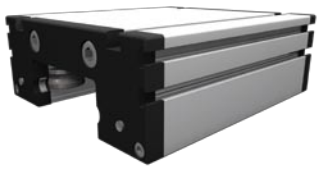
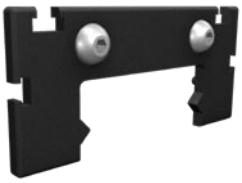
Heavy Duty Traverse without drive (SLTR) and with rack and pinion drive (SLTZA)

Repeating accuracy:
± 0,1mm
Velocity:
v ≤ 5 m/s

Product line overview

Spare parts

Carriages, V-slides, wiper end plates, jointing plates for closed carriage, rollers, end plates, eccentrics, guide rods, cover bands, lubricants, ball- and trapezoidal screws, spindles, leading-nuts, belts, belt pulleys, plug-in shafts, belt adjusters.

Accessories

Slide nuts, handwheels, positional indicators, spindle clamps, carrier clamps, plates, mounting blocks, switch holders, cable cover tubes, cable chains, switches, activating strips, motor adapters, couplings, bevel gears, combination cubes, cover caps, gearboxes, keyed shafts, bellows, toothed pulleys, toothed belts.





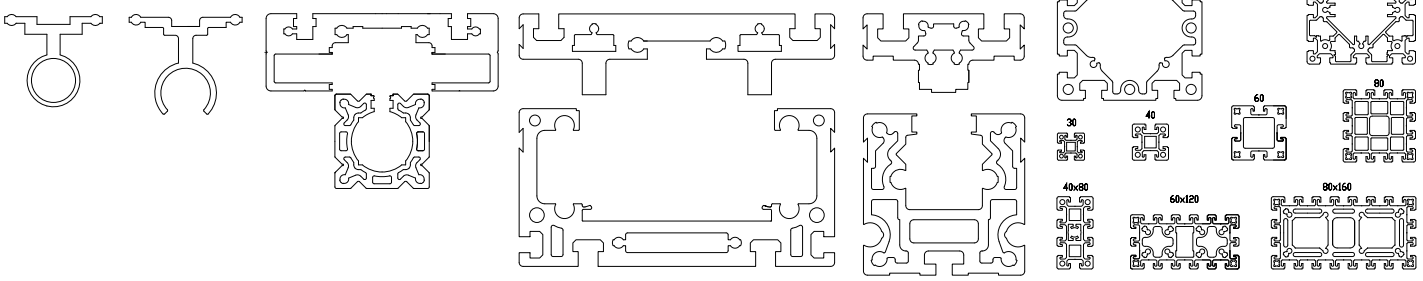
Drives

Stepping motors, gears, control units, gearboxes.




Appendix

System profile specifications, service manual



Specifications
Service manuals

Product index

BAHR Modultechnik

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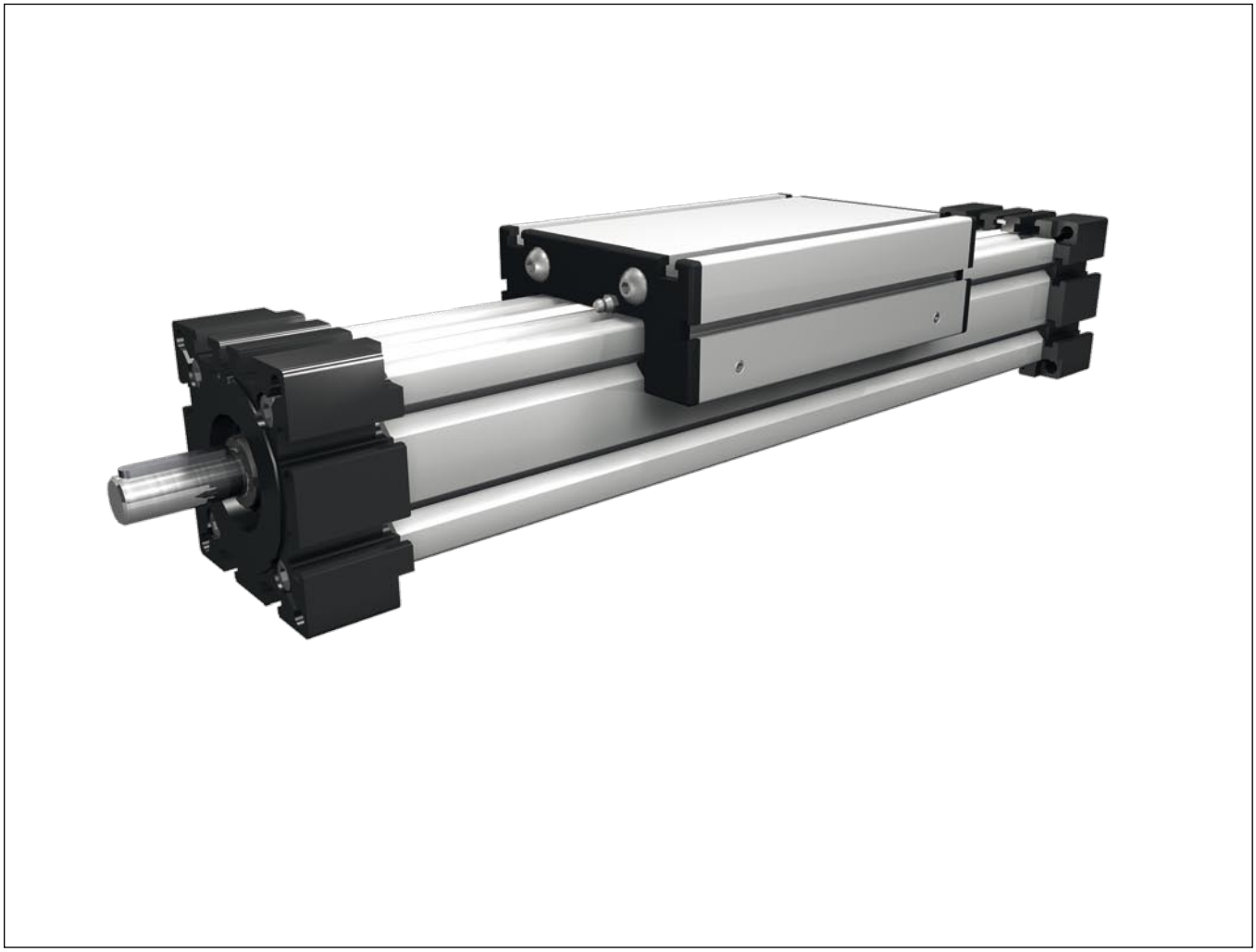
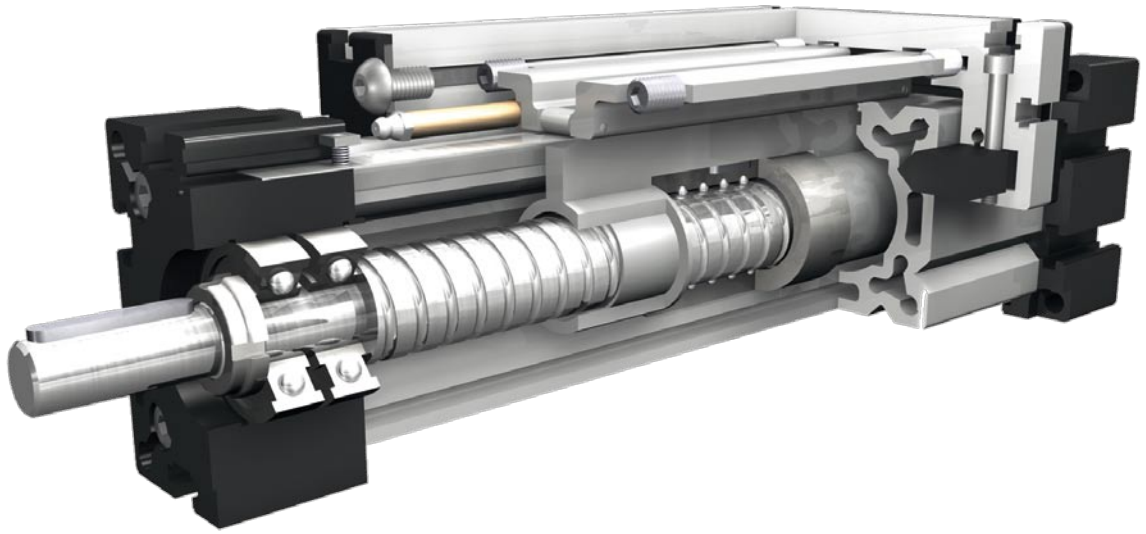


Trapezoidal or ballscrew spindle driven positioning systems EL and EG

Positioning system EGT/EGK 30, 40, 60, 80

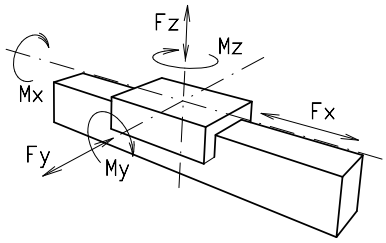
Spindle driven with trapezoidal or ballscrew spindle



Function:
This unit consists of an aluminium square profile with lateral V-guides. The carriage, which is driven by means of a trapezoidal threaded spindle with lead screw, moves along the unit guided by V-slides that are adjustable free of play. Where two linear units are used in parallel or where two carriages are mounted on one unit, the leading-nut receiver can be used to adjust the symmetry of the carriages. The linear opening of the unit is sealed with a stainless steel cover band to make the unit splash-proof and dust-tight.

Fitting position: As required. Max. length 3.000 mm
Carriage mounting: T-slots, tapped holes (size 40)
Unit mounting: By T-slots or tapped holes in the bearing block, mounting sets.

Forces and torques



Size	EG 30		EG 40		EG 60		EG 80	
Forces / Torques	static	dynamic	static	dynamic	static	dynamic	static	dynamic
F_x (N)	750	600	1500	1200	2500	2000	4200	3500
F_y (N)	90	60	350	315	500	450	1000	900
F_z (N)	90	60	500	450	750	675	1125	1000
M_x (Nm)	10	5	20	18	33	30	82	75
M_y (Nm)	13	6	44	40	77	70	220	200
M_z (Nm)	14	7	33	30	55	50	165	150
All forces and torques relate to the following: existing values / table values	$\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$							
No-load torque								
Trapezoidal thread	10x3	-	18x4	18x8	24x5	24x10	28x5	28x10
(Nm)	0,4	-	0,70	0,70	0,50	0,80	0,80	1,0
Ballscrew	8x2,5	-	16x5	16x10	25x5	25x10	32x5	32x10
(Nm)	0,25	-	0,40	0,60	0,40	0,70	0,80	1,0
Geometrical moments of inertia of aluminium profile								
I_x mm^4	$4,09x10^4$		$1,35x10^5$		$5,65x10^5$		$19,14x10^5$	
I_y mm^4	$4,00x10^4$		$1,48x10^5$		$6,12x10^5$		$20,12x10^5$	
Elastic-modulus N/mm^2	70000		70000		70000		70000	

Formula: EGT/K

Driving torque:

$$M_a = \frac{F*P*S_i*w}{2000*\pi*\mu} + M_{leer}$$

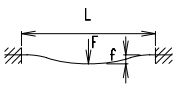
$$P_a = \frac{M_a*n}{9550}$$

F	= force	(N)
P	= thread pitch	(mm)
S_i	= safety factor 1,2 ... 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm of screw	(min^{-1})
M_a	= driving torque	(Nm)
μ	= screw efficiency	
w	= friction coefficient	~ 1,22
P_a	= motor power	(KW)

Efficiency of lead screws:

All ballscrews: 0.900
Tr 10x3 0.375
Tr 18x4 0.399 Tr 18x8 0.565
Tr 24x5 0.384 Tr 24x10 0.550
Tr 28x5 0.349 Tr 28x10 0.513

$$f = \frac{F*L^3}{E*I*192}$$

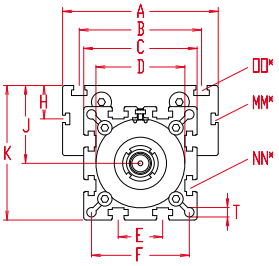


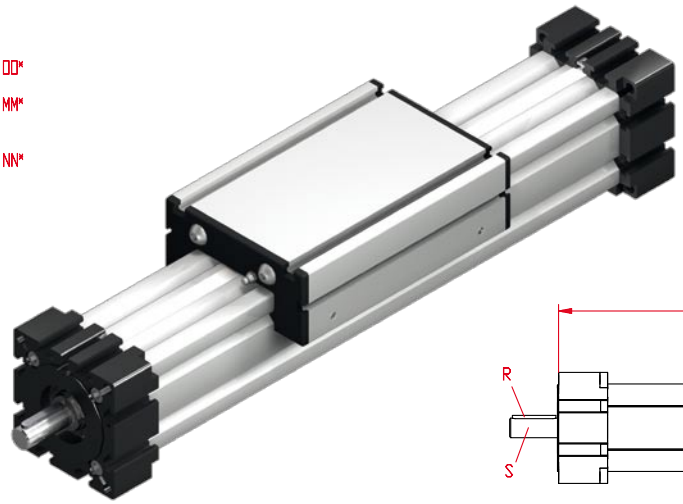
f = deflection	(mm)
F = load	(N)
L = free length	(mm)
E = elastic modulus 70000	(N/mm^2)
I = second moment of area	(mm^4)

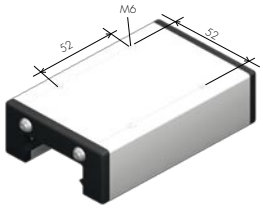
For the diagram for critical speeds of lead screws refer to chapter 5.2 page 3

Positioning system EGT/EGK 30, 40, 60, 80

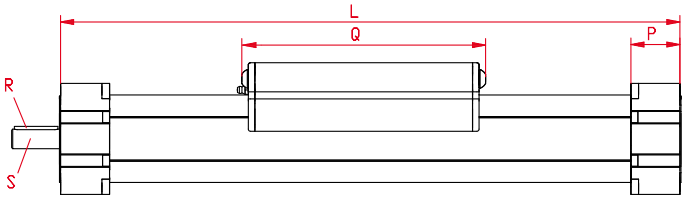
Dimensions (mm)







Size 40 without T-slots



*For slide nuts refer to chapter 2.2 page 2

Increasing the carriage length will increase the basic length by the same amount.

Size ❒	Basic length L	A	B	C	D	E	F	H	J	K	MM for	NN for	OO for	P	Q	R	S Ø x length	T	Basic weight	Weight per 100 mm
EG 30	120	70	56	42	40x1	13	35	-	26	47	-	M 6	M 6	18	82	-	5x15	4,2	0,6 kg	0,16 kg
EG 40	169	70	-	58	48x1	18	47	-	35	64	-	M 6	M 6	25	117	3x3x25	10x27	6,5	1,3 kg	0,36 kg
EG 60	235	100	80	82	62x1	30	69	-	49	90	-	M 8	M 8	35	165	5x5x28	14x35	8,5	4,0 kg	0,67 kg
EG 80	286	140	110	102	80x1	40	88	30	70	121	M 6	M 10	M 10	45	194	6x6x40	18x45	8,5	6,7 kg	1,14 kg

Spindle:
T **(T)** Trapezoidal thread **(K)** Ballscrew

Selection of screw:
1 **(1)** right hand **(2)** left hand (Ballscrew by inquiry)

Choice of guide body profile:
0 **(0)** Standard **(2)** corrosion-protected guide rods (only size 30) and screws

Choice of carriages:

0 **(0)**

(1)

Size	Version 1	
	Q	L
30	94	132
40	133	185
60	181	253
80	210	302

Drive version:
0 **(0)** one shaft (locating bearing side) **(1)** one shaft (non-locating bearing side) **(2)** shaft on both sides

Selection of screw:
0

Size	Standard	Multistart screw	Standard	Multistart screw		
	trapezoidal thread		ballscrew			
30	**(0)** Tr 10x3		**(0)** Kg 8x2,5			
40	**(0)** Tr 18x4	**(1)** Tr 18x8	**(0)** Kg 16x5	**(1)** Kg 16x10	**(2)** Kg 16x16	
60	**(0)** Tr 24x5	**(1)** Tr 24x10	**(0)** Kg 25x5	**(1)** Kg 20x20	**(2)** Kg 25x10	**(3)** Kg 20x50
80	**(0)** Tr 28x5	**(1)** Tr 28x10	**(0)** Kg 32x5	**(1)** Kg 25x25	**(2)** Kg 32x10	

Ballscrew pitch accuracy:
0 **(0)** 0,1 mm / 300 mm (Standard) **(1)** 0,05 mm / 300 mm **(2)** 0,025 mm / 300 mm

End play of ball nut:
0 **(0)** 0,04 mm (Standard), **(1)*** < 0,02 mm, **(2)*** 2% apply prestress
* only in combination with **pitch accuracy (1)** or **(2)**

Repeatability:
± 0,2 mm Trapezoidal
± 0,025 mm Ballscrew

1500 Basic length + stroke = total length

EG	T	40	1	0	0	0	0	0	0	01500
		Pos.	1	2	3	4	5	6	7	

For combination kits and connecting elements refer to chapter 2.2

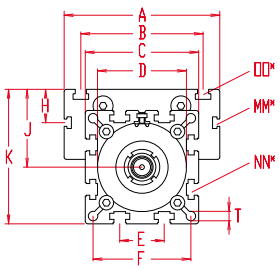
Sample ordering code:
EGT40, trapezoidal right hand thread, standard body profile, top carriage, one shaft (locating bearing side), spindle 18x4, 1331 mm stroke

Positioning system EGT/EGK 30, 40, 60, 80

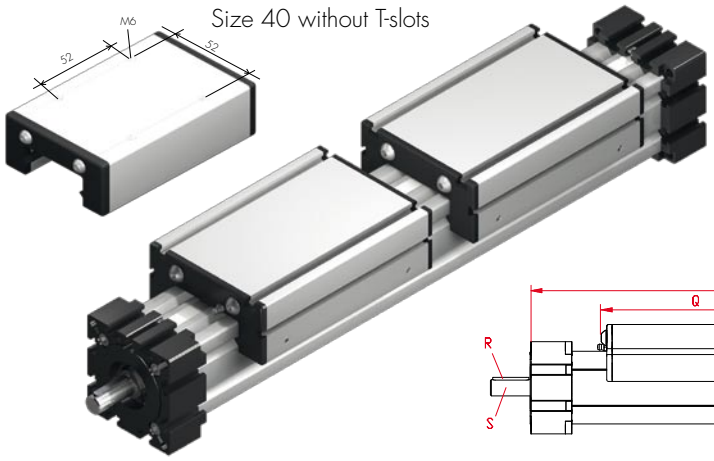
Dimensions (mm)

1.1

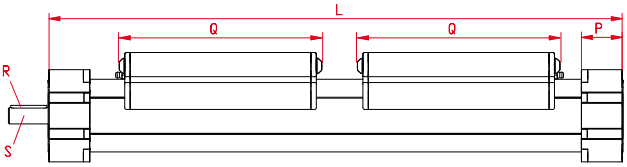
with trapezoidal thread or ballscrew, right-hand and left-hand thread or divided spindles



Size 40 without T-slots



Increasing the carriage length will increase the basic length by the same amount.



*For slide nuts refer to chapter 2.2 page 2

Size ❐	Basic length L	A	B	C	D	E	F	H	J	K	MM for	NN for	OO for	P	Q	R	S Ø x length	T	Basic weight	Weight per 100 mm
EG 30	202	70	56	42	40x1	13	35	-	26	47	-	M 6	M 6	18	82	-	5x15	4,2	1,0 kg	0,16 kg
EG 40	286	70	-	58	48x1	18	47	-	35	64	-	M 6	M 6	25	117	3x3x25	10x27	6,5	2,5 kg	0,36 kg
EG 60	402	100	80	82	62x1	30	69	-	49	90	-	M 8	M 8	35	165	5x5x28	14x35	8,5	6,2 kg	0,67 kg
EG 80	480	140	110	102	80x1	40	88	30	70	121	M6	M 10	M 10	45	194	6x6x40	18x46	8,5	12,0 kg	1,14 kg

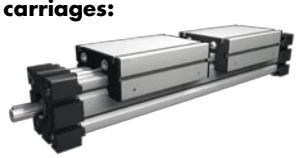
T **Spindle:**
(T) Trapezoidal thread **(K)** Ballscrew

3 **Selection of screw:**
(3) right - left hand **(4)** divided spindle

0 **Choice of guide body profile:**
(0) Standard **(2)** corrosion-protected guide rods (only size 30) and screws

Choice of carriages:

0 **(0)**



(1)

Size	Version 1	
	Q	L
30	94	226
40	133	318
60	181	434
80	210	512

0 **Drive version:**
(0) shaft right hand thread **(1)** shaft left hand thread **(2)** shaft on both sides

0 **Selection of screw:**

Size	Standard trapezoidal thread	Multistart screw trapezoidal thread	Standard ballscrew	Multistart screw ballscrew
30	**(0)** Tr 10x3		**(0)** Kg 8x2,5*	
40	**(0)** Tr 18x4	**(1)** Tr 18x8	**(0)** Kg 16x5	**(1)** Kg 16x10* / **(2)** 16x16*
60	**(0)** Tr 24x5	**(1)** Tr 24x10	**(0)** Kg 25x5	**(1)** Kg 20x20* / **(2)** 25x10*
80	**(0)** Tr 28x5	**(1)** Tr 28x10	**(0)** Kg 32x5	**(1)** Kg 25x25* / **(2)** 32x10*

* = only for selection of divided spindle

0 **Ballscrew pitch accuracy:**
(0) 0,1 mm / 300 mm (Standard) **(1)** 0,05 mm / 300 mm **(2)** 0,025 mm / 300 mm

0 **End play of ball nut:**
(0) 0,04 mm (Standard), **(1)*** < 0,02 mm, **(2)*** 2% apply prestress
* only in combination with **pitch accuracy (1)** or **(2)**

Repeatability:
± 0,2 mm Trapezoidal
± 0,025 mm Ballscrew

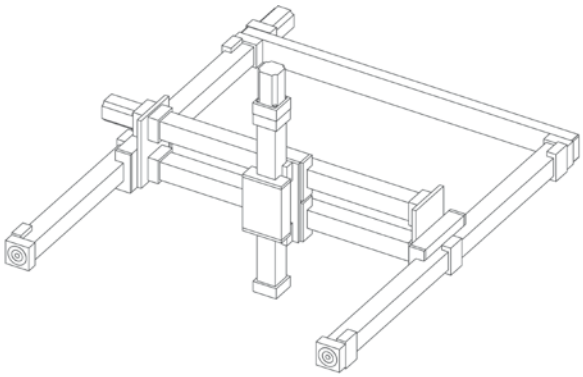
2200 Basic length + stroke = total length

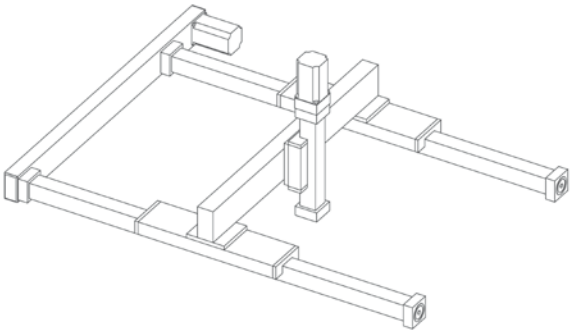
EG	T	40	3	0	0	0	0	0	0	02200
		Pos.	1	2	3	4	5	6	7	

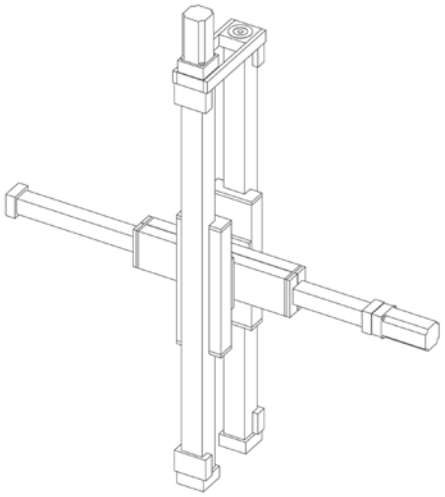
For combination kits and connecting elements refer to chapter 2.2

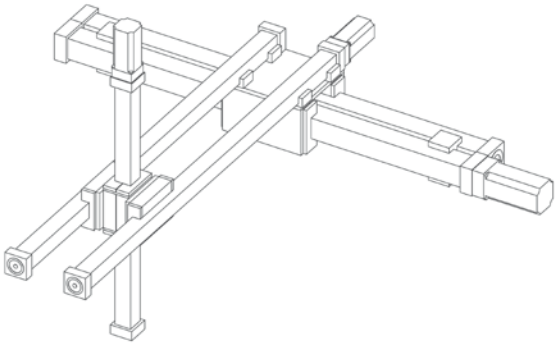
Sample ordering code:
EGT40, trapezoidal right - left hand thread, standard body profile, 2 top carriage, one shaft on right hand side, spindle 18x4, 1914 mm stroke

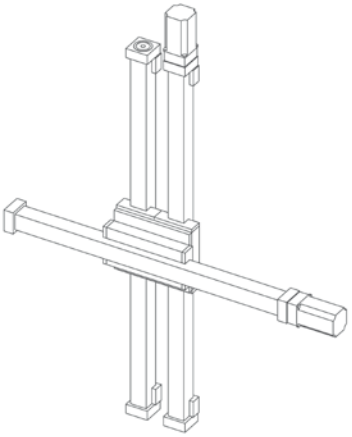
Possible mounting styles

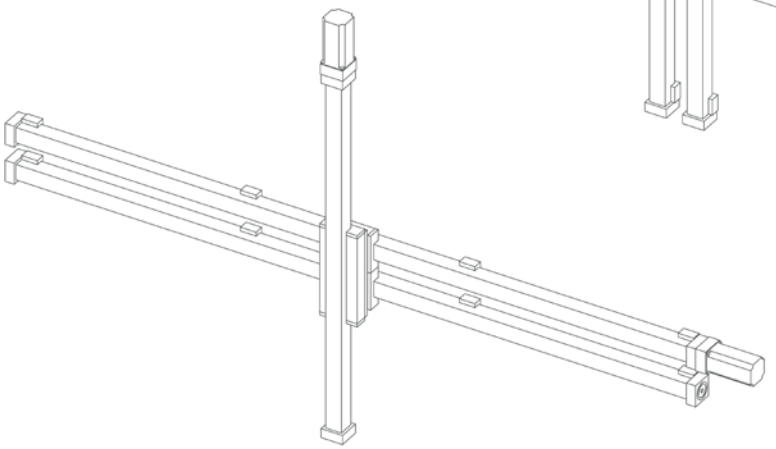


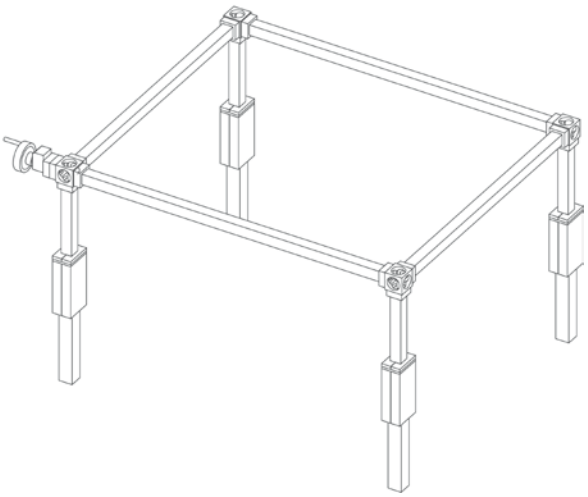












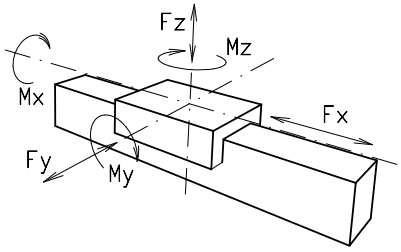
Positioning system EGTH/EGKH 40, 60, 80

Spindle driven with trapezoidal or ballscrew spindle

Function:
The rotary movement of the spindle is translated into a linear motion. Carriage and square tube are connected by a clamping block. The result is a telescopic movement.

Fitting position: As required. Max. length 3.000 mm
Carriage mounting: By T-slots and tapped holes
Unit mounting: By T-slots and tapped holes in the mounting surface.

Forces and torques



Size	EG(T/K)H 40		EG(T/K)H 60		EG(T/K)H 80	
Forces / Torques	static	dynamic	static	dynamic	static	dynamic
F_x (N)	1500	1200	2500	2000	4200	3500
F_y (N)	350	315	500	450	1000	900
F_z (N)	500	450	750	675	1125	1000
M_x (Nm)	20	18	33	30	82	75
M_y (Nm)	44	40	77	70	220	200
M_z (Nm)	33	30	55	50	165	150
All forces and torques relate to the following: existing values / table values	$\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$					
No-load torque						
Trapezoidal thread	18x4	18x8	24x5	24x10	28x5	28x10
(Nm)	0,70	0,70	0,50	0,80	0,80	1,0
Geometrical moments of inertia of aluminium profile						
I_x mm^4	1,35x10^5		5,65x10^5		19,14x10^5	
I_y mm^4	1,48x10^5		6,12x10^5		20,12x10^5	
E-modulus N/mm^2	70000		70000		70000	

Formula: EGTH

Driving torque:

$$M_a = \frac{F*P*S_i*w}{2000*\pi*\mu} + M_{leer}$$

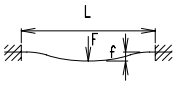
$$P_a = \frac{M_a*n}{9550}$$

F	= force	(N)
P	= thread pitch	(mm)
S_i	= safety factor 1,2 ... 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm of screw	(min^{-1})
M_a	= driving torque	(Nm)
μ	= screw efficiency	
w	= friction coefficient	~ 1,22
P_a	= motor power	(KW)

Efficiency of lead screws:

All ballscrew	0.900		
Tr 18x4	0.399	Tr 18x8	0.565
Tr 24x5	0.384	Tr 24x10	0.550
Tr 28x5	0.349	Tr 28x10	0.513

$$f = \frac{F*L^3}{E*I*192}$$

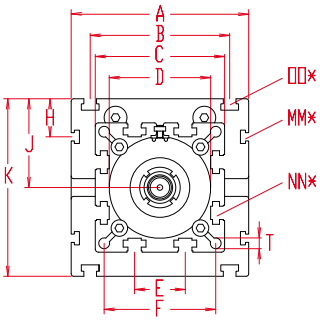


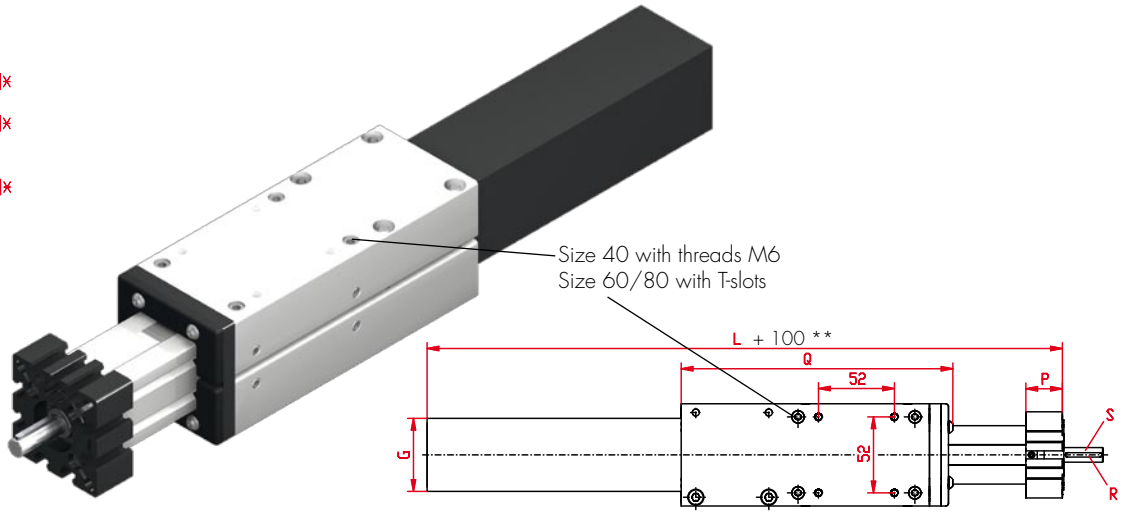
f =deflection	(mm)
F =load	(N)
L =free length	(mm)
E =elastic modulus 70000	(N/mm^2)
I =second moment of area	(mm^4)

For the diagram for critical speeds of lead screws refer to chapter 5.2 page 3

Positioning system EGTH /EGKH 40, 60, 80

Dimensions (mm)





*For slide nuts refer to chapter 2.2 page 2

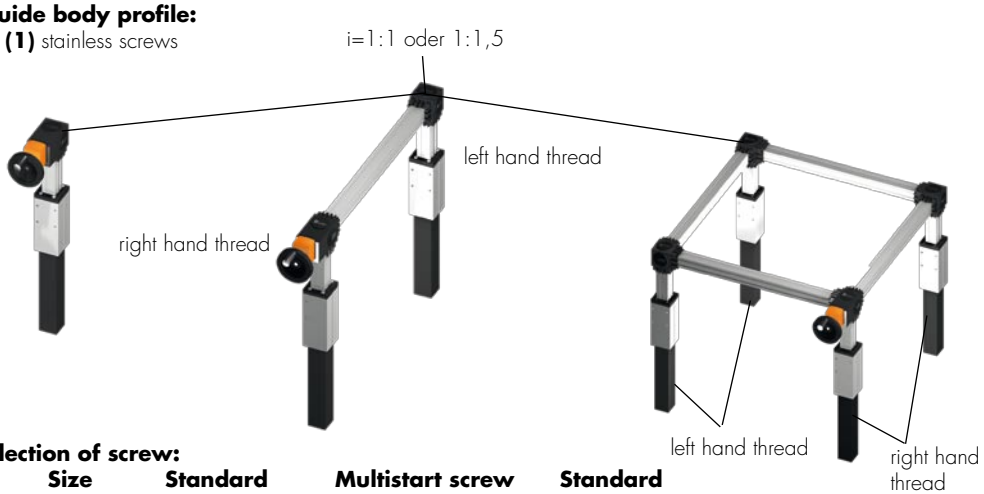
** The basic length (minimum length) of the unit (L+100) includes a stroke of 100mm

Size ❒	Basic length L +**	A	B	C	D	E	F	G	H	J	K	MM for	NN for	OO for	P	Q	R	S Ø x length	T	Basic weight	Weight per 100 mm
EG H40	255	70	-	58	48x1	18	47	50	-	35	70	-	M 6	-	25	190	3x3x25	10x27	6,5	3,0 kg	0,44 kg
EG H60	345	100	80	82	62x1	30	69	70	-	49	98	-	M 8	M 8	35	250	5x5x28	14x35	8,5	7,0 kg	0,71 kg
EG H80	390	140	110	102	80x1	40	88	90	30	70	140	M 6	M 10	M 10	45	300	6x6x40	18x45	8,5	12,8 kg	1,35 kg

T **Spindle:**
(T) Trapezoidal thread **(K)** Ballscrew

1 **Selection of screw:**
(1) right hand **(2)** left hand

0 **Choice of guide body profile:**
(0) Standard **(1)** stainless screws



0 **Selection of screw:**

Size	Standard trapezoidal thread	Multistart screw trapezoidal thread	Standard ballscrew
40	**(0)** Tr 18x4	**(1)** Tr 18x8	**(0)** Kg 16x5
60	**(0)** Tr 24x5	**(1)** Tr 24x10	**(0)** Kg 25x5
80	**(0)** Tr 28x5	**(1)** Tr 28x10	**(0)** Kg 32x5

0 **Ballscrew pitch accuracy:**
(0) 0,1 mm / 300 mm (Standard) **(1)** 0,05 mm / 300 mm **(2)** 0,025 mm / 300 mm

0 **End play of ball nut:**
(0) 0,04 mm (Standard), **(1)*** < 0,02 mm, **(2)*** 2% apply prestress
* only in combination with **pitch accuracy (1)** or **(2)**

755 Basic length + stroke = total length

Repeatability:
± 0,2 mm Trapezoidal
± 0,025 mm Ballscrew

Pos.	1	2	3	4	5	6	7
EG	T	H	40	1	0	0	0	0	0	0	00755

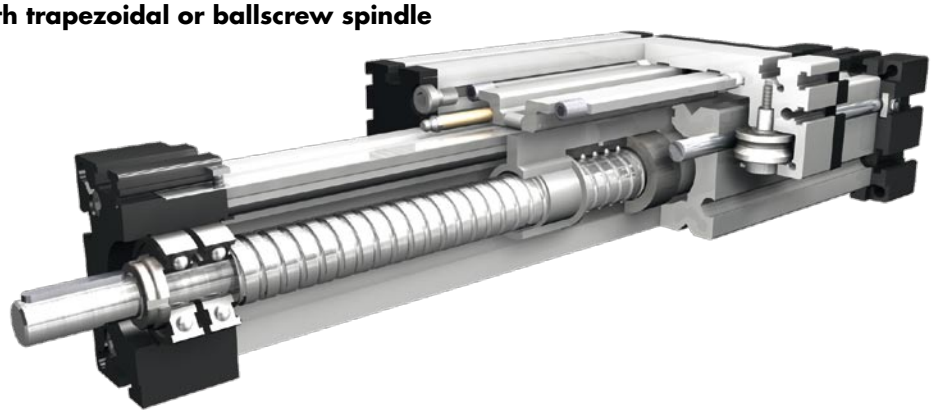
For combination kits and connecting elements refer to chapter 2.2

Sample ordering code:
EGTH40, trapezoidal right hand thread, standard body profile, 500 mm stroke

Positioning system ELT/ELK 30, 40, 60, 60S, 80, 80S, 100, 125

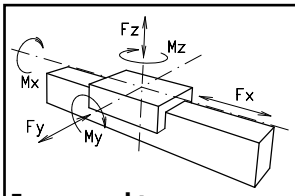
Spindle driven with trapezoidal or ballscrew spindle

Specifications



Function:

This linear unit consists of an aluminium hollow section with integral, parallel ground and hardened steel guide rods. The carriage has play-adjustable ball-bearing rollers which engage with the guide rods. The rotating ballscrew causes linear motion of the ballnut, which is connected to the carriage. The slot necessary for this is covered by a stainless steel strip, making the unit dust- and splash-proof. Lateral adjustment of movement for parallel units, or when two carriages are mounted on one unit, is provided by the ballnut mounting.



Forces and torques

Fitting position: As required, max. length 3.000 mm
Carriage mounting: By T-slots and tapped holes
Unit mounting: By T-slots and tapped holes in the mounting surfaces.

Size	EL 30		EL 40		EL 60		EL 60 S		EL 80		EL 80S		EL 100		EL 125	
Forces/Torques	static	dyna.	static	dyna.	static	dyna.	static	dyna.	static	dyna.	static	dyna.	static	dyna.	static	dyna.
F_x (N)	750	600	1500	1200	2500	2000	2500	2000	5000	4000	5000	4000	10000	8000	15000	12000
F_y (N)	90	60	1200	700	3000	2000	4100	3100	3000	2000	4600	3600	8000	6500	12000	9000
F_z (N)	90	60	900	650	1700	1100	2160	1600	1700	1100	3000	1800	3600	2200	6000	4500
M_x (Nm)	12	10	25	20	67	43	88	65	90	55	170	140	300	230	600	450
M_y (Nm)	12	10	32	18	90	70	190	140	110	80	270	230	400	270	750	600
M_z (Nm)	15	12	35	25	120	100	230	170	150	120	300	220	750	500	1350	1150

All forces and torques relate to the following:

existing values / table values

$$\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$$

No-load torque								
Trapezoidal thread	10x3	18x4/18x8	24x5/24x10	24x5/24x10	28x5/28x10	28x5/28x10	32x6/32x12	40x7/40x14
(Nm)	0,3	0,4/0,5	0,6/0,8	0,6/0,8	0,8/1,0	0,8/1,0	0,9/1,1	1,2/1,4
Ballscrew	8x2,5	16x5/16x10	25x5/25x10	25x5/25x10	32x5/32x10	32x5/32x10	32x5/32x10	40x10/40x20
(Nm)	0,15	0,2/0,4	0,4/0,6	0,4/0,6	0,6/0,8	0,6/0,8	0,7/0,9	1,0/1,2
Geometrical moments of inertia of aluminium profile								
I_x mm^4	4,09x10^4	1,32x10^5	6,79x10^5	6,79x10^5	18,99x10^5	18,99x10^5	44,4x10^5	101,5x10^5
I_y mm^4	4,00x10^4	1,34x10^5	6,97x10^5	6,97x10^5	18,97x10^5	18,97x10^5	44,8x10^5	101,5x10^5
E-Modulus N/mm^2	70000	70000	70000	70000	70000	70000	70000	70000

For life-time calculation of rollers use our CD-ROM or homepage!

Formula: ELT/K

Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi*\mu} + M_{leer}$$

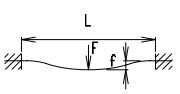
$$P_a = \frac{M_a*n}{9550}$$

F	= force	(N)
P	= thread pitch	(mm)
S_i	= safety factor 1,2 ... 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm of screw	(min^{-1})
M_a	= driving torque	(Nm)
μ	= screw efficiency	
P_a	= motor power	(KW)

Efficiency of lead screws:

All ballscrew	0.900		
Tr 10x3	0,375	Tr 32x6	0,360
Tr 18x4	0,399	Tr 32x12	0,524
Tr 18x8	0,565	Tr 40x7	0,344
Tr 24x5	0,384	Tr 40x14	0,509
Tr 24x10	0,550		
Tr 28x5	0,349		
Tr 28x10	0,513		

$$f = \frac{F*L^3}{E*I*192}$$

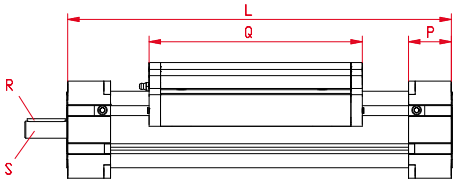


f =deflection	(mm)
F =load	(N)
L =free length	(mm)
E =elastic modulus 70000	(N/mm^2)
I =second moment of area	(mm^4)

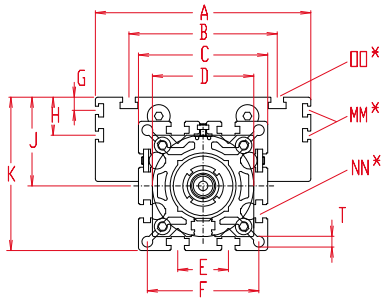
For the diagram for critical speeds of lead screws refer to chapter 5.2 page 3

Positioning system ELT/ELK 30, 40, 60, 60S, 80, 80S, 100, 125

Dimensions (mm)



Increasing the carriage length will increase the basic length by the same amount.



*For slide nuts refer to chapter 2.2 page 2

Size ❒	Basic length L	A	B	C	D	E	F	G	H	J	K	MM for	NN for	OO for	P	Q	R	S Ø x length	T	Basic weight	Weight per 100 mm
EL 30	120	70	56	42	40x1	13	35	-	-	26	47	-	M 6	M 6	18	82	-	5x15	4,2	0,7 kg	0,16 kg
EL 40	175	100	66	58	48x1	18	47	–	-	35	64	-	M 6	M 6	25	122	3x3x25	10x27	6,5	1,7 kg	0,37 kg
EL 60	245	144	96	82	62x1	30	69	-	-	49	90	-	M 8	M 8	35	168	5x5x28	14x35	8,5	5,1 kg	0,89 kg
EL 60S	270	170	108	82	62x1	30	69	-	-	49	94	-	M 8	M 8	35	194	5x5x28	14x35	8,5	5,1 kg	0,89 kg
EL 80	285	170	117	102	80x1	40	88	10	30	70	121	M 6	M 10	M 10	45	194	6x6x40	18x45	8,5	10,0 kg	1,48 kg
EL 80S	305	190	126	102	80x1	40	88	12,5	30	71	122	M 6	M 10	M 8	45	214	6x6x40	18x45	8,5	11,0 kg	1,48 kg
EL 100	410	230	155	130	110x1	50	112	-	29	89	154	M 10	M 10	M 10	55	300	6x6x40	22x45	10,5	19,0 kg	2,00 kg
EL 125	510	295	200	165	130x1	60	142	-	30	107,5	190	M 10	M 12	M 12	65	365	8x7x50	25x55	13,0	33,0 kg	2,89 kg

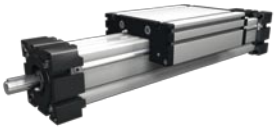
Spindle:
T **(T)** Trapezoidal thread **(K)** Ballscrew

Selection of screw:
1 **(1)** right hand **(2)** left hand (Ballscrew by inquiry)

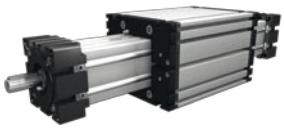
Choice of guide body profile:
0 **(0)** Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

Choice of carriages:
0

(0)



(1)



Size	Version 1	
	Q	L
30	94	132
40	138	191
60	184	261
60S	214	290
80	210	301
80S	234	325
100	316	426
125	389	534

Drive version:
0 **(0)** one shaft (locating bearing side) **(1)** one shaft (non-locating bearing side) **(2)** shaft on both sides

Selection of screw:
0

Size	Standard trapezoidal thread	Multistart screw trapezoidal thread	Standard ballscrew	Multistart screw ballscrew		
30	**(0)** Tr 10x3		**(0)** Kg 8x2,5			
40	**(0)** Tr 18x4	**(1)** Tr 18x8	**(0)** Kg 16x5	**(1)** Kg 16x10	**(2)** Kg 16x16	
60	**(0)** Tr 24x5	**(1)** Tr 24x10	**(0)** Kg 25x5	**(1)** Kg 20x20	**(2)** Kg 25x10	**(3)** Kg 20x50
80	**(0)** Tr 28x5	**(1)** Tr 28x10	**(0)** Kg 32x5	**(1)** Kg 25x25	**(2)** Kg 32x10	
100	**(0)** Tr 32x6	**(1)** Tr 32x12	**(0)** Kg 32x5	**(1)** Kg 32x10	**(2)** Kg 32x20	**(3)** Kg 32x32
125	**(0)** Tr 40x7	**(1)** Tr 40x14	**(0)** Kg 40x10	**(1)** Kg 40x20	**(2)** Kg 40x40	

Ballscrew pitch accuracy:
0 **(0)** 0,1 mm / 300 mm (Standard) **(1)** 0,05 mm / 300 mm **(2)** 0,025 mm / 300 mm

End play of ball nut:
0 **(0)** 0,04 mm (Standard), **(1)*** < 0,02 mm, **(2)*** 2% apply prestress
* only in combination with **pitch accuracy (1)** or **(2)**

1500 Basic length + stroke = total length

Repeatability:
± 0,2 mm Trapezoidal
± 0,025 mm Ballscrew

EL	T	40	1	0	0	0	0	0	0	01500
		Pos.	1	2	3	4	5	6	7	

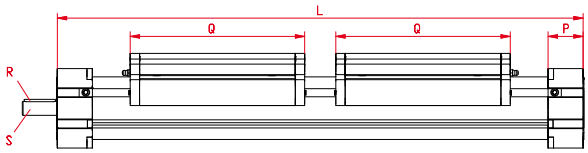
For combination kits and connecting elements refer to chapter 2.2

Sample ordering code:
ELT40, trapezoidal right hand thread, standard body profile, top carriage, one shaft (locating bearing side), spindle 18x4, 1325 mm stroke

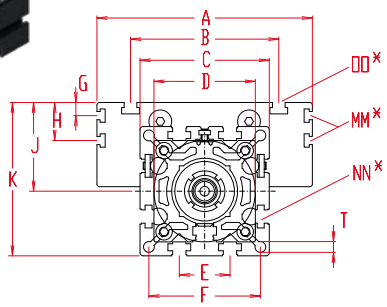
Positioning system ELT/ELK 30, 40, 60, 60S, 80, 80S, 100, 125

with trapezoidal thread or ballscrew, right-hand and left-hand thread or divided spindles

Dimensions (mm)



Increasing the carriage length will increase the basic length by the same amount.



*For slide nuts refer to chapter 2.2 page 2

Size ❒	Basic length L	A	B	C	D	E	F	G	H	J	K	MM for	NN for	OO for	P	Q	R	S Ø x length	T	Basic weight	Weight per 100 mm
EL 30	202	70	56	42	40x1	13	35	-	-	26	47	-	M 6	M 6	18	82	-	5 x 15	4,2	1,1 kg	0,16 kg
EL 40	300	100	66	58	48x1	18	47	-	-	35	64	-	M 6	M 6	25	122	3x3x25	10 x 27	6,5	2,5 kg	0,37 kg
EL 60	410	144	96	82	62x1	30	69	-	-	49	90	-	M 8	M 8	35	168	5x5x28	14 x 35	8,5	8,1 kg	0,89 kg
EL 60S	460	170	108	82	62x1	30	69	-	-	49	94	-	M 8	M 8	35	194	5x5x28	14 x 35	8,5	10,1 kg	0,89 kg
EL 80	480	170	117	102	80x1	40	88	10	30	70	121	M 6	M10	M10	45	194	6x6x40	18 x 45	8,5	15,0 kg	1,48 kg
EL 80S	520	190	126	102	80x1	40	88	12,5	30	71	122	M 6	M10	M 8	45	214	6x6x40	18 x 45	8,5	17,0 kg	1,48 kg
EL 100	720	230	155	130	110x1	50	112	-	29	89	154	M10	M10	M10	55	300	6x6x40	22 x 45	10,5	32,0 kg	2,00 kg
EL 125	880	295	200	165	130x1	60	142	-	30	107,5	190	M10	M12	M12	65	365	8x7x50	25 x 55	13	48,0 kg	2,89 kg

T **Spindle:**
(T) Trapezoidal thread **(K)** Ballscrew

3 **Selection of screw:**
(3) right - left hand **(4)** divided spindle

0 **Choice of guide body profile:**
(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

Choice of carriages:

0 **(0)**

(1)

Size	Version 1	
	Q	L
30	94	226
40	138	232
60	184	442
60S	214	502
80	210	512
80S	234	560
100	316	752
125	389	928

0 **Drive version:**
(0) shaft right hand thread **(1)** shaft left hand thread **(2)** shaft on both sides

0 **Selection of screw:**

Size	Standard	Multistart screw	Standard	Multistart screw
	trapezoidal thread		ballscrew	
30	**(0)** Tr 10x3		**(0)** Kg 8x2.5*	
40	**(0)** Tr 18x4	**(1)** Tr 18x8	**(0)** Kg 16x5	**(1)** Kg 16x10* **(1)** Kg 16x16*
60	**(0)** Tr 24x5	**(1)** Tr 24x10	**(0)** Kg 25x5	**(1)** Kg 20x20* **(2)** Kg 25x10*
80	**(0)** Tr 28x5	**(1)** Tr 28x10	**(0)** Kg 32x5	**(1)** Kg 25x25* **(2)** Kg 32x10*
100	**(0)** Tr 32x6	**(1)** Tr 32x12	**(0)** Kg 32x5	**(1)** Kg 32x10* **(2)** Kg 32x20* **(3)** Kg 32x32*
125	**(0)** Tr 40x7	**(1)** Tr 40x14	**(0)** Kg 40x10	**(1)** Kg 40x20* **(2)** Kg 40x40*

* = only for selection of devided spindle

0 **Ballscrew pitch accuracy:**
(0) 0,1 mm / 300 mm (Standard) **(1)** 0,05 mm / 300 mm **(2)** 0,025 mm / 300 mm

0 **End play of ball nut:**
(0) 0,04 mm (Standard), **(1)*** < 0,02 mm, **(2)*** 2% apply prestress
* only in combination with **pitch accuracy (1)** or **(2)**

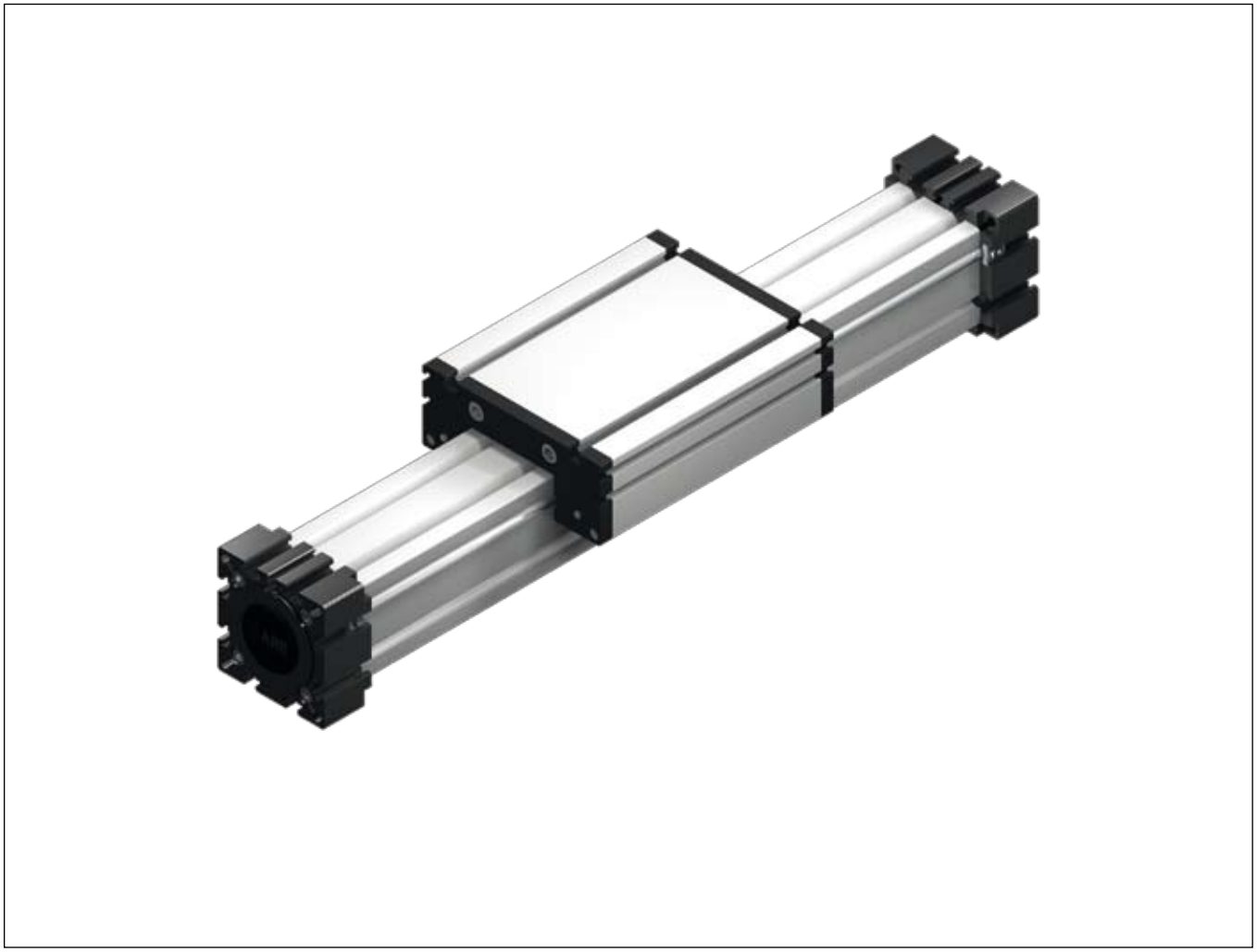
2200 Basic length + stroke = total length

Repeatability:
± 0,2 mm Trapezoidal
± 0,025 mm Ballscrew

EL	T	40	3	0	0	0	0	0	0	02200
		Pos.	1	2	3	4	5	6	7	

For combination kits and connecting elements refer to chapter 2.2

Sample ordering code:
ELT40, trapezoidal right - left hand thread, standard body profile, 2 top carriage, shaft on right hand side, spindle 18x4, 1900 mm stroke



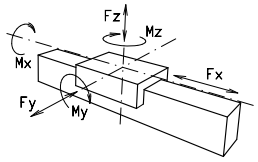
Non driven positioning systems E / EL / UL

Positioning system ELR 30, 40, 60, 60S, 80, 80S, 100, 125

Roller guide unit without drive

Specifications

Function:
This unit consists of an aluminium hollow section with integral, parallel ground and hardened steel guide rods. The carriage has play-adjustable ball bearing rollers which engage with the guide rods. Two bearing blocks without bearings are fitted. Actuation can be by pneumatic cylinder or other device, or the unit may be used as load-carrying linear slide.



Forces and torques

Fitting position: As required, max. length 6.000 mm
Carriage connection: By T-slots and tapped holes
Unit mounting: By T-slots and tapped holes in the mounting surface, mounting sets.

Size	ELR 30		ELR 40		ELR 60		ELR 60 S		ELR 80		ELR 80S		ELR 100		ELR 125	
Forces/Torques	static	dynam.	static	dynam.	static	dynam.	static	dynam.	static	dynam.	static	dynam.	static	dynam.	static	dynam.
F_x (N)	-	-	-	-	-	-			-	-	-	-	-	-	-	-
F_y (N)	90	60	1200	700	3000	2000	4100	3100	3000	2000	4600	3600	8000	6500	12000	9000
F_z (N)	90	60	900	650	1700	1100	2160	1600	1700	1100	3000	1800	3600	2200	6000	4500
M_x (Nm)	10	5	25	20	67	43	88	65	90	55	170	140	300	230	600	450
M_y (Nm)	13	6	32	18	90	70	190	140	110	80	270	230	400	270	750	600
M_z (Nm)	14	7	35	25	120	100	230	170	150	120	300	220	750	500	1350	1150

All forces and torques relate to the following:

existing values / table values

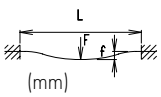
$$\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$$

No-load torque								
max. (m/s)	3	4	5	5	6	8	10	10
Geometrical moments of inertia of aluminium profile								
I_x mm^4	4,09x10^4	1,32x10^5	6,79x10^5	6,79x10^5	18,99x10^5	18,99x10^5	44,4x10^5	10,2x10^6
I_y mm^4	4,00x10^4	1,34x10^5	6,97x10^5	6,97x10^5	18,97x10^5	18,97x10^5	44,8x10^5	10,2x10^6
E-Modulus N/mm^2	70000	70000	70000	70000	70000	7000	70000	70000

For life-time calculation of rollers use our CD-ROM or homepage!

Formula: ELR

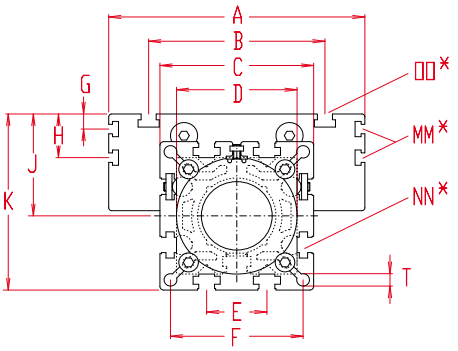
$$f = \frac{F * L^3}{E * I * 192}$$



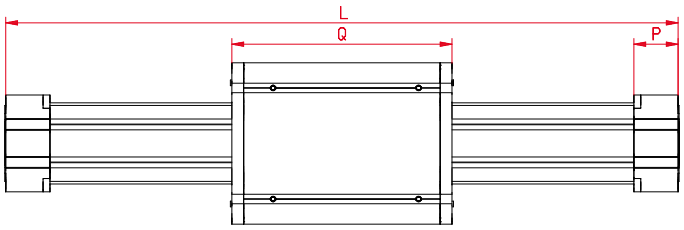
f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

Positioning system ELR 30, 40, 60, 60S, 80, 80S, 100, 125

Dimensions (mm)



Increasing the carriage length will increase the basic length by the same amount.



*For slide nuts refer to chapter 2.2 page 2

Size ❒	Basic length L	A	B	C	D	E	F	G	H	K	MM for	NN for	OO for	P	Q	T	Basic weight	Weight per 100 mm
ELR 30	120	70	56	42	40x1	13	35	-	-	47	-	M 6	M 6	18	82	4,2	0,5 kg	0,12 kg
ELR 40	175	100	66	58	48x1	18	47	-	-	64	-	M 6	M 6	25	122	6,5	0,9 kg	0,23 kg
ELR 60	245	144	96	82	62x1	30	69	-	-	90	-	M 8	M 8	35	168	8,5	3,1 kg	0,61 kg
ELR 60S	265	170	108	82	62x1	30	69	-	-	94	-	M 8	M 8	35	194	8,5	4,1 kg	0,61 kg
ELR 80	285	170	117	102	80x1	40	88	10	30	121	M 6	M 10	M 10	45	194	8,5	5,3 kg	0,90 kg
ELR 80S	305	190	126	102	80x1	40	88	12,5	30	122	M 6	M 10	M 8	45	214	8,5	6,3 kg	0,90 kg
ELR 100	410	230	155	130	110x1	50	112	-	29	154	M 10	M 10	M 10	55	300	10,5	15,1 kg	1,50 kg
ELR 125	510	295	200	165	130x1	60	142	-	30	190	M 10	M 12	M 12	65	365	13	26,8 kg	2,05 kg

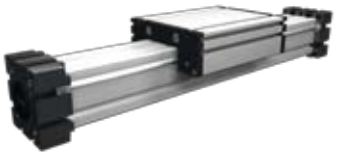
Choice of guide body profile:

0

(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

Choice of carriages:

0 **(0)**



(1)

Size	Version 1	
	Q	L
30	94	132
40	138	191
60	184	261
60S	214	284
80	210	301
80S	234	325
100	316	426
125	389	534

1500 Basic length + stroke = total length

ELR	40	0	0	0	0	0	0	0	01500
	Pos.	1	2	3	4	5	6	7	

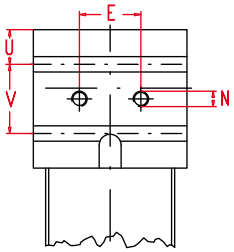
For combination kits and connecting elements refer to chapter 2.2

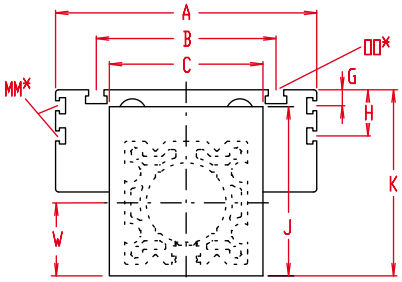
Sample ordering code:
ELR 40, non driven system, standard body profile, standard carriage, 1325 mm stroke

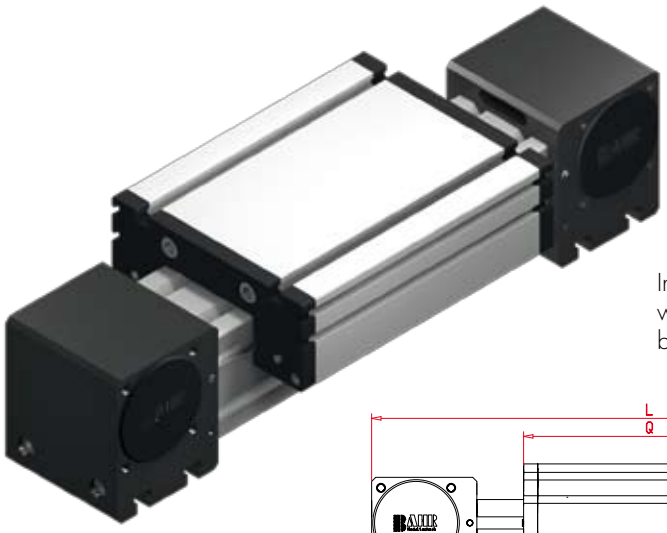
Positioning system ELRZ 30, 40, 60, 60S, 80, 80S, 100, 125

Roller guide unit without drive

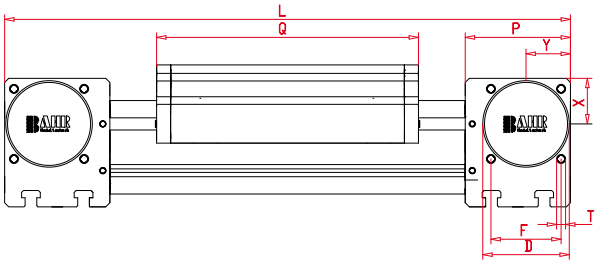
Dimensions (mm)







Increasing the carriage length will increase the basic length by the same amount.



*For slide nuts refer to chapter 2.2 page 2

Size ❒	Basic length L	A	B	C	D	E	F	G	H	J	K	MM for	N	OO for	P	Q	T	U	V	W	X	Y	Basic weight	Weight per 100 mm
ELRZ 30	158	70	56	42	28	13	25	-	-	44	47	-	M 6	M 6	36	82	M 4	10	16	21	16	16	0,6 kg	0,13 kg
ELRZ 40	225	100	66	58	37	18	32	-	-	58	64	-	M 6	M 6	49	122	M 5	12,5	24	29	20,5	20,5	1,2 kg	0,23 kg
ELRZ 60	290	144	96	80	47	30	42	-	-	82	90	-	M 8	M 8	59	168	M 6	14	30	41	27	27	3,4 kg	0,61 kg
ELRZ 60S	315	170	108	80	47	30	42	-	-	82	94	-	M 8	M 8	59	194	M 6	14	30	41	27	27	4,4 kg	0,61 kg
ELRZ 80	375	170	117	100	68	40	60	10	30	110	121	M 6	M 10	M 10	90	194	M 8	22,5	45	51	39	38	6,7 kg	0,90 kg
ELRZ 80S	395	190	126	100	68	40	60	12,5	30	110	122	M 6	M 10	M 8	90	214	M 8	22,5	45	51	39	38	7,7 kg	0,90 kg
ELRZ 100	530	230	155	130	90	50	80	-	29	135	154	M 10	M 12	M 10	110	300	M 10	23	64	65	50	50	17,5 kg	1,50 kg
ELRZ 125	625	295	200	160	110	60	100	-	30	167	191	M 10	M 12	M 12	130	365	M 12	38	50	82	60	60	28,3 kg	2,05 kg

Choice of guide body profile:

0 **(0)** Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

Choice of carriages:

0 **(0)**

(1)

Size	Version 1	
	Q	L
30	94	170
40	138	241
60	184	306
60S	214	335
80	210	391
80S	234	415
100	316	546
125	389	649

Application:
This unit can be used as a load-carrying linear slide, or it may be fitted with a suitable pneumatic drive.

1500 Basic length + stroke = total length

ELRZ	40	0	0	0	0	0	0	0	01500
	Pos.	1	2	3	4	5	6	7	

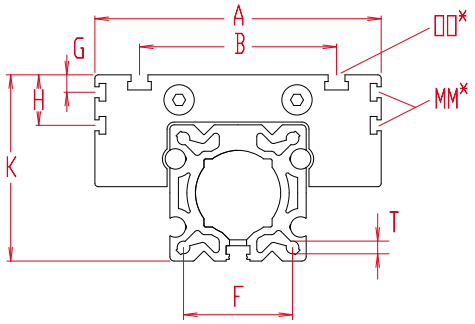
For combination kits and connecting elements refer to chapter 2.2

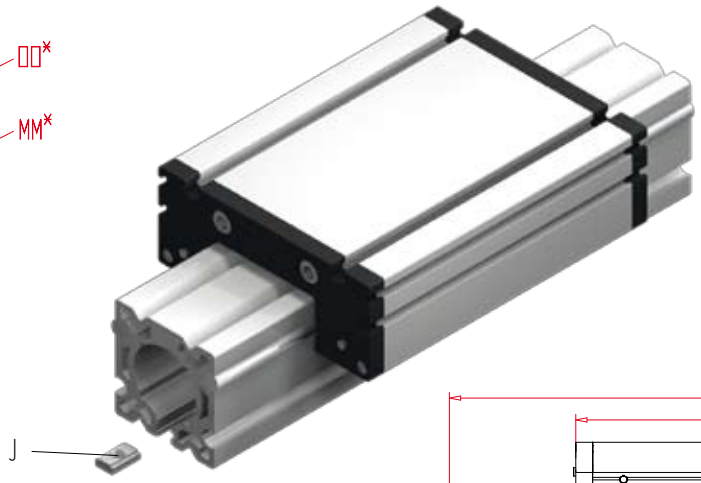
Sample ordering code:
ELRZ 40, Non driven system, standard body profile, standard carriage, 1275 mm stroke

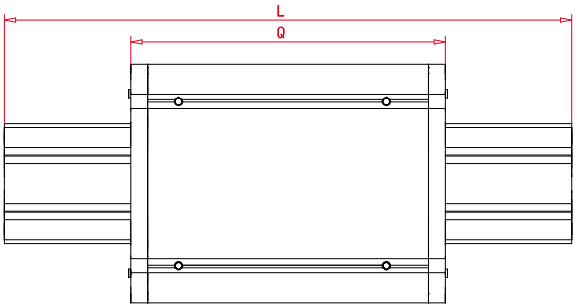
Positioning system ER 30, 40, 60, 60S, 80, 80S, 100, 125

Roller guide unit without drive

Dimensions (mm)







Increasing the carriage length will increase the basic length by the same amount.

*For slide nuts refer to chapter 2.2 page 2

Size ❒	Basic length L	A	B	F	G	H	J	K	MM for	OO for	Q	T	Basic weight	Weight per 100 mm
ER 30	86	70	56	23	-	-	M 6	41	-	M 6	82	M 4	0,5 kg	0,12 kg
ER 40	126	100	66	29	-	-	M 6 - M10	55	-	M 6	122	M 5	0,7 kg	0,23 kg
ER 60	172	144	96	48	-	-	M 6 - M10	79	-	M 8	168	M 6	2,4 kg	0,61 kg
ER 60S	198	170	108	48	-	-	M 6 - M10	83	-	M 8	194	M 6	3,4 kg	0,61 kg
ER 80	198	170	117	64	10	30	M 6 - M10	110	M 6	M 10	194	M 8	3,7 kg	0,90 kg
ER 80S	218	190	126	64	12,5	30	M 6 - M10	111	M 6	M 8	214	M 8	4,7 kg	0,90 kg
ER 100	304	230	155	80	-	29	M 10	139	M 10	M 10	300	M 10	10,8 kg	1,50 kg
ER 125	369	295	200	100	-	30	M 12	170	M 10	M 12	365	M 12	20,3 kg	2,05 kg

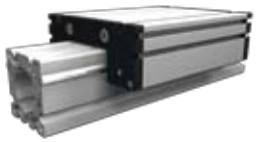
Choice of guide body profile:

0

(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

Choice of carriages:

0 **(0)**



(1)

Size	Version 1	
	Q	L
30	94	98
40	138	142
60	184	188
60S	214	218
80	210	214
80S	234	238
100	316	320
125	389	393

Application:
This unit can be used as a load-carrying linear slide, or it may be fitted with a suitable pneumatic drive.

1500 Basic length + stroke = total length

ER	40	0	0	0	0	0	0	0	01500
Pos.	1	2	3	4	5	6	7		

For combination kits and connecting elements refer to chapter 2.2

Sample ordering code:
ER 40, Non driven system, standard body profile, standard carriage, 1374 mm stroke

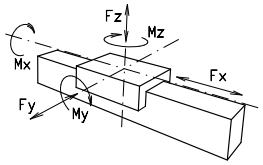
Positioning system E 40, 60, 60S, 80, 80S

Roller guide unit without drive **Specifications**

Function:
Very low building system achieved by an aluminium guide body with integrated, hardened steel guide rods. The carriage, which has internal linear ball bearings that can be adjusted free of play, moves along the body.

Fitting position: As required, max. length 6.000 mm.
Carriage connection: By T-slots.
Unit mounting: By tapped holes in the mounting surface, bottom surface with T-slots.

Forces and torques

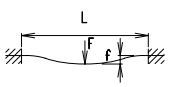


Size	E 40		E 60		E 60 S		E 80		E 80S	
Forces/Torques	static	dynamic	static	dynamic	static	dynamic	static	dynamic	static	dynamic
F_x (N)	-	-	-	-	-	-	-	-	-	-
F_y (N)	1200	700	3000	2000	4100	3100	3000	2000	4600	3600
F_z (N)	900	650	1700	1100	2160	1600	1700	1100	3000	1800
M_x (Nm)	25	20	67	43	88	65	90	55	170	140
M_y (Nm)	32	18	90	70	190	140	110	80	270	230
M_z (Nm)	35	25	120	100	230	170	150	120	300	220
All forces and torques relate to the following:										
existing values / table values	$\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$									
Speed										
max. (m/s)	4		5		5		6		8	
Geometrical moments of inertia of aluminium profile										
I_x mm^4	0,157x10^5		1,71x10^5		1,71x10^5		2,8x10^5		2,8x10^5	
I_y mm^4	0,654x10^5		6,1x10^5		6,1x10^5		10,59x10^5		10,59x10^5	
E-Modulus N/mm^2	70000		70000		70000		70000		70000	

For life-time calculation of rollers use our CD-ROM or homepage!

Formula: E

$$f = \frac{F*L^3}{E*I*192}$$

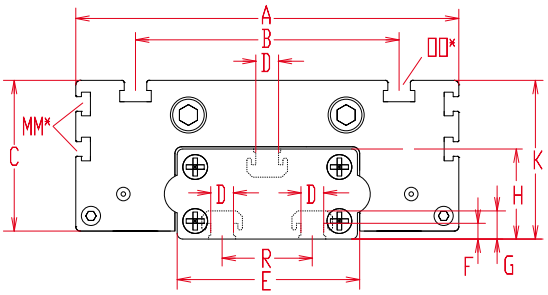


f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

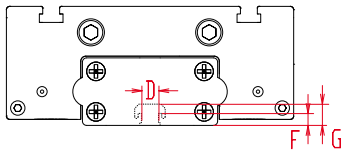
Positioning system E 40, 60, 60S, 80, 80S

Dimensions (mm)

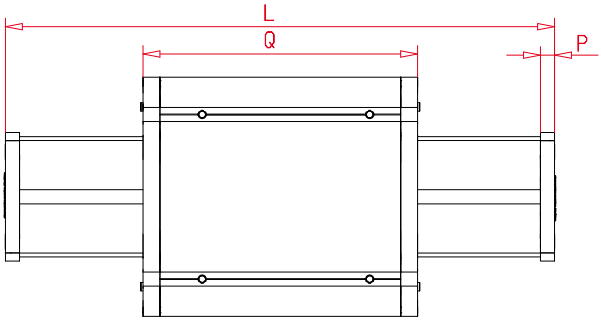
Increasing the carriage length will increase the basic length by the same amount.



Size 80



Size 40, 60



*For slide nuts refer to chapter 2.2 page 2

Size ❒	Basic length L	A	B	C	D	E	F	G	H	K	MM for	OO for	P	Q	R	Basic weight	Weight per 100 mm
E 40	136	100	66	34,5	10	40	7	12,5	22	37	-	M 6	6	122	-	1,0 kg	0,13 kg
E 60	186	144	96	49	10	60	7	12,5	30	49	-	M 8	8	168	-	2,2 kg	0,20 kg
E 60S	212	170	108	53	10	60	7	12,5	30	53	-	M 8	8	194	-	3,2 kg	0,20 kg
E 80	215	170	117	66,5	10	80	7	12,5	40	70	M 6	M 10	10	194	40	3,4 kg	0,48 kg
E 80S	245	190	126	67,5	10	80	7	12,5	40	71	M 6	M 8	10	214	40	4,4 kg	0,48 kg

Choice of guide body profile:
0 **(0)** Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

1500 Basic length + stroke = total length

E	40	0	0	0	0	0	0	0	01500
	Pos.	1	2	3	4	5	6	7	

For combination kits and connecting elements refer to chapter 2.2

Sample ordering code:
E 40, non driven system, standard body profile, 1364 mm stroke

Positioning system UL 40, 60, 80

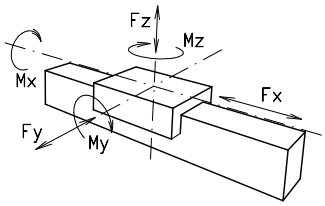
Roller guide unit without drive

Specifications

Function:
Very low building roller system achieved by an aluminium guide body with integrated, hardened steel guide rods. The carriage, which has internal linear ball bearings that can be adjusted free of play, moves along the body.

Fitting position: As required, max. length 6.000 mm.
Carriage connection: By tapped holes
Unit mounting: Afterwards by holes or tapped holes

Forces and torques

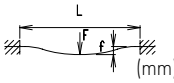


Size	UL 40		UL 60		UL 80	
Forces/Torques	static	dynamic	static	dynamic	static	dynamic
F_x (N)	-	-	-	-	-	-
F_y (N)	1200	700	3000	2000	3000	2000
F_z (N)	900	650	1700	1100	1700	1100
M_x (Nm)	25	20	67	43	90	55
M_y (Nm)	32	18	90	70	110	80
M_z (Nm)	35	25	120	100	150	120
All forces and torques relate to the following:						
existing values / table values	$\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$					
Speed						
max. (m/s)	4		5		6	
Geometrical moments of inertia of aluminium profile						
I_x mm^4	0,157x10^5		1,71x10^5		2,8x10^5	
I_y mm^4	0,654x10^5		6,1x10^5		10,59x10^5	
E-Modulus N/mm^2	70000		70000		70000	

For life-time calculation of rollers use our CD-ROM or homepage!

Formula: UL

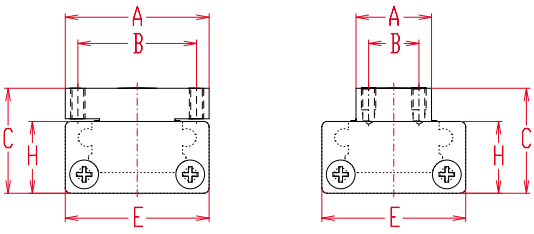
$$f = \frac{F*L^3}{E*I*192}$$

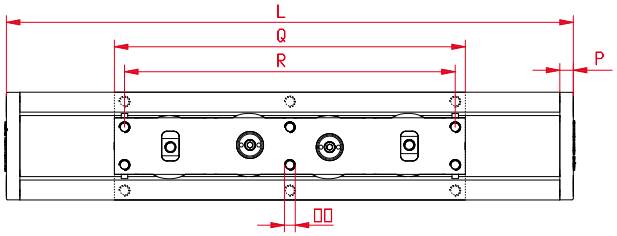


f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

Positioning system UL 40, 60, 80

Dimensions (mm)





Size ❒	Basic length L	A	B	C	E	H	OO for	P	Q	R	Basic weight	Weight per 100 mm
UL 40	160	40/20	31/13	33	40	22	M 5/M 5x8	6	146*	120	1,2 kg	0,13 kg
UL 60	215	60/29	48/20	43	60	30	M 6/M 6x10	8	194*	180	2,1 kg	0,20 kg
UL 80	285	80/42	66/28	58,5	80	40	M 8/M 8x12	10	260*	245	4,2 kg	0,48 kg

* = the carriage is not available in different lengths

Choice of guide body profile:

0

(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

0 **Choice of carriage:**

(0) Standard

(1) small carriage

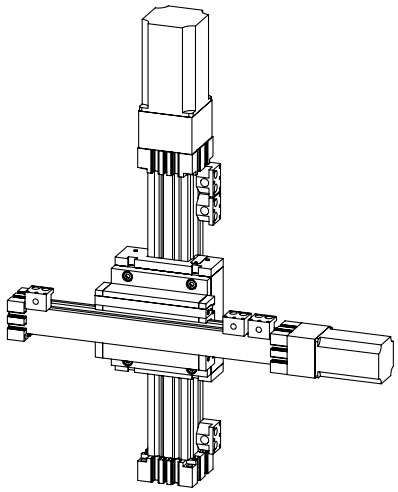
1500 Basic length + stroke = total length

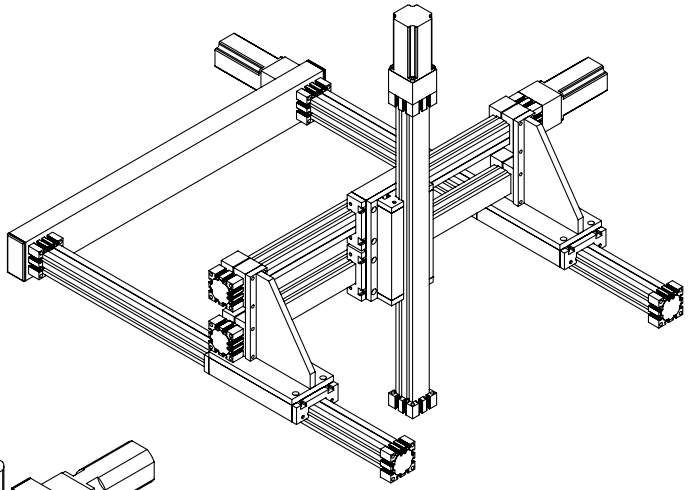
UL	40	0	0	0	0	0	0	0	01500
	Pos.	1	2	3	4	5	6	7	

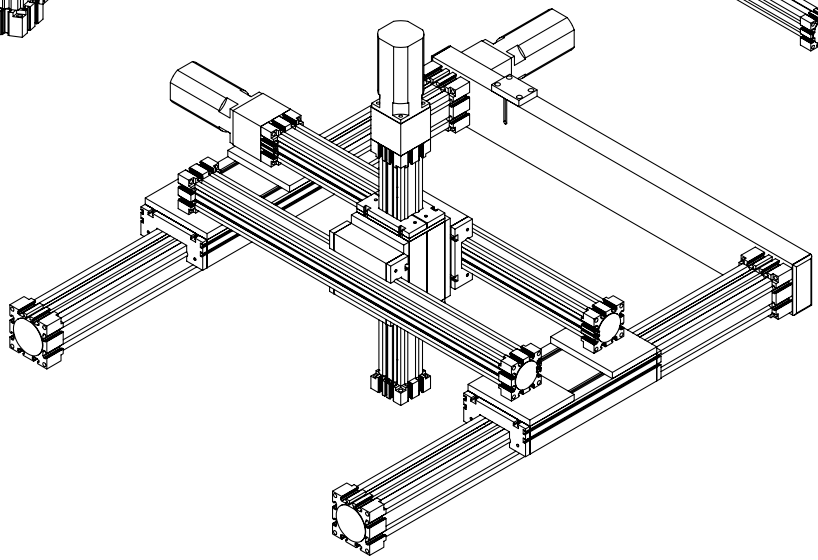
For combination kits and connecting elements refer to chapter 2.2

Sample ordering code:
UL 40, non driven system, standard body profile, standard carriage (wide version), 1340 mm stroke

Possible mounting styles



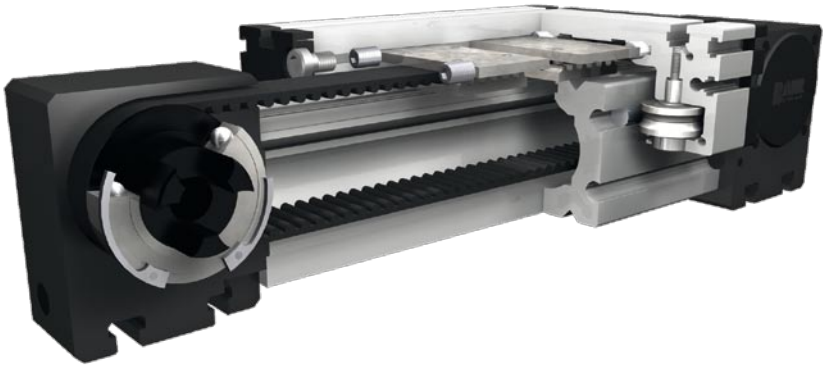




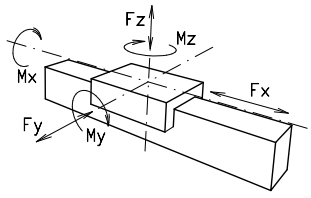
Belt driven positioning systems ELZ, ELZex, ELZG, ELZZ, ELSZ, ELSD, ELZT, ELHZ, ELVZ, ELFZ, ELZU, MLZ

Positioning system ELZ 30, 40, 60, 60S, 80, 80S, 100, 125

Belt drive **Specifications**



Function:
This linear unit consists of an aluminium square profile with integrated, hardened steel guide rods. The carriage, which has internal linear ball bearings that can be adjusted free of play, is driven along the guide rods by a timing belt. The pulleys have maintenance-free ball bearings. Belt tension can be readjusted by a simple screw adjustment device in the carriage. This device can also be used for symmetrical adjustment of two or more linear units running parallel.



Forces and torques

Fitting position: As required. Max. length 6.000 mm without joints.
Carriage mounting: By T-slots.
Unit mounting: By T-slots or tapped holes in the bearing block, mounting sets.
Belt type: HTD with steel reinforcement, no backlash when changing direction, repeatability: ± 0,1 mm.

Size	ELZ 30		ELZ 40		ELZ 60		ELZ 60 S		ELZ 80		ELZ 80 S		ELZ 100		ELZ 125	
Forces/Torques	static	dynamic	static	dynamic	static	dynamic	static	dynamic	static	dynamic	static	dynamic	static	dynamic	static	dynamic
F_x (N)	200	180	390	350	894	800	894	800	1900	1800	1900	1800	4000	3800	5900	5750
F_y (N)	90	60	1200	700	3000	2000	4100	3100	3000	2000	4600	3600	8000	6500	12000	9000
F_z (N)	90	60	900	650	1700	1100	2160	1600	1700	1100	3000	1800	3600	2200	6000	4500
M_x (Nm)	10	5	25	20	67	43	88	65	90	55	170	140	300	230	600	450
M_y (Nm)	13	6	32	18	90	70	190	140	110	80	270	230	400	270	750	600
M_z (Nm)	14	7	35	25	120	100	230	170	150	120	300	220	750	500	1350	1150
All forces and torques relate to the following: existing values / table values $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$																
No-load torque																
Nm	0,2		0,3		0,6		0,7		0,9		1,2		1,4		1,8	
Speed																
(m/sec) max	2		4		5		7		6		8		10		10	
Tensile force																
permanent (N)	200		390		900		900		1900		1900		4000		5900	
0,2 sec (N)	280		480		1000		1000		2090		2090		4300		6350	
Geometrical moments of inertia of aluminium profile																
I_x mm^4	4,09x10^4		1,32x10^5		6,79x10^5		6,79x10^5		18,99x10^5		18,99x10^5		44,4x10^5		101,5x10^5	
I_y mm^4	4,00x10^4		1,34x10^5		6,97x10^5		6,97x10^5		18,97x10^5		18,97x10^5		44,8x10^5		101,5x10^5	
E-Modulus N/mm^2	70000		70000		70000		70000		70000		70000		70000		70000	

For life-time calculation of rollers use our CD-ROM or homepage!

Formula: ELZ

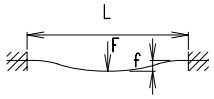
Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F	= force	(N)
P	= pulley action perimeter	(mm)
S_i	= safety factor 1,2 … 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm pulley	(min^{-1})
M_a	= driving torque	(Nm)
P_a	= motor power	(KW)

$$f = \frac{F*L^3}{E*I*192}$$



f	= deflection	(mm)
F	= load	(N)
L	= free length	(mm)
E	= elastic modulus 70000	(N/mm^2)
I	= second moment of area	(mm^4)

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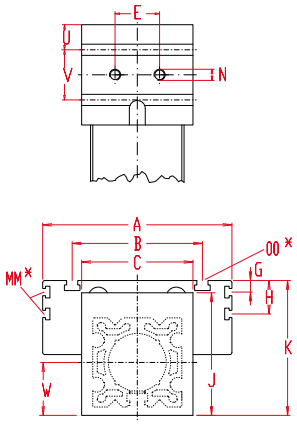
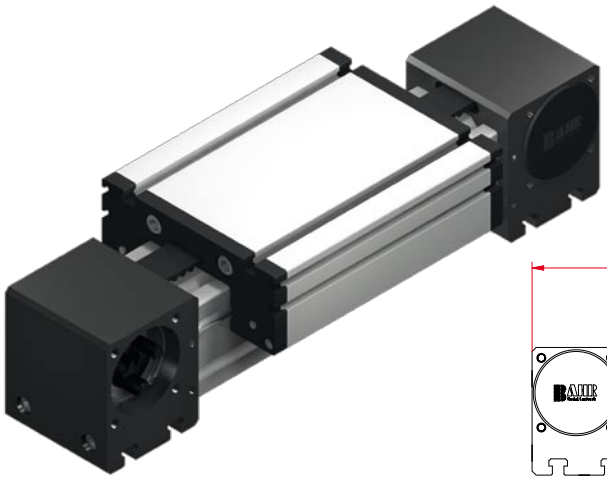
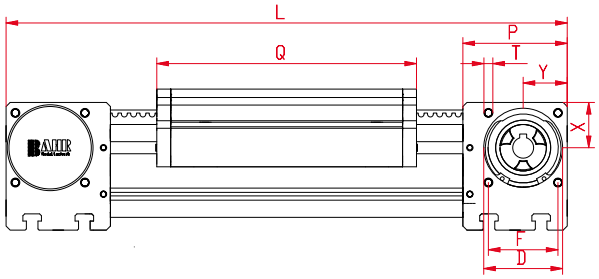
Positioning system ELZ 30, 40, 60, 60S, 80, 80S, 100, 125

Dimensions (mm)





Increasing the carriage length will increase the basic length by the same amount.



3.1

*For slide nuts refer to chapter 2.2 page 2

Size ❒	Basic length L	A	B	C	D	E	F	G	H	J	K	MM for	N	OO for	P	Q	T	U	V	W	X	Y	Basic weight	Weight per 100 mm
ELZ 30	158	70	56	42	28	13	25	-	-	44	47	-	M 5	M 6	36	82	M 4	10	16	21	16	16	0,8 kg	0,13 kg
ELZ 40	225	100	66	58	37	18	32	-	-	58	64	-	M 6	M 6	49	122	M 5	12,5	24	29	20,5	20,5	1,9 kg	0,24 kg
ELZ 60	290	144	96	80	47	30	42	-	-	82	90	-	M 8	M 8	59	168	M 6	15	30	41	27	26	4,8 kg	0,62 kg
ELZ 60 S	315	170	108	80	47	30	42	-	-	82	94	-	M 8	M 8	59	194	M 6	15	30	41	27	26	5,8 kg	0,62 kg
ELZ 80	375	170	117	100	68	40	60	10	30	110	121	M 6	M 10	M 10	90	194	M 8	22,5	45	51	39	38	10,0 kg	1,00 kg
ELZ 80 S	395	190	126	100	68	40	60	12,5	30	110	122	M 6	M 10	M 8	90	214	M 8	22,5	45	51	39	38	11,0 kg	1,00 kg
ELZ 100	530	230	155	130	90	50	80	-	29	135	154	M 10	M 12	M 10	110	300	M 10	23	64	65	50	50	24,0 kg	1,60 kg
ELZ 125	625	295	200	160	110	60	100	-	30	167	191	M 10	M 12	M 12	130	365	M 10	38	50	82	60	60	37,0 kg	2,10 kg

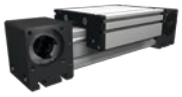
Choice of guide body profile:

0

(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

Choice of carriages:

0 **(0)**



(1)

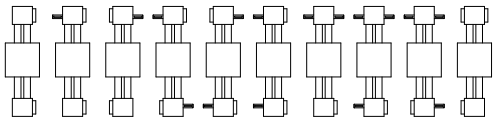
Size	Version 1	
	Q	L
30	94	170
40	138	241
60	184	306
60S	214	335
80	210	391
80S	234	415
100	316	546
125	389	649

Drive version:

0

0

0 1 2 3 4 5 6 7 8 9



Version 9 is the same as 0, but with double sided coupling claw.

The standard version is supplied without shaft. A shaft can be retrofitted by inserting it into the pulley bore and securing it with 2 locking rings or tension sets (size 100 and 125).

Belt table

Code No.		Size	Belt	mm/rev.	Number of teeth
0	**1**	30	3M12	75	25
0	**3**	40	5M15	100	20
0	**4**	60 (S)	5M25	130	26
0	**7**	80 (S)	8M30	192	24
0	**9**	100	8M50	256	32
1	**0**	125	8M70	304	38

Shaft dimensions

Size	Shaft ø h6 x length	Key
30	6 x 15	2x2x12
40	10 x 27	3x3x25
60 (S)	14 x 35	5x5x28
80 (S)	18 x 45	6x6x40
100	22 x 45	6x6x40
125	30 x 55	8x7x50

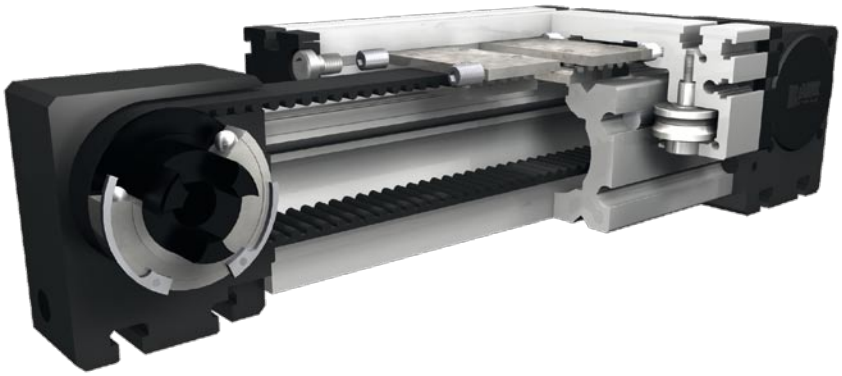
Basic length + stroke = total length

ELZ	40	1	0	0	0	0	3	1	01500
	Pos.	1	2	3	4	5	6	7	

Sample ordering code:
ELZ 40 with standard body profile, standard carriage, coupling claw on one side, 1275 mm stroke.

Positioning system Ex ELZ 40, 60, 60S, 80, 80S, 100, 125

Belt drive



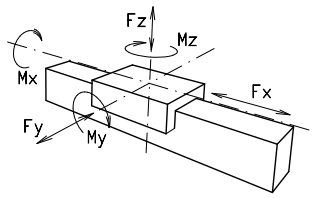
Specifications

ATEX 95
Ex II 2G c IIB T4
Ex II 3D T125°C

Function:
Like ELZ. The positioning system is suitable for use according to the intended purpose in potentially explosive areas (see ATEX 95 marking). An operating manual is included in the scope of delivery. The system is certified for the following areas:

ATEX 95 II 2G EEx c IIB T4:
All application areas except for underground mining. Gas atmosphere category 2, explosion protection category: protection due to secure construction (design security). Equipment group IIB. Temperature class T4=135°C

ATEX 95 II 3D T125°C:
All application areas except for underground mining. Dust atmosphere category 3. Maximum permissible surface temperature: 125°C.



Forces and torques

Fitting position: As required, max. length 6.000 mm.
Carriage mounting: T-slots
Unit mounting: By T-slots or tapped holes in the bearing block, mounting sets.
Belt type: HTD with steel reinforcement, no backlash when changing direction, repeatability: ± 0,1 mm.

Size	ELZex 40		ELZex 60		ELZex 60 S		ELZex 80		ELZex 80 S		ELZex 100		ELZex 125	
Forces/Torques	static	dynamic	static	dynamic	statisch	dynamic	static	dynamic	static	dynamic	static	dynamic	static	dynamic
F_x (N)	178	142	312	250	312	250	1083	866	1083	866	1127	902	2067	1654
F_y (N)	517	414	1330	1064	1910	1528	1584	1267	2219	1775	3100	2480	4980	3984
F_z (N)	355	284	742	594	935	748	613	490	1052	842	1292	1034	2190	1752
M_x (Nm)	12	10	36	29	52	41	36	29	67	54	101	81	220	176
M_y (Nm)	13	11	39	32	66	53	39	32	87	70	136	109	280	224
M_z (Nm)	19	15	70	56	137	110	100	81	182	146	326	260	636	509
All forces and torques relate to the following existing values / table values: $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$														
No-load torque														
Nm	0,3		0,6		0,7		0,9		1,2		1,4		1,8	
Speed														
(m/sec) max	1		1		1		1		1		1		1	
Tensile force														
permanent (N)	178		312		312		1083		1083		1127		2067	
Geometrical moments of inertia of aluminium profile														
I_x mm⁴	1,32x10⁵		6,79x10⁵		6,79x10⁵		18,99x10⁵		18,99x10⁵		44,4x10⁵		101,5x10⁵	
I_y mm⁴	1,34x10⁵		6,97x10⁵		6,97x10⁵		18,97x10⁵		18,97x10⁵		44,8x10⁵		101,5x10⁵	
E-Modulus N/mm²	70000		70000		70000		70000		70000		70000		70000	

For life-time calculation of rollers use our CD-ROM or homepage!

Formula: ELZex

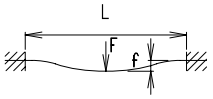
Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F	= force	(N)
P	= pulley action perimeter	(mm)
S_i	= safety factor 1,2 … 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm pulley	(min^{-1})
M_a	= driving torque	(Nm)
P_a	= motor power	(KW)

$$f = \frac{F*L^3}{E*I*192}$$

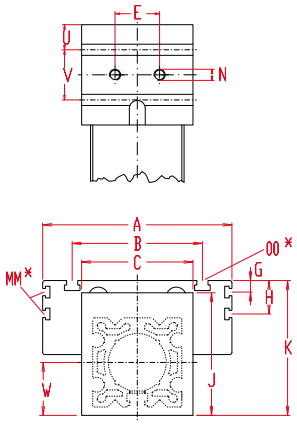


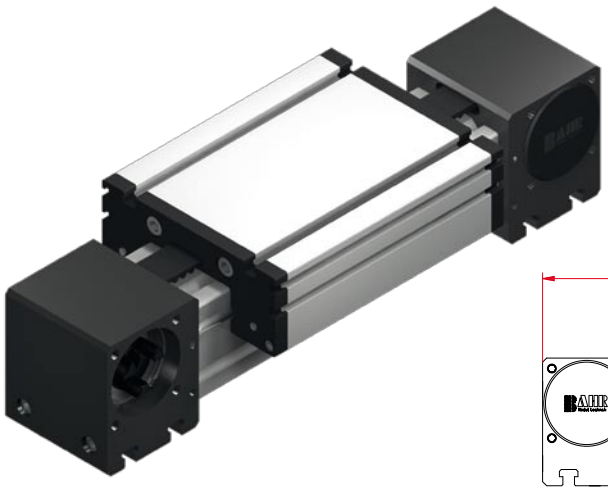
f= deflection		(mm)
F= load		(N)
L= free length		(mm)
E= elastic modulus	70000	(N/mm²)
I= second moment of area		(mm⁴)

BAHR Modultechnik

Positioning system Ex ELZ 40, 60, 60S, 80, 80S, 100, 125

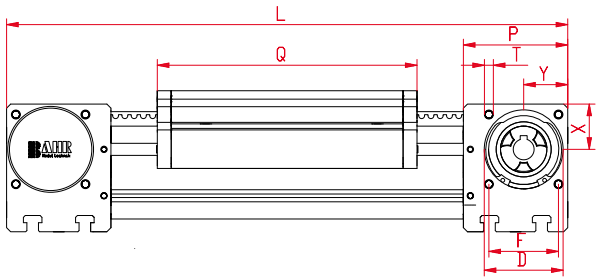
Dimensions (mm)





ATEX 95
Ex II 2G c IIB T4
Ex II 3D T125°C

Increasing the carriage length will increase the basic length by the same amount.



3.1

*For slide nuts refer to chapter 2.2 page 2

Size ❒	Basic length L	A	B	C	D	E	F	G	H	J	K	MM for	N	OO for	P	Q	T	U	V	W	X	Y	Basic weight	Weight per 100 mm
ELZex 40	225	100	66	58	37	18	32	-	-	58	64	-	M 6	M 6	49	122	M 5	12,5	24	29	20,5	20,5	1,9 kg	0,24 kg
ELZex 60	290	144	96	80	47	30	42	-	-	82	90	-	M 8	M 8	59	168	M 6	15	30	41	27	26	4,8 kg	0,62 kg
ELZex 60 S	315	170	108	80	47	30	42	-	-	82	94	-	M 8	M 8	59	194	M 6	15	30	41	27	26	5,8 kg	0,62 kg
ELZex 80	375	170	117	100	68	40	60	10	30	110	121	M 6	M 10	M 10	90	194	M 8	22,5	45	51	39	38	10,0 kg	1,00 kg
ELZex 80 S	395	190	126	100	68	40	60	12,5	30	110	122	M 6	M 10	M 8	90	214	M 8	22,5	45	51	39	38	11,0 kg	1,00 kg
ELZex 100	530	230	155	130	90	50	80	-	29	135	154	M 10	M 12	M 10	110	300	M 10	23	64	65	50	50	24,0 kg	1,60 kg
ELZex 125	625	295	200	160	110	60	100	-	30	167	191	M 10	M 12	M 12	130	365	M 10	38	50	82	60	60	37,0 kg	2,10 kg

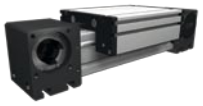
Choice of guide body profile:

0

(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

Choice of carriages:

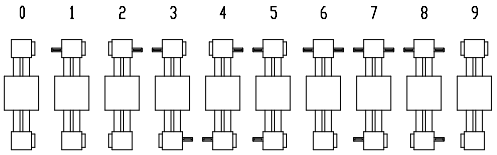
0



Size	Version 1	
	Q	L
40	138	241
60	184	306
60S	214	335
80	210	391
80S	234	415
100	316	546
125	389	649

Drive version:

0



Version 9 is the same as 0, but with double sided coupling claw.

The standard version is supplied without shaft. A shaft can be retrofitted by inserting it into the pulley bore and securing it with 2 locking rings or tension sets (size 100 and 125).

Belt table

Code No.		Size	Belt	mm/rev.	Number of teeth
0	**3**	40	5M15	100	20
0	**4**	60 (S)	5M25	130	26
0	**7**	80 (S)	8M30	192	24
0	**9**	100	8M50	256	32
1	**0**	125	8M70	304	38

Shaft dimensions

Size	Shaft ø h6 x length	Key
40	10 x 27	3x3x25
60 (S)	14 x 35	5x5x28
80 (S)	18 x 45	6x6x40
100	22 x 45	6x6x40
125	30 x 55	8x7x50

Basic length + stroke = total length

For combination kits and connecting elements refer to chapter 2.2

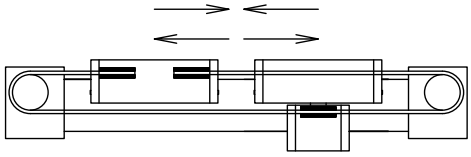
ELZex	40	1	0	0	0	0	3	1	01500
Pos.		1	2	3	4	5	6	7	

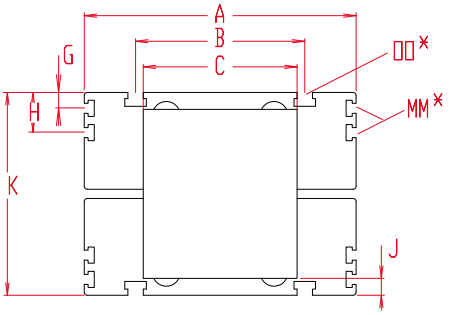
Sample ordering code:
ELZex 40, standard body profile, standard carriage, coupling claw on one side, 1275 mm stroke.

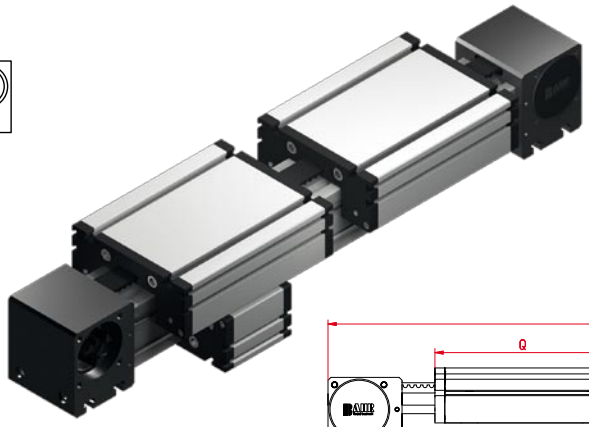
Positioning system ELZ 30, 40, 60, 60S, 80, 80S, 100, 125

Belt drive with two carriages moving in opposite directions

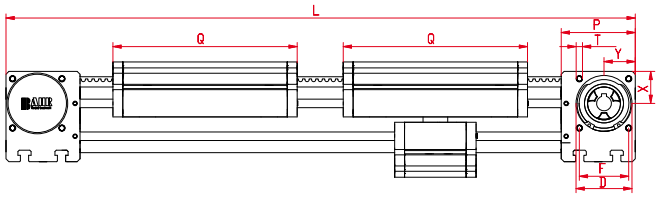
Dimensions (mm)







Increasing the carriage length will increase the basic length by the same amount.



*For slide nuts refer to chapter 2.2 page 2

Size ❒	Basic length L	A	B	C	D	F	G	H	J	K	MM for	OO for	P	Q	T	X	Y	Basic weight	Weight per 100 mm
ELZ 30	250	70	56	42	28	25	-	-	5	52	-	M 6	36	82	M 4	16	16	1,2 kg	0,13 kg
ELZ 40	350	100	66	58	37	32	-	-	6	70	-	M 6	49	122	M 5	20,5	20,5	2,8 kg	0,24 kg
ELZ 60	460	144	96	80	47	42	-	-	8	98	-	M 8	59	168	M 6	27	27	7,4 kg	0,62 kg
ELZ 60S	510	170	108	80	47	42	-	-	12	106	-	M 8	59	194	M 6	27	27	7,4 kg	0,62 kg
ELZ 80	570	170	117	100	68	60	10	30	19	140	M 6	M10	90	194	M 8	39	39	15,0 kg	1,00 kg
ELZ 80S	610	190	126	100	68	60	12,5	30	21	142	M 6	M 8	90	214	M 8	39	39	17,0 kg	1,00 kg
ELZ 100	830	230	155	130	90	80	-	29	24	178	M10	M10	110	300	M10	50	50	34,0 kg	1,60 kg
ELZ 125	990	295	200	160	110	100	-	30	25,5	216	M10	M12	130	365	M10	60	60	53,5 kg	2,10 kg

Choice of guide body profile:

0

(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

Choice of carriages:

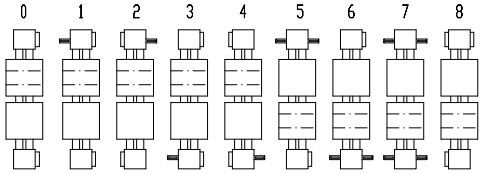
0 **(0)**

(1)

Size	Version 1	
	Q	L
30	94	274
40	138	382
60	184	492
60S	214	554
80	210	602
80S	234	650
100	316	862
125	389	1038

Coupling - shaft mounting:

0



Version 8 is the same as 0, but with double sided coupling claw.

The standard version is supplied without shaft. A shaft can be retrofitted by inserting it into the pulley bore and securing it with 2 locking rings or tension sets (size 100 and 125).

Belt table

Code No.		Size	Belt	mm/rev.	Number of teeth
0	**1**	30	3M12	75	25
0	**3**	40	5M15	100	20
0	**4**	60 (S)	5M25	130	26
0	**7**	80 (S)	8M30	192	24
0	**9**	100	8M50	256	32
1	**0**	125	8M70	304	38

Shaft dimensions

Size	Shaft ø h6 x length	Key
30	6 x 15	2x2x12
40	10 x 27	3x3x25
60 (S)	14 x 35	5x5x28
80 (S)	18 x 45	6x6x40
100	22 x 45	6x6x40
125	30 x 55	8x7x50

Basic length + stroke = total length

ELZ	40	3	0	0	0	0	3	1	01500
	Pos.	1	2	3	4	5	6	7	

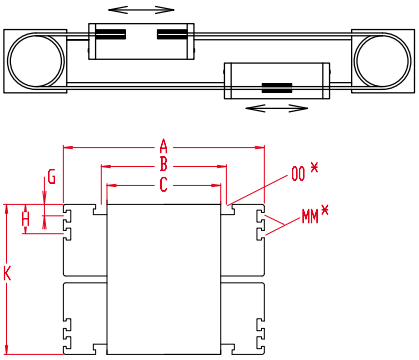
For combination kits and connecting elements refer to chapter 2.2

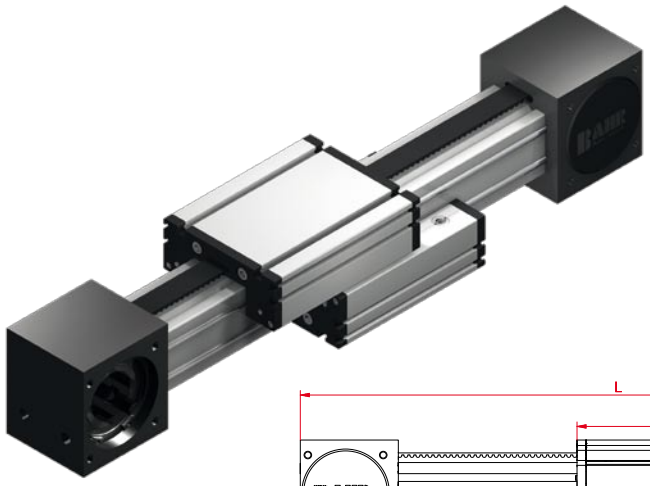
Sample ordering code:
ELZ 40, right/left hand with standard body profile, standard carriage, coupling claw on one side, 1150 mm stroke.

Positioning system ELZG 30, 40, 60, 60S, 80, 80S

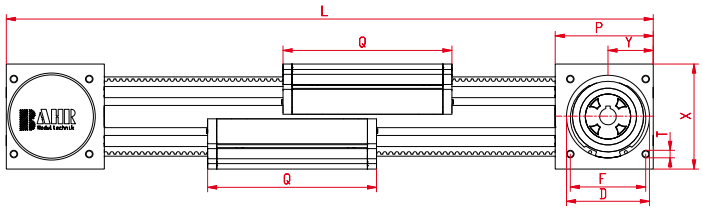
Belt drive

Dimensions (mm)





Increasing the carriage length will increase the basic length by the same amount.



*For slide nuts refer to chapter 2.2 page 2

Size ❒	Basic length L	A	B	C	D	F	G	H	K	MM for	OO for	P	Q	T	X	Y	Basic weight	Weight per 100 mm
ELZG 30	195	70	56	48	47	42	-	-	52	-	M 6	55	82	M 6	52	27	1,1 kg	0,13 kg
ELZG 40	265	100	66	60	55	55	-	-	70	-	M 6	70	124	M 6	70	33	4,0 kg	0,29 kg
ELZG 60	365	144	96	88	80	70	-	-	98	-	M 8	95	168	M 8	98	46	10,3 kg	0,65 kg
ELZG 60S	390	170	108	88	80	70	-	-	106	-	M 8	95	194	M 8	98	46	12,3 kg	0,65 kg
ELZG 80	460	170	117	118	110	100	10	30	140	M 6	M 10	130	194	M 10	140	60	23,5 kg	1,15 kg
ELZG 80S	480	190	126	118	110	100	12,5	30	142	M 6	M 8	130	214	M 10	140	60	24,5 kg	1,15 kg

Choice of guide body profile:

0

(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

Choice of carriages:

0

(0)

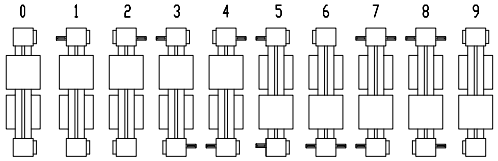
For standard carriage length see 'Q' in table. The carriages can be delivered in any non-standard length upon request; the longer the carriage, the higher the load capacity.

Drive version:

0

0

0 1 2 3 4 5 6 7 8 9



Version 9 is the same as 0, but with double sided coupling claw.

The standard version is supplied without shaft. A shaft can be retrofitted by inserting it into the pulley bore and securing it with 2 locking rings or tension sets (size 80).

Belt table

Code No.		Size	Belt	mm/rev.	Number of teeth
0	**1**	30	3M12	120	40
0	**3**	40	5M15	160	32
0	**4**	60 (S)	5M25	220	44
0	**7**	80 (S)	8M30	320	40

Shaft dimensions

Size	Shaft Ø h6 x length	Key
30	6 x 15	2x2x12
40	14 x 35	5x5x28
60 (S)	18 x 45	6x6x40
80 (S)	22 x 45	6x6x40

Basic length + stroke = total length

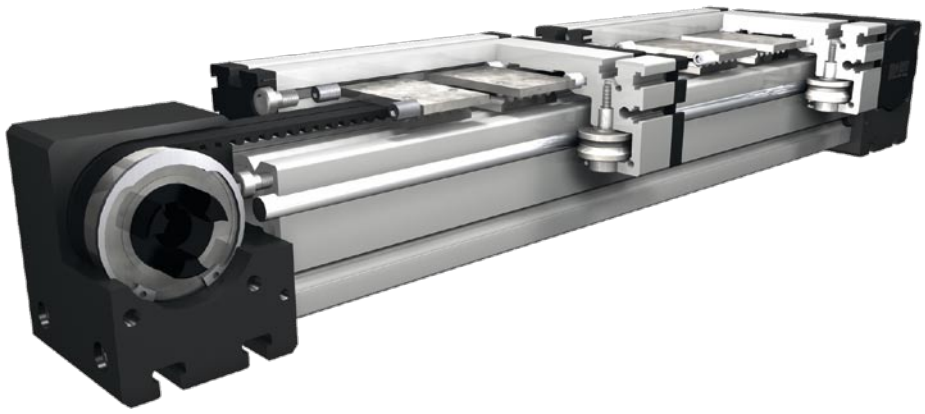
ELZG	40	1	0	0	0	0	3	1	01500
	Pos.	1	2	3	4	5	6	7	

For combination kits and connecting elements refer to chapter 2.2

Sample ordering code:
ELZG 40, standard body profile, standard carriage and coupling claw on one side, 1235 mm stroke.

Positioning system ELZZ 60, 60S, 80, 80S, 100, 125

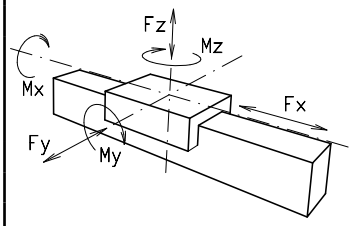
Belt drive with two separately driven carriages **Specifications**



Function:
Same functions as ELZ, but each carriage can be moved separately by its own drive. This unit has twin pulleys, which run on separate bearings, and two independent, parallel drive belts, one for each carriage.

Fitting position: As required. Max. length 4.000 mm without joints.
Carriage mounting: By T-slots.
Unit mounting: By T-slots or tapped holes in the bearing block, mounting sets.
Belt type: HTD with steel reinforcement, no backlash when changing direction, repeatability ± 0,1 mm.

Forces and torques



Size	ELZZ 60		ELZZ 60 S		ELZZ 80		ELZZ 80 S		ELZZ 100		ELZZ 125	
Forces/Torques	static	dynamic	static	dynamic	static	dynamic	static	dynamic	static	dynamic	static	dynamic
F_x (N)	298	250	298	250	679	500	679	500	1210	1100	1900	1800
F_y (N)	3000	2000	4100	3100	3000	2000	4600	3600	8000	6500	12000	9000
F_z (N)	1700	1100	2160	1600	1700	1100	3000	2600	3600	2200	6000	4500
M_x (Nm)	67	43	88	65	90	55	170	140	300	230	600	450
M_y (Nm)	90	70	190	140	110	80	270	230	400	270	750	600
M_z (Nm)	120	100	230	170	150	120	300	220	750	500	1350	1150
All forces and torques relate to the following: existing values / table values: $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$												
No-load torque												
Nm	0,6		0,7		0,9		1,2		1,4		1,8	
Speed												
(m/sec) max	5		5		6		8		10		10	
Tensile force												
permanent (N)	298		298		679		679		1210		1900	
0,2 sec (N)	333		333		746		746		1331		2090	
Geometrical moments of inertia of aluminium profile												
I_x mm^4	6,79x10^5		6,79x10^5		18,99x10^5		18,99x10^5		44,4x10^5		101,5x10^5	
I_y mm^4	6,97x10^5		6,97x10^5		18,97x10^5		18,97x10^5		44,8x10^5		101,5x10^5	
E-Modulus N/mm^2	70000		70000		70000		70000		70000		70000	

For life-time calculation of rollers use our CD-ROM or homepage!

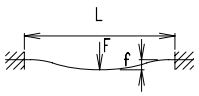
Formula: ELZZ
Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F = force (N)
P = pulley action perimeter (mm)
S_i = safety factor 1,2 ... 2
M_{leer} = no-load torque (Nm)
n = rpm pulley (min^{-1})
M_a = driving torque (Nm)
P_a = motor power (KW)

$$f = \frac{F*L^3}{E*I*192}$$

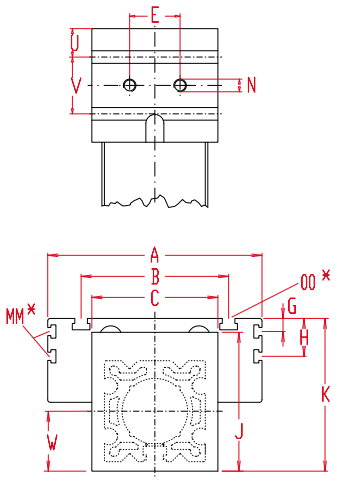


f= deflection (mm)
F = load (N)
L= free length (mm)
E= elastic modulus 70000 (N/mm^2)
I= second moment of area (mm^4)

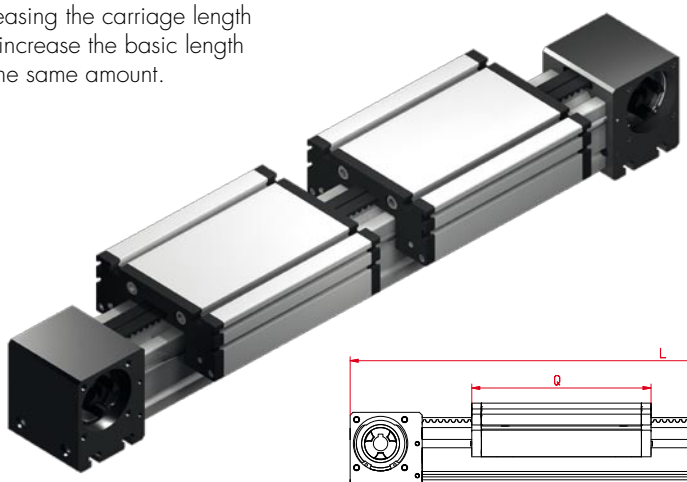
BAHR Modultechnik

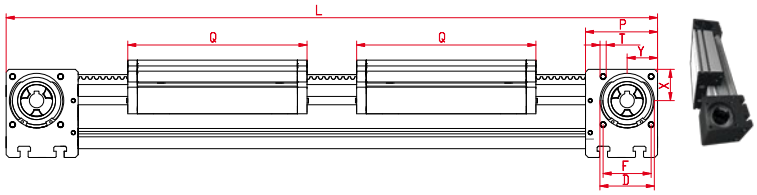
Positioning system ELZZ 60, 60S, 80, 80S, 100, 125

Dimensions (mm)



Increasing the carriage length will increase the basic length by the same amount.





3.1

*For slide nuts refer to chapter 2.2 page 2

Size ❒	Basic length L	A	B	C	D	E	F	G	H	J	K	MM for	N	OO for	P	Q	T	U	V	W	X	Y	Basic weight	Weight per 100 mm
ELZZ 60	460	144	96	80	47	30	42	-	-	82	90	-	M 8	M 8	59	168	M 6	15	30	41	27	26	7,4 kg	0,62 kg
ELZZ 60S	510	170	108	80	47	30	42	-	-	82	94	-	M 8	M 8	59	194	M 6	15	30	41	27	26	9,4 kg	0,62 kg
ELZZ 80	570	170	117	100	68	40	60	10	30	110	121	M 6	M 10	M 10	90	194	M 8	22,5	45	51	39	38	12,8 kg	1,00 kg
ELZZ 80S	610	190	126	100	68	40	60	12,5	30	110	122	M 6	M 10	M 8	90	214	M 8	22,5	45	51	39	38	14,8 kg	1,00 kg
ELZZ 100	830	230	155	130	90	50	80	-	29	135	154	M 10	M 12	M 10	110	300	M 10	23	64	65	50	50	33,0 kg	1,60 kg
ELZZ 125	990	295	200	160	110	60	100	-	30	167	191	M 10	M 12	M 12	130	365	M 10	38	50	82	60	60	52,0 kg	2,10 kg

Choice of guide body profile:

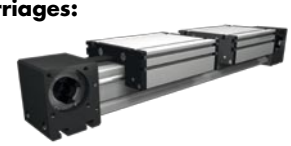
0

(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

Choice of carriages:

0

(0)



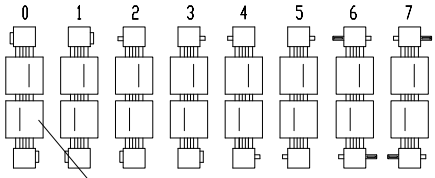
(1)

Size	Version 1	
	Q	L
60	184	492
60S	214	550
80	210	602
80S	234	650
100	316	862
125	389	1038

Drive version:

0

The standard version is supplied without shaft.



Coupling claw on one side

Standard-shaft[1]

Shaft one size smaller[2]

Belt table

Code No.		Size	Belt	mm/rev.	Number of teeth
0	**2**	60 (S)	5M09	130	26
0	**5**	80 (S)	8M12	192	24
0	**6**	100	8M20	256	32
0	**7**	125	8M30	304	38

Shaft dimensions

Size	Shaft ø h6 x length	Key
60 (S)[1]	14 x 35	5x5x28
60 (S)[2]	10 x 27	3x3x25
80 (S)[1]	18 x 45	6x6x40
80 (S)[2]	14 x 35	5x5x28
100[1]	22 x 45	6x6x40
100[2]	18 x 45	6x6x40
125[1]	30 x 55	8x7x50
125[2]	22 x 45	6x6x40

— Basic length + stroke = total length

ELZZ	60	4	0	0	0	0	2	1	01500
	Pos.	1	2	3	4	5	6	7	

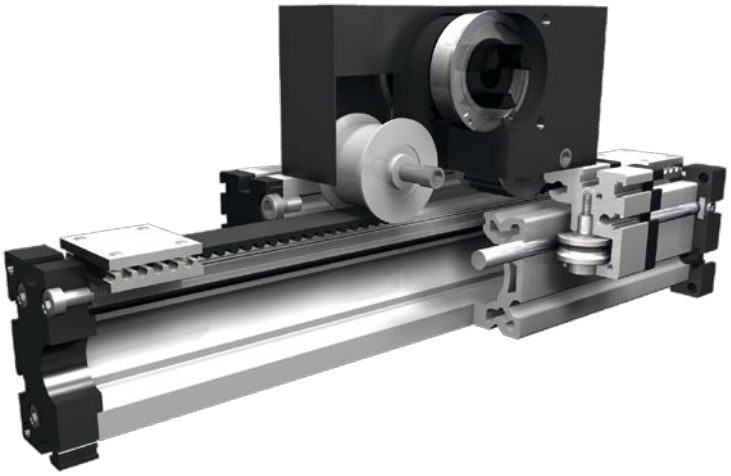
For combination kits and connecting elements refer to chapter 2.2

Sample ordering code:
ELZZ 60 with standard body profile, standard carriage and coupling claw on one side, 1040 mm stroke

Positioning system ELSZ 40, 60, 60S, 80, 80S, 100, 125

With standard belt

Specifications

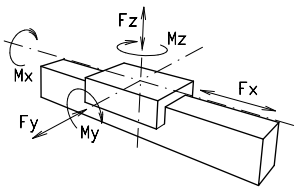


Function:

This linear unit consists of an aluminium square profile with hardened steel guide rods. The carriage, which has internal linear ball bearings that can be adjusted free of play, is driven along the guide rods by a timing belt. The pulley has maintenance-free ball bearings. Belt tension can be readjusted by a simple tensioning device in one of the end blocks. This device can also be used for symmetrical adjustment of two or more linear units running parallel.

Fitting position: As required. Max. length without joints 6.000 mm.
Carriage mounting: By T-slots.
Unit mounting: By T-slots or tapped holes in the bearing blocks, or mounting sets.
Belt type: HTD with steel reinforcement, no backlash when changing direction, repeatability ± 0,1 mm.

Forces and torques



Size	ELSZ 40		ELSZ 60		ELSZ 60 S		ELSZ 80		ELSZ 80 S		ELSZ 100		ELSZ 125	
Forces/Torques	static	dynam.	static	dynam.	static	dynam.	static	dynam.	static	dynam.	static	dynam.	static	dynam.
F_x (N)	390	350	894	800	894	800	1900	1800	1900	1800	4000	3800	5900	5750
F_y (N)	1200	700	3000	2000	4100	3100	3000	2000	4600	3600	8000	6500	12000	9000
F_z (N)	900	650	1700	1100	2160	1600	1700	1100	3000	1800	3600	2200	6000	4500
M_x (Nm)	25	20	67	43	88	65	90	55	170	140	300	230	600	450
M_y (Nm)	32	18	90	70	190	140	110	80	270	230	400	270	750	600
M_z (Nm)	35	25	120	100	230	170	150	120	300	220	750	500	1350	1150
All forces and torques relate to the following: existing values / table values: $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$														
No-load torque														
Nm	0,7		0,9		0,9		1,1		1,2		1,5		1,8	
Speed														
(m/sec) max	4		5		7		6		8		8		10	
Tensile force														
permanent (N)	390		900		900		1900		1900		4000		5900	
0,2 sec (N)	480		1000		1000		2090		2090		4300		6350	
Geometrical moments of inertia of aluminium profile														
I_x mm^4	1,32x10^5		6,79x10^5		6,79x10^5		18,99x10^5		18,99x10^5		44,4x10^5		101,5x10^5	
I_y mm^4	1,34x10^5		6,97x10^5		6,97x10^5		18,97x10^5		18,97x10^5		44,8x10^5		101,5x10^5	
E-Modulus N/mm^2	70000		70000		70000		70000		70000		70000		70000	

For life-time calculation of rollers use our CD-ROM or homepage!

Formula: ELSZ

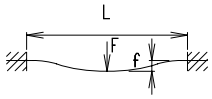
Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F	= force	(N)
P	= pulley action perimeter	(mm)
S_i	= safety factor 1,2 ... 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm pulley	(min^{-1})
M_a	= driving torque	(Nm)
P_a	= motor power	(KW)

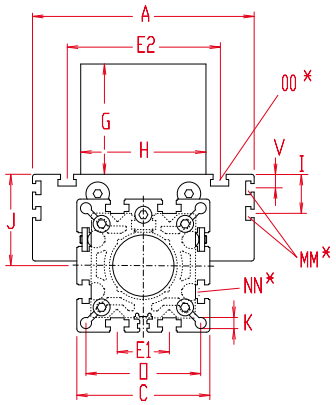
$$f = \frac{F*L^3}{E*I*192}$$

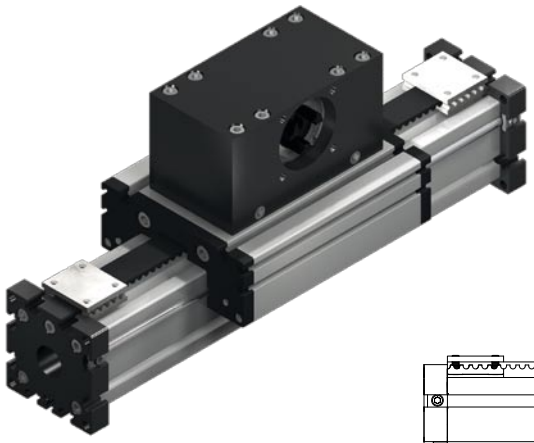


f= deflection	(mm)
F = load	(N)
L= free length	(mm)
E= elastic modulus 70000	(N/mm^2)
I= second moment of area	(mm^4)

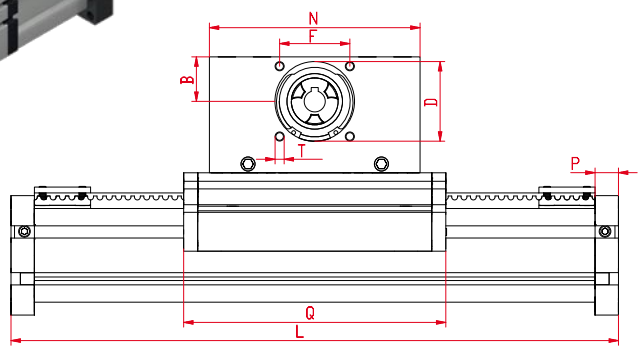
Positioning system ELSZ 40, 60, 60S, 80, 80S, 100, 125

Dimensions (mm)





Increasing the carriage length will increase the basic length by the same amount.



*For slide nuts refer to chapter 2.2 page 2

Size ❐	Basic length L	A	B	C	D	E1	E2	F	G	H	I	J	K	MM for	N	NN for	O	OO for	P	Q	T	V	Basic weight	Weight per 100 mm
ELSZ 40	230	100	20	58	37	25	66	32	65	60	-	35	6,5	-	110	M 6	47	M 6	12	144	M 5	-	2,1 kg	0,24 kg
ELSZ 60	280	144	30	82	47	30	96	42	80	80	-	49	8,5	-	130	M 8	69	M 8	16	168	M 6	-	5,1 kg	0,62 kg
ELSZ 60S	305	170	30	82	47	30	108	42	80	80	-	53	8,5	-	130	M 8	69	M 8	16	194	M 6	-	6,1 kg	0,62 kg
ELSZ 80	365	170	39	102	68	40	117	60	100	100	30	70	8,5	M 6	180	M 10	88	M 10	20	214	M 8	10	11,0 kg	1,00 kg
ELSZ 80S	375	190	39	102	68	40	126	60	100	100	30	71	8,5	M 6	180	M 8	88	M 8	20	225	M 8	12,5	12,0 Kg	1,00 Kg
ELSZ 100	535	230	60	130	90	50	155	80	130	130	29	89	10,5	M 10	270	M 12	112	M 10	30	310	M 10	-	25,8 kg	1,60 kg
ELSZ 125	595	295	62	165	110	60	200	100	139	160	30	107,5	M 10	M 10	310	M 12	140	M 12	30	365	M 10	-	54,5 kg	1,94 kg

Choice of guide body profile:

0

(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

Choice of carriages:

0

(0)

(1)

(2)

(3)

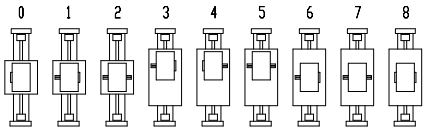
Size	Version 1		Version 2		Version 3	
	Q	L	Q	L	Q	L
40	237	325	160	246	253	341
60	303	415	184	296	319	431
60S	329	431	214	325	349	451
80	379	525	230	381	395	541
80S	399	545	245	395	419	565
100	535	760	326	551	551	776
125	640	870	389	619	664	894

Drive version:

0

0

0 1 2 3 4 5 6 7 8



Version 8 is the same as 0, but with double sided coupling claw.

The standard version is supplied without shaft. A shaft can be retrofitted by inserting it into the pulley bore and securing it with 2 locking rings or tension sets (size 100 + 125).

Belt table

Code No.		Size	Belt	mm/rev.	Number of teeth
0	**3**	40	5M15	100	20
0	**4**	60 (S)	5M25	130	26
0	**7**	80 (S)	8M30	192	24
0	**9**	100	8M50	256	32
1	**0**	125	8M70	304	38

Shaft dimensions

Size	Shaft ø h6 x length	Key
40	10 x 27	3x3x25
60 (S)	14 x 35	5x5x28
80 (S)	18 x 45	6x6x40
100	22 x 45	6x6x40
125	30 x 55	8x7x50

Basic length + stroke = total length

ELSZ	60	0	0	0	0	0	4	1	01500
	Pos.	1	2	3	4	5	6	7	

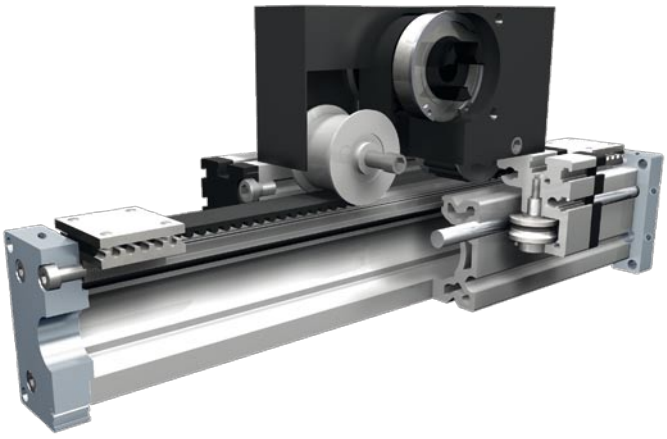
For combination kits and connecting elements refer to chapter 2.2

Sample ordering code:
ELSZ 60 with standard body profile, standard carriage and coupling claw on one side, 1220 mm stroke.

Positioning system ELSZ 30, 40, 60, 60S, 80, 80S, 100, 125

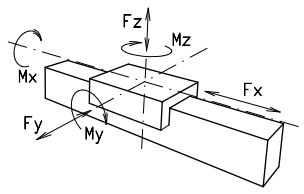
With widened belt drive

Specifications



Function:

This linear unit consists of an aluminium square profile with hardened steel guide rods. The carriage, which has internal linear ball bearings that can be adjusted free of play, is driven along the guide rods by a timing belt. The pulley has maintenance-free ball bearings. Belt tension can be readjusted by a simple tensioning device in one of the end blocks. This device can also be used for symmetrical adjustment of two or more linear units running parallel.



Forces and torques

Fitting position: As required. Max. length without joints 6.000 mm.
Carriage mounting: By T-slots.
Unit mounting: By T-slots, threads or tapped holes in the bearing blocks, or mounting sets.
Belt type: HTD with steel reinforcement, no backlash when changing direction, repeatability ± 0,1 mm.

Size	ELSZ 30		ELSZ 40		ELSZ 60		ELSZ 60 S		ELSZ 80		ELSZ 80 S		ELSZ 100		ELSZ 125	
Forces/Torques	static	dynam.	static	dynam.	static	dynam.	static	dynam.	static	dynam.	static	dynam.	static	dynam.	static	dynam.
F_x (N)	390	350	894	800	1900	1800	1900	1800	4000	3800	4000	3800	5900	5750	7900	7500
F_y (N)	90	60	1200	700	3000	2000	4100	3100	3000	2000	4600	3600	8000	6500	12000	9000
F_z (N)	90	60	900	650	1700	1100	2160	1600	1700	1100	3000	1800	3600	2200	6000	4500
M_x (Nm)	10	5	25	20	67	43	88	65	90	55	170	140	300	230	600	450
M_y (Nm)	13	6	32	18	90	70	190	140	110	80	270	230	400	270	750	600
M_z (Nm)	14	7	35	25	120	100	230	170	150	120	300	220	750	500	1350	1150

All forces and torques relate to the following:

existing values / table values: $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$

No-load torque							
Nm	0,5	0,7	0,9	0,9	1,2	1,2	1,5	1,8
Speed							
(m/sec) max	2	4	5	7	8	8	8	8
Tensile force							
permanent (N)	390	894	1 900	1900	4000	4000	5900	7900
0,2 sec (N)	480	480	2090	2090	4300	4300	6350	8500
Geometrical moments of inertia of aluminium profile							
I_x mm^4	4,09x10^4	1,32x10^5	6,79x10^5	6,79x10^5	18,99x10^5	18,99x10^5	44,4x10^5	101,5x10^5
I_y mm^4	4,00x10^4	1,34x10^5	6,97x10^5	6,97x10^5	18,97x10^5	18,97x10^5	44,8x10^5	101,5x10^5
E-Modulus N/mm^2	70000	70000	70000	70000	70000	70000	70000	70000

For life-time calculation of rollers use our CD-ROM or homepage!

Formula: ELSZ

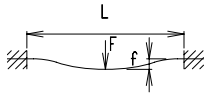
Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F	= force	(N)
P	= pulley action perimeter	(mm)
S_i	= safety factor 1,2 … 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm pulley	(min^{-1})
M_a	= driving torque	(Nm)
P_a	= motor power	(KW)

$$f = \frac{F*L^3}{E*I*192}$$

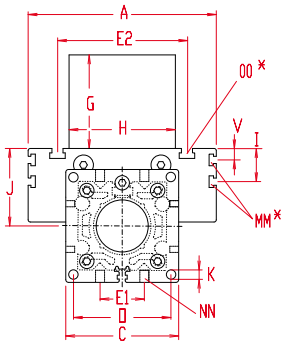


f= deflection		(mm)
F	= load	(N)
L= free length		(mm)
E= elastic modulus	70000	(N/mm^2)
I= second moment of area		(mm^4)

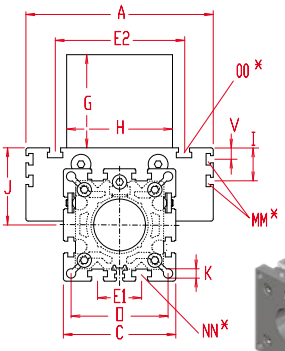
Positioning system ELSZ 30, 40, 60, 60S, 80, 80S, 100, 125

Dimensions (mm)

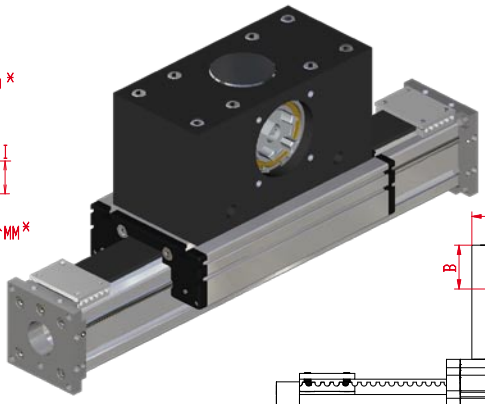
Increasing the carriage length will increase the basic length by the same amount.

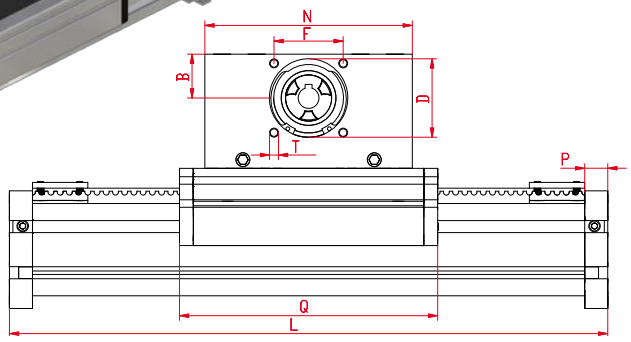


ELSZ 40 - 100



ELSZ 30, 125





*For slide nuts refer to chapter 2.2 page 2

Size ❒	Basic length L	A	B	C	D	E1	E2	F	G	H	I	J	K	MM for	N	NN for	O	OO for	P	Q	T	V	Basic weight	Weight per 100 mm
ELSZ 30	210	70	20	42	37	-	56	32	55	60	-	26	4,2	-	110	M 6	35	M 6	12	128	M 5	-	1,5 kg	0,16 kg
ELSZ 40	260	100	30	58	47	18	66	42	83	80	-	35	6,5	-	130	M 6	47	M 6	12	164	M 6	-	2,7 kg	0,24 kg
ELSZ 60	355	144	39	82	68	30	96	60	105	100	-	49	8,5	-	180	M 8	69	M 8	16	214	M 8	-	6,3 kg	0,62 kg
ELSZ 60S	355	170	39	82	68	30	108	60	105	100	-	53	8,5	-	180	M 8	69	M 8	16	214	M 8	-	7,3 kg	0,62 kg
ELSZ 80	460	170	60	102	90	40	117	80	140	130	30	70	8,5	M 6	270	M 10	88	M 10	20	304	M 10	10	14,0 kg	1,00 kg
ELSZ 80S	460	190	60	102	90	40	126	80	140	130	30	71	8,5	M 6	270	M 10	88	M 8	20	304	M 10	12,5	15,0 Kg	1,00 Kg
ELSZ 100	575	230	62	130	110	50	155	100	143	160	29	89	M 12	M 10	310	M 10	112	M 10	30	350	M 10	-	31,0 kg	1,60 kg
ELSZ 125	595	295	62	165	110	60	200	100	139	180	30	107,5	M 12	M 10	310	M 12	140	M 12	30	365	M 10	-	57,4 kg	1,96 kg

Choice of guide body profile:

0

(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

Choice of carriages:

0

(0)

(1)

(2)

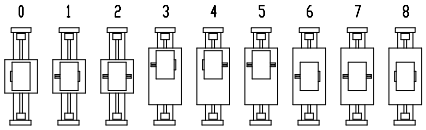
(3)

Size	Version 1		Version 2		Version 3	
	Q	L	Q	L	Q	L
30	195	279	140	222	207	291
40	257	355	180	276	273	371
60	353	494	230	371	369	510
60S	379	520	234	375	399	540
80	469	625	320	476	485	641
80S	489	645	324	480	509	665
100	575	800	366	591	591	816
125	640	870	389	619	664	894

Drive version:

0

0



The standard version is supplied without shaft. A shaft can be retrofitted by inserting it into the pulley bore and securing it with 2 locking rings or tension sets (size 80 + 100).

Version 8 is the same as 0, but with double sided coupling claw.

Belt table

Code No.		Size	Belt	mm/rev.	Number of teeth
0	**3**	30	5M15	100	20
0	**4**	40	5M25	130	26
0	**7**	60 (S)	8M30	192	24
0	**9**	80 (S)	8M50	256	32
1	**0**	100	8M70	304	38
1	**4**	125	8M100	304	38

Shaft dimensions

Size	Shaft ø h6 x length	Key
30	10 x 27	3x3x25
40	14 x 35	5x5x28
60 (S)	18 x 45	6x6x40
80 (S)	22 x 45	6x6x40
100	30 x 55	8x7x50
125	40 x 55	12x8x50

Basic length + stroke = total length

ELSZ	60	0	0	0	0	0	7	1	01500
	Pos.	1	2	3	4	5	6	7	

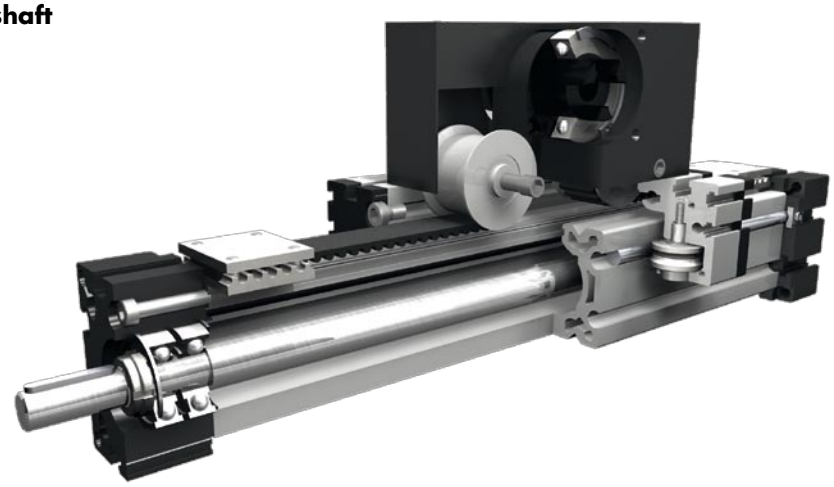
For combination kits and connecting elements refer to chapter 2.2

Sample ordering code:
ELSZ 60 with standard body profile, standard carriage with widened belt and coupling claw on one side, 1170 mm stroke.

Positioning system ELSD 40, 60, 60S, 80, 80S, 100

Belt drive with rotary shaft

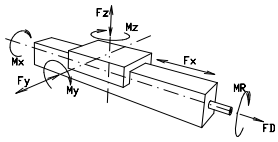
Specifications



Function:
Same as ELSZ, but with an additional rotary shaft, fitted within the aluminium body. One end can be driven by any suitable motor, and the other end is provided with a shaft with feather key and an axial tapped hole for fitting grippers or other components.

Fitting position: As required. Max. length 2.000 mm.
Carriage mounting: By T-slots.
Unit mounting: By T-slots or tapped holes in the bearing blocks, mounting sets.
Belt type: HTD with steel reinforcement, no backlash when changing direction, repeatability ± 0,1 mm.

Forces and torques



Size	ELSD 40		ELSD 60		ELSD 60 S		ELSD 80		ELSD 80 S		ELSD 100	
Forces/Torques	static	dynamic	static	dynamic	static	dynamic	static	dynamic	static	dynamic	static	dynamic
F_x (N)	390	350	894	800	894	800	1900	1800	1900	1800	4000	3800
F_y (N)	1200	700	3000	2000	4100	3100	3000	2000	4600	3600	8000	6500
F_z (N)	900	650	1700	1100	2160	1600	1700	1100	3000	1800	3600	2200
F_D (N)	50		150		150		250		250		400	
M_x (Nm)	25	20	67	43	88	65	90	55	170	140	300	230
M_y (Nm)	32	18	90	70	190	140	110	80	270	230	400	270
M_z (Nm)	35	25	120	100	230	170	150	120	300	220	750	500
M_R (Nm)	5		10		10		20		20		30	
All forces and torques relate to the following: existing values / table values $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$												
No-load torque												
Nm	0,7		0,9		0,9		1,1		1,2		1,5	
Stiction torque M_R (Nm)	0,1		0,1		0,1		0,1		0,1		0,1	
Speed												
(m/sec) max	4		5		7		6		8		8	
Tensile force												
permanent (N)	390		900		900		1900		1900		4000	
0,2 sec (N)	480		1000		1000		2090		2090		4300	
Geometrical moments of inertia of aluminium profile												
I_x mm^4	1,32x10^5		6,79x10^5		6,79x10^5		18,99x10^5		18,99x10^5		44,4x10^5	
I_y mm^4	1,34x10^5		6,97x10^5		6,97x10^5		18,97x10^5		18,97x10^5		44,8x10^5	
E-Modulus N/mm^2	70000		70000		70000		70000		70000		70000	

For life-time calculation of rollers use our CD-ROM or homepage!

Formula: ELSD

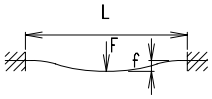
Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F = force (N)
P = pulley action perimeter (mm)
S_i = safety factor 1,2 ... 2
M_{leer} = No-load torque (Nm)
n = rpm pulley (min^{-1})
M_a = driving torque (Nm)
P_a = motor power (KW)

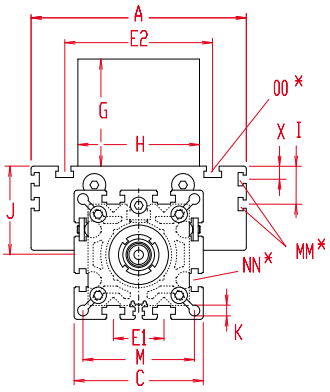
$$f = \frac{F*L^3}{E*I*192}$$

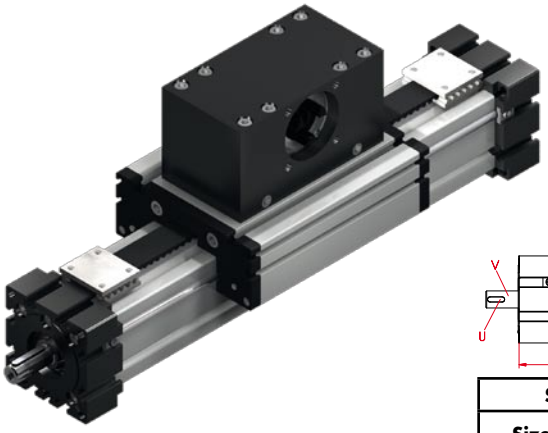


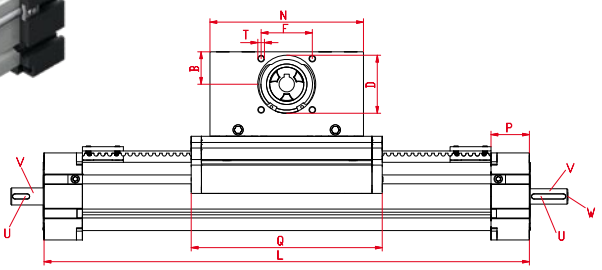
f= deflection (mm)
F = load (N)
L= free length (mm)
E= elastic modulus 70000 (N/mm^2)
I= second moment of area (mm^4)

Positioning system ELSD 40, 60, 60S, 80, 80S, 100

Dimensions (mm)







Increasing the carriage length will increase the basic length by the same amount.

Shaft (drive end)			Shaft (load end)		
Size ❒	Shaft ø h6 x length (V)	Key (U)	Shaft ø h6 x length (V)	Key (U)	Thread (W)
40	10 x 20	3x3x10	12 x 20	4x4x10	M 6 x 12
60 (S)	14 x 25	5x5x20	17 x 25	5x5x20	M 8 x 20
80 (S)	18 x 30	6x6x20	20 x 30	6x6x20	M 10 x 20
100	22 x 35	6x6x30	25 x 35	8x7x30	M 12 x 25

*For slide nuts refer to chapter 2.2 page 2

Size ❒	Basic length L	A	B	C	D	E1	E2	F	G	H	I	J	K	M	MM for	N	NN for	OO for	P	Q	T	X	Basic weight	Weight per 100 mm
ELSD 40	260	100	20	58	37	25	66	32	65	60	-	35	6,5	47	-	110	M 6	M 6	25	144	M 5	-	2,4 kg	0,40 kg
ELSD 60	320	144	30	82	47	30	96	42	80	80	-	49	8,5	69	-	130	M 8	M 8	35	168	M 6	-	5,9 kg	0,87 kg
ELSD 60S	345	170	30	82	47	30	108	42	80	80	-	53	8,5	69	-	130	M 8	M 8	35	194	M 6	-	6,9 kg	0,87 kg
ELSD 80	415	170	39	102	68	40	117	60	100	100	30	70	8,5	88	M 6	180	M 10	M 10	45	214	M 8	10	12,5 kg	1,30 kg
ELSD 80S	430	190	39	102	68	40	126	60	100	100	30	71	8,5	88	M 6	180	M 10	M 8	45	225	M 8	12,5	14,0 kg	1,30 kg
ELSD 100	585	230	60	130	90	50	155	80	130	130	29	89	10,5	112	M10	270	M 10	M 10	55	310	M 10	-	27,0 kg	1,70 kg

Choice of guide body profile:

0

(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

Choice of carriages:

0

(0) 

(1) 

(2) 

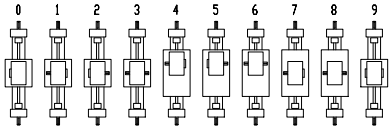
(3) 

Size	Version 1		Version 2		Version 3	
	Q	L	Q	L	Q	L
40	237	355	160	276	253	371
60	303	453	184	336	319	469
60S	329	469	214	365	349	489
80	379	575	230	431	395	591
80S	399	595	245	450	419	615
100	535	810	326	601	551	826

Drive version:

0

0 



Version 9 is the same as 0, but with double sided coupling claw.

The standard version is supplied without shaft. A shaft can be retrofitted by inserting it into the pulley bore and securing it with 2 locking rings or tension sets (size 100).

Belt table

Code No.		Size	Belt	mm/rev.	Number of teeth
0	**3**	40	5M15	100	20
0	**4**	60 (S)	5M25	130	26
0	**7**	80 (S)	8M30	192	24
0	**9**	100	8M50	256	32

Shaft dimensions

Size	Shaft ø h6 x length	Key
40	10 x 27	3x3x25
60 (S)	14 x 35	5x5x28
80 (S)	18 x 45	6x6x40
100	22 x 45	6x6x40

Basic length + stroke = total length

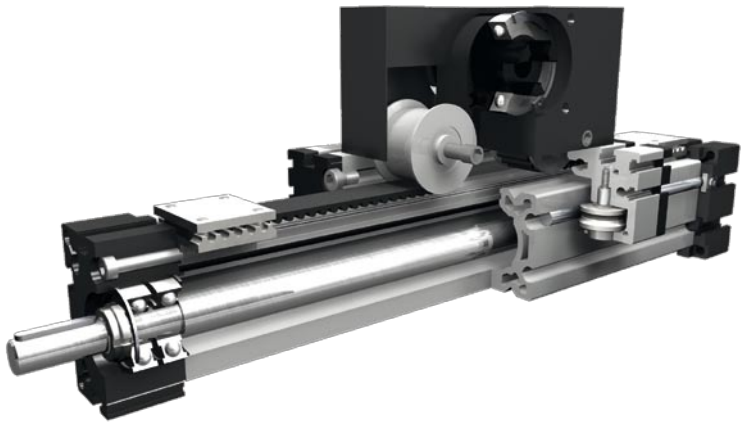
ELSD	60	0	0	0	0	0	4	1	01500
	Pos.	1	2	3	4	5	6	7	

For combination kits and connecting elements refer to chapter 2.2

Sample ordering code:
ELSD 60 with standard body profile, standard carriage and coupling claw on one side, 1180 mm stroke

Positioning system ELSD 40, 60, 60S, 80, 80S, 100

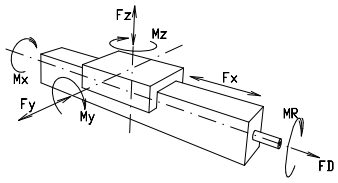
Belt drive with widened belt and rotary shaft **Specifications**



Function:
Same as ELSZ, but with an additional rotary shaft, fitted within the aluminium body. One end can be driven by any suitable motor, and the other end is provided with a shaft with feather key and an axial tapped hole for fitting grippers or other components.

Fitting position: As required. Max. length 2.000 mm.
Carriage mounting: By T-slots.
Unit mounting: By T-slots or tapped holes in the bearing blocks, mounting sets.
Belt type: HTD with steel reinforcement, no backlash when changing direction, repeatability ± 0,1 mm.

Forces and torques



Size	ELSD 40		ELSD 60		ELSD 60 S		ELSD 80		ELSD 80 S		ELSD 100	
Forces/Torques	static	dynamic	static	dynamic	static	dynamic	static	dynamic	static	dynamic	static	dynamic
F_x (N)	894	800	1900	1800	1900	1800	4000	3800	4000	3800	5900	5750
F_y (N)	1200	700	3000	2000	4100	3100	3000	2000	4600	3600	8000	6500
F_z (N)	900	650	1700	1100	2160	1600	1700	1100	3000	1800	3600	2200
F_D (N)	50		150		150		250		250		400	
M_x (Nm)	25	20	67	43	88	65	90	55	170	140	300	230
M_y (Nm)	32	18	90	70	190	140	110	80	270	230	400	270
M_z (Nm)	35	25	120	100	230	170	150	120	300	220	750	500
M_R (Nm)	5		10		10		20		20		30	
All forces and torques relate to the following: existing values / table values $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$												
No-load torque												
Nm	0,7		0,9		0,9		1,1		1,2		1,5	
Stiction torque M_R (Nm)	0,1		0,1		0,1		0,1		0,1		0,1	
Speed												
(m/sec) max	4		5		7		6		8		8	
Tensile force												
permanent (N)	900		1900		1900		4000		4000		5900	
0,2 sec (N)	1000		2090		2090		4300		4300		6350	
Geometrical moments of inertia of aluminium profile												
I_x mm^4	1,32x10^5		6,79x10^5		6,79x10^5		18,99x10^5		18,99x10^5		44,4x10^5	
I_y mm^4	1,34x10^5		6,97x10^5		6,97x10^5		18,97x10^5		18,97x10^5		44,8x10^5	
E-Modulus N/mm^2	70000		70000		70000		70000		70000		70000	

For life-time calculation of rollers use our CD-ROM or homepage!

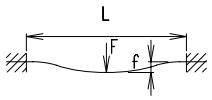
Formula: ELSD
Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F = force (N)
P = pulley action perimeter (mm)
S_i = safety factor 1,2 ... 2
M_{leer} = No-load torque (Nm)
n = rpm pulley (min^{-1})
M_a = driving torque (Nm)
P_a = motor power (KW)

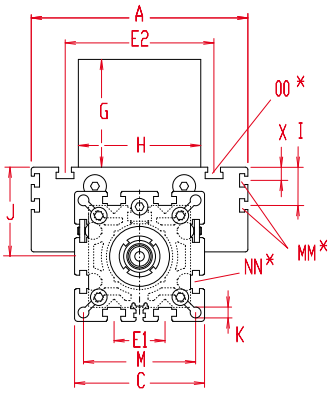
$$f = \frac{F*L^3}{E*I*192}$$



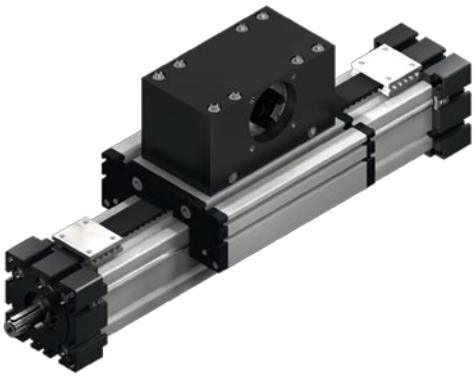
f= deflection (mm)
F = load (N)
L= free length (mm)
E= elastic modulus 70000 (N/mm^2)
I= second moment of area (mm^4)

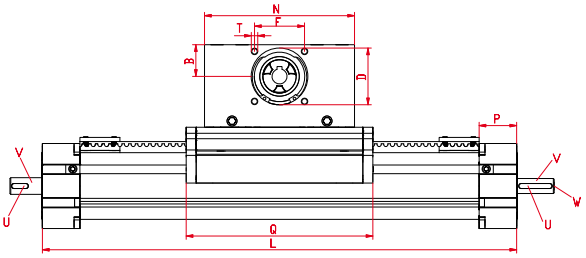
Positioning system ELSD 40, 60, 60S, 80, 80S, 100

Dimensions (mm)



Increasing the carriage length will increase the basic length by the same amount.





3.1

Shaft (drive end)			Shaft (load end)		
Size ❒	Shaft ø h6 x length (V)	Key (U)	Shaft ø h6 x length (V)	Key (U)	Thread (W)
40	10 x 20	3x3x10	12 x 20	4x4x10	M 6 x 12
60 (S)	14 x 25	5x5x20	17 x 25	5x5x20	M 8 x 20
80 (S)	18 x 30	6x6x20	20 x 30	6x6x20	M 10 x 20
100	22 x 35	6x6x30	25 x 35	8x7x30	M 12 x 25

*For slide-nuts refer to chapter 2.2 page 2

Size ❒	Basic length L	A	B	C	D	E1	E2	F	G	H	I	J	K	M	MM for	N	NN for	OO for	P	Q	T	X	Basic weight	Weight per 100 mm
ELSD 40	286	100	30	58	47	25	66	42	83	80	-	35	6,5	47	-	130	M 6	M 6	25	164	M 6	-	2,7 kg	0,40 kg
ELSD 60	395	144	39	82	68	30	96	60	105	100	-	49	8,5	69	-	180	M 8	M 8	35	214	M 8	-	6,5 kg	0,87 kg
ELSD 60S	395	170	39	82	68	30	108	60	105	100	-	53	8,5	69	-	180	M 8	M 8	35	214	M 8	-	7,5 kg	0,87 kg
ELSD 80	510	170	60	102	90	40	117	80	140	130	30	70	8,5	88	M 6	270	M 10	M 10	45	304	M 10	10	13,7 kg	1,30 kg
ELSD 80S	510	190	60	102	90	40	126	80	140	130	30	71	8,5	88	M 6	270	M 10	M 8	45	304	M 10	12,5	15,2 kg	1,30 kg
ELSD 100	625	230	62	130	110	50	155	100	143	160	29	89	10,5	112	M10	310	M 10	M 10	55	350	M 10	-	33,4 kg	1,70 kg

Choice of guide body profile:

0

(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

Choice of carriages:

0

(0)

(1)

(2)

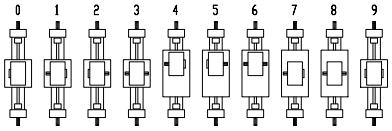
(3)

Size	Version 1		Version 2		Version 3	
	Q	L	Q	L	Q	L
40	257	381	180	302	273	397
60	353	534	230	411	369	550
60S	379	560	234	415	399	580
80	469	675	320	526	485	691
80S	489	695	324	530	509	715
100	575	850	366	641	591	866

Drive version:

0

0



Version 9 is the same as 0, but with double sided coupling claw.

The standard version is supplied without shaft. A shaft can be retrofitted by inserting it into the pulley bore and securing it with 2 locking rings or tension sets (size 80 + 100).

Belt table

Code No.		Size	Belt	mm/rev.	Number of teeth
0	**4**	40	5M25	130	26
0	**7**	60 (S)	8M30	192	24
0	**9**	80 (S)	8M50	256	32
1	**0**	100	8M70	304	38

Shaft dimensions

Size	Shaft ø h6 x length	Key
40	14 x 35	5x5x28
60 (S)	18 x 45	6x6x40
80 (S)	22 x 45	6x6x40
100	30 x 55	8x7x40

Basic length + stroke = total length

ELSD	60	0	0	0	0	0	7	1	01500
	Pos.	1	2	3	4	5	6	7	

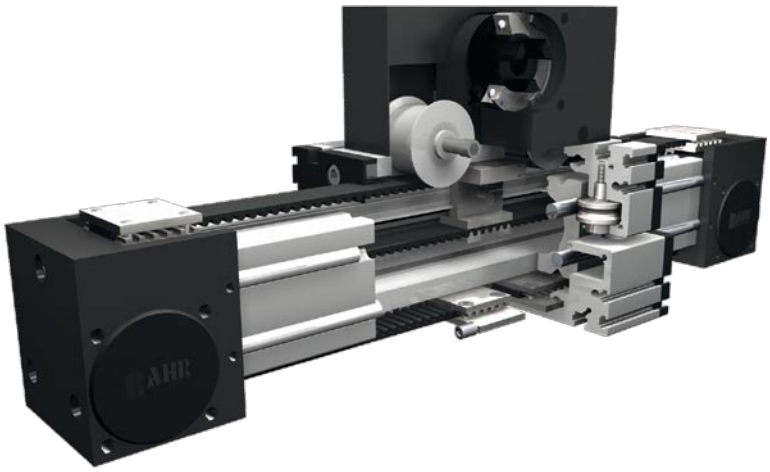
For combination kits and connecting elements refer to chapter 2.2

Sample ordering code:
ELSD 60 with standard body profile, standard carriage and coupling claw on one side, 1146 mm stroke

Positioning system ELZT 40, 60, 60S, 80, 80S, 100

Telescopic belt drive

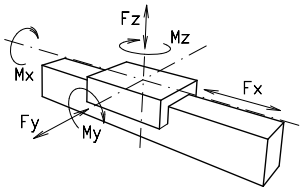
Specifications



Function:
This unit consists of an aluminium square profile with integrated, hardened steel guide rods. Two carriages, which have internal linear ball bearings that can be adjusted free of play, are driven along the guide rods in opposite directions by 2 belts. The pulleys include maintenance-free ball bearings. One belt is tensioned by a tensioning device within the carriage. The other timing belt is tensioned by a tensioning device within the bearing block. The carriage with the drive block (with motor) is screwed to the crosshead. A T-slot profile is screwed to the carriage as an extension arm which can be adjusted to any length (see functional diagram on page 3/20).

Fitting position: As required. Max. length 3.000 mm.
Unit mounting: By T-slots in the carriage, extension arm
Belt type: HTD with steel reinforcement, no backlash when changing direction, repeatability +- 0,1 mm.

Forces and torques



Size	ELZT 40		ELZT 60		ELZT 60 S		ELZT 80		ELZT 80 S		ELZT 100	
Forces/torques	static	dynamic	static	dynamic	static	dynamic	static	dynamic	static	dynamic	static	dynamic
F_x (N)	360	300	580	470	580	470	1800	1570	1800	1570	4000	3500
F_y (N)	1200	700	3000	2000	4100	3100	3000	2000	4600	3600	8000	6500
F_z (N)	900	650	1700	1100	2160	1600	1700	1100	3000	1800	3600	2200
M_x (Nm)	25	20	67	43	88	65	90	55	170	140	300	230
M_y (Nm)	32	18	90	70	190	140	110	80	270	230	400	270
M_z (Nm)	35	25	120	100	230	170	150	120	370	310	750	500
All forces and torques relate to the following: existing values / table values	$\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$											
No-load torque												
Nm	0,9		1,1		1,1		1,3		1,2		2,4	
Speed												
(m/sec) max	4		5		7		6		8		8	
Tensile force												
permanent (N)	360		580		580		1800		1800		4000	
0,2 sec (N)	450		700		700		2200		2200		4300	
Geometrical moments of inertia of aluminium profile												
I_x mm⁴	$1,32x10^5$		$6,79x10^5$		$6,79x10^5$		$18,99x10^5$		$18,99x10^5$		$44,4x10^5$	
I_y mm⁴	$1,34x10^5$		$6,97x10^5$		$6,97x10^5$		$18,97x10^5$		$18,97x10^5$		$44,8x10^5$	
E-Modulus N/mm²	70000		70000		70000		70000		70000		70000	

For life-time calculation of rollers use our CD-ROM or homepage!

Formula: ELZT

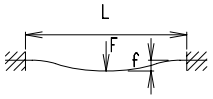
Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

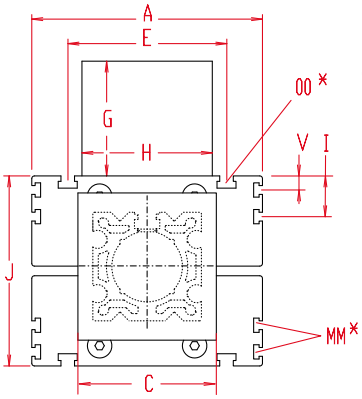
F	= force	(N)	
P	= pulley action perimeter	(mm)	
S_i	= safety factor 1,2 ... 2		
M_{leer}	= No-load torque	(Nm)	
n	= rpm pulley	(min^{-1})	
M_a	= driving torque	(Nm)	
P_a	= motor power	(KW)	

$$f = \frac{F*L^3}{E*I*192}$$



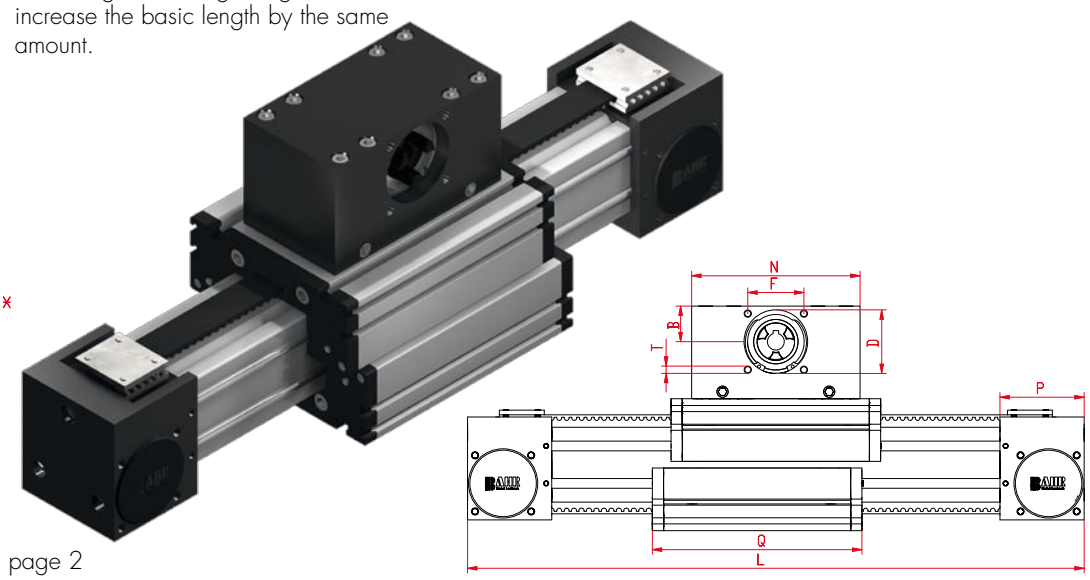
f= deflection		(mm)
F	= load	(N)
L= free length		(mm)
E= elastic modulus	70000	(N/mm^2)
I= second moment of area		(mm^4)

Positioning system ELZT 40, 60, 60S, 80, 80S, 100



Increasing the carriage length will increase the basic length by the same amount.

Dimensions (mm)



*For slide nuts refer to chapter 2.2 page 2

Size ❒	Basic length L	A	B	C	D	F	G	H	I	J	MM for	N	OO for	P	Q	T	V	Basic weight	Weight per 100 mm
ELZT 40	265	100	30	58	47	42	83	80	-	70	-	130	M 6	49	164	M 6	-	3,6 kg	0,31 kg
ELZT 60	345	144	39	80	68	60	105	100	-	98	-	180	M 8	59	218	M 8	-	9,1 kg	0,73 kg
ELZT 60S	370	170	39	80	68	60	105	100	-	106	-	180	M 8	59	220	M 8	-	10,1 kg	0,73 kg
ELZT 80	494	170	60	100	90	80	140	130	30	140	M 6	270	M 10	90	304	M 10	10	24,0 kg	1,14 kg
ELZT 80S	494	190	60	100	90	80	140	130	30	142	M 6	270	M 8	90	304	M 10	12,5	26,0 Kg	1,14 kg
ELZT 100	530	230	62	130	110	100	143	160	29	178	M 10	310	M 10	110	350	M 10	-	40,6 kg	1,95 kg

Choice of guide body profile:

0

(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

Choice of carriages:

0

(0)

(1)

(2)

(3)

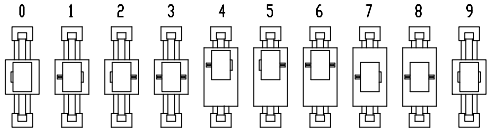
Size	Version 1		Version 2		Version 3	
	Q	L	Q	L	Q	L
40	257	360	257	360	257	360
60	353	480	353	480	353	480
60S	379	506	379	506	379	506
80	469	659	469	659	469	659
80S	489	679	489	679	489	679
100	575	755	575	755	575	755

Drive version:

0

0

0 1 2 3 4 5 6 7 8 9



The standard version is supplied without shaft. A shaft can be retrofitted by inserting it into the pulley bore and securing it with 2 locking rings or tension sets (size 80 + 100).

Version 9 is the same as 0, but with double sided coupling claw.

Belt table

Code No.		Size	Belt	mm/rev.	Number of teeth
0	**4**	40	5M25	130	26
0	**7**	60 (S)	8M30	192	24
0	**9**	80 (S)	8M50	256	32
1	**0**	100	8M70	304	38

Shaft dimensions

Size	Shaft ø h6 x length	Key
40	14 x 35	5x5x28
60 (S)	18 x 45	6x6x40
80 (S)	22 x 45	6x6x40
100	30 x 55	8x7x40

Basic length + 1/2stroke = total length

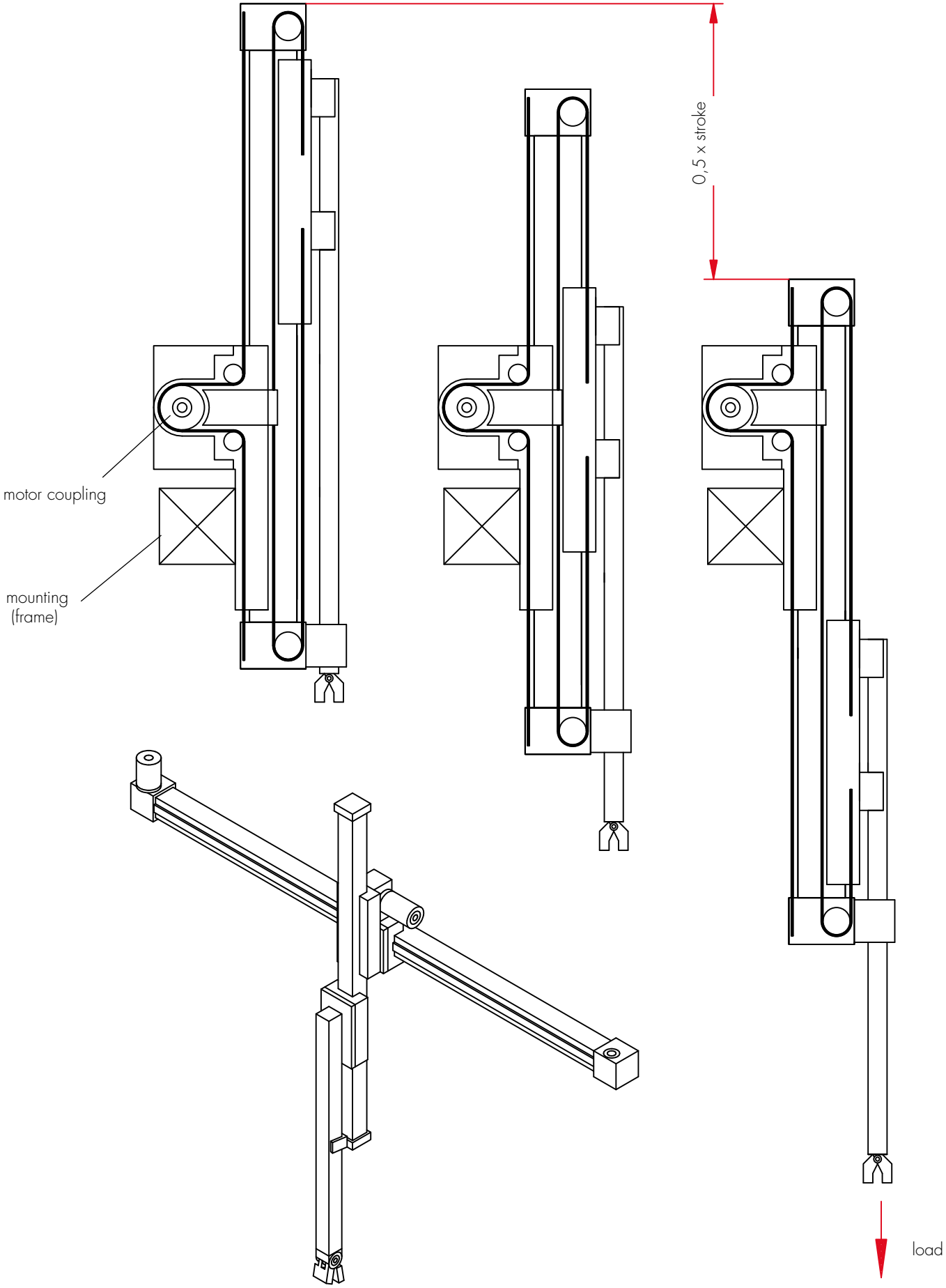
ELZT	60	6	0	0	0	0	4	1	01500
	Pos.	1	2	3	4	5	6	7	

For combination kits and connecting elements refer to chapter 2.2

Sample ordering code:
ELZT 60 with standard body profile, standard carriage and coupling claw on one side, 2310 mm stroke

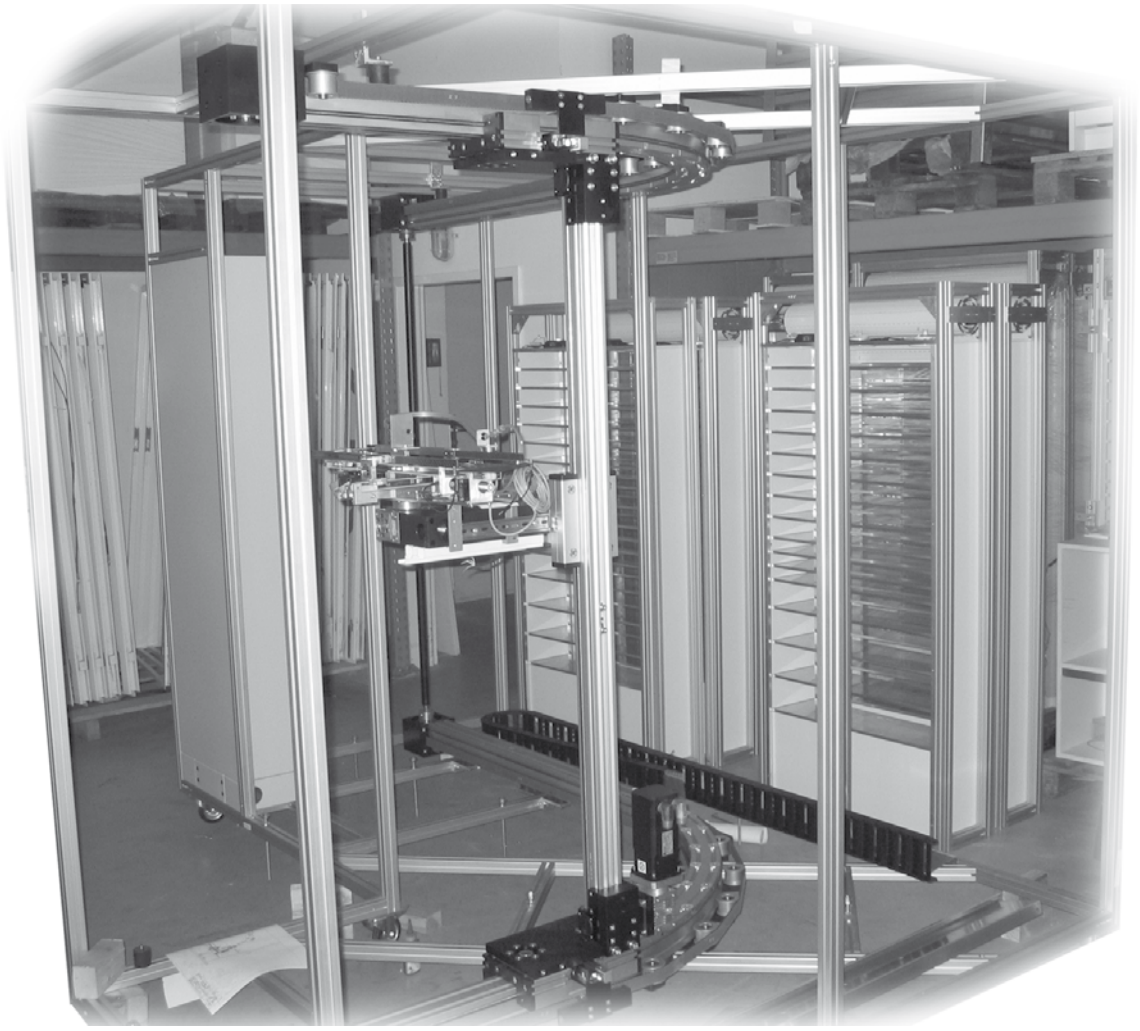
Function and possibilities of variation

ELZT belt drive unit



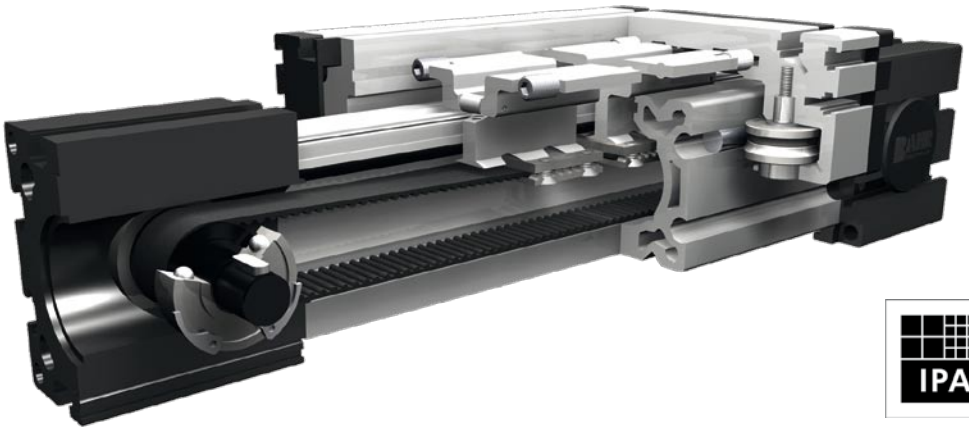
Possible mounting styles

Belt drive unit



Positioning system ELHZ 60, 60S, 80, 80S, 100, 125

Internal belt drive **Specifications**

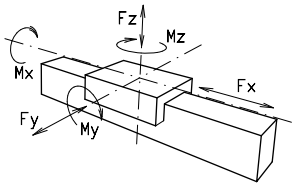


Fraunhofer IPA TESTED DEVICE Lineareinheit ELHZ 60 Report No. BA 9807-151

Function:
This linear unit consists of an aluminium square profile with integrated, hardened steel guide rods. The carriage, which has internal linear ball bearings that can be adjusted free of play, is driven along the guide rods by a timing belt. Toothed pulley has maintenance-free ball bearings. Belt tension can be readjusted by a simple screw adjustment device in the carriage. This device can also be used for symmetrical adjustment of two or more linear units running parallel.
This linear unit is suitable for application in clean rooms of clean-room classification 1.000 (corresponding to US Fed. Standard 209 E).

Fitting position: As required. Max. length 3.000 mm without joints.
Carriage mounting: By T-slots.
Unit mounting: By tapped holes or tapped holes in the bearing block, mounting sets.
Belt type: HTD with steel reinforcement, no backlash when changing direction, repeatability ± 0,1 mm.

Forces and torques



Size	ELHZ 60		ELHZ 60 S		ELHZ 80		ELHZ 80 S		ELHZ 100		ELHZ 125	
Forces/Torques	static	dynamic	static	dynamic	static	dynamic	static	dynamic	static	dynamic	static	dynamic
F_x (N)	700	580	700	580	1000	840	1000	840	3100	2600	5000	4950
F_y (N)	3000	2000	4100	3100	3000	2000	4600	3600	8000	6500	12000	9000
F_z (N)	1700	1100	2160	1600	1700	1100	3000	1800	3600	2200	6000	4500
M_x (Nm)	67	43	88	65	90	55	170	140	300	230	600	450
M_y (Nm)	90	70	190	140	110	80	270	230	400	270	750	600
M_z (Nm)	120	100	230	170	150	120	300	220	750	500	1350	1150
All forces and torques relate to the following: existing values / table values $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$												
No-load torque												
Nm	0,5		0,5		0,8		1,2		1,2		1,6	
Speed												
(m/sec) max	3		4		4		4		5		6	
Tensile force												
permanent (N)	700		700		1000		1000		3100		5000	
0,2 sec (N)	800		800		1150		1150		3400		5450	
Geometrical moments of inertia of aluminium profile												
I_x mm^4	6,79x10^5		6,79x10^5		18,99x10^5		18,99x10^5		44,4x10^5		101,5x10^5	
I_y mm^4	6,97x10^5		6,97x10^5		18,97x10^5		18,97x10^5		44,8x10^5		101,5x10^5	
E-Modulus N/mm^2	70000		70000		70000		70000		70000		70000	

For life-time calculation of rollers use our CD-ROM or homepage!

Formula: ELHZ

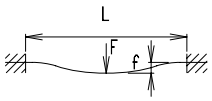
Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F	= force	(N)
P	= pulley action perimeter	(mm)
S_i	= safety factor 1,2 ... 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm pulley	(min^{-1})
M_a	= driving torque	(Nm)
P_a	= motor power	(KW)

$$f = \frac{F*L^3}{E*I*192}$$

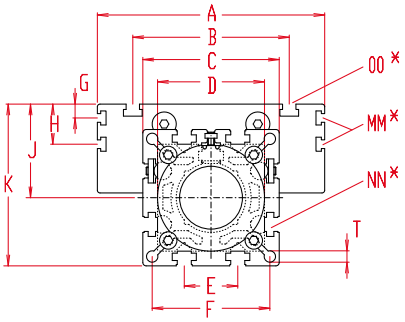


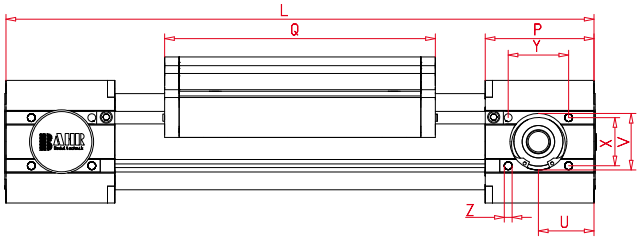
f= deflection	(mm)
F = load	(N)
L= free length	(mm)
E= elastic modulus 70000	(N/mm^2)
I= second moment of area	(mm^4)

BAHR Modultechnik

Positioning system ELHZ 60, 60S, 80, 80S, 100, 125

Dimensions (mm)





Increasing the carriage length will increase the basic length by the same amount.

*For slide nuts refer to chapter 2.2 page 2

Size ❒	Basic length L	A	B	C	D	E	F	G	H	J	K	MM for	NN for	OO for	P	Q	T	U	V	W¹	X	Y	Z	Basic weight	Weight per 100 mm
ELHZ 60	290	144	96	82	62x1	30	69	–	-	49	90	-	M 8	M 8	59	168	8,5	23	37	14	30	36	M 6	4,8 kg	0,62 kg
ELHZ 60S	315	170	108	82	62x1	30	69	–	-	53	94	-	M 8	M 8	59	194	8,5	23	37	14	30	36	M 6	5,8 kg	0,62 kg
ELHZ 80	375	170	117	102	80x1	40	88	10	30	70	121	M 6	M10	M10	90	194	8,5	38	47	18	40	50	M 8	10,0 kg	1,00 kg
ELHZ 80S	395	190	126	102	80x1	40	88	12,5	30	71	122	M 6	M10	M 8	90	214	8,5	38	47	18	40	50	M 8	11,0 kg	1,00 kg
ELHZ 100	530	230	155	130	110x1	50	112	-	29	89	154	M10	M10	M10	110	300	10,5	45	68	19	50	64	M10	24,0 kg	1,60 kg
ELHZ 125	630	295	200	165	130x2	60	142	-	30	107,5	190	M10	M10	M12	132	365	13,0	58	90	35	60	85	M10	37,0 kg	2,10 kg

W¹ = standard shaft

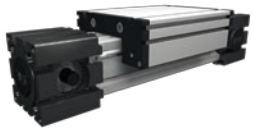
Choice of guide body profile:

0

(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

Choice of carriages:

0 **(0)**

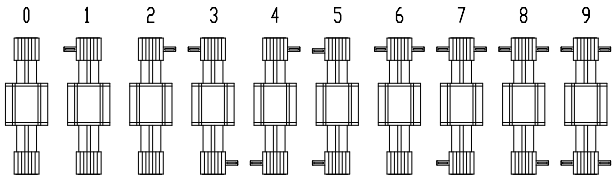


(1)

Size	Version 1	
	Q	L
60	184	306
60S	214	336
80	210	391
80S	234	415
100	316	546
125	389	649

Drive version:

0



The standard version 0 is supplied with 4 flush mounted shafts.

Belt table

Code No.		Size	Belt	mm/rev.	Number of teeth
0	**4**	60 (S)	5M25	80	16
0	**4**	80 (S)	5M25	110	22
0	**9**	100	8M50	144	18
0	**9**	125	8M50	192	24

Shaft dimensions

Size	Shaft ø h6 x length	Key
60 (S)	14 x 35	5x5x28
80 (S)	18 x 45	6x6x40
100	22 x 45	6x6x40
125	30 x 55	8x7x50

Basic length + stroke = total length

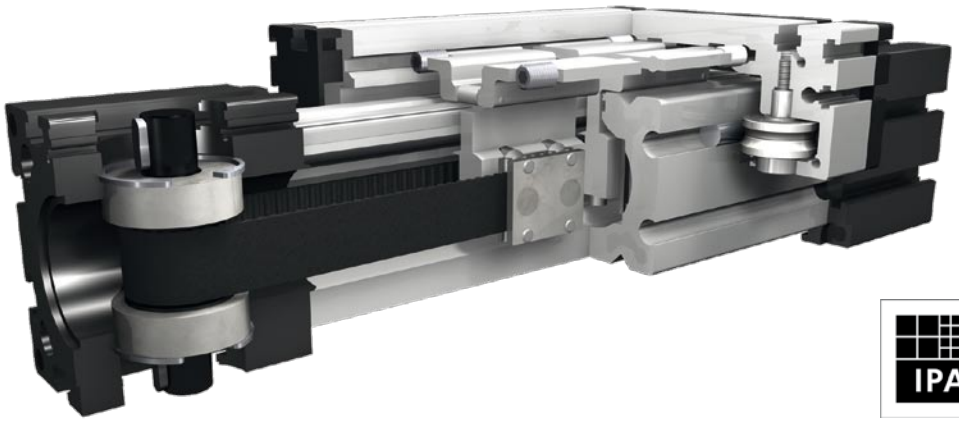
ELHZ	60	0	0	0	0	0	4	1	01500
	Pos.	1	2	3	4	5	6	7	

For combination kits and connecting elements refer to chapter 2.2

Sample ordering code:
ELHZ 60, with standard body profile, standard carriage and 4 flush mounted shafts, 1210 mm stroke.

Positioning system ELVZ 60, 60S, 80, 80S, 100, 125

Internal belt drive **Specifications**

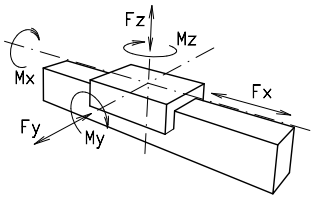


Fraunhofer TESTED DEVICE IPA Linearreinheit ELHZ 60 Report No. BA 9807-151

Function:
This linear unit consists of an aluminium square profile with integrated, hardened steel guide rods. The carriage, which has internal linear ball bearings that can be adjusted free of play, is driven along the guide rods by a toothed belt. Toothed pulley has maintenance-free ball bearings. Belt tension can be readjusted by a simple screw adjustment device in the carriage. This device can also be used for symmetrical adjustment of two or more linear units running parallel.
This linear unit is suitable for application in clean rooms of clean-room classification 1.000 (corresponding to US Fed. Standard 209 E).

Fitting position: As required. Max. length 3.000 mm without joints.
Carriage mounting: By T-slots.
Unit mounting: By tapped holes or tapped holes in the bearing block, mounting sets.
Belt type: HTD with steel reinforcement, no backlash when changing direction, repeatability ± 0,1 mm.

Forces and torques



Size	ELVZ 60		ELVZ 60 S		ELVZ 80		ELVZ 80 S		ELVZ 100		ELVZ 125	
Forces/Torques	static	dynamic	static	dynamic	static	dynamic	static	dynamic	static	dynamic	static	dynamic
F_x (N)	700	580	700	580	1000	840	1000	840	3100	2600	5000	4950
F_y (N)	3000	2000	4100	3100	3000	2000	4600	3600	8000	6500	12000	9000
F_z (N)	1700	1100	2160	1600	1700	1100	3000	1800	3600	2200	6000	4500
M_x (Nm)	67	43	88	65	90	55	170	140	300	230	600	450
M_y (Nm)	90	70	190	140	110	80	270	230	400	270	750	600
M_z (Nm)	120	100	230	170	150	120	300	220	750	500	1350	1150
All forces and torques relate to the following: existing values / table values: $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$												
No-load torque												
Nm	0,5		0,5		0,8		1,2		1,2		1,6	
Speed												
(m/sec) max	3		4		4		4		5		6	
Tensile force												
permanent (N)	700		700		1000		1000		3100		5000	
0,2 sec (N)	800		800		1150		1150		3400		5450	
Geometrical moments of inertia of aluminium profile												
I_x mm⁴	6,79x10⁵		6,79x10⁵		18,99x10⁵		18,99x10⁵		44,4x10⁵		101,5x10⁵	
I_y mm⁴	6,97x10⁵		6,97x10⁵		18,97x10⁵		18,97x10⁵		44,8x10⁵		101,5x10⁵	
E-Modulus N/mm²	70000		70000		70000		70000		70000		70000	

For life-time calculation of rollers use our CD-ROM or homepage!

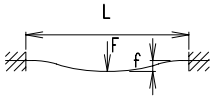
Formula: ELVZ
Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F	= force	(N)
P	= pulley action perimeter	(mm)
S_i	= safety factor 1,2 … 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm pulley	(min^{-1})
M_a	= driving torque	(Nm)
P_a	= motor power	(KW)

$$f = \frac{F*L^3}{E*I*192}$$

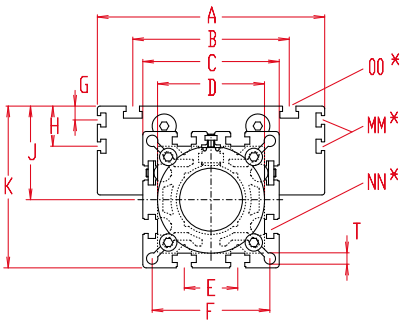


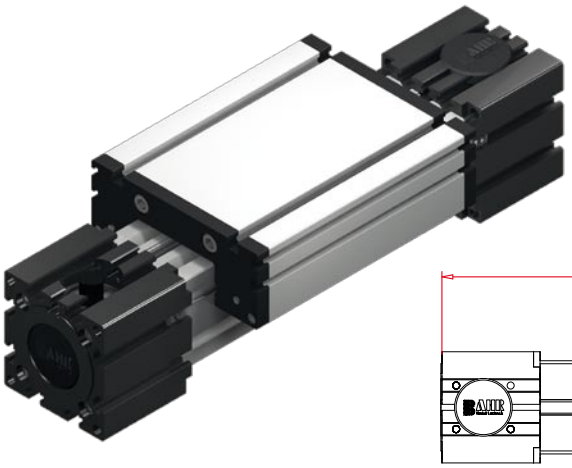
f= deflection (mm)
F = load (N)
L= free length (mm)
E= elastic modulus 70000 (N/mm²)
I= second moment of area (mm⁴)

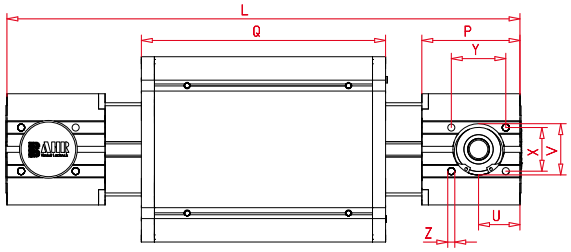
BAHR Modultechnik TÜV CERT DIN EN ISO 9001 EDELSTAHL Rostfrei

Positioning system ELVZ 60, 60S, 80, 80S, 100, 125

Dimensions (mm)





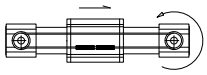
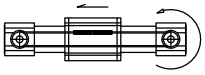


Increasing the carriage length will increase the basic length by the same amount

*For slide nuts refer to chapter 2.2 page 2

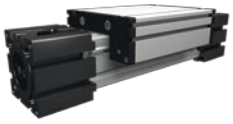
Size ❒	Basic length L	A	B	C	D	E	F	G	H	J	K	MM for	NN for	OO for	P	Q	T	U	V	W¹	X	Y	Z	Basic weight	Weight per 100 mm
ELVZ 60	290	144	96	82	62x1	30	69	–	-	49	90	-	M 8	M 8	59	168	8,5	23	37	14	30	36	M 6	4,8 kg	0,62 kg
ELVZ 60S	315	170	108	82	62x1	30	69	–	-	53	94	-	M 8	M 8	59	194	8,5	23	37	14	30	36	M 6	5,8 kg	0,62 kg
ELVZ 80	375	170	117	102	80x1	40	88	10	30	70	121	M 6	M10	M10	90	194	8,5	38	47	18	40	50	M 8	10,0 kg	1,00 kg
ELVZ 80S	395	190	126	102	80x1	40	88	12,5	30	71	122	M 6	M10	M 8	90	214	8,5	38	47	18	40	50	M 8	11,0 kg	1,00 kg
ELVZ 100	530	230	155	130	110x1	50	112	-	29	89	154	M10	M10	M10	110	300	10,5	45	68	19	50	64	M10	24,0 kg	1,60 kg
ELVZ 125	630	295	200	165	130x2	60	142	-	30	107,5	190	M10	M10	M12	132	365	13	58	90	35	60	85	M10	37,0 kg	2,10 kg

W¹ = standard shaft

1 **(1)** Belt connection right  **(2)** Belt connection left 

0 **Choice of guide body profile:**
(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

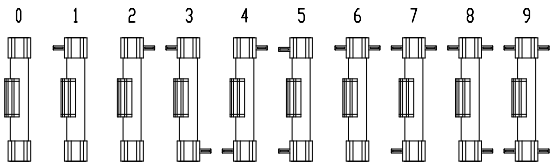
Choice of carriages:

0 **(0)** 

(1) 

Size	Version 1	
	Q	L
60	184	306
60S	214	336
80	210	391
80S	234	415
100	316	546
125	389	649

Drive version:

0 

The standard version 0 is supplied with 4 flush mounted shafts.

Belt table

Code No.		Size	Belt	mm/rev.	Number of teeth
0	**4**	60 (S)	5M25	80	16
0	**4**	80 (S)	5M25	110	22
0	**9**	100	8M50	144	18
0	**9**	125	8M50	192	24

Shaft dimensions

Size	Shaft ø h6 x length	Key
60 (S)	14 x 35	5x5x28
80 (S)	18 x 45	6x6x40
100	22 x 45	6x6x40
125	30 x 55	8x7x50

Basic length + stroke = total length

ELVZ	60	1	0	0	0	0	4	1	01500
Pos.		1	2	3	4	5	6	7	

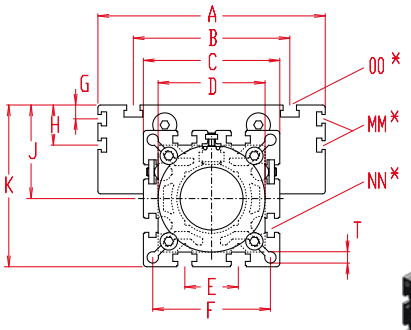
For combination kits and connecting elements refer to chapter 2.2

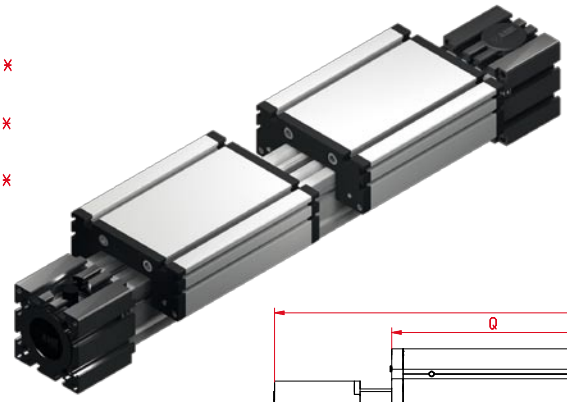
Sample ordering code:
ELVZ 60 with belt connection right, standard body profile, standard carriage and 4 flush mounted shafts, 1210 mm stroke

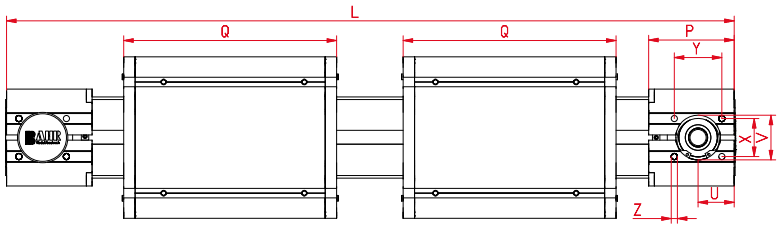
Positioning system ELVZ 60, 60S, 80, 80S, 100, 125

Internal belt drive with two carriages moving in opposite directions

Dimensions (mm)





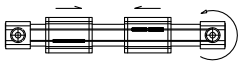


Increasing the carriage length will increase the basic length by the same amount

*For slide nuts refer to chapter 2.2 page 2

Size ❒	Basic length L	A	B	C	D	E	F	G	H	J	K	MM for	NN for	OO for	P	Q	T	U	V	W¹	X	Y	Z	Basic weight	Weight per 100 mm
ELVZ 60	460	144	96	82	62x1	30	69	–	–	49	90	–	M 8	M 8	59	168	8,5	23	37	14	30	36	M 6	6,5 kg	0,62 kg
ELVZ 60S	510	170	108	82	62x1	30	69	–	–	53	94	–	M 8	M 8	59	194	8,5	23	37	14	30	36	M 6	8,5 kg	0,62 kg
ELVZ 80	570	170	117	102	80x1	40	88	10	30	70	121	M 6	M10	M10	90	194	8,5	38	47	18	40	50	M 8	13,0 kg	1,00 kg
ELVZ 80S	610	190	123	102	80x1	40	88	12,5	30	71	122	M 6	M10	M 8	90	214	8,5	38	47	18	40	50	M 8	15,0 kg	1,00 kg
ELVZ 100	830	230	155	130	110x1	50	112	–	29	89	154	M10	M10	M10	110	300	10,5	45	68	19	50	64	M10	31,0 kg	1,60 kg
ELVZ 125	990	295	200	165	130x2	60	142	–	30	107,5	190	M10	M10	M12	132	365	13	58	90	35	60	85	M10	50,5 kg	2,10 kg

W¹ = standard shaft

7 **(7)** Belt connection right  **(8)** Belt connection left 

Choice of guide body profile:

0 **(0)** Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

Choice of carriages:

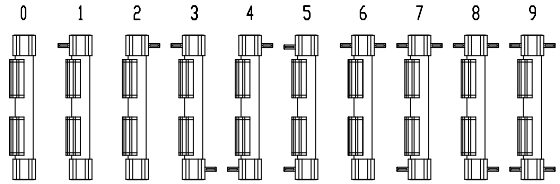
0 **(0)** 

(1) 

Size	Version 1	
	Q	L
60	184	492
60S	214	542
80	210	602
80S	234	650
100	316	862
125	389	1038

Drive version:

0



The standard version 0 is supplied with 4 flush mounted shafts.

Belt table

Code No.		Size	Belt	mm/rev.	Number of teeth
0	**4**	60 (S)	5M25	80	16
0	**4**	80 (S)	5M25	110	22
0	**9**	100	8M50	144	18
0	**9**	125	8M50	192	24

Shaft dimensions

Size	Shaft ø h6 x length	Key
60 (S)	14 x 35	5x5x28
80 (S)	18 x 45	6x6x40
100	22 x 45	6x6x40
125	30 x 55	8x7x50

Basic length + stroke = total length

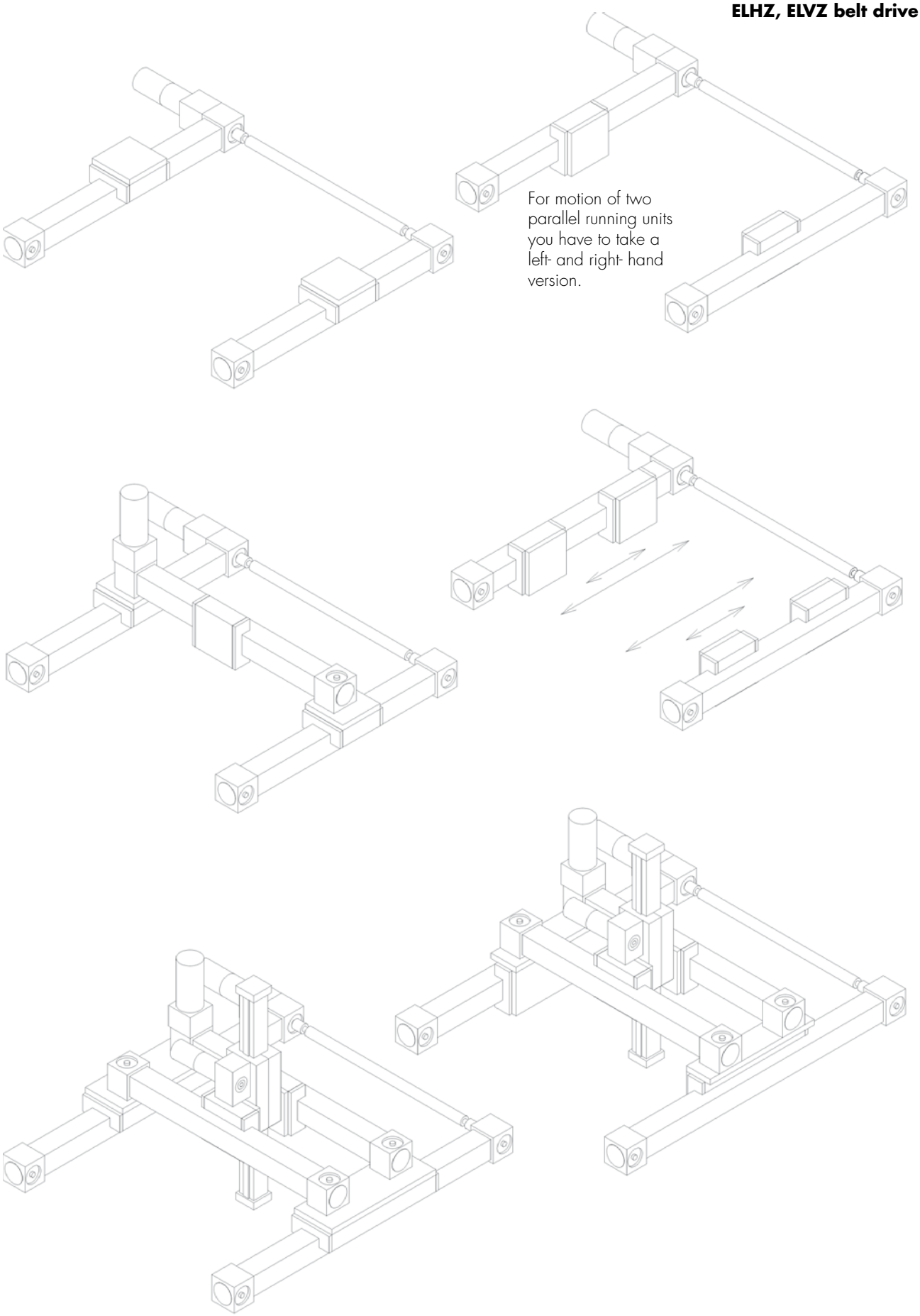
ELVZ	60	7	0	0	0	0	4	1	01500
	Pos.	1	2	3	4	5	6	7	

For combination kits and connecting elements refer to chapter 2.2

Sample ordering code:
ELVZ 60 right-/left-hand with belt connection right, standard body profile, standard carriage and 4 flush mounted shafts, 1040 mm stroke

Possible mounting styles

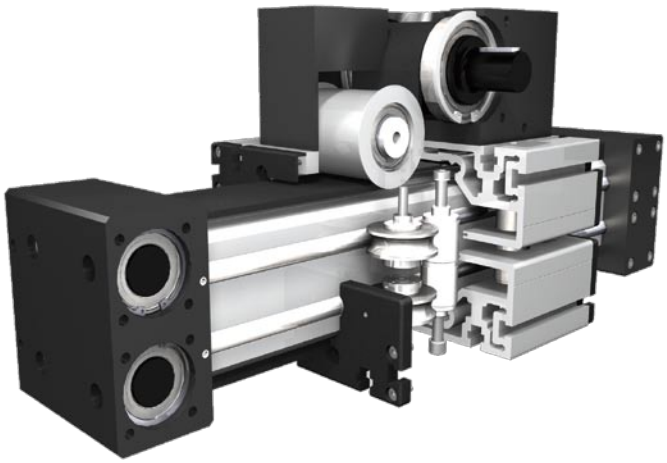
ELHZ, ELVZ belt drive units



For motion of two parallel running units you have to take a left- and right- hand version.

Positioning system ELFZ 60S, 80S, 100, 125

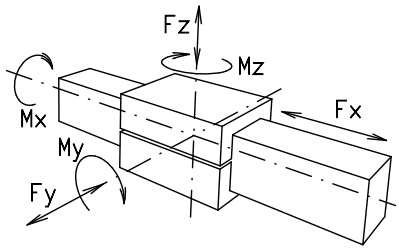
Specifications



Function:
This special lifting unit consists of an aluminium square profile with hardened steel guide rods. The carriages, which have internal linear ball bearings that can be adjusted free of play, are driven along the guide rods by a timing belt. The rotating timing belt pulleys have maintenance-free ball bearings. One rotation of the drive pulley complies with 1/2 linear circumference of the drive pulley. Belt tension can be readjusted by a simple tensioning device in one of the carriages. This device can also be used for symmetrical adjustment of two or more linear units running parallel.

Fitting position: As required. Max. length without joints 6.000 mm.
Carriage mounting: By T-slots.
Unit mounting: By T-slots or tapped holes in the bearing blocks, or mounting sets.
Belt type: HTD with steel reinforcement, no backlash when changing direction, repeatability ± 0,1 mm.

Forces and torques



Size	ELFZ 60S		ELFZ 80S		ELFZ 100		ELFZ 125	
Forces/Torques	static	dynamic	static	dynamic	static	dynamic	static	dynamic
F_x (N)	3600	3200	6200	5400	8700	7600	12000	10400
F_y (N)	8200	6200	9200	7200	16000	13000	24000	18000
F_z (N)	4320	3200	6000	3600	7200	4400	12000	9000
M_x (Nm)	176	130	340	280	600	460	1200	900
M_y (Nm)	380	280	540	460	800	540	1500	1200
M_z (Nm)	460	340	600	440	1500	1000	2700	2300
All forces and torques relate to the following: existing values / table values: $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$								
No-load torque								
Nm	1,3		1,5		2		2	
Speed								
(m/sec) max	4		4		4		4	
Drive torque								
max (Nm)	48		120		386		500	
Geometrical moments of inertia of aluminium profile								
I_x mm^4	6,79x10^5		1,89x10^6		4,44x10^6		10,15x10^6	
I_y mm^4	6,9710^5		1,8910^6		4,48x10^6		10,15x10^6	
E-Modulus N/mm^2	70000		70000		70000		70000	

For life-time calculation of rollers use our CD-ROM or homepage!

Formula: ELFZ

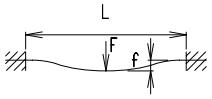
Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi*2} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F	= force	(N)
P	= pulley action perimeter	(mm)
S_i	= safety factor 1,2 ... 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm pulley	(min^{-1})
M_a	= driving torque	(Nm)
P_a	= motor power	(KW)

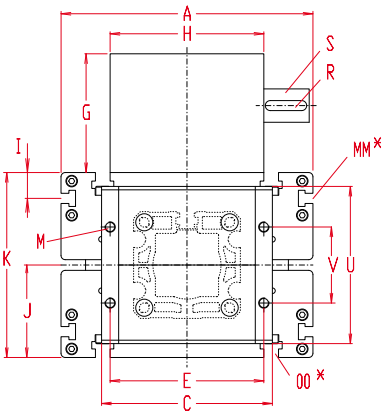
$$f = \frac{F*L^3}{E*I*192}$$

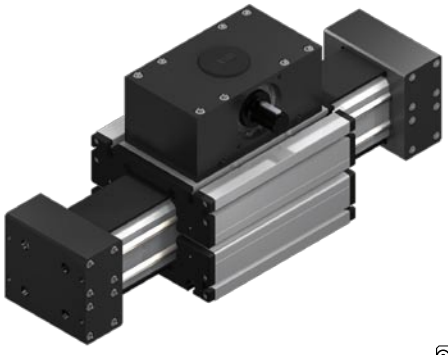


f= deflection		(mm)
F	= load	(N)
L= free length		(mm)
E= elastic modulus	70000	(N/mm^2)
I= second moment of area		(mm^4)

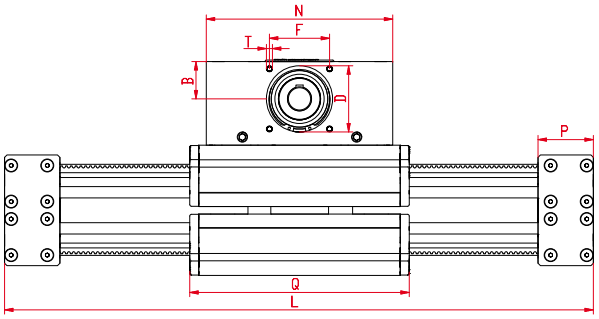
Positioning system ELFZ 60S, 80S, 100, 125

Dimensions (mm)





Increasing the carriage length will increase the basic length by the same amount.



*For slide nuts refer to chapter 2.2 page 2

Size ❒	Basic length L	A	B	C	D	E	F	G	H	I	J	K	MM for	M	N	OO for	P	Q	R	S	T	U	V	Basic weight	Weight per 100 mm
ELFZ 60S	410	170	38	108	68	97	60	102	100	-	53	106	-	M8	180	M8	97	214	6x6x40	18x45	M8	97	60	23,1 kg	0,64 kg
ELFZ 80S	580	190	60	126	90	106	80	139	130	12,5	71	142	M6	M10	270	M 8	130	315	8x7x40	30x45	M10	130	70	51 kg	1,20 kg
ELFZ 100	530	230	62	170	110	150	100	143	160	29	89	178	M10	M10	310	M10	77	365	12x8x50	40x55	M10	150	80	69 kg	1,80 kg
ELFZ 125	560	295	62	200	110	180	100	139	180	30	107,5	218	M10	M12	310	M12	92	365	12x8x50	40x55	M10	186	89	87,5 kg	2,70 kg

Choice of guide body profile:

0

(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

Choice of carriages:

0

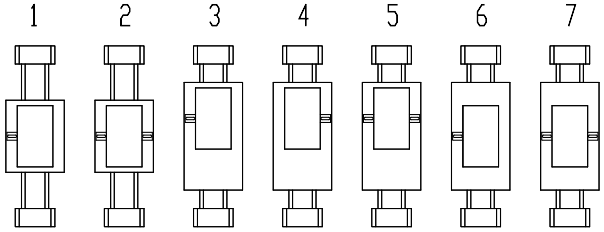
(0)

(1)

Size	Version 1	
	Q	L
60S	380	580
80S	489	750
100	575	740
125	640	830

Drive version:

1



Belt table

Code No.		Size	Belt	mm/rev. ≈ linear	Number of teeth
0	**3**	60S	8M30	192 ≈ 96	24
0	**4**	80S	8M50	256 ≈128	32
0	**7**	100	8M70	304 ≈152	38
0	**9**	125	8M100	304 ≈152	38

Shaft dimensions

Size	Shaft ø h6 x length	Key
60S	18 x 45	6x6x40
80S	30 x 45	8x7x40
100	40 x 55	12x8x50
125	40 x 55	12x8x50

Basic length + stroke = total length

ELFZ	125	0	0	0	1	0	9	1	01500
Pos.	1	2	3	4	5	6	7		

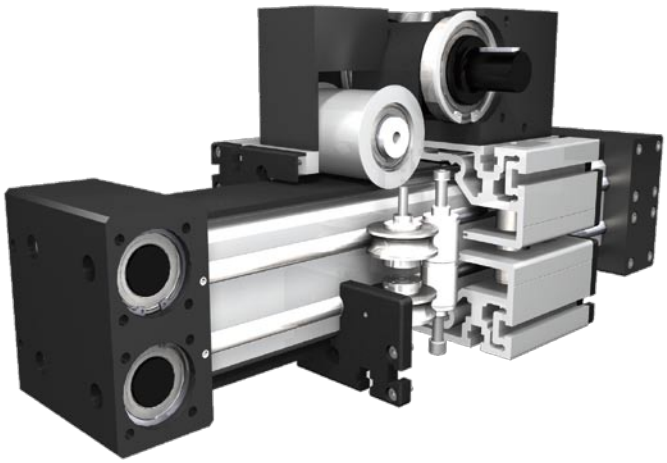
For combination kits and connecting elements refer to chapter 2.2

Sample ordering code:
ELFZ 125 with standard body profile, standard carriage, shaft Pos. 1, 940 mm stroke

Positioning system ELFZ Ex 60S, 80S, 100, 125

Specifications

ATEX 95
Ex II 2G c IIB T4
Ex II 3D T125°C



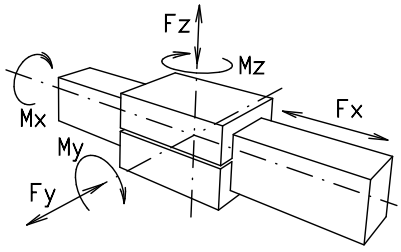
Function:
Like ELFZ. The positioning system is suitable for use according to the intended purpose in potentially explosive areas (see ATEX 95 marking). An operating manual is included in the scope of delivery. The system is certified for the following areas:

ATEX 95 II 2G EEx c IIB T4:
All application areas except for underground mining. Gas atmosphere category 2, explosion protection category: protection due to secure construction (design security). Equipment group IIB. Temperature class T4=135°C

ATEX 95 II 3D T125°C:
All application areas except for underground mining. Dust atmosphere category 3. Maximum permissible surface temperature: 125°C.

Fitting position: As required. Max. length without joints 3.000 mm.
Carriage mounting: By T-slots.
Unit mounting: By T-slots or tapped holes in the bearing blocks, or mounting sets.
Belt type: HTD with steel reinforcement, no backlash when changing direction, repeatability ± 0,1 mm.

Forces and torques



Size	ELFZex 60S		ELFZex 80S		ELFZex 100		ELFZex 125	
Forces/Torques	static	dynamic	static	dynamic	static	dynamic	static	dynamic
F_x (N)	1800	1550	3000	2600	4200	3650	6000	5200
F_y (N)	3820	3056	4438	3550	6200	4960	9960	7968
F_z (N)	1870	1496	1052	842	1292	1043	2190	1752
M_x (Nm)	104	82	134	108	202	162	440	352
M_y (Nm)	132	106	154	140	272	218	560	448
M_z (Nm)	274	220	364	292	652	520	1272	1018
All forces and torques relate to the following: existing values / table values $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$								
No-load torque								
Nm	1,2		1,5		2		2	
Speed								
(m/sec) max	1		1		1		1	
Drive torque								
max (Nm)	27		62		101		145	
Geometrical moments of inertia of aluminium profile								
I_x mm⁴	6,79x10⁵		1,89x10⁶		4,44x10⁶		10,15x10⁶	
I_y mm⁴	6,97x10⁵		1,89x10⁶		4,48x10⁶		10,15x10⁶	
E-Modulus N/mm²	70000		70000		70000		70000	

For life-time calculation of rollers use our CD-ROM or homepage!

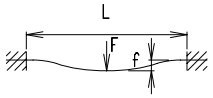
Formula: ELFZ
Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi*2} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F = force (N)
P = pulley action perimeter (mm)
S_i = safety factor 1,2 ... 2
M_{leer} = no-load torque (Nm)
n = rpm pulley (min^{-1})
M_a = driving torque (Nm)
P_a = motor power (KW)

$$f = \frac{F*L^3}{E*I*192}$$

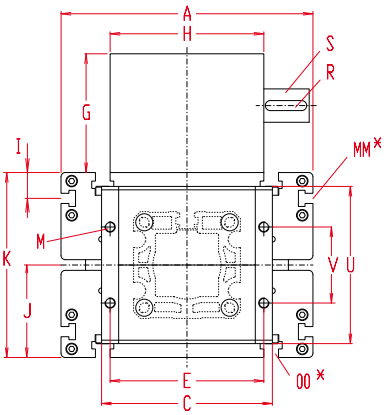


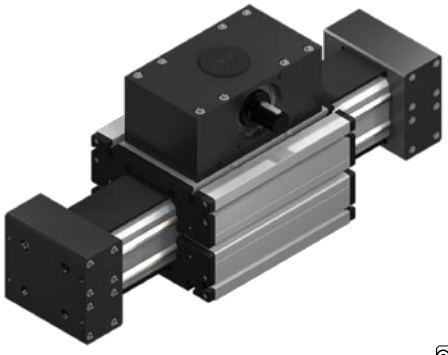
f= deflection (mm)
F = load (N)
L= free length (mm)
E= elastic modulus 70000 (N/mm^2)
I= second moment of area (mm^4)

Positioning system ELFZ Ex 60S, 80S, 100, 125

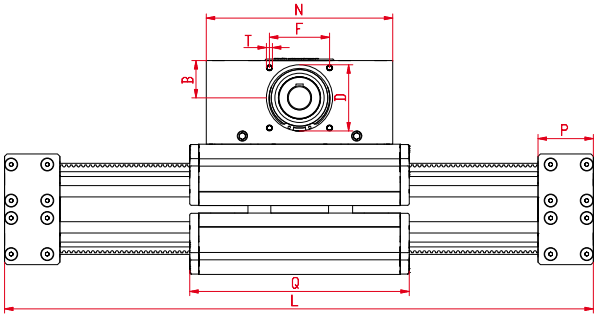
Dimensions (mm)

ATEX 95
Ex II 2G c IIB T4
Ex II 3D T125°C





Increasing the carriage length will increase the basic length by the same amount.



*For slide nuts refer to chapter 2.2 page 2

Size ❒	Basic length L	A	B	C	D	E	F	G	H	I	J	K	MM for	M	N	OO for	P	Q	R	S	T	U	V	Basic weight	Weight per 100 mm
ELFZex 60S	430	170	38	108	68	97	60	102	100	-	53	106	-	M8	180	M8	97	214	6x6x40	18x45	M8	97	60	23,2 kg	0,64 kg
ELFZex 80S	600	190	60	126	90	106	80	139	130	12,5	71	142	M6	M10	270	M 8	130	315	8x7x40	30x45	M10	130	70	51 kg	1,20 kg
ELFZex 100	560	230	62	170	110	150	100	143	160	29	89	178	M10	M10	310	M10	77	365	12x8x50	40x55	M10	150	80	69 kg	1,80 kg
ELFZex 125	590	295	62	200	110	180	100	139	180	30	107,5	218	M10	M12	310	M12	92	365	12x8x50	40x55	M10	186	89	87,5 kg	2,70 kg

Choice of guide body profile:
0
(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

Choice of carriages:

0

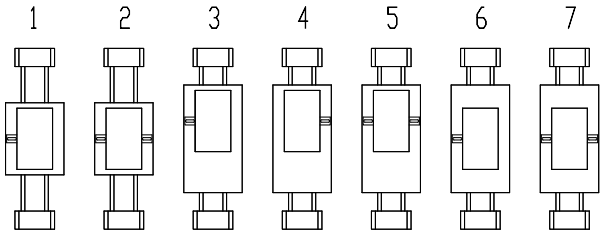
(0)

(1)

Size	Version 1	
	Q	L
60S	380	600
80S	489	770
100	575	770
125	640	860

Drive version:

1



Belt table

Code No.		Size	Belt	mm/rev. ≈linear	Number of teeth
0	**3**	60S	8M30	192 ≈96	24
0	**4**	80S	8M50	256 ≈128	32
0	**7**	100	8M70	304 ≈152	38
0	**9**	125	8M100	304 ≈152	38

Shaft dimensions

Size	Shaft ø h6 x length	Key
60S	18 x 45	6x6x40
80S	30 x 45	8x7x40
100	40 x 55	12x8x50
125	40 x 55	12x8x50

Basic length + stroke = total length

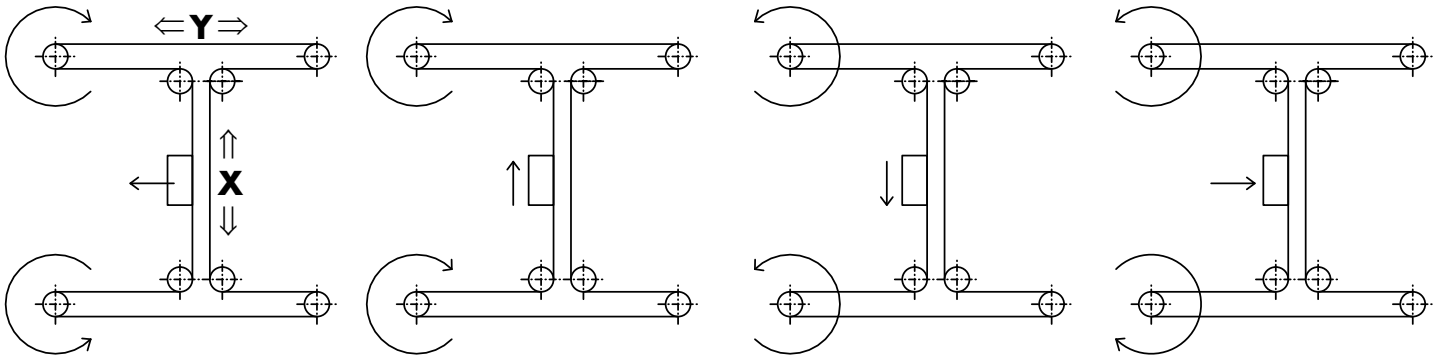
ELFZex	125	0	0	0	1	0	9	1	01500
Pos.		1	2	3	4	5	6	7	

For combination kits and connecting elements refer to chapter 2.2

Sample ordering code:
ELFZ 125 with standard body profile, standard carriage, shaft Pos. 1, 910 mm stroke

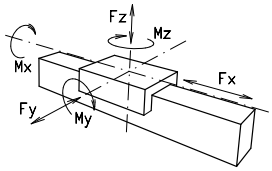
Positioning system ELZU 30, 40, 60, 60S, 80, 80S, 100

Surface portal **Specifications**



Function:

Surface portal, consisting of 2 Y-axes and 1 X-axis, driven by one rotating belt. This belt runs around different deflection pulleys. Positioning is achieved by two motors. The coordinate is diagonal to the deflection points of the Y-axis.
Advantage: Only small weights are moved, thus enabling high accelerations to be achieved.



Forces and torques

Fitting position: As required. Max. length and width 3.000 mm.
Carriage mounting: By T-slots.
Unit mounting: By T-slots or tapped holes in the bearing block, mounting sets.
Belt type: HTD with steel reinforcement, no backlash when changing direction, repeatability: ± 0,1 mm.

Size	ELZU 30		ELZU 40		ELZU 60		ELZU 60 S		ELZU 80		ELZU 80 S		ELZU 100	
Forces/Torques	static	dynamic	static	dynamic	static	dynamic	static	dynamic	static	dynamic	static	dynamic	static	dynamic
F_x (N)	200	180	390	350	894	800	894	800	1900	1800	1900	1800	4000	3800
F_y (N)	90	60	1200	700	3000	2000	4100	3100	3000	2000	4600	3600	8000	6500
F_z (N)	90	60	900	650	1700	1100	2160	1600	1700	1100	3000	1800	3600	2200
M_x (Nm)	10	5	25	20	67	43	88	65	90	55	170	140	300	230
M_y (Nm)	13	6	32	18	90	70	190	140	110	80	270	230	400	270
M_z (Nm)	14	7	35	25	120	100	230	170	150	120	300	220	750	500
All forces and torques relate to the following: existing values / table values $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$														
No-load torqe														
Nm	0,2		0,6		1,2		1,2		1,8		1,8		2,6	
Speed														
(m/sec) max	2		4		5		5		6		6		8	
Tensile force														
permanent (N)	200		390		900		900		1900		1900		3600	
0,2 sec (N)	280		480		1000		1000		2090		2090		4000	
Geometrical moments of inertia of aluminium profile														
I_x mm⁴	4,09x10⁴		1,32x10⁵		6,79x10⁵		6,79x10⁵		18,99x10⁵		18,99x10⁵		44,4x10⁵	
I_y mm⁴	4,00x10⁴		1,34x10⁵		6,97x10⁵		6,97x10⁵		18,97x10⁵		18,97x10⁵		44,8x10⁵	
E-Modulus N/mm²	70000		70000		70000		70000		70000		70000		70000	

For life-time calculation of rollers use our CD-ROM or homepage!

Formula: ELZU

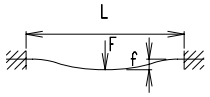
Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F	= force	(N)
P	= pulley action perimeter	(mm)
S_i	= safety factor 1,2 … 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm pulley	(min^{-1})
M_a	= driving torque	(Nm)
P_a	= motor power	(KW)

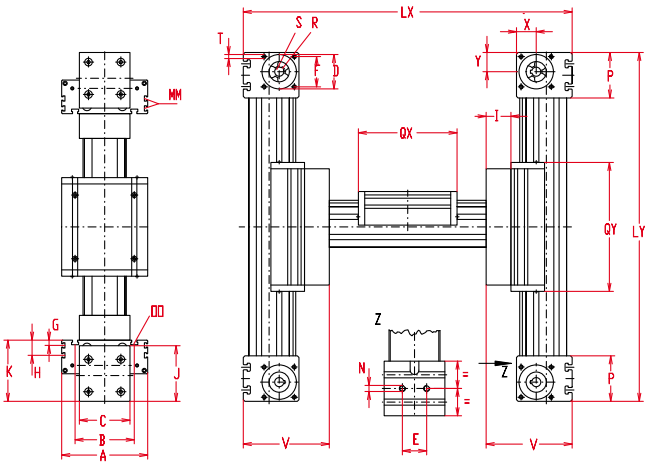
$$f = \frac{F*L^3}{E*I*192}$$



f= deflection	(mm)
F = load	(N)
L= free length	(mm)
E= elastic modulus 70000	(N/mm^2)
I= second moment of area	(mm^4)

Positioning system ELZU 30, 40, 60, 60S, 80, 80S, 100

Dimensions (mm)



*For slide nuts refer to chapter 2.2 page 2

Size ❒	Basic length Lx	Basic length Ly	A	B	C	D	E	F	G	H	I	J	K	MM for	N for	OO for	P	Qx	Qy	T	V	X	Y	Basic weight	Weight per 100 mm
ELZU 30	240	210	70	56	42	28	13	25	-	-	27	44	47	-	M 5	M 6	36	82	126	M 5	74	16	16	6,3 kg	0,13 kg
ELZU 40	304	250	100	66	58	37	18	32	-	-	26	58	64	-	M 6	M 6	49	124	147	M 5	90	20,5	20,5	6,8 kg	0,24 kg
ELZU 60	426	330	144	96	80	47	30	42	-	-	33	82	90	-	M 8	M 8	59	168	210	M 6	123	27	26	14,7 kg	0,62 kg
ELZU 60S	450	330	170	108	80	47	30	42	-	-	33	82	94	-	M 8	M 8	59	194	210	M 6	127	27	26	17,7 kg	0,62 kg
ELZU 80	535	435	170	117	100	68	40	60	10	30	44	110	121	M 6	M10	M10	90	194	244	M 8	165	39	38	31,0 kg	1,00 kg
ELZU 80S	555	455	190	126	100	68	40	60	12,5	30	45	110	122	M6	M10	M 8	90	214	264	M 8	167	39	38	32,0 kg	1,00 kg
ELZU 100	758	590	230	155	130	90	50	80	-	29	69	135	154	M10	M12	M10	110	300	360	M10	223	50	50	47,3 kg	1,40 kg

Choice of guide body profile:

0

(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

Choice of carriages:

0

(0)

(1)

(2)

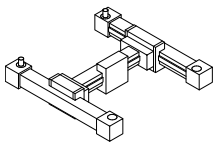
Size	Version 1 Qx	Version 1 Lx	Version 1 Qy	Version 1 Ly	Version 2 Qx	Version 2 Lx	Version 2 Qy	Version 2 Ly
30	94	252	126	210	94	252	138	222
40	138	320	147	250	138	320	163	266
60	184	442	210	330	184	442	226	346
60S	214	468	210	330	214	468	230	350
80	210	551	244	435	210	551	260	451
80S	234	575	264	455	234	575	284	475
100	316	774	360	590	316	774	376	606

Drive version:

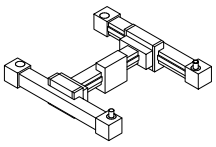
0

(0)

(1)



(2)



The standard version is supplied without shaft. A shaft can be retrofitted by inserting it into the pulley bore and securing it with 2 locking rings.

Belt table

Code No.	Size	Belt	mm/rev.	Number of teeth
0 1	30	3M12	75	25
0 3	40	5M15	100	20
0 4	60 (S)	5M25	130	26
0 7	80 (S)	8M30	192	24
0 9	100	8M50	256	32

Shaft dimensions

Size	Shaft ø h6 x length	Key
30	6 x 15	2x2x12
40	10 x 27	3x3x25
60 (S)	14 x 35	5x5x28
80 (S)	18 x 45	6x6x40
100	22 x 45	6x6x40

X-Axis Basic length + stroke = total length

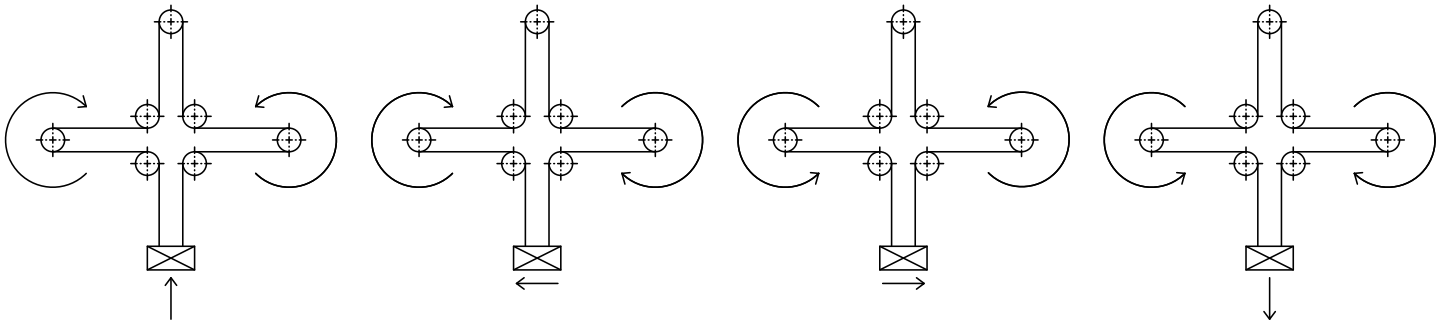
Y-Axes Basic length + stroke = total length

ELZU	**60**	**7**	**0**	**0**	**0**	**0**	**4**	**1**	**01500**
ELZU	**60**	**8**	**0**	**0**	**0**	**0**	**4**	**1**	**00700**
Pos.	1	2	3	4	5	6	7		

For combination kits and connecting elements refer to chapter 2.2

Sample ordering code:
ELZU 60 with standard body profile, standard carriage, coupling claw on one side, stroke X = 1074 / Y = 370 mm

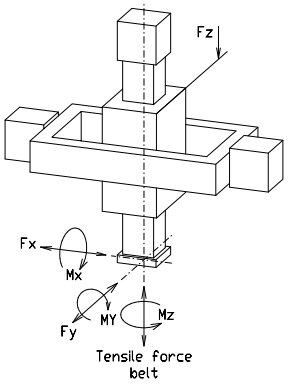
Positioning system ELZI 30, 40, 60



Function:
X/Z gantry consisting of a double guide in the horizontal X level and a vertical Z axis. The belt is fixed and tensioned at the load end.
The unit is driven by a rotating belt, which remains connected through various deflection points. The movement is realised by two motors. The coordinate lies diagonal to the deflection points of the X axes and the Z axis.
Advantage: Only small masses are moved and thus it is possible to achieve high accelerations.

Fitting position: As required, max. length for x-axes 2000mm, for z-axis 1000mm
Unit mounting: By tapped holes in the bearing block, mounting sets.
Belt type: HTD with steel reinforcement, no backlash when changing direction, repeatability: ± 0,1 mm.

Forces and torques



Size	ELZI 30		ELZI 40		ELZI 60	
Forces/torques	static	dynam.	static	dynam.	static	dynam.
F_x (N)	390	350	894	800	1900	1800
F_y (N)	90	60	1200	700	3000	2000
F_z (N)	180	160	3400	2200	3800	3600
M_x (Nm)	10	5	25	20	67	43
M_y (Nm)	13	6	32	18	90	70
M_z (Nm)	14	7	35	25	120	100
All forces and torques relate to the following: existing values / table values $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$						
No-load torque horizontal movement						
Nm	2 x 0,4		2 x 0,6		2 x 1,1	
Speed						
(m/sec) max	2		4		5	
Tensile force (please use necessarily the Mulco life-time calculation, see Chapter 5.2 Page 2)						
permanent (N)	390		894		1900	
0,2 sec (N)	480		1000		2090	
Geometrical moments of inertia of aluminium profile						
I_x mm⁴ (X-/Z-Achse)	0,31x10⁵ / 0,41x10⁵		1,12x10⁵ / 1,32x10⁵		4,06x10⁵ / 6,79x10⁵	
I_y mm⁴ (X-/Z-Achse)	1,70x10⁵ / 0,40x10⁵		7,20x10⁵ / 1,34x10⁵		24,3x10⁵ / 6,97x10⁵	
E-Modulus N/mm²	70000		70000		70000	

For lifetime calculation of rollers you have to use only our CD-ROM or homepage!

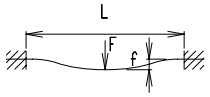
Formula: ELZI
Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F = force (N)
P = pulley action perimeter (mm)
S_i = safety factor 1,2 … 2
M_{leer} = no-load torque (Nm)
n = rpm pulley (min^{-1})
M_a = driving torque (Nm)
P_a = motor power (KW)

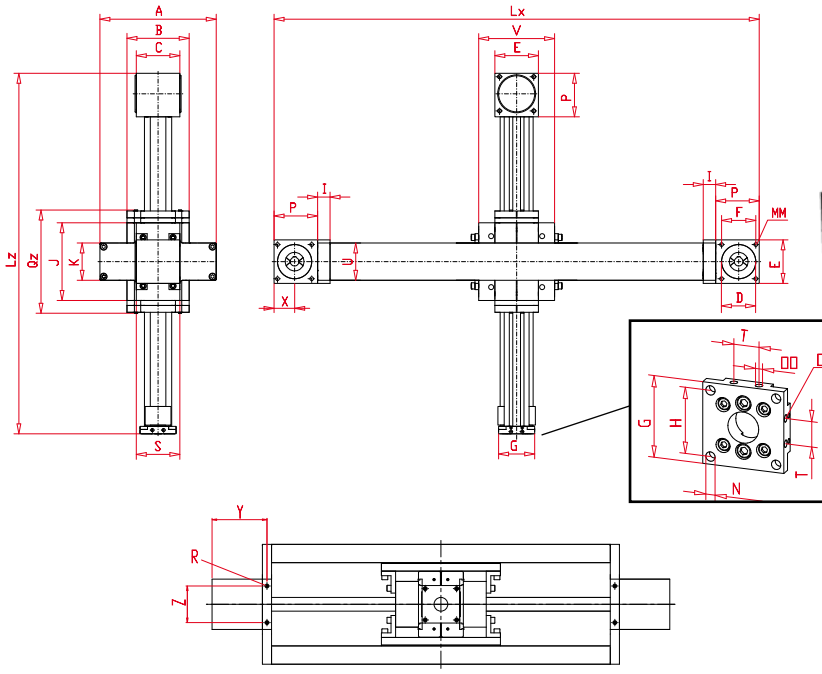
$$f = \frac{F*L^3}{E*I*192}$$



f= deflection (mm)
F = load (N)
L= free length (mm)
E= elastic modulus 70000 (N/mm^2)
I= second moment of area (mm^4)

Positioning system ELZI 30, 40, 60

Dimensions (mm)



Endpiece for gripper

Systemprofil combinations

Size	X-Axis	Z-Axis
30	2 x UL40	EL30
40	2 x UL60	EL40
60	2 X UL80	EL60

Size ❐	Basic legth		A	B	C	D	E	F	G	H	I	J	K	MM for	⌀ N	OO for	P	Qz	R for	S	T	U	V	X	Y	Z	Basic weight	Weight per 100 mm X-/Z-axis
	Lx	Lz																									
ELZI 30	290	245	137	70	51	47	52	42	42	35	15	114	40	M6	4,2	M6	55	144	M6	60	-	40	112	26,5	62,5	35	5,20 kg	0,32/0,18 kg
ELZI 40	380	290	187	100	70	55	70	55	58	47	20	125	60	M6	6,6	M6	70	165	M8	70	18	60	122	33	80	50	11,5 kg	0,68/0,3 kg
ELZI 60	525	425	262	144	110	90	100	80	82	68	20	192	80	M10	8,5	M8	110	235	M10	100	30	80	198	50	120	80	33,0 kg	1,13/0,67 kg

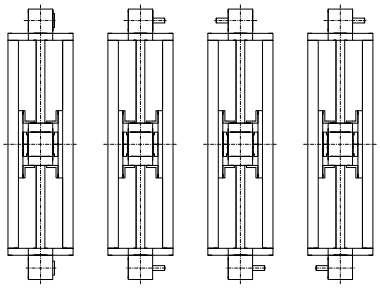
Choice of guide body profile:

0

(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

Drive version:

0 **(0)** **(0)** **(1)** **(2)** **(3)**



Belt table

Code No.		Size	Belt	mm/rev.	Number of teeth
0	**3**	30	5M15	120	24
0	**4**	40	5M25	160	32
0	**6**	60	8M30	224	28

Shaft dimensions / Coupling Type

Size	Shaft ⌀ h6 x length	Key	Coupling
30	10x27	3x3x25	Type 14
40	14x35	5x5x28	Type 24
60	22x45	6x6x35	Type 9

X-Axis Basic length + stroke = total length
Y-Axes Basic length + stroke = total length

ELZI	40	0	0	0	0	0	4	1	01500
ELZI	**40**	**1**	**0**	**0**	**0**	**0**	**4**	**1**	**00700**
	Pos.	1	2	3	4	5	6	7	

Bestellbeispiel:
ELZI 40, with standard body profile, coupling claw on one side, stroke X = 1120 / Z = 410mm

Positioning system ELBZ R800

Specifications

Function:
This linear unit consists of a curved aluminium square profile with hardened steel guide rods. The smallest radius amounts to 800 mm. The carriage which has internal linear ball bearings that can be adjusted free of play is driven along the guide rods by a timing belt. The pulley has maintenance-free ball bearings. Belt tension can be readjusted by a simple tensioning device in one of the end blocks. This device can also be used for symmetrical adjustment of two or more linear units running parallel.

Fitting position:	As required.
Carriage mounting:	Special drilling
Unit mounting:	By T-slots or tapped holes in the profile nut, or mounting sets.
Belt type:	HTD with steel reinforcement, no backlash when changing direction, repeatability ± 0,1 mm.

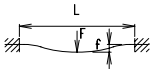
Formula: ELBZ
Driving torque:

$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_{leer}$$

$$P_a = \frac{M_a * n}{9550}$$

F = force	(N)
P = pulley action perimeter	(mm)
S_i = safety factor 1,2 ... 2	
M_{leer} = no-load torque	(Nm)
n = rpm pulley	(min^{-1})
M_a = driving torque	(Nm)
P_a = motor power	(KW)

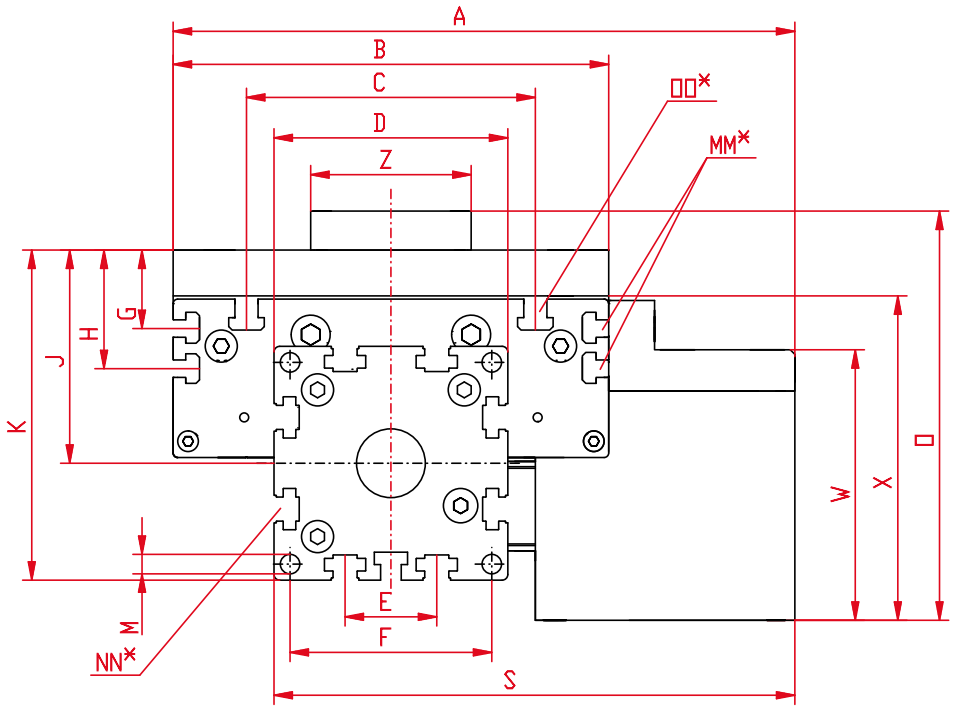
$$f = \frac{F * L^3}{E * I * 192}$$



f= deflection	(mm)
F= load	(N)
L= free length	(mm)
E= elastic modulus 70000	(N/mm^2)
I= second moment of area	(mm^4)

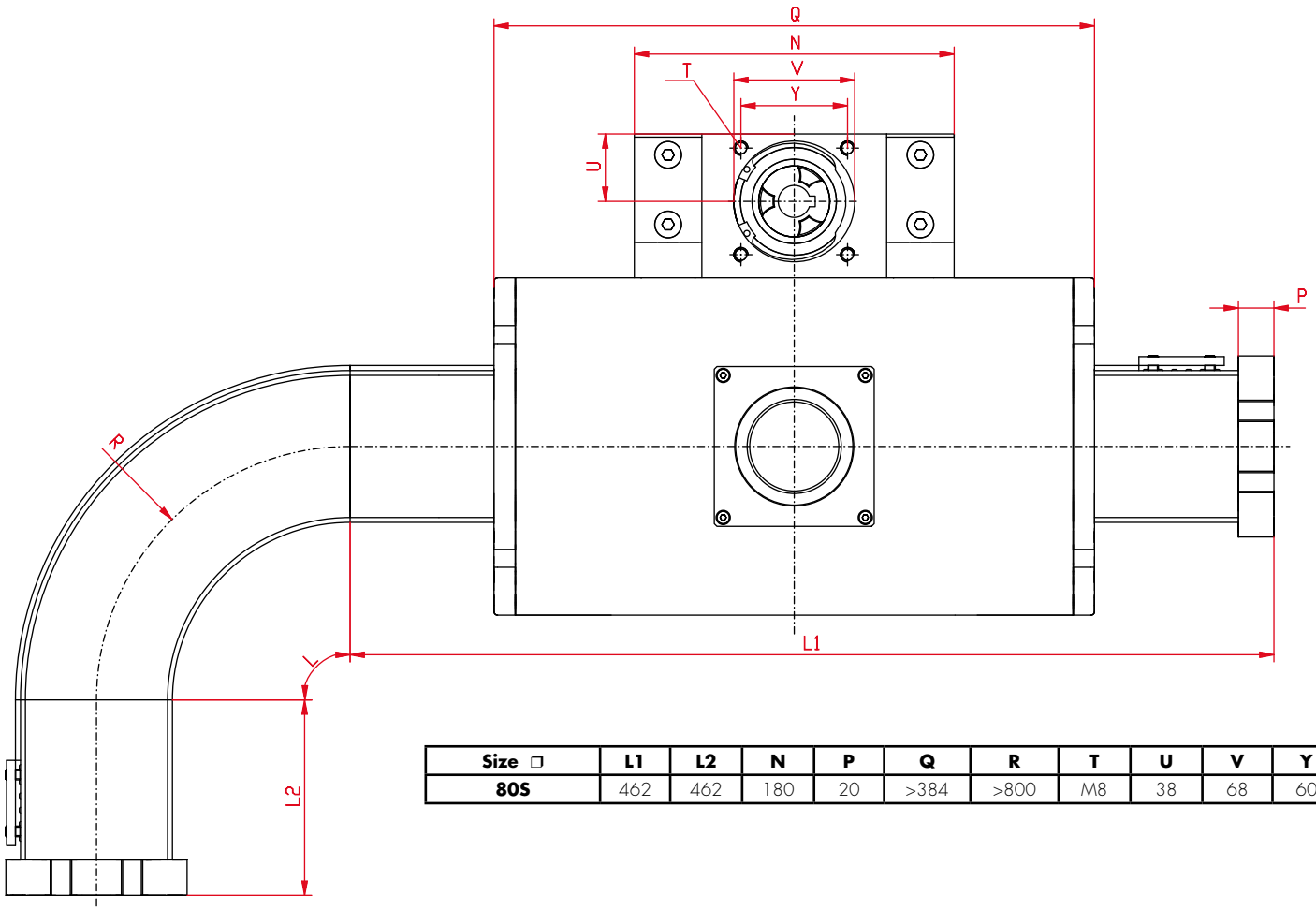
Positioning system ELBZ R800

Dimensions (mm)



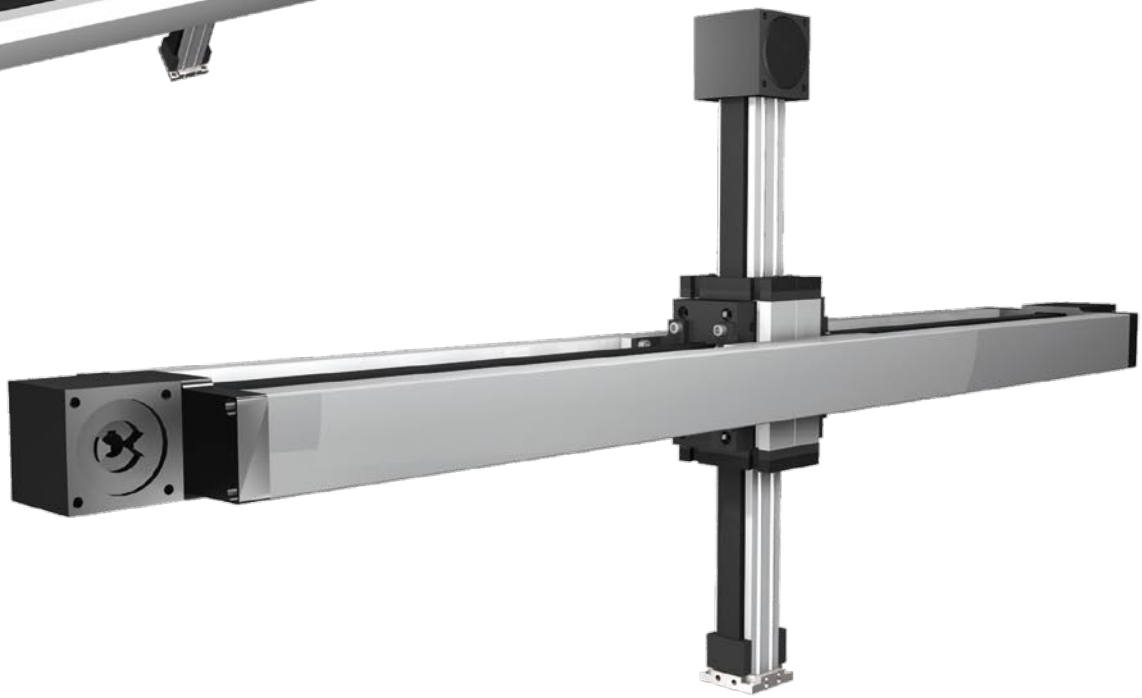
*For slide nuts refer to chapter 2.2 page 2 V = Q + 100 mm W = servicing position

Size ❐	A	B	C	D	E	F	G	H	J	K	M	O	S	MM for	NN for	OO for	W	X	Z
80S	271	190	126	102	40	88	34,5	52	94	145	8,5	183	228	M6	M10	M10	118	137,5	74

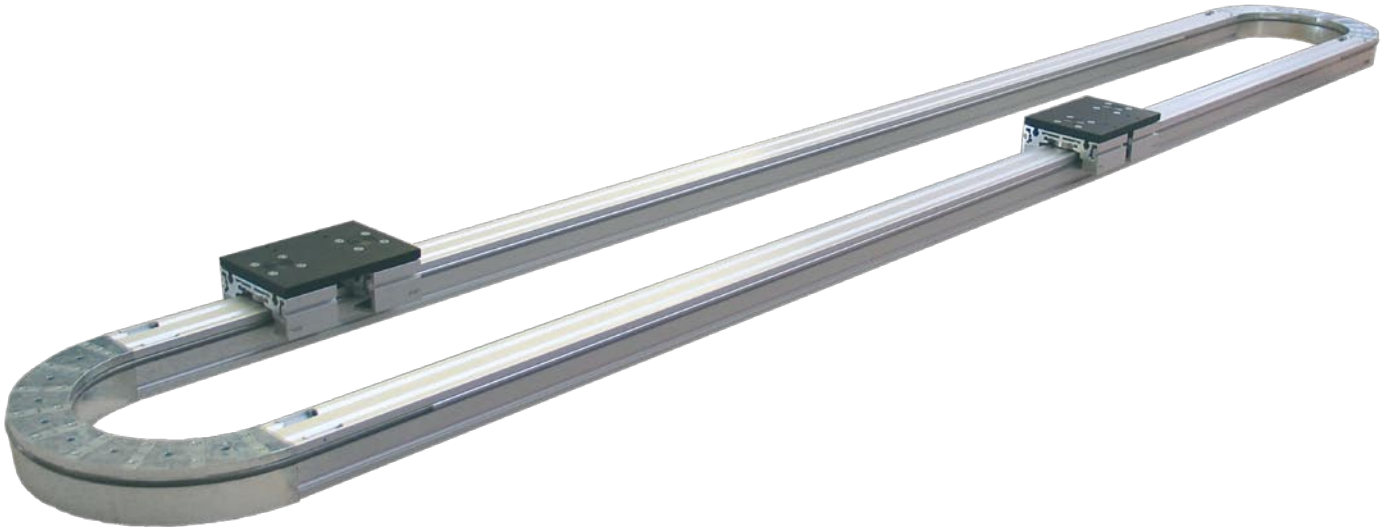


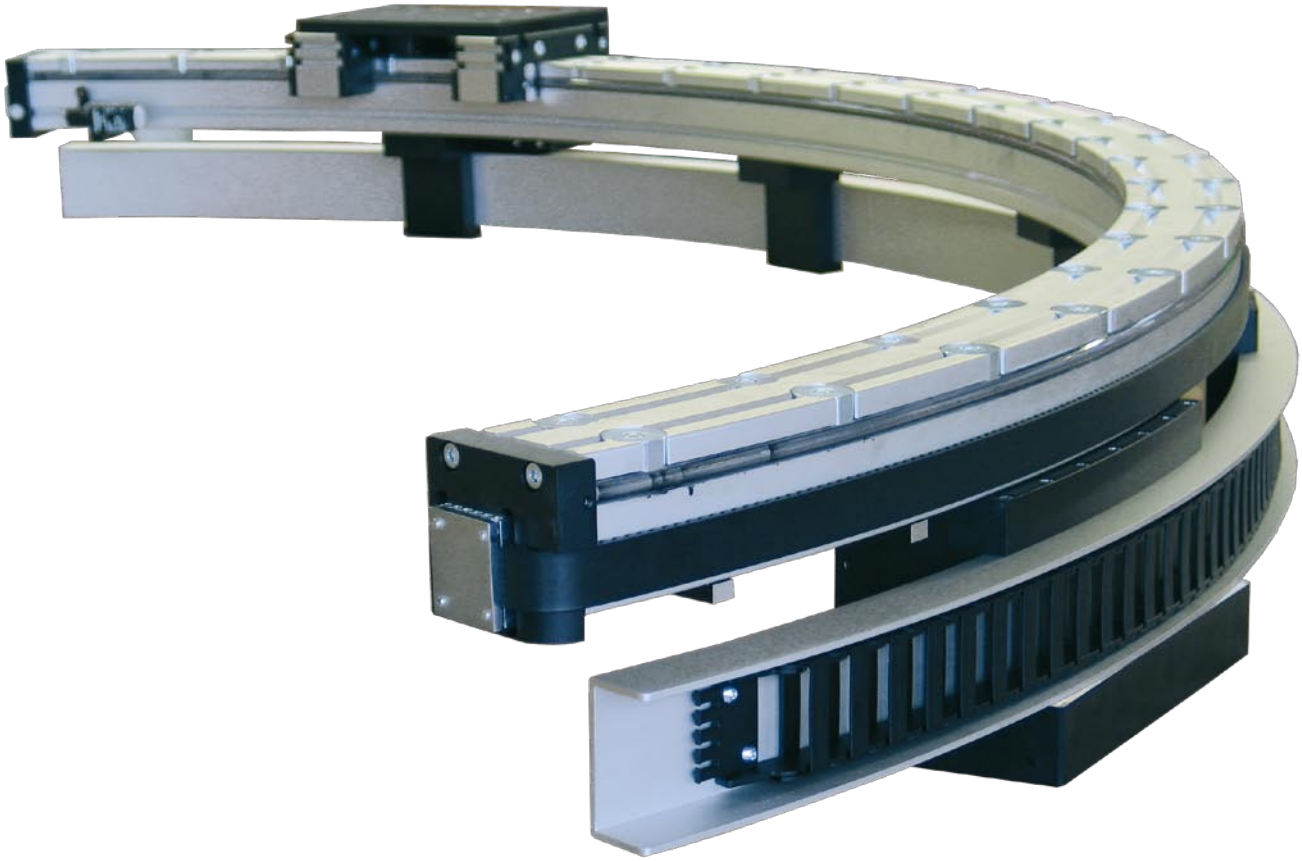
Size ❐	L1	L2	N	P	Q	R	T	U	V	Y
80S	462	462	180	20	>384	>800	M8	38	68	60

Combination ELZ / ELSZ and ELZI



Curve Systems

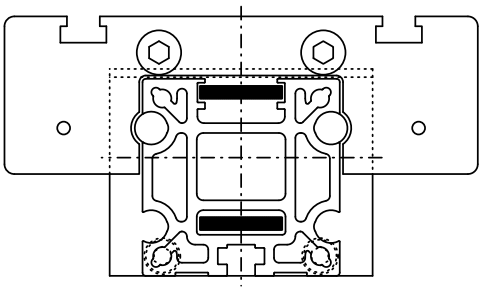




Positioning system MLZ 60, 60S, 80, 80S, 100

Belt drive

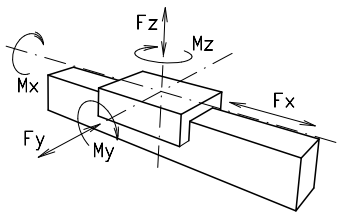
Specifications



Function:
This linear unit consists of an aluminium square profile with integrated, hardened steel guide rods. The carriage, which has internal linear ball bearings, that can be adjusted free of play, is driven along the guide rods by a timing belt. The advantage of this system is that the belt is guided within the profile, ensuring that the belt is always tight and thus enabling the system to be operated e.g. when lying on its side. The pulleys have maintenance-free ball bearings. Belt tension can be readjusted by a simple screw adjustment device in the carriage. This device can also be used for symmetrical adjustment of two or more linear units running parallel.

Fitting position: As required, max. length 6.000 mm without joints.
Carriage mounting: By T-slots.
Unit mounting: By T-slots or tapped holes in the bearing block, mounting sets.
Belt type: HTD with steel reinforcement, no backlash when changing direction, repeatability: ± 0,1 mm.

Forces and torques



Size	MLZ 60		MLZ 60 S		MLZ 80		MLZ 80 S		MLZ 100	
Forces/Torques	static	dynamic	statisch	dynamisch	static	dynamic	static	dynamic	static	dynamic
F_x (N)	894	800	894	800	1900	1800	1900	1800	4000	3800
F_y (N)	3000	2000	4100	3100	3000	2000	4600	3600	8000	6500
F_z (N)	1700	1100	2160	1600	1700	1100	3000	1800	3600	2200
M_x (Nm)	67	43	88	65	90	55	170	140	300	230
M_y (Nm)	90	70	190	140	110	80	270	230	400	270
M_z (Nm)	120	100	230	170	150	120	300	220	750	500
All forces and torques relate to the following: existing values / table values $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$										
No-load torque										
Nm	0,6		0,7		0,9		1,2		1,4	
Speed										
(m/sec) max	5		7		6		8		10	
Tensile force										
permanent (N)	900		900		1900		1900		4000	
0,2 sec (N)	1000		1000		2090		2090		4300	
Geometrical moments of inertia of aluminium profile										
I_x mm⁴	$4,83x10^5$		$4,83x10^5$		$17,49x10^5$		$17,49x10^5$		$39,4x10^5$	
I_y mm⁴	$5,03x10^5$		$5,03x10^5$		$18,02x10^5$		$18,02x10^5$		$43,5x10^5$	
E-Modulus N/mm²	70000		70000		70000		70000		70000	

For life-time calculation of rollers use our CD-ROM or homepage!

Formula: MLZ

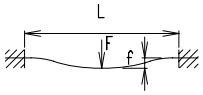
Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F	= force	(N)
P	= pulley action perimeter	(mm)
S_i	= safety factor 1,2 ... 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm pulley	(min^{-1})
M_a	= driving torque	(Nm)
P_a	= motor power	(KW)

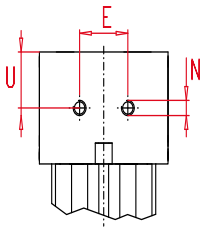
$$f = \frac{F*L^3}{E*I*192}$$



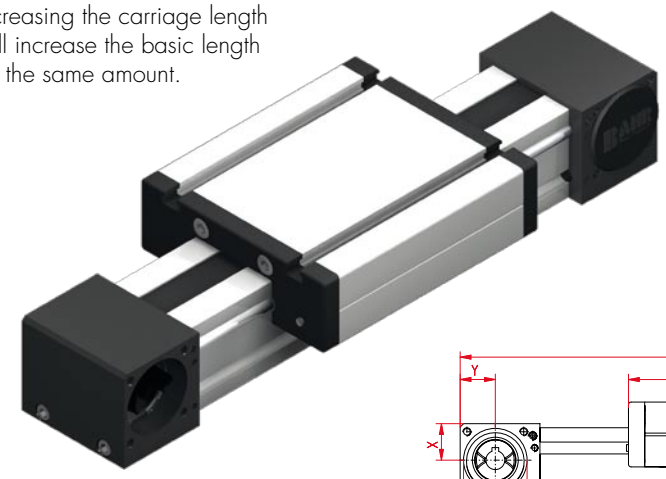
f= deflection (mm)
F = load (N)
L= free length (mm)
E= elastic modulus 70000 (N/mm²)
I= second moment of area (mm⁴)

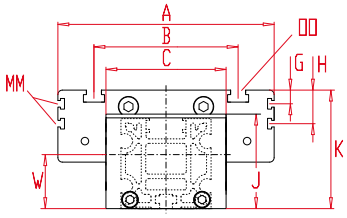
Positioning system MLZ 60, 60S, 80, 80S, 100

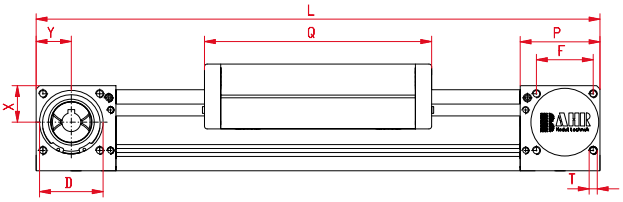
Dimensions (mm)



Increasing the carriage length will increase the basic length by the same amount.







*For slide nuts refer to chapter 2.2 page 2

Size ❒	Basic length L	A	B	C	D	E	F	G	H	J	K	MM for	N	OO for	P	Q	T	U	W	X	Y	Basic weight	Weight per 100 mm
MLZ 60	290	144	96	80	47	30	42	-	-	63	79	-	M 8	M 8	59	168	M 6	29,5	36	27	26	4,7 kg	0,6 kg
MLZ 60S	315	170	108	80	47	30	42	-	-	63	83	-	M 8	M 8	59	194	M 6	29,5	30	27	26	5,7 kg	0,6 kg
MLZ 80	375	170	117	100	68	40	60	10	30	93	110	M 6	M 10	M 10	90	194	M 8	47,5	40	45	40	9,6 kg	1,0 kg
MLZ 80 S	395	190	126	100	68	40	60	12,5	30	93	111	M 6	M 10	M 8	90	214	M 8	47,5	40	45	40	10,8 kg	1,0 kg
MLZ 100	530	230	155	130	90	50	80	-	29	110	139	M10	M 12	M10	110	300	M 10	55	50	49	50	22,5 kg	1,55 kg

Choice of guide body profile:

0

(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

Choice of carriages:

0 **(0)**

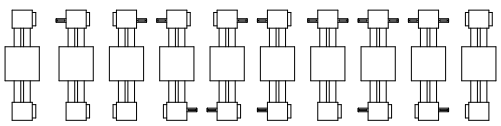
(1)

Size	Version 1	
	Q	L
60	184	306
60S	214	336
80	210	391
80S	234	415
100	316	546

0 **Drive version:**

0

0 1 2 3 4 5 6 7 8 9



Version 9 is the same as 0, but with double sided coupling claw.

The standard version is supplied without shaft.

Belt table

Code No.		Size	Belt	mm/rev.	Number of teeth
0	**4**	60 (S)	5M25	130	26
0	**7**	80 (S)	8M30	176	22
0	**9**	100	8M50	224	28

Shaft dimensions

Size	Shaft ø h6 x length	Key
60 (S)	14 x 35	5x5x28
80 (S)	18 x 45	6x6x40
100	22 x 45	6x6x40

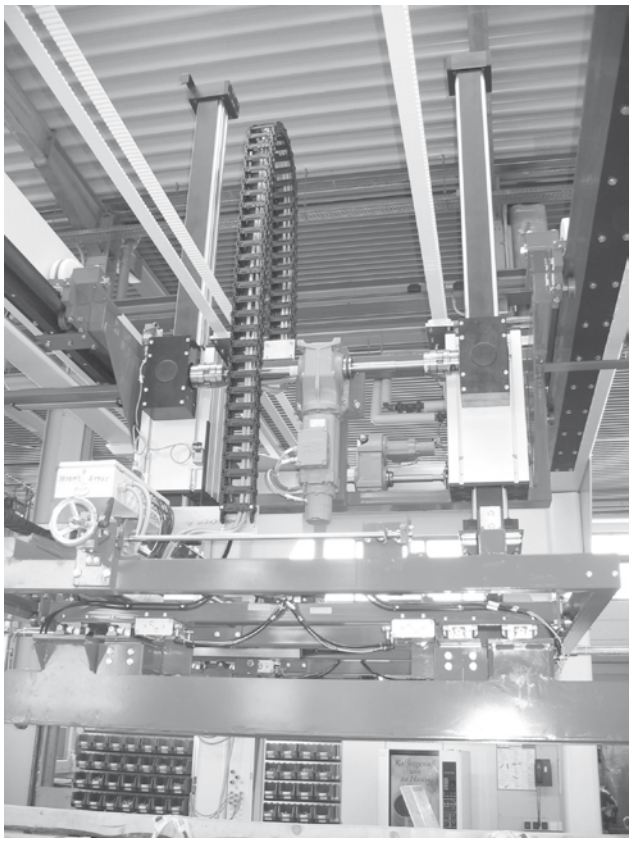
Basic length + stroke = total length

MLZ	60	1	0	0	0	0	4	1	01500
Pos.		1	2	3	4	5	6	7	

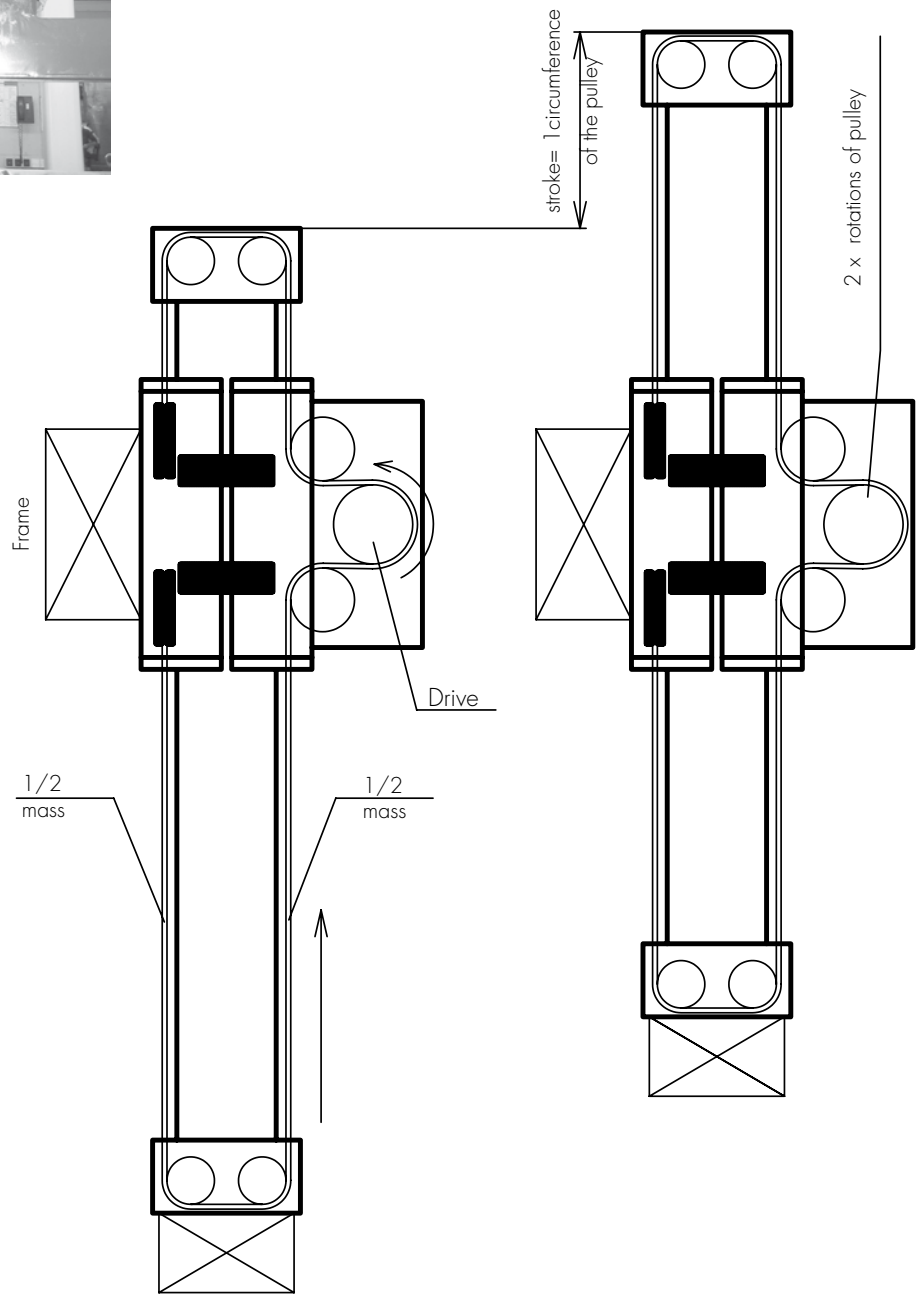
For combination kits and connecting elements refer to chapter 2.2

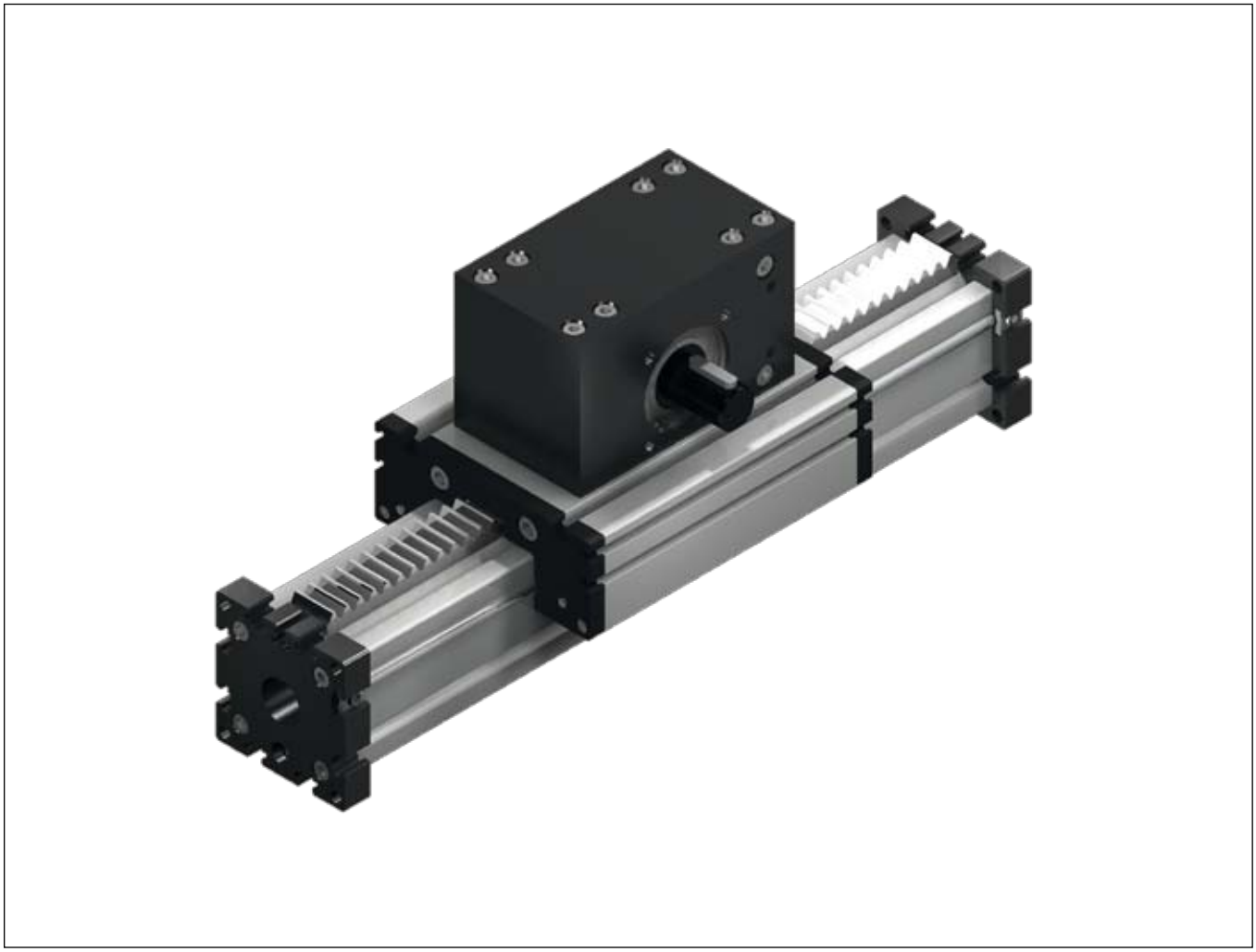
Sample ordering code:
MLZ 60 with standard body profile, standard carriage, coupling claw on one side, 1210 mm stroke.

Possible mounting styles



Operational principle ELFZ





Rack and pinion driven positioning systems ELZA, ELZQ

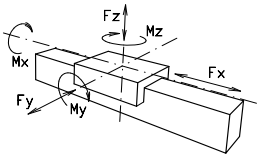
Positioning system ELZA 40, 60, 60S, 80, 80S, 100

Rack and pinion drive

Function:
This unit consists of an aluminium square profile with integrated, hardened steel guide rods. The carriage, which has internal linear ball bearings that can be adjusted free of play, is driven by a rack and pinion. The pinion is equipped with maintenance-free ball bearings.

Fitting position: As required. Max. length without joints 6.000 mm.
Carriage mounting: By T-slots.
Unit mounting: By T-slots and holes in the bearing blocks, mounting sets.
Rack: C 45 or St 60 zinc coated, stainless steel on request. Repeatability: ± 0,2 mm.

Forces and torques



Size	ELZA 40		ELZA 60		ELZA 60 S		ELZA 80		ELZA 80 S		ELZA 100	
Forces/Torques	static	dynamic	static	dynamic	static	dynamic	static	dynamic	static	dynamic	static	dynamic
F_x (N)	900	750	1500	1200	1500	1200	2200	1800	2200	1800	2900	2500
F_y (N)	1200	700	3000	2000	4100	3100	3000	2000	4600	3600	8000	6500
F_z (N)	900	650	1700	1100	2160	1600	1700	1100	3000	1800	3600	2200
M_x (Nm)	25	20	67	43	88	65	90	55	170	140	300	230
M_y (Nm)	32	18	90	70	190	140	110	80	270	230	400	270
M_z (Nm)	35	25	120	100	230	170	150	120	300	220	750	500
All forces and torques related to the following: existing values / table values $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$												
Speed												
(m/sec) max	2		2,5		2,5		3		3		3	
Geometrical moments of inertia of aluminium profile												
I_x mm^4	1,32x10^5		6,79x10^5		6,79x10^5		18,99x10^5		18,99x10^5		44,4x10^5	
I_y mm^4	1,34x10^5		6,97x10^5		6,97x10^5		18,97x10^5		18,97x10^5		44,8x10^5	
E-Modulus N/mm^2	70000		70000		70000		70000		70000		70000	

For life-time calculation of rollers use our CD-ROM or homepage!

Formula: ELZA

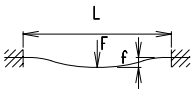
Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F	= force	(N)
P	= pulley action perimeter	(mm)
S_i	= safety factor 1,2 ... 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm pulley	(min^{-1})
M_a	= driving torque	(Nm)
P_a	= motor power	(KW)

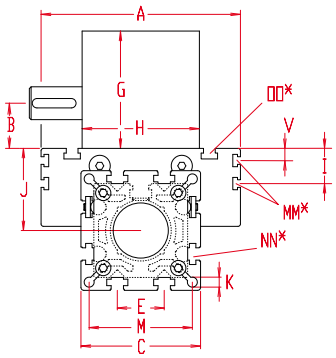
$$f = \frac{F*L^3}{E*I*192}$$

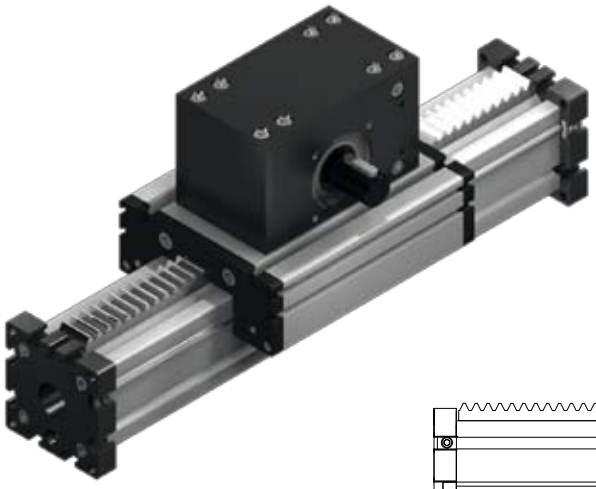


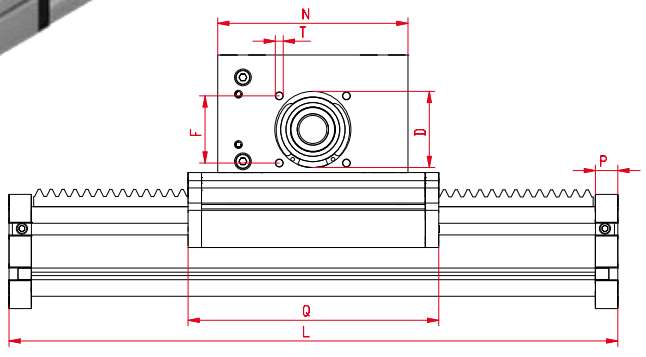
f= deflection (mm)
F= load (N)
L= free length (mm)
E= elastic modulus 70000 (N/mm^2)
I= second moment of area (mm^4)

Positioning system ELZA 40, 60, 60S, 80, 80S, 100

Dimensions (mm)







Increasing the carriage length will increase the basic length by the same amount.

*For slide nuts refer to chapter 2.2 page 2

Size ❒	Basic length L	A	B	C	D	E	F	G	H	I	J	K	M	MM for	N	NN for	OO for	P	Q	T	V	Basic weight	Weight per 100 mm
ELZA 40	150	100	21,5	58	37	18	32	60	56	-	35	6,5	47	-	100	M 6	M 6	12	122	M 6	-	2,0 kg	0,35 kg
ELZA 60	205	144	28,0	82	47	30	42	75	63	-	49	8,5	69	-	130	M 8	M 8	16	168	M 6	-	5,3 kg	0,68 kg
ELZA 60S	230	170	28,0	82	47	30	42	75	63	-	53	8,5	69	-	130	M 8	M 8	16	194	M 6	10	6,3 kg	0,68 kg
ELZA 80	240	170	39,0	102	68	40	60	105	100	30	70	8,5	88	M 6	170	M 10	M 10	20	194	M 8	10	11,9 kg	1,19 kg
ELZA 80S	260	190	39,0	102	68	40	60	105	100	30	71	8,5	88	M 6	170	M 10	M 8	20	214	M 8	12,5	12,9 kg	1,19 kg
ELZA 100	360	230	55,3	130	90	50	80	155	120	29	89	10,5	112	M 10	240	M 10	M 10	30	300	M 10	-	24,0 kg	1,75 kg

Choice of guide body profile:

0

(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

Choice of carriages:

0

(0)

(1)

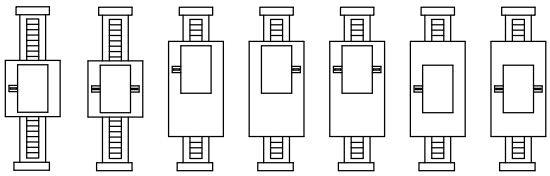
(2)

(3)

Size	Version 1		Version 2		Version 3	
	Q	L	Q	L	Q	L
40	227	255	138	166	243	271
60	303	340	184	221	319	356
60S	329	366	214	251	349	386
80	369	415	210	256	385	431
80S	389	435	234	280	409	455
100	505	565	316	376	521	581

Drive version:

1



Size ❒	Shaft ø h6 x length	Key	Pinion	
			mm/rev.	Modul
40	14 x 30	5x5x28	188,5	1,5
60 (S)	18 x 30	6x6x28	251,6	2
80 (S)	28 x 40	8x7x35	358,0	3
100	28 x 40	8x7x35	508,9	3

1500 Basic length + stroke = total length

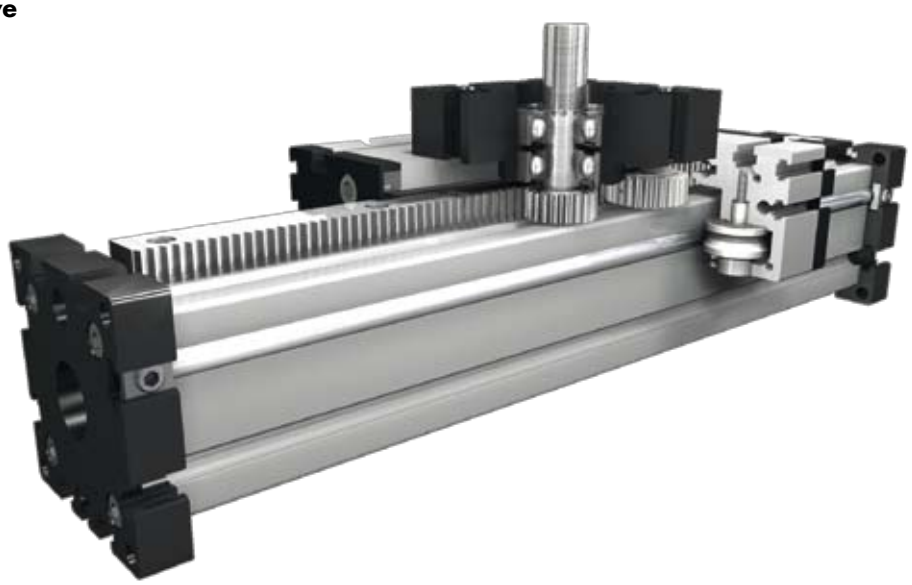
ELZA	60	0	0	0	1	0	3	0	01500
Pos.	1	2	3	4	5	6	7		

For combination kits and connecting elements refer to chapter 2.2

Sample ordering code:
ELZA 60 with standard body profile, standard carriage, standard shaft , 1295 mm stroke

Positioning system ELZQ 60, 80, 80S

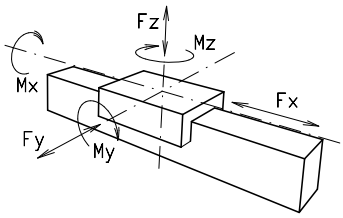
Rack and pinion drive



Function:
This unit consists of an aluminium square profile with integrated, hardened steel guide rods. The carriage, which has internal linear ball bearings that can be adjusted free of play, is driven along the guide rods by a high precision rack. The rack and pinion system is suitable for highly dynamic servo operation and ideal for lifting movements. The pinion has maintenance-free ball bearings. The rack is lubricated by a toothed felt wheel.

Fitting position: As required. Max. length without joints 6.000 mm.
Carriage mounting: By T-slots.
Unit mounting: By T-slots and holes in the bearing block, mounting sets.
Rack: Cf53; h6= hardened and ground; h7 = finely toothed. Repeatability: ± 0,1 mm.

Forces and torques



Size	ELZQ 60 h6		ELZQ 60 h7		ELZQ 80 h6		ELZQ 80 h7		ELZQ 80S h6		ELZQ 80S h7	
Forces/Torques	static	dynamic	static	dynamic	static	dynamic	static	dynamic	static	dynamic	static	dynamic
F_x (N)	1800	1400	940	780	1800	1400	940	780	1800	1400	940	780
F_y (N)	3000	2000	3000	2000	3000	2000	3000	2000	4600	3600	4600	3600
F_z (N)	1700	1100	1700	1100	1700	1100	1700	1100	3000	1800	3000	1800
M_x (Nm)	67	43	67	43	90	55	90	55	170	140	170	140
M_y (Nm)	90	70	90	70	110	80	110	80	270	230	270	230
M_z (Nm)	120	100	120	100	150	120	150	120	300	220	300	220
All forces and torques related to the following: existing values / table values $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$												
Speed												
(m/sec) max	4		4		4		4		4		4	
Geometrical moments of inertia of aluminium profile												
I_x mm^4	6,79x10^5		6,79x10^5		18,99x10^5		18,99x10^5		18,99x10^5		18,99x10^5	
I_y mm^4	6,97x10^5		6,97x10^5		18,97x10^5		18,97x10^5		18,97x10^5		18,97x10^5	
E-Modulus N/mm^2	70000		70000		70000		70000		70000		70000	

For life-time calculation of rollers use our CD-ROM or homepage!

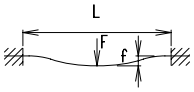
Formula: ELZQ
Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F	= force	(N)
P	= pulley action perimeter	(mm)
S_i	= safety factor 1,2 … 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm pulley	(min^{-1})
M_a	= driving torque	(Nm)
P_a	= motor power	(KW)

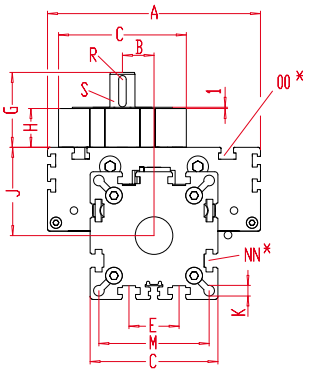
$$f = \frac{F*L^3}{E*I*192}$$

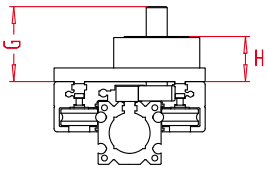


f= deflection (mm)
F = load (N)
L= free length (mm)
E= elastic modulus 70000 (N/mm^2)
I= second moment of area (mm^4)

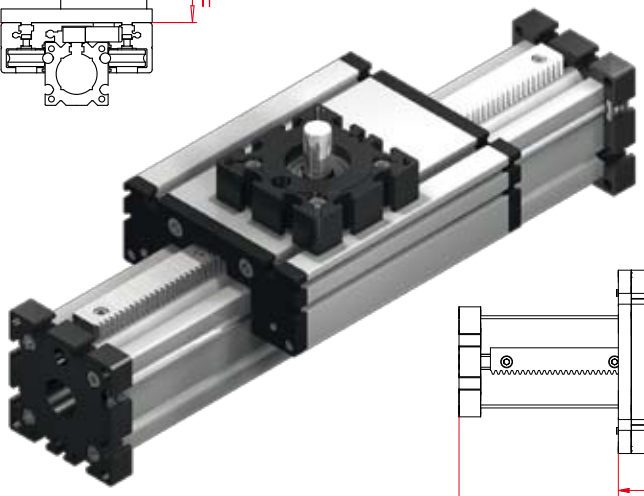
Positioning system ELZQ 60, 80, 80S

Dimensions (mm)

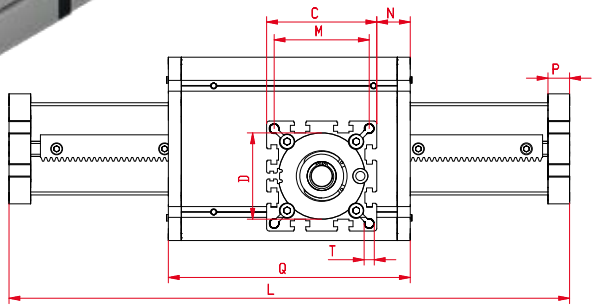




Size 60 with mounting plate on carriage.



Increasing the carriage length will increase the basic length by the same amount.



4.1

*For slide nuts refer to chapter 2.2 page 2

Size ❒	Basic length L	A	B	C	D ø	E	G	H	J	K	M	N	NN for	OO for	P	Q	T	Basic weight	Weight per 100 mm
ELZQ 60	230	144	25,5	82	62	30	71,5	42	49	8,5	69	32	M 8	M 8	16	194	M 10	5,0 kg	0,68 kg
ELZQ 80	260	170	25,5	102	80	40	60,5	31	70	8,5	88	25	M 10	M 10	20	214	M 10	11,0 kg	1,19 kg
ELZQ 80S	280	190	25,5	102	80	40	60,5	31	71	8,5	88	25	M 10	M 8	20	234	M 10	12,0 Kg	1,19 kg

Choice of guide body profile:

0

(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

Choice of carriages:

0

(0)

(1)

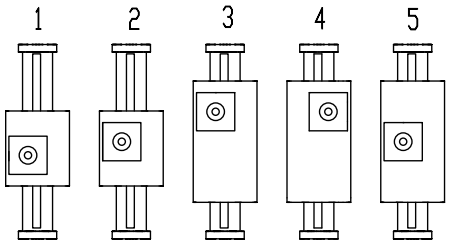
(2)

(3)

Size	Version 1		Version 2		Version 3	
	Q	L	Q	L	Q	L
60	338	374	210	246	354	390
80	384	430	230	276	400	446
80S	404	450	254	300	420	466

Drive version:

1



Size ❒	Shaft ø h6 x length	Key	Pinion	
			mm/rev.	Modul
60	20 x 29,5	6x6x25	100	1,6
80 (S)	20 x 29,5	6x6x25	100	1,6

Rack and pinion accuracy:

0 **(0)** h7 (standard) **(1)** h6 (hardened and ground, finely toothed)

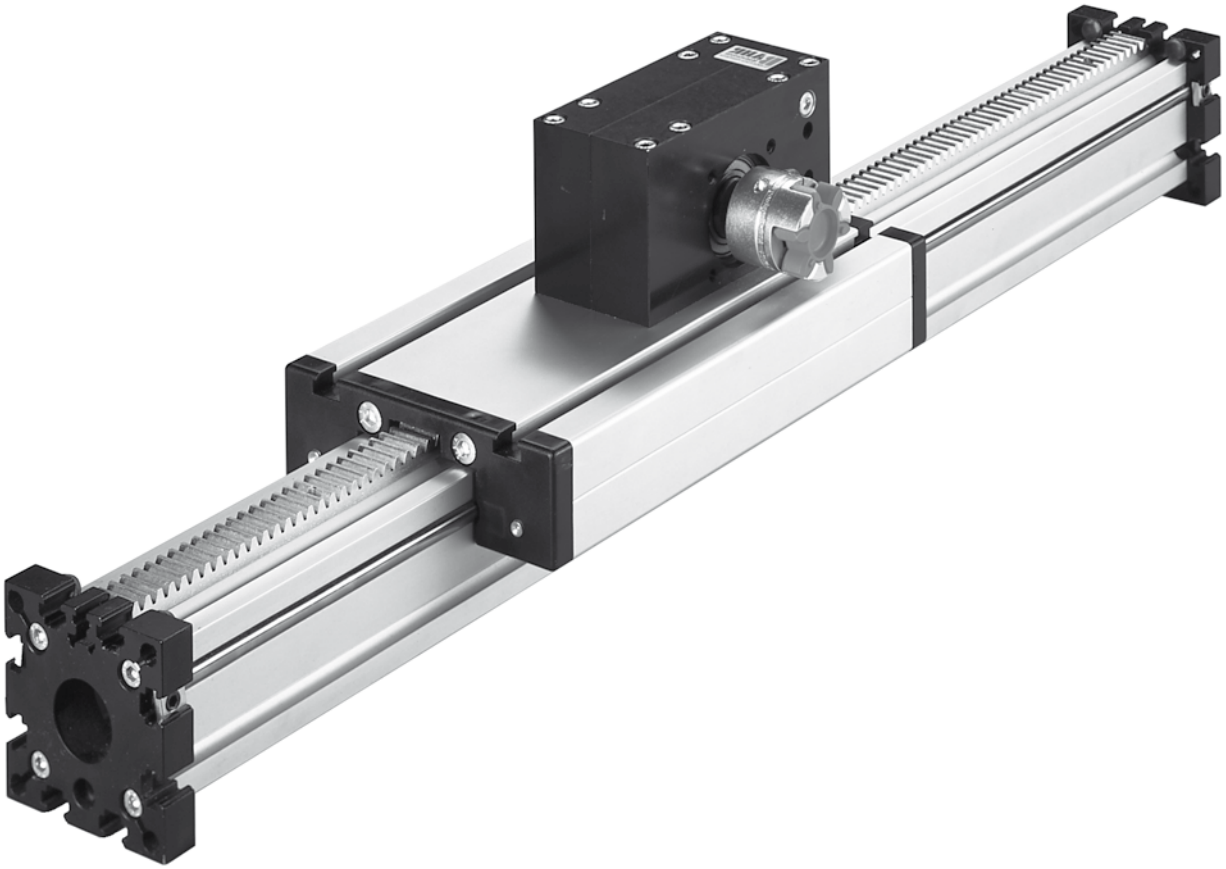
1500 Basic length + stroke = total length

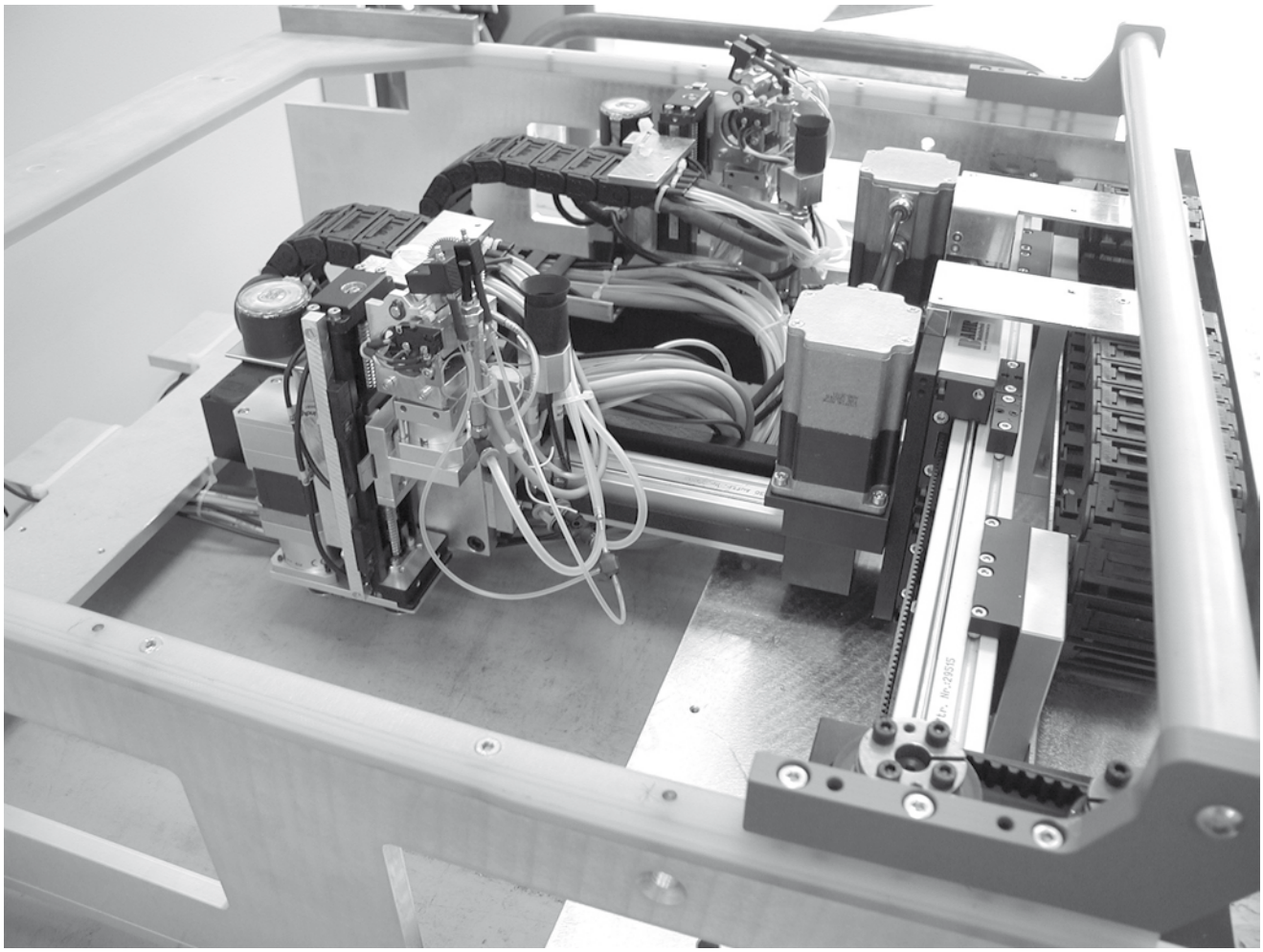
ELZQ	60	0	0	0	1	0	2	0	01500
Pos.	1	2	3	4	5	6	7		

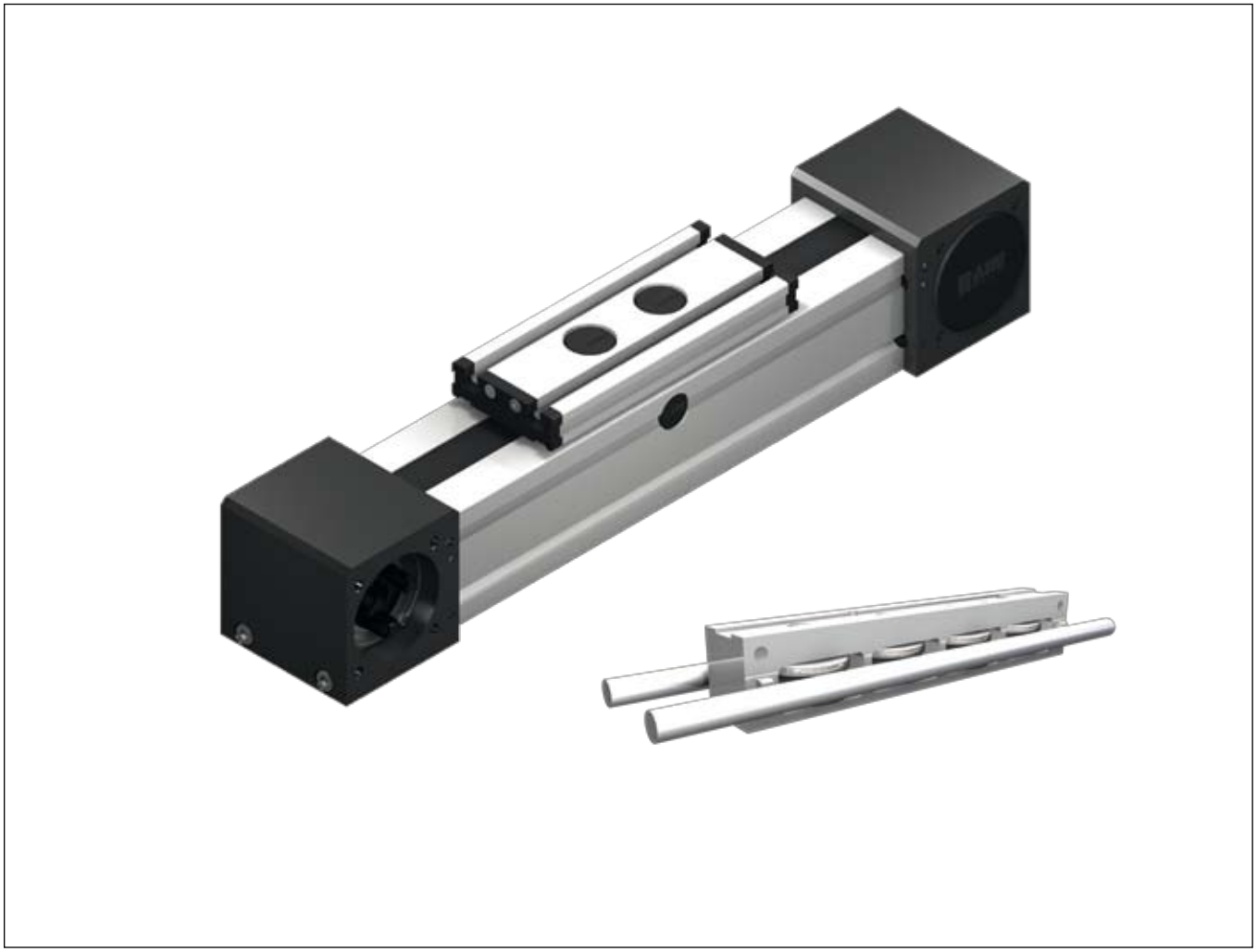
For combination kits and connecting elements refer to chapter 2.2

Sample ordering code:
ELZQ 60 with standard body profile, standard carriage, position of drive 1, rack and pinion accuracy class h7, 1270 mm stroke

Example for ELZA







Roller guide
positioning systems
QL

Positioning system QLZ 60, 80, 100

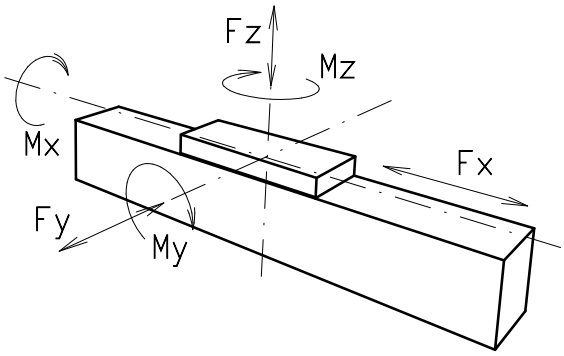
Belt drive

Function:

This unit consists of a square aluminium profile with an integrated roller guide. The carriage is driven by a timing belt. Each standard pulley includes one coupling claw on one side. Belt tension can be readjusted by a simple screw adjustment device in the carriage. This device can also be used for symmetrical adjustment of two or more linear units running parallel.
This linear unit is suitable for application in clean rooms of clean-room classification 1.000 (corresponding to US Fed. Standard 209 E).

Fitting position: As required. Max. length 6.000 mm without joints.
Carriage mounting: By T-slots.
Unit mounting: By T-slots and mounting sets. The linear axis can be combined with any T-slot profile.
Belt performance: HTD with steel reinforcement, no backlash when changing direction, repeatability ± 0,1 mm.
Carriage support: In the standard version, the carriage runs on 4 rollers which can be adjusted and serviced at a central servicing position. For longer carriages the number of rollers can be increased.

Forces and torques



Size	60		80		100	
Forces/Torques	static	dynamic	static	dynamic	static	dynamic
F_x (N)	894	800	1900	1800	4000	3800
F_y (N)	600	500	1600	1240	1900	1500
F_z (N)	900	650	1500	1200	2100	1700
M_x (Nm)	15	10	50	40	85	60
M_y (Nm)	60	50	100	80	140	110
M_z (Nm)	40	30	75	60	110	90
All forces and torques related to the following:						
existing values / table values	$\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$					
No-load torque						
Nm	0,6		0,8		1,2	
Speed						
(m/sec) max	4		6		7	
Tensile force						
permanent (N)	900		1900		4000	
0,2 sec (N)	1000		2090		4300	
Geometrical moments of inertia of aluminium profile						
I_x mm^4	4,3x10^5		16,5x10^5		43,0x10^5	
I_y mm^4	4,8x10^5		18,7x10^5		48,8x10^5	
Elastic modulus N/mm^2	70000		70000		70000	

For life-time calculation of rollers use our CD-ROM or homepage!

Formula: QLZ

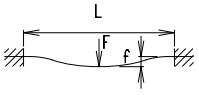
Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F	= force	(N)
P	= pulley action perimeter	(mm)
S_i	= safety factor 1,2 … 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm pulley	(min^{-1})
M_a	= driving torque	(Nm)
P_a	= motor power	(KW)

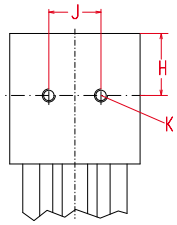
$$f = \frac{F*L^3}{E*I*192}$$

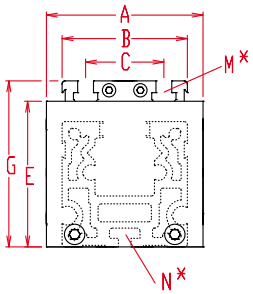


f= deflection (mm)
F = load (N)
L= free length (mm)
E= elastic modulus 70000 (N/mm^2)
I= second moment of area (mm^4)

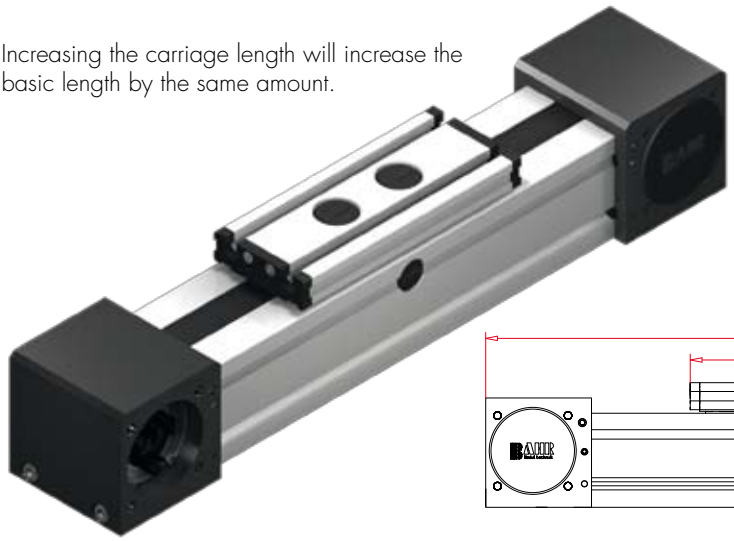
Positioning system QLZ 60, 80, 100

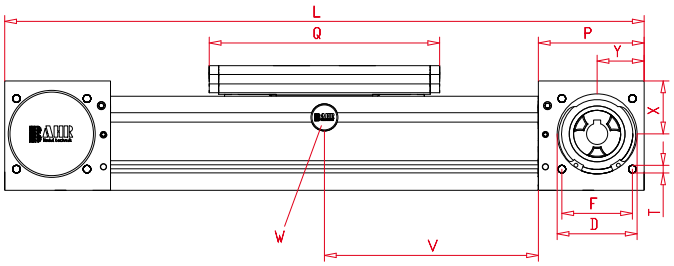
Dimensions (mm)





Increasing the carriage length will increase the basic length by the same amount.





*For slide nuts refer to chapter 2.2 page 2 V = Q + 100 mm W = servicing position

Size ❒	Basic length L	A	B	C	D	E	F	G	H	J	K	N for	M for	P	Q	T	X	Y	Basic weight	Weight per 100 mm
QLZ 60	280	80	60	36	47	63	42	79	29,5	30	M 8	M 5	M 6	59	152	M 6	27	26	3,2 Kg	0,39 kg
QLZ 80	390	100	80	50	68	93	60	106	47,5	40	M 10	M 6	M 8	90	196	M 8	45	40	9,6 Kg	0,86 Kg
QLZ 100	490	130	100	66	90	110	80	129	55	50	M 12	M 10	M 10	110	260	M 10	49	50	15,8 kg	1,23 Kg

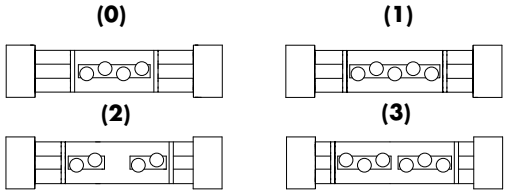
Choice of guide body profile:

0

(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

Choice of carriages:

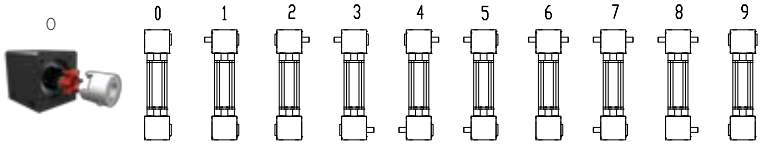
0



Size	Version 0		Version 1		Version 2		Version 3	
	Q	L	Q	L	Q	L	Q	L
60	152	280	192	320	>232	>360	>232	>360
80	196	390	246	440	>296	>490	>296	>490
100	260	490	320	550	>388	>610	>388	>610

Drive version:

0



Size	Shaft ø h6 x length	Key
60	14 x 35	5x5x28
80	18 x 45	6x6x40
100	22 x 45	6x6x40

9 is as 0, but with coupling claws on both sides. The standard version is supplied without shaft. A shaft can be retrofitted by inserting it into the pulley bore and securing it with 2 locking rings or tension sets (size 100).

Belt table

Code No.		Size	Belt	Pulley	
				mm/rev.	Number of teeth
0	**3**	60	5M25	130	26
0	**4**	80	8M30	176	22
0	**7**	100	8M50	224	28

Basic length + stroke = total length

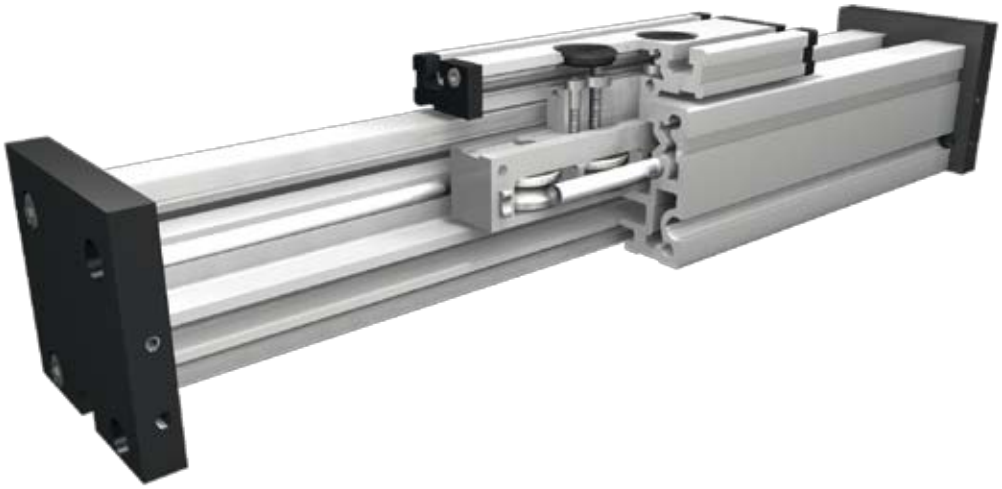
For additional accessories refer to chapter 2.2 – 4.2

QLZ	80	1	0	0	0	0	4	1	01500
	Pos.	1	2	3	4	5	6	7	

Sample ordering code:
QLZ80, standard body profile, standard carriage, coupling claw on one side, 1110 mm stroke

Positioning system QLR 60, 80, 100

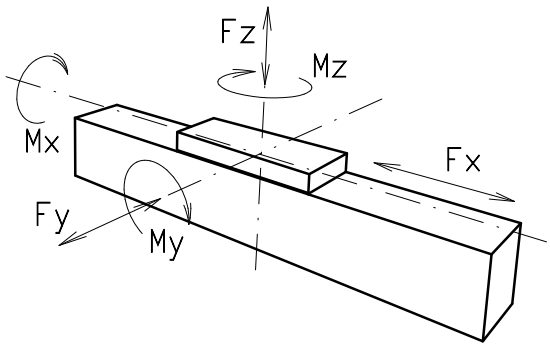
Roller guide



Function:
This unit consists of a square aluminium profile with an integrated roller guide. The carriage, which has internal linear ball bearings that can be adjusted free of play, moves along the guide body. This roller guide can be driven by a pneumatic cylinder or other additional drives or it serves as a load carrying slide unit.

Fitting position: As required. Max. length 6.000 mm without joints.
Carriage mounting: By T-slots.
Unit mounting: By T-slots and mounting sets. The linear axis can be combined with any T-slot profile.
Carriage support: In the standard version, the carriage runs on 4 rollers which can be adjusted and serviced at a central servicing position. For longer carriages the number of rollers can be increased.

Forces and torques

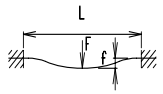


Size	60		80		100	
Forces/torques	static	dynamic	static	dynamic	static	dynamic
F_x (N)	-	-	-	-	-	-
F_y (N)	600	500	1600	1240	1900	1500
F_z (N)	900	650	1500	1200	2100	1700
M_x (Nm)	15	10	50	40	85	60
M_y (Nm)	60	50	100	80	140	110
M_z (Nm)	40	30	75	60	110	90
All forces and torques related to the following: existing values / table values	$\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$					
Speed						
(m/sec) max	4		6		7	
Geometrical moments of inertia of aluminium profile						
I_x mm^4	$4{,}3 \times 10^5$		$16{,}5 \times 10^5$		$43{,}0 \times 10^5$	
I_y mm^4	$4{,}8 \times 10^5$		$18{,}7 \times 10^5$		$48{,}8 \times 10^5$	
Elastic modulus N/mm^2	70000		70000		70000	

For life-time calculation of rollers use our CD-ROM or homepage!

Formula: QLR

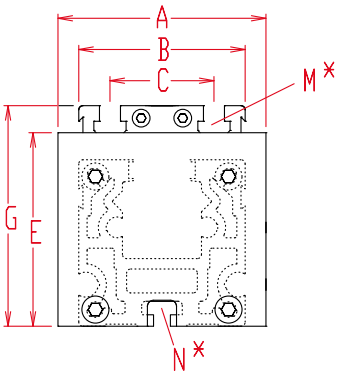
$$f = \frac{F * L^3}{E * I * 192}$$

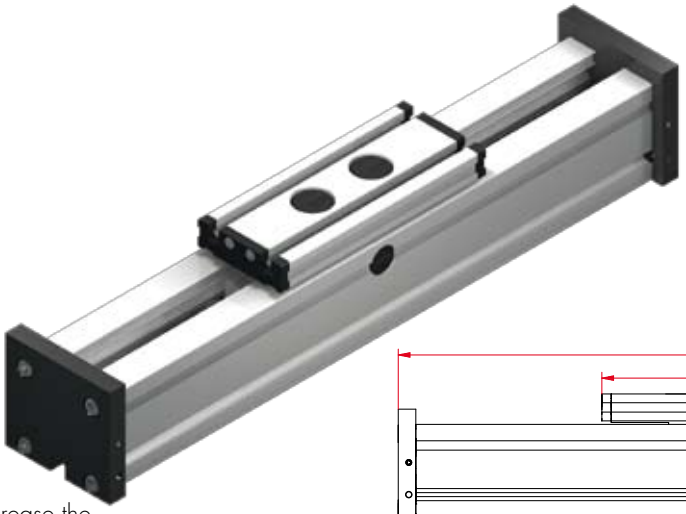


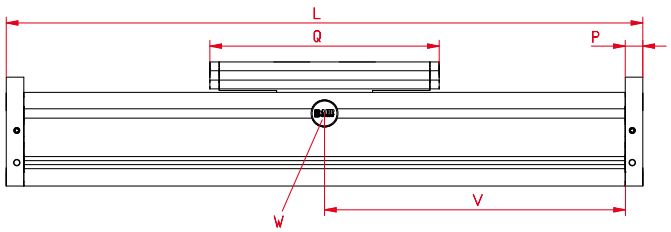
f = deflection	(mm)
F = load	(N)
L = free length	(mm)
E = elastic modulus 70000	(N/mm^2)
I = second moment of area	(mm^4)

Positioning system QLR 60, 80, 100

Dimensions (mm)







Increasing the carriage length will increase the basic length by the same amount.

*For slide nuts refer to chapter 2.2 page 2 V = Q + 100 mm W = servicing position

Size ❒	Basic length L	A	B	C	E	G	N for	M for	P	Q	Basic weight	Weight per 100 mm
QLR 60	180	80	60	36	60	79	M 5	M 6	12	152	1,45 kg	0,36 kg
QLR 80	240	100	80	50	93	106	M 6	M 8	17	196	4,2 kg	0,75 kg
QLR 100	310	130	100	66	110	129	M 10	M 10	20	260	7,2 kg	1,42 kg

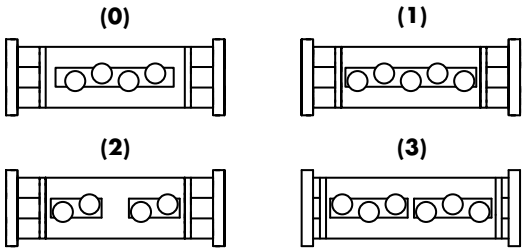
Choice of guide body profile:

0

(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

Choice of carriages:

0



Size	Version 0		Version 1		Version 2		Version 3	
	Q	L	Q	L	Q	L	Q	L
60	152	180	192	220	>232	>260	>232	>260
80	196	240	246	290	>296	>340	>296	>340
100	260	310	320	370	>388	>430	>388	>430

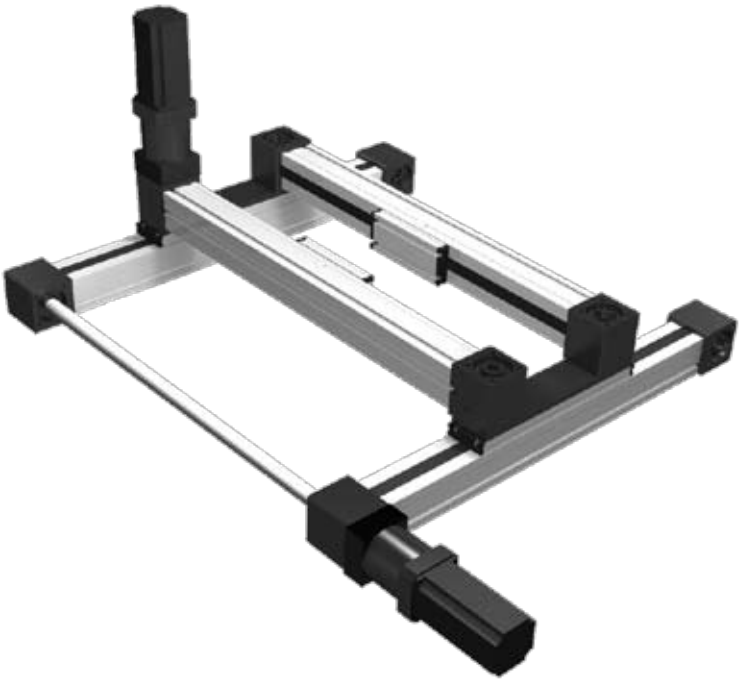
1500 Basic length + stroke = total length

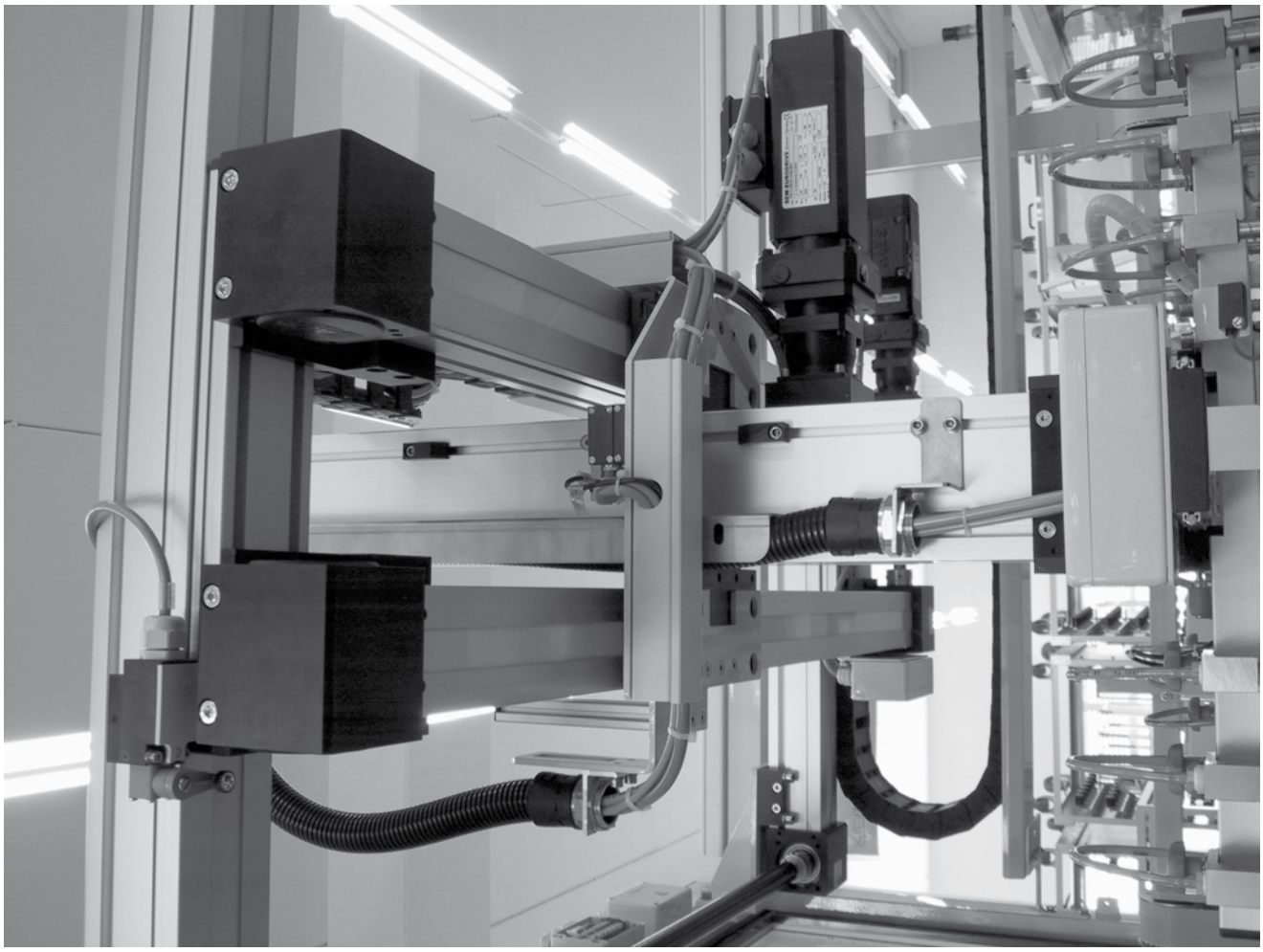
For additional accessories refer to chapter 2.2 – 4.2

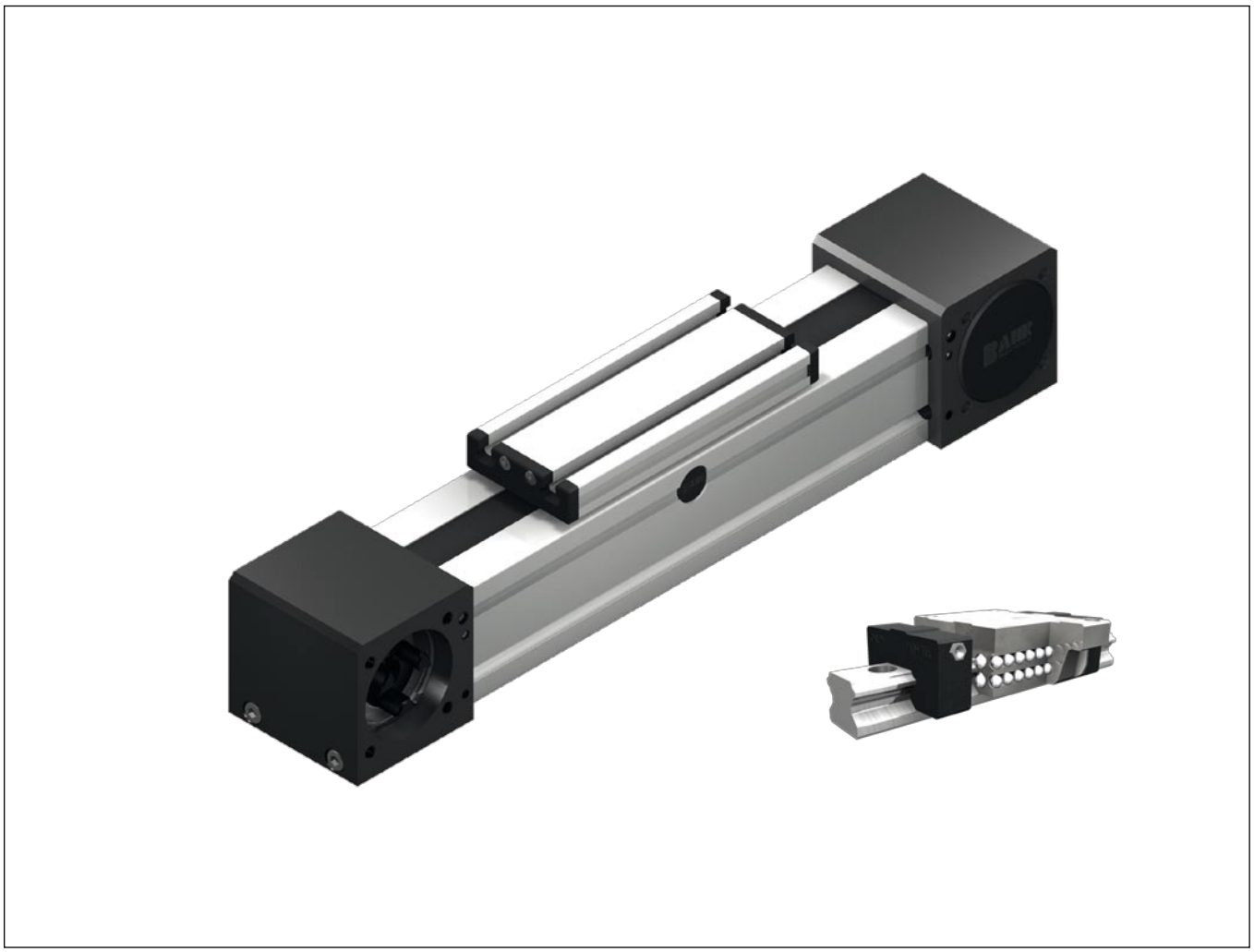
QLR	80	0	0	0	0	0	0	0	01500
Pos.		1	2	3	4	5	6	7	

Sample ordering code:
QLR80 with standard body profile, standard carriage and 1260 mm stroke

Possible mounting styles



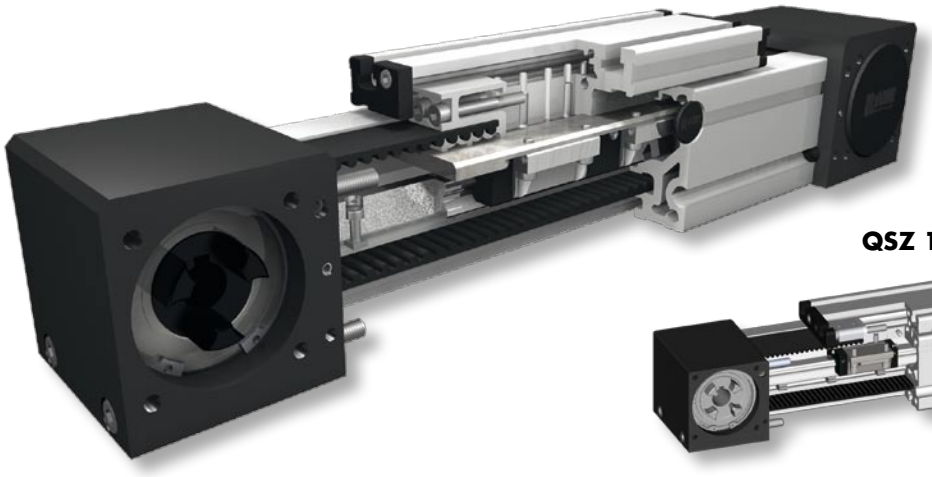




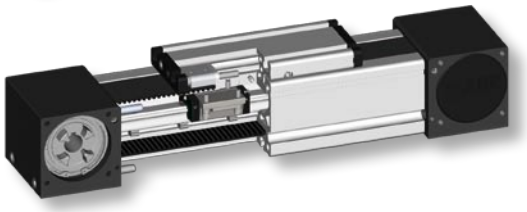
Rail guide
positioning systems
QS

Positioning system QSZ 60, 80, 100, 125

Belt drive



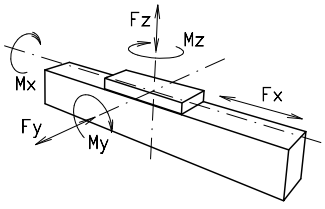
QSZ 125



Function:
This unit consists of a square aluminium profile with an integrated ball rail. The carriage is moved by a belt drive. Each standard pulley includes one coupling claw on one side. Belt tension can be readjusted by a simple screw adjustment device in the carriage. This device can also be used for symmetrical adjustment of two or more linear units running parallel.

Fitting position: As required. Max. length 6.000 mm without joints.
Carriage mounting: By T-slots.
Unit mounting: By T-slots and mounting sets. The linear axis can be combined with any T-slot profile.
Belt performance: HTD with steel reinforcement, no backlash when changing direction, repeatability ± 0,1 mm.
Carriage support: In the standard version, the carriage runs on two runner blocks which can be adjusted and serviced at a central servicing position. For longer carriages the number of runner blocks can be increased.

Forces and torques



Size	60		80		100		125	
permitted dyn. forces*	5000 km	10000 km	5000 km	10000 km	5000 km	10000 km	5000 km	10000 km
F_x (N)	894	800	1900	1800	4000	3800	5900	5750
F_y (N)	1410	990	3570	2550	4080	2900	6892	5470
F_z (N)	3520	2500	8500	6050	10300	7270	17205	13659
M_x (Nm)	33	23	107	75	142	101	288	228
M_y (Nm)	104	73	310	222	439	311	1110	881
M_z (Nm)	100	70	296	210	412	292	1012	803
C (N)	7800		18800		22800		31700	
All forces and torques related to the following: existing values / table values	$\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$							
No-load torque								
Nm	1,0		1,4		1,8			
Speed								
(m/sec) max	5		5		5		5	
Tensile force								
permanent (N)	900		1900		4000		5900	
0,2 sec (N)	1000		2090		4300		6350	
Geometrical moments of inertia of aluminium profile								
I_x mm^4	4,3x10^5		16,5x10^5		43,0x10^5		74,9x10^5	
I_y mm^4	4,8x10^5		18,7x10^5		48,8x10^5		106,5x10^5	
Elastic modulus N/mm^2	70000		70000		70000		70000	

* referred to lifetime

Formula: QSZ

Driving torque:

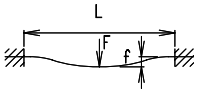
$$M_a = \frac{F*P*S_i}{2000*\pi} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F	= force	(N)	
P	= pulley action perimeter	(mm)	
S_i	= safety factor 1,2 ... 2		
M_{leer}	= no-load torque	(Nm)	
n	= rpm pulley	(min^{-1})	
M_a	= driving torque	(Nm)	
P_a	= motor power	(KW)	

Deflection:

$$f = \frac{F*L^3}{E*I*192}$$



f	= deflection	(mm)
F	= load	(N)
L	= free length	(mm)
E	= elastic modulus 70000	(N/mm^2)
I	= second moment of area	(mm^4)

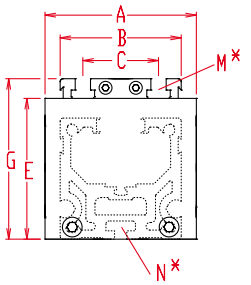
Nominal lifetime:

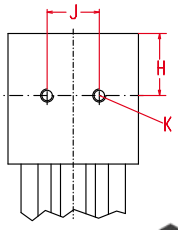
$$L = \left(\frac{C}{F}\right)^3 x10^5$$

L	= lifetime in meters	
C	= dynamic load factor	(N)
F	= medium load	(N)

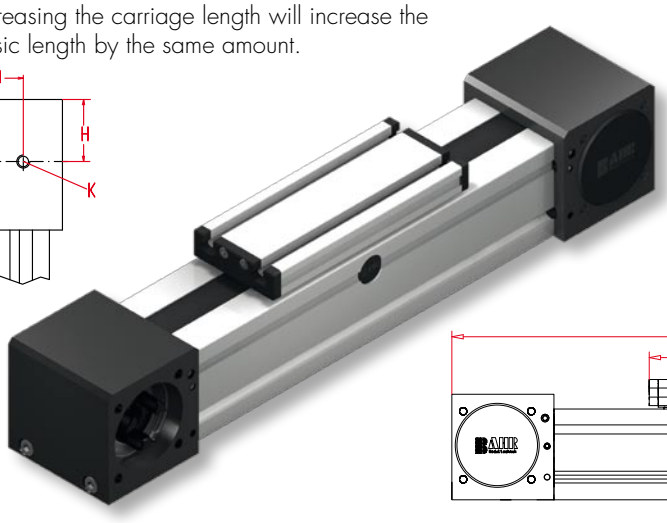
Positioning system QSZ 60, 80, 100, 125

Dimensions (mm)

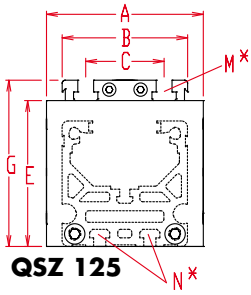




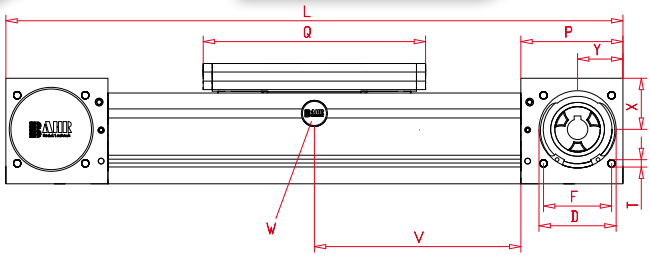
Increasing the carriage length will increase the basic length by the same amount.



QSZ 125



QSZ 125



*For slide nuts refer to chapter 2.2 page 2 V = Q + 100 mm W = servicing position

Size ❒	Basic length L	A	B	C	D	E	F	G	H	J	K	N for	M for	P	Q	T	X	Y	Basic weight	Weight per 100 mm
QSZ 60	300	80	60	36	47	63	42	79	29,5	30	M 8	M 5	M 6	59	177	M 6	27	26	3,5 kg	0,55 kg
QSZ 80	430	100	80	50	68	93	60	106	47,5	40	M 10	M 6	M 8	90	232	M 8	45	40	10,4 kg	0,96 kg
QSZ 100	510	130	100	66	90	110	80	129	55	50	M 12	M 10	M 10	110	268	M 10	49	50	15,9 kg	1,47 kg
QSZ 125	570	160	125	82	110	134,5	100	157,5	65	60	M 12	M 10	M 12	130	300	M 10	60	60	30,5 kg	2,21 kg

Choice of guide body profile:

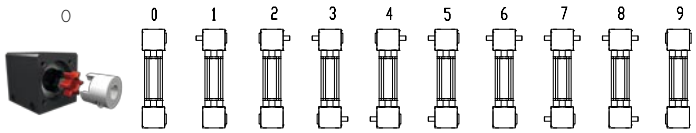
0 **(0)** Standard **(1)** corrosion-protected screws **(4)** expanded corrosion-protected version (depending on the availability of components)

0 **Choice of carriages:**

Size	Version 0		Version 1		Version 2		Version 3	
	Q	L	Q	L	Q	L	Q	L
60	177	300	152	280	242	370	302	430
80	232	430	196	390	312	510	388	585
100	268	510	260	500	362	610	448	690
125	300	570	260	530	365	635	467	740

Drive version:

0



Size	Shaft ø h6 x length	Key
60	14 x 35	5x5x28
80	18 x 45	6x6x40
100	22 x 45	6x6x40
125	30 x 55	8x7x50

9 is as 0, but with coupling claws on both sides. The standard version is supplied without shaft. A shaft can be retrofitted by inserting it into the pulley bore and securing it with 2 locking rings or clamping sets (Size 100 + 125).

Belt table

Code No.		Size	Belt	Pulley	
				mm/rev.	Number of teeth
0	**3**	60	5M25	130	26
0	**4**	80	8M30	176	22
0	**7**	100	8M50	224	28
0	**9**	125	8M70	288	36

Basic length + stroke = total length

QSZ	80	1	0	0	0	0	4	1	01500
	Pos.	1	2	3	4	5	6	7	

For additional accessories refer to chapter 2.2 – 4.2

Sample ordering code:
QSZ80 with standard body profile, standard carriage, coupling claw on one side, 1070 mm stroke

Positioning system QSSZ 60, 80

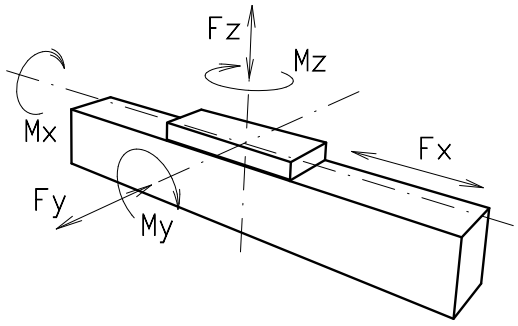
Belt drive

Fraunhofer TESTED® DEVICE IPA
Bahr Modultechnik GmbH Positioniersystem QSSZ80 Report No. BA 0603-344

Function:
This linear unit consists of a square aluminium profile with integrated rail guidance. The carriage, which has runner blocks, is driven by a timing belt. Each standard pulley includes a coupling claw on one side and is equipped with maintenance-free ball bearings. Belt tension can be readjusted by a simple screw adjustment device in the carriage. This device can also be used for symmetrical adjustment of two or more linear units running parallel.

Fitting position: As required. Max. length 3.000 mm without joints.
Carriage mounting: By T-slots.
Unit mounting: By T-slots and mounting sets. The linear axis can be combined with any T-slot profile.
Belt performance: HTD with steel reinforcement, no backlash when changing direction, repeatability ± 0,1 mm.
Carriage support: In the standard version, the carriage runs on 2 runner blocks which can be serviced at a central servicing position. For longer carriages the number of runner blocks can be increased.

Forces and torques



Size	60		80	
permitted dyn. forces*	5000 km	10000 km	5000 km	10000 km
F_x (N)	97	87	223	200
F_y (N)	350	240	890	630
F_z (N)	880	625	2100	1500
M_x (Nm)	8	6	26	18
M_y (Nm)	26	18	77	55
M_z (Nm)	25	17	74	52
All forces and torques related to the following: existing values / table values $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$				
No-load torque				
Nm	1,0		1,4	
Speed				
(m/sec) max	3		3	
Tensile force				
permanent (N)	Lifetime calculation see the internet			
Geometrical moments of inertia of aluminium profile				
I_x mm⁴			16,5x10⁵	
I_y mm⁴			18,7x10⁵	
Elastic modulus N/mm²			70000	

* referred to life-time

Formula: QSSZ

Driving torque:

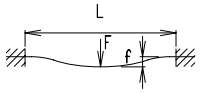
$$M_a = \frac{F*P*S_i}{2000*\pi} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F	= force	(N)
P	= pulley action perimeter	(mm)
S_i	= safety factor 1,2 … 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm pulley	(min^{-1})
M_a	= driving torque	(Nm)
P_a	= motor power	(KW)

Deflection:

$$f = \frac{F*l^3}{E*I*192}$$



f	= deflection	(mm)
F	= load	(N)
L	= free length	(mm)
E	= elastic modulus 70000	(N/mm²)
I	= second moment of area	(mm⁴)

Nominal lifetime:

$$L = \left(\frac{C}{F}\right)^3 x10^5$$

L	= Lifetime in meters	
C	= Dynamic load factor	(N)
F	= Medium load	(N)

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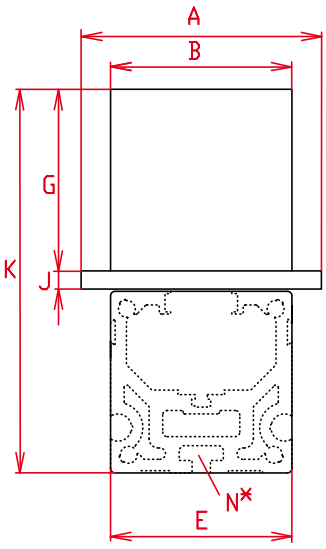
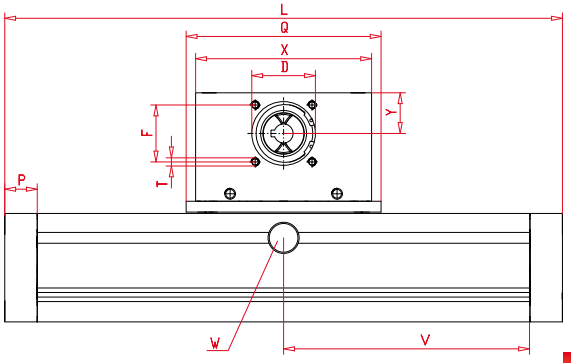
Positioning system QSSZ 60, 80





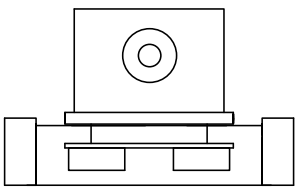
*For slide nuts refer to chapter 2.2 page 2 V = Q + 100 mm W = servicing position

Size ❒	Basic length L	A	B	D	E	F	G	J	K	N for	P	Q	T	X	Y	Basic weight	Weight per 100 mm
QSSZ 60	168	60	60	37	60	32	65	7,50	134,5	M 5	20	124	M 5	110	20	3,30 kg	0,47 kg
QSSZ 80	200	106	80	47	80	42	80	8	169	M 6	24	144	M 6	130	30	5,7 kg	1,02 kg

0 **Choice of guide body profile:**
(0) Standard **(1)** corrosion-protected screws **(4)** expanded corrosion-protected version (depending on the availability of components)

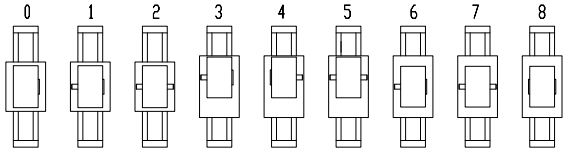
Choice of carriages:

0 **(0)**



Drive version:

0



Size	Shaft ø h6 x length	Key
60	10 x 27	3x3x25
80	14 x 35	5x5x28

8 is as 0, but with coupling claws on both sides. The standard version is supplied without shaft. A shaft can be retrofitted by inserting it into the pulley bore and securing it with 2 locking rings.

Belt table

Code No.		Size	Belt	Pulley	
				mm/rev.	Number of teeth
0	**3**	60	5M15	100	20
0	**7**	80	5M25	130	26

Basic length + stroke = total length

For additional accessories refer to chapter 2.2 – 4.2

QSSZ	80	1	0	0	0	0	7	1	01500
	Pos.	1	2	3	4	5	6	7	

Sample ordering code:
QSSZ80, standard body profile, standard carriage, coupling claw on one side, 1300 mm stroke

Positioning system QST/K 60, 80, 100

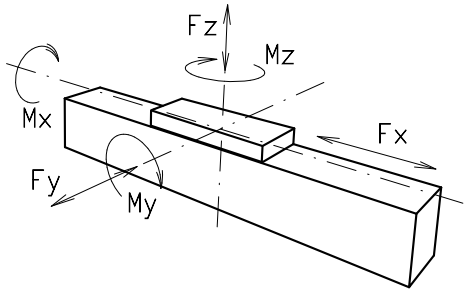
Spindle drives

Fraunhofer IPA TESTED® DEVICE
Bahr Modultechnik GmbH
Positioningsystem QSK 80
Report No. BA 0610-367

Function:
This unit consists of a square aluminium profile with an integrated ball rail. The carriage is driven by means of a rotating spindle with leading nut. The openings of the guide body are sealed by a stainless steel cover band to protect the drive from splash water and dust.

Fitting position: As required, max. length 3000mm
Carriage connection: By T-slots
Unit mounting: By half round slots and tapped holes in the bearing blocks, mounting sets

Forces and torques



Size	QST/K 60		QST/K 80		QST/K 100	
permitted dyn. forces*	5000 km	10000 km	5000 km	10000 km	5000 km	10000 km
F_x (N)	900	800	2500	2000	5000	4000
F_y (N)	1415	1010	3570	2542	4082	2910
F_z (N)	3525	2510	8500	6050	10300	7360
M_x (Nm)	33	23	107	76	142	101
M_y (Nm)	190	143	604	430	838	597
M_z (Nm)	176	125	550	392	745	532
C (N)	7800		18800		22800	
All forces and torques related to the following: existing values / table values $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$						
No-load torque						
Trapezoidal	18x4/18x8		24x5/24x10		32x6/32x12	
Nm	0,6/0,7		0,6/0,8		1,5/1,7	
Ballscrew	16x5/16x10		25x5/20x20/25x10		32x5/32x10	
Nm	0,4/0,6		0,4/0,7/0,6		1,3/1,6	
Geometrical moments of inertia of aluminium profile						
I_x mm⁴	$4,3x10^5$		$14,0x10^5$		$43,0x10^5$	
I_y mm⁴	$4,8x10^5$		$16,6x10^5$		$48,8x10^5$	
E-Modulus N/mm²	70000		70000		70000	

* referred to life-time

Formula: QST/K

Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi*\mu} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

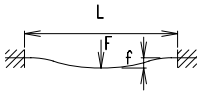
F = force (N)
P = thread pitch (mm)
S_i = safety factor 1,2 … 2
M_{leer} = no-load torque (Nm)
n = rpm of screw (min^{-1})
M_a = driving torque (Nm)
μ = screw efficiency
P_a = motor power (KW)

Efficiency of lead screws:

All ballscrew	0.900
Tr 18x4	0,399
Tr 18x8	0,565
Tr 24x5	0,384
Tr 24x10	0,550
Tr 32x6	0,360
Tr 32x12	0,524

Deflection:

$$f = \frac{F*L^3}{E*I*192}$$



f = deflection(mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm²)
I = second moment of area (mm⁴)

Nominal lifetime:

$$L = \left(\frac{C}{F}\right)^3 x10^5$$

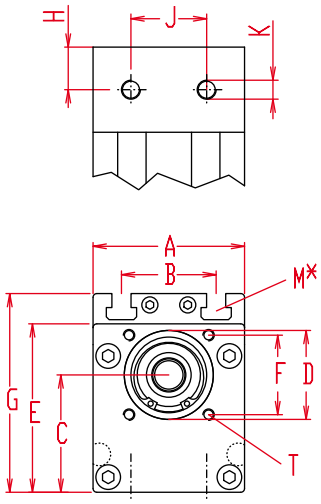
L = Lifetime in meters
C = Dynamic load factor (N)
F = Medium load (N)

For the diagram for critical speeds of lead screws refer to chapter 5.2 page 3

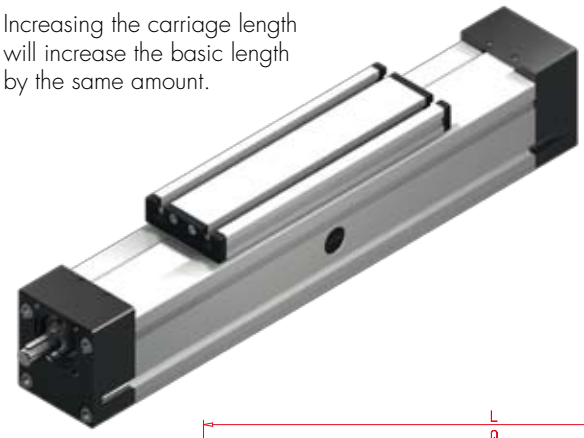
BAHR Modultechnik

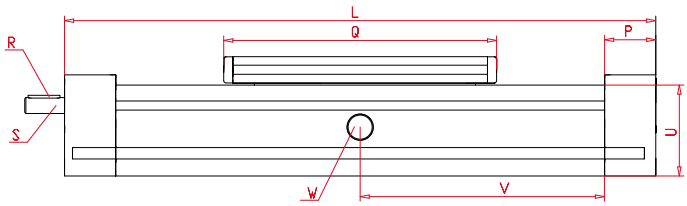
Positioning system QST/K 60, 80, 100

Dimensions (mm)



Increasing the carriage length will increase the basic length by the same amount.





*For slide nuts refer to main catalog chapter 2.2 page 2 V = Q + 100 mm W = servicing position

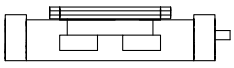
Size ❐	Basic length L	A	B	C	D	E	F ❐	G	H	J	K	M for	P	Q	Shaft R Key	Shaft S Øh6x length	T for	U	Basic weight	Weight per 100 mm
QST/K 60	270	60	36	45	37	67	32	79	19	18	M6	M6	38	188	3x3x25	10h6x27	M5	60	4,1 kg	0,5 kg
QST/K 80	350	80	50	62	47	89	42	106	22,5	40	M10	M8	45	250	5x5x28	14h6x35	M6	80	7,5 kg	0,9 kg
QST/K 100	410	100	66	75	68	112	60	129	28,5	50	M10	M10	57	288	6x6x40	22h6x45	M8	100	14,8 kg	1,3 kg

K **Spindle:**
(T) Trapezoidal thread **(K)** Ballscrew

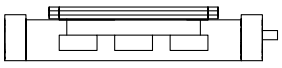
1 **Selection of screw:**
(1) right hand (Standard) **(2)** left hand (Ballscrew by inquiry)

0 **Choice of carriage:**

(0)



(1)



Size	Carriage version 1 Q	Carriage version 1 Basic length L
60	255	350
80	336	436
100	383	510

0 **Drive version:**
(0) one shaft (locating bearing side) **(1)** one shaft (non-locating bearing side) **(2)** shaft on both sides

0 **Selection of screw:**

Size	Standard	Multistart screw	Standard	Multistart screw	
	trapezoidal thread		ballscrew		
60	**(0)** Tr 18x4	**(1)** Tr 18x8	**(0)** Kg 16x5	**(1)** Kg 16x10	**(2)** Kg 16x16
80	**(0)** Tr 24x5	**(1)** Tr 24x10	**(0)** Kg 25x5	**(1)** Kg 20x20	**(2)** Kg 25x10
100	**(0)** Tr 32x6	**(1)** Tr 32x12	**(0)** Kg 32x5	**(1)** Kg 32x10	**(2)** Kg 32x32 *

* = Basic and carriage length (L and Q) increase over 47 mm

Choice of guide body profile:
0 **(0)** Standard **(1)** corrosion-protected screws
(4) expanded corrosion-protected version (depending on the availability of components)

Ballscrew pitch accuracy:
0 **(0)** 0,1 mm / 300 mm (Standard) **(1)** 0,05 mm / 300 mm **(2)** 0,025 mm / 300 mm

End play of ball nut:
0 **(0)** 0,04 mm (Standard) **(1)*** < 0,02 mm **(2)*** 2% apply prestress
* only in combination with **pitch accuracy (1)** or **(2)**

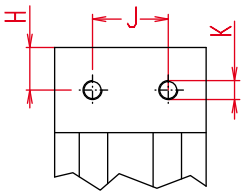
1500 Basic length + stroke = total length

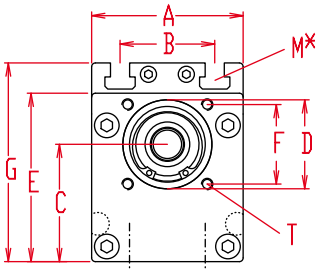
QS	K	80	1	0	0	0	0	0	0	01500
			Pos. 1	2	3	4	5	6	7	

Sample ordering code:
QSK80, ballscrew right hand thread, standard carriage, one shaft (locating bearing side), spindle 25x5, 1150 mm stroke.

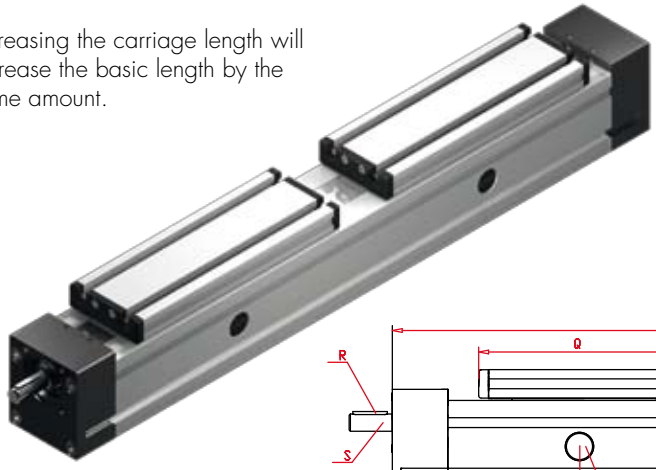
Positioning system QST/K 60, 80, 100

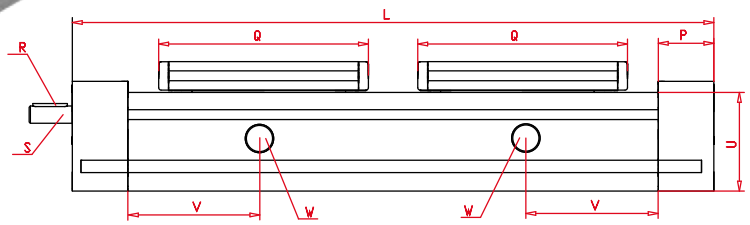
Dimensions (mm)





Increasing the carriage length will increase the basic length by the same amount.





*For slide nuts refer to main catalog chapter 2.2 page 2 V = Q + 100 mm W = servicing position

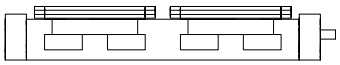
Size ❒	Basic length L selection of screw 3	Basic length L selection of screw 4	A	B	C	D	E	F ❒	G	H	J	K	M for	P	Q	Shaft R Key	Shaft S Øh6x length	T for	U	Basic weight	Weight per 100 mm
QST/K 60	460	500	60	36	45	37	67	32	79	19	18	M6	M6	38	188	3x3x25	10h6x27	M5	60	5,4 kg	0,5 kg
QST/K 80	600	640	80	50	62	47	89	42	106	22,5	40	M10	M8	45	250	5x5x28	14h6x35	M6	80	9,8 kg	0,9 kg
QST/K 100	700	740	100	66	75	68	112	60	129	28,5	50	M10	M10	57	288	6x6x40	22h6x45	M8	100	18,6 kg	1,3 kg

K **Spindle:**
(T) Trapezoidal thread **(K)** Ballscrew

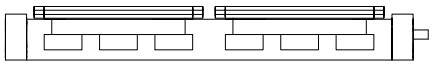
3 **Selection of screw:**
(3) right - left hand **(4)** divided spindle

0 **Choice of carriage:**

(0)



(1)



Size	Carriage version 1 Q	Carriage version 1 Basic length L selection of spindle 3	Carriage version 1 Basic length L selection of spindle 4
60	255	590	630
80	336	770	810
100	383	890	930

0 **Drive version:**
(0) shaft right hand thread **(1)** shaft left hand thread **(2)** shaft on both sides

Selection of screw:	Size	Standard	Multistart screw	
0 Ballscrew right hand	60	**(0)** 16x5	**(1)** 16x10*	**(2)** 16x16*
	80	**(0)** 25x5	**(1)** 20x20*	**(2)** 25x10*
	100	**(0)** 32x5	**(1)** 32x10*	**(2)** 32x32**
Ballscrew left hand	upon request			
Trapezoidal right hand thread	60	**(0)** 18x4	**(1)** 18x8	
	80	**(0)** 24x5	**(1)** 24x10	
	100	**(0)** 32x6	**(1)** 32x12	
Trapezoidal left hand thread	60	**(0)** 18x4	**(1)** 18x8	
	80	**(0)** 24x5	**(1)** 24x10	
	100	**(0)** 32x6	**(1)** 32x12	

* = only for selection of divided spindle,
** = only for selection of divided spindle, Basic and carriage length (L and Q) increase over 94 mm

0 **Choice of guide body profile:**
(0) Standard **(1)** corrosion-protected screws
(4) expanded corrosion-protected version (depending on the availability of components)

0 **Ballscrew pitch accuracy:**
(0) 0,1 mm / 300 mm (Standard) **(1)** 0,05 mm / 300 mm **(2)** 0,025 mm / 300 mm

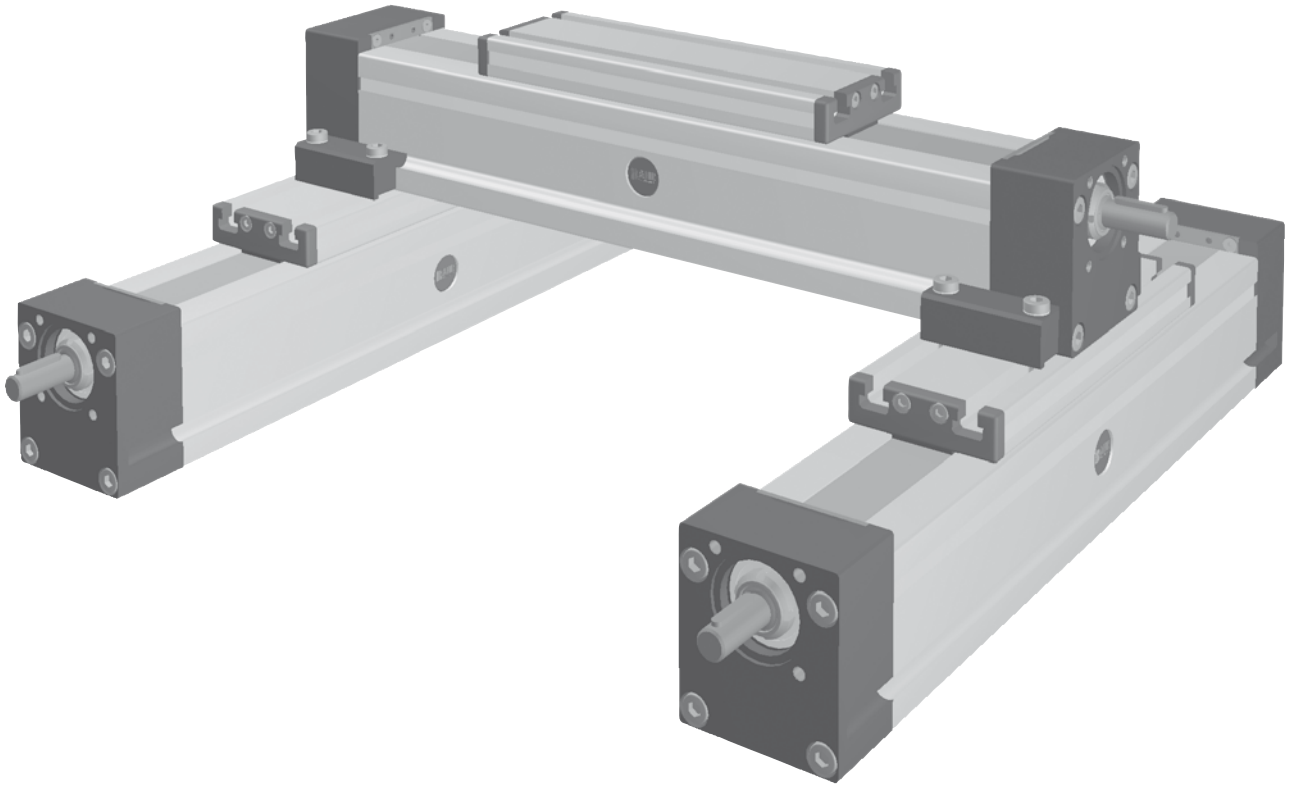
0 **End play of ball nut:**
(0) 0,04 mm (Standard) **(1)*** < 0,02 mm **(2)*** 2% apply prestress
* only in combination with **pitch accuracy (1)** or **(2)**

1500 Basic length + stroke = total length

QS	K	80	3	0	0	0	0	0	0	01500
Pos.		1	2	3	4	5	6	7		

Sample ordering code:
QSK80, ballscrew right - left hand thread, standard carriage, shaft on right hand thread, spindle 25x5, 860 mm stroke.

Possible combinations and mounting styles QST/K



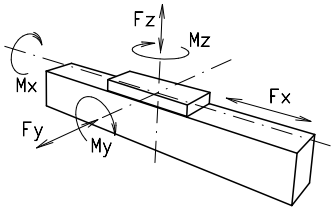
Positioning system QSR 60, 80, 100, 125

Rail guide

Function:
This unit consists of a square aluminium profile with an integrated ball rail. This unit can be driven by a pneumatic cylinder or other additional drives or it serves as a load carrying slide unit.

Fitting position: As required. Max. length 6.000 mm without joints.
Carriage mounting: By T-slots.
Unit mounting: By T-slots and mounting sets. The linear axis can be combined with any T-slot profile.
Carriage support: In the standard version, the carriage runs on two runner blocks which can be adjusted and serviced at a central servicing position. For longer carriages the number of runner blocks can be increased.

Forces and torques



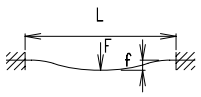
Size	60		80		100		125	
permitted dyn. forces*	5000 km	10000 km	5000 km	10000 km	5000 km	10000 km	5000 km	10000 km
F_x (N)	-	-	-	-	-	-	-	-
F_y (N)	1410	990	3570	2550	4080	2900	6892	5470
F_z (N)	3520	2500	8500	6050	10300	7270	17205	13659
M_x (Nm)	33	23	107	75	142	101	288	228
M_y (Nm)	104	73	310	222	439	311	1110	881
M_z (Nm)	100	70	296	210	412	292	1012	803
C (N)	7800		18800		22800		31700	
All forces and torques related to the following: existing values / table values: $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$								
Speed								
(m/sec) max	5		5		5		5	
Geometrical moments of inertia of aluminium profile								
I_x mm^4	$4{,}3 \times 10^5$		$16{,}5 \times 10^5$		$43{,}0 \times 10^5$		$74{,}9 \times 10^5$	
I_y mm^4	$4{,}8 \times 10^5$		$18{,}7 \times 10^5$		$48{,}8 \times 10^5$		$106{,}5 \times 10^5$	
Elastic modulus N/mm^2	70000		70000		70000		70000	

* referred to life-time

Formula: QSR

Deflection:

$$f = \frac{F * L^3}{E * I * 192}$$



f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

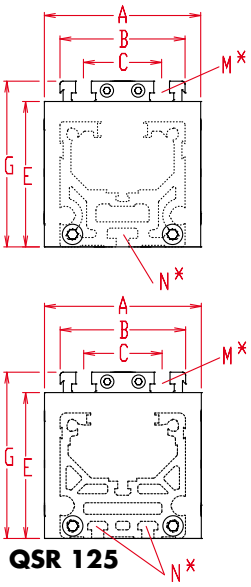
Nominal lifetime:

$$L = \left(\frac{C}{F}\right)^3 \times 10^5$$

L = Lifetime in meters
C = Dynamic load factor (N)
F = Medium load (N)

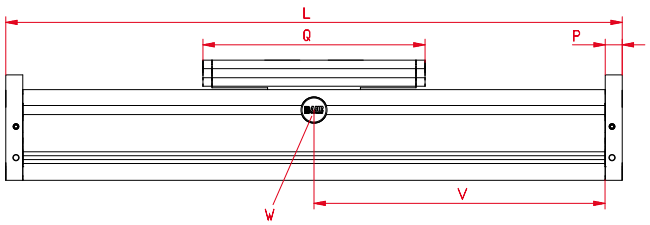
Positioning system QSR 60, 80, 100, 125

Dimensions (mm)



QSR 125

Increasing the carriage length will increase the basic length by the same amount.



*For slide nuts refer to chapter 2.2 page 2 V = Q + 100 mm W = servicing position

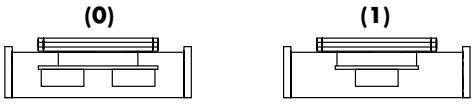
Size ❒	Basic length L	A	B	C	E	G	N for	M for	P	Q	Basic weight	Weight per 100 mm
QSR 60	205	80	60	36	60	79	M 5	M 6	12	177	1,8 kg	0,50 kg
QSR 80	270	100	80	50	93	106	M 6	M 8	17	232	4,9 kg	0,96 kg
QSR 100	315	130	100	66	110	129	M 10	M 10	20	268	8,2 kg	1,71 kg
QSR 125	360	160	125	82	134,5	157,5	M 10	M 12	25	300	15,1 kg	2,11 kg

Choice of guide body profile:

0 **(0)** Standard **(1)** corrosion-protected screws **(4)** expanded corrosion-protected version (depending on the availability of components)

Choice of carriages:

0



Size	Version 0		Version 1	
	Q	L	Q	L
60	177	205	152	180
80	232	270	196	240
100	268	315	260	310
125	300	360	260	320

QSR	80	0	0	0	0	0	0	0	01500
	Pos.	1	2	3	4	5	6	7	

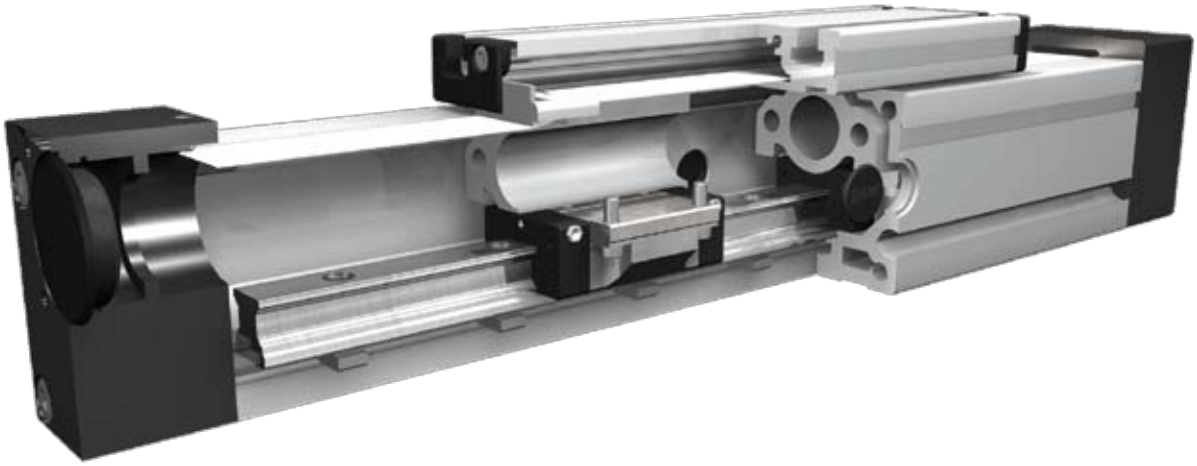
1500 Basic length + stroke = total length

For additional accessories refer to chapter 2.2 – 4.2

Sample ordering code:
QSR80 with standard body profile, standard carriage and 1230 mm stroke

Positioning system QSSR 60, 80, 100

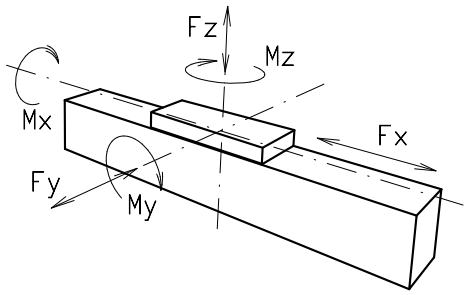
Rail guide



Function:
This unit consists of a square aluminium profile with an integrated ball rail. The carriage is with leading nut and without drive. The openings of the guide body are covered by a stainless steel cover band to protect the system from splash water and dust.

Fitting position: As required, max. length 6.000mm
Carriage connection: By T-slots
Unit mounting: By half round slots and tapped holes in the bearing blocks, mounting sets

Forces and torques



Size	QSSR 60		QSSR 80		QSSR 100	
permitted dyn. forces*	5000 km	10000 km	5000 km	10000 km	5000 km	10000 km
F_y (N)	1410	990	3570	2550	4080	2900
F_z (N)	3520	2500	8500	6050	10300	7270
M_x (Nm)	33	23	107	75	142	101
M_y (Nm)	190	143	604	430	838	597
M_z (Nm)	176	125	550	392	745	532
C (N)	7800		18800		22800	

All forces and torques related to the following:

existing values / table values: $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$

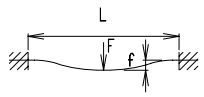
Geometrical moments of inertia of aluminium profile			
I_x mm⁴	$4{,}3 \times 10^5$	$14{,}0 \times 10^5$	$43{,}0 \times 10^5$
I_y mm⁴	$4{,}8 \times 10^5$	$16{,}6 \times 10^5$	$48{,}8 \times 10^5$
E-Modulus N/mm²	70000	70000	70000

* referred to life-time

Formula: QSSR

Deflection:

$$f = \frac{F * L^3}{E * I * 192}$$



f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm²)
I = second moment of area (mm⁴)

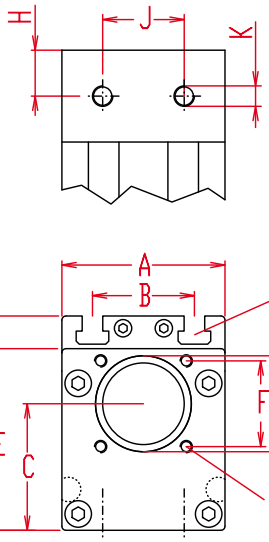
Nominal lifetime:

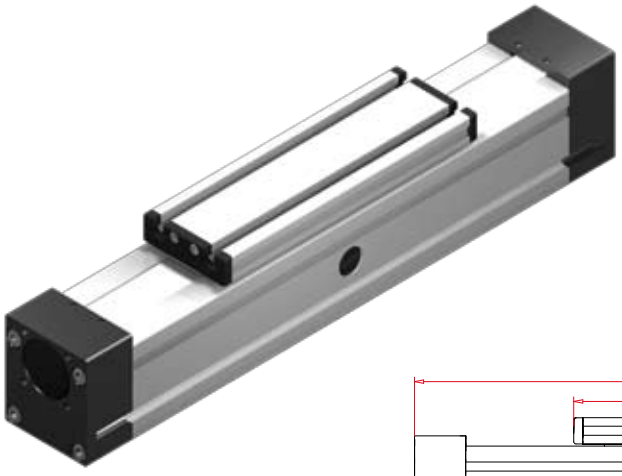
$$L = \left(\frac{C}{F}\right)^3 \times 10^5$$

L = Lifetime in meters
C = Dynamic load factor (N)
F = Medium load (N)

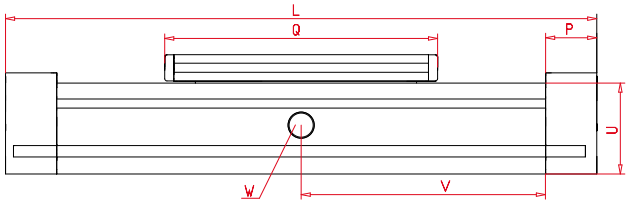
Positioning system QSSR 60, 80, 100

Dimensions (mm)





Increasing the carriage length will increase the basic length by the same amount.



*For slide nuts refer to chapter 2.2 page 2 V = Q + 100 mm W = servicing position

Size ❒	Basic length L	A	B	C	D	E	F ❒	G	H	J	K	M for	P	Q	T for	U	Basic weight	Weight per 100 mm
QSSR 60	270	60	36	45	37	67	32	79	19	18	M6	M6	38	188	M5	60	3,1 kg	0,3 kg
QSSR 80	350	80	50	62	47	89	42	106	22,5	40	M10	M8	45	250	M6	80	5,7 kg	0,8 kg
QSSR 100	410	100	66	75	68	112	60	129	28,5	50	M10	M10	57	288	M8	100	10,2 kg	1,2 kg

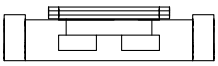
6.1

Choice of guide body profile:

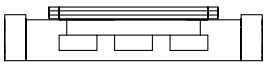
0 **(0)** Standard **(1)** corrosion-protected screws **(4)** expanded corrosion-protected version (depending on the availability of components)

0 **Choice of carriage:**

(0)



(1)



Size	Carriage version 1	
	Q	Basic length L
60	255	350
80	336	436
100	383	510

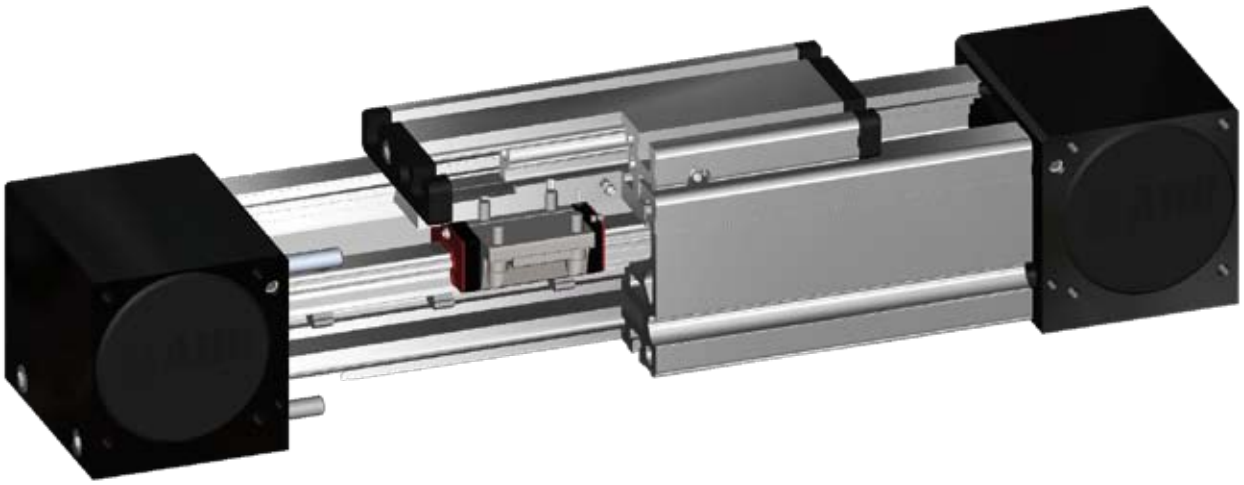
1500 Basic length + stroke = total length

QSSR	80	1	0	0	0	0	0	01500
Pos.	1	2	3	4	5	6	7	

Sample ordering code:
QSSR80 with standard body profile, standard carriage, 1150 mm stroke.

Positioning system QSRZ 60, 80, 100, 125

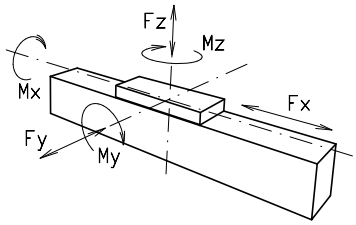
Rail guide



Function:
This unit consists of a square aluminium profile with an integrated ball rail. The carriage is with leading nut and without drive.

Fitting position: As required, max. length 6.000mm
Carriage connection: By T-slots
Unit mounting: By half round slots and tapped holes in the bearing blocks, mounting sets

Forces and torques



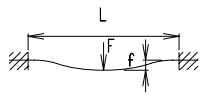
Size	QSRZ 60		QSRZ 80		QSRZ 100		QSRZ 125	
permitted dyn. forces*	5000 km	10000 km	5000 km	10000 km	5000 km	10000 km	5000 km	10000 km
F_y (N)	1410	990	3570	2550	4080	2900	6892	5470
F_z (N)	3520	2500	8500	6050	10300	7270	17205	13659
M_x (Nm)	33	23	107	75	142	101	288	228
M_y (Nm)	104	73	310	222	439	311	1110	881
M_z (Nm)	100	70	296	210	412	292	1012	803
C (N)	7800		18800		22800		31700	
All forces and torques related to the following: existing values / table values $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$								
Geometrical moments of inertia of aluminium profile								
I_x mm^4	4,3x10^5		16,5x10^5		43,0x10^5		74,9x10^5	
I_y mm^4	4,8x10^5		18,7x10^5		48,8x10^5		106,5x10^5	
E-Modulus N/mm^2	70000		70000		70000		70000	

* referred to life-time

Formula: QSRZ

Deflection:

$$f = \frac{F * L^3}{E * I * 192}$$



f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

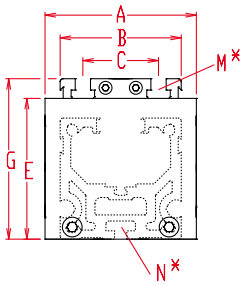
Nominal lifetime:

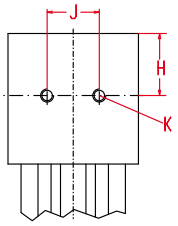
$$L = \left(\frac{C}{F}\right)^3 \times 10^5$$

L = Lifetime in meters
C = Dynamic load factor (N)
F = Medium load (N)

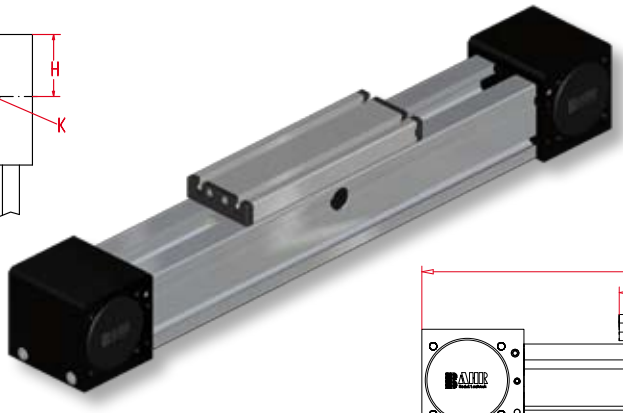
Positioning system QSRZ 60, 80, 100, 125

Dimensions (mm)

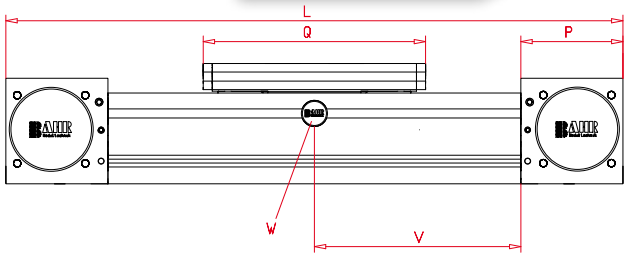


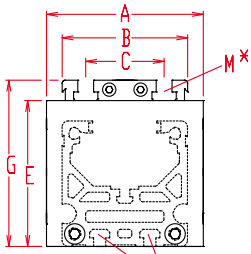


Increasing the carriage length will increase the basic length by the same amount.



QSRZ 125





QSRZ125

*For slide nuts refer to chapter 2.2 page 2 V = Q + 100 mm W = servicing position

Size ❒	Basic length L	A	B	C	E	G	H	J	K	N for	M for	P	Q	Basic weight	Weight per 100 mm
QSRZ 60	300	80	60	36	63	79	29,5	30	M 8	M 5	M 6	59	177	3,5 kg	0,55 kg
QSRZ 80	430	100	80	50	93	106	47,5	40	M 10	M 6	M 8	90	232	10,4 kg	0,96 kg
QSRZ 100	510	130	100	66	110	129	55	50	M 12	M 10	M 10	110	268	15,9 kg	1,47 kg
QSRZ 125	570	160	125	82	134,5	157,5	65	60	M 12	M 10	M 12	130	300	30,5 kg	2,21 kg

Choice of guide body profile:

0 **(0)** Standard **(1)** corrosion-protected screws **(4)** expanded corrosion-protected version (depending on the availability of components)

0 **Choice of carriages:**

Size	Version 0		Version 1		Version 2		Version 3	
	Q	L	Q	L	Q	L	Q	L
60	177	300	152	280	242	370	302	430
80	232	430	196	390	312	510	444	640
100	268	510	260	500	362	610	448	690
125	300	570	260	530	365	635	467	740

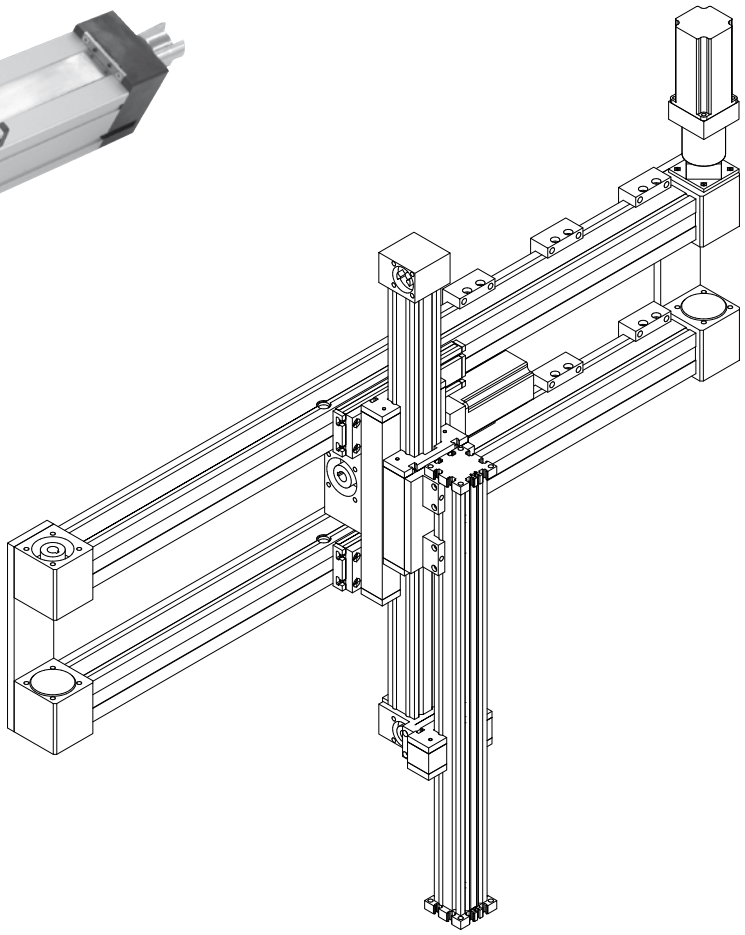
Basic length + stroke = total length

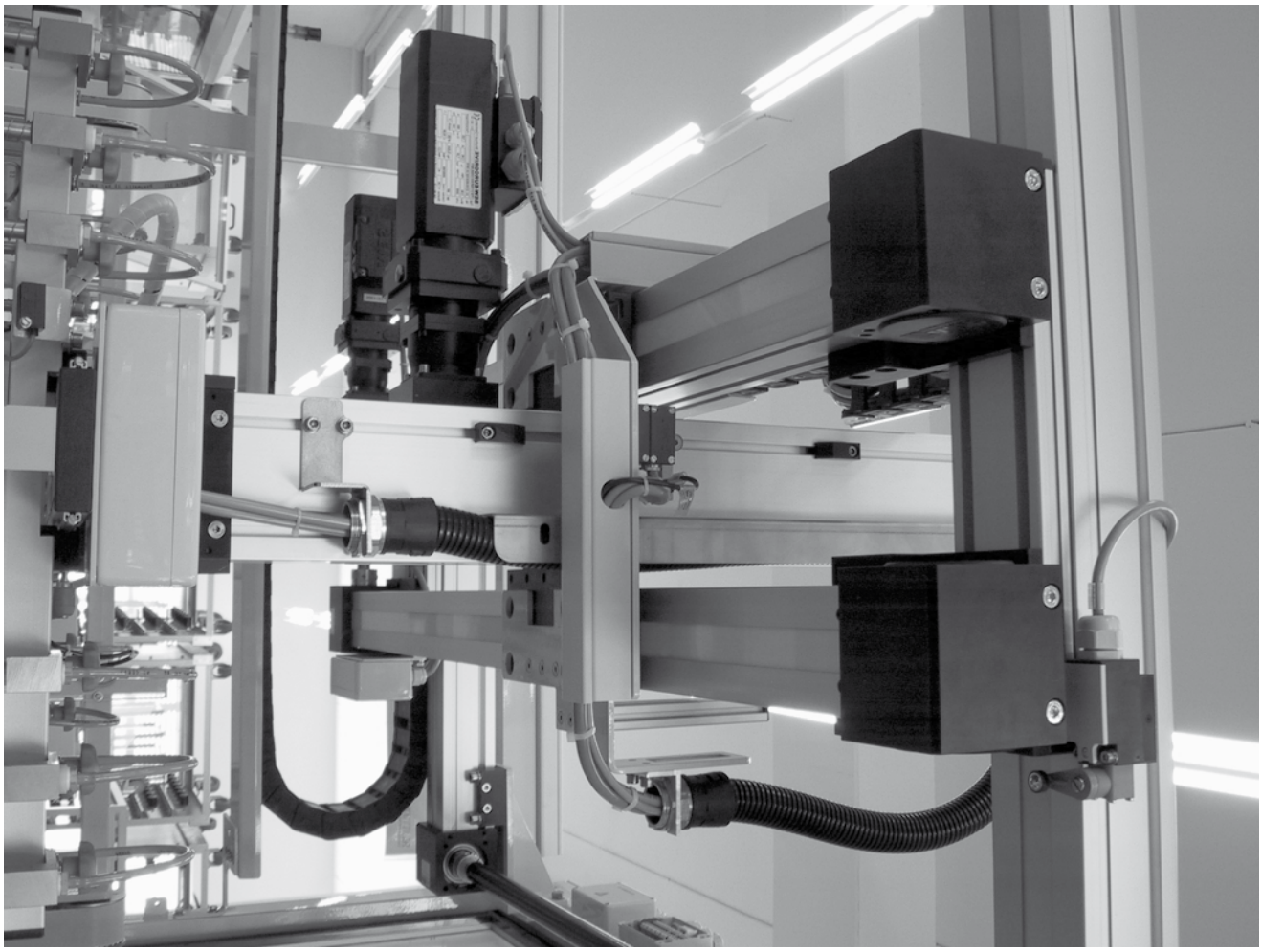
QSRZ	80	1	0	0	0	0	4	1	01500
	Pos.	1	2	3	4	5	6	7	

For additional accessories refer to chapter 2.2 – 4.2

Sample ordering code:
QSRZ80 with standard body profile, standard carriage, coupling claw on one side, 1070 mm stroke

Possible mounting styles

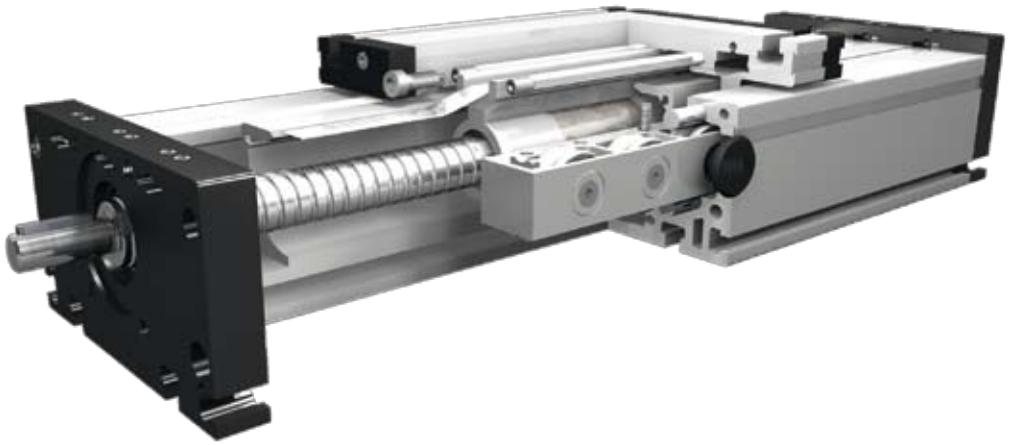




Roller guide positioning systems DL

Positioning system DLT/DLK 120, 160, 200

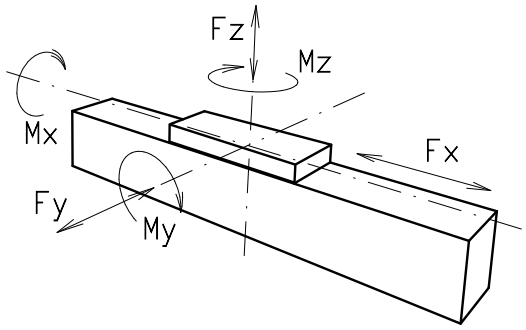
Spindle drives



Function:
This unit consists of a rectangular aluminium profile with 2 integrated roller guides. The carriage is driven by means of a rotating spindle with leading nut. Where two parallel linear units are used or where two carriages are mounted on one unit, the leading-nut receiver can be used to adjust the symmetry of the carriages. The openings of the guide body are sealed with 3 stainless steel cover bands to protect the drive from splash water and dust.

Fitting position: As required. Max. length 3.000 mm without joints.
Carriage mounting: By T-slots.
Unit mounting: By T-slots and mounting sets. The linear axis can be combined with any T-slot profile.
Carriage support: In the standard version, the carriage runs on 8 rollers which can be adjusted and serviced at a central servicing position. For longer carriages the number of rollers can be increased. Repeatability ballscrew ± 0,025 mm, trapezoidal thread ± 0,2 mm.

Forces and torques



Size	120		160		200	
Forces/Torques	static	dynamic	static	dynamic	static	dynamic
F_x (N)	900	800	5000	4000	10000	8000
F_y (N)	1100	900	3000	2000	4400	3100
F_z (N)	1250	1000	3500	2800	4900	4400
M_x (Nm)	150	125	400	320	600	510
M_y (Nm)	140	120	360	300	560	480
M_z (Nm)	100	90	180	150	310	275
All forces and torques related to the following: existing values / table values	$\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$					
No-load torque						
Trapezoidal thread	18 x 4	18 x 8	24 x 5	24 x 10	32 x 6	32 x 12
(Nm)	0,6	0,9	0,6	0,9	0,9	1,1
Ballscrew	16 x 5	16 x 10	25 x 5	20 x 20	32 x 5	32 x 10
(Nm)	0,5	0,8	0,5	0,8	0,7	0,9
Geometrical moments of inertia of aluminium profile						
I_x mm^4	$6,6x10^5$		$22,2x10^5$		$63,8x10^5$	
I_y mm^4	$38,6x10^5$		$122,0x10^5$		$335,0x10^5$	
Elastic modulus N/mm^2	70000		70000		70000	

For life-time calculation of rollers use our CD-ROM or homepage!

Formula: DLT/K

Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi*\mu} + M_{leer}$$

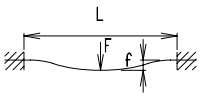
$$P_a = \frac{M_a*n}{9550}$$

F	= force	(N)
P	= thread pitch	(mm)
S_i	= safety factor 1,2 ... 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm of screw	(min^{-1})
M_a	= driving torque	(Nm)
μ	= screw efficiency	
P_a	= motor power	(KW)

Efficiency of lead screws:

All ballscrew	0.900
Tr 18x4	0,399
Tr 18x8	0,565
Tr 24x5	0,384
Tr 24x10	0,550
Tr 32x6	0,360
Tr 32x12	0,524

$$f = \frac{F*L^3}{E*I*192}$$

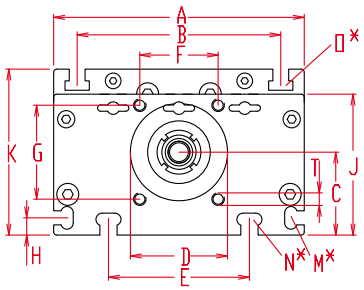


f = deflection	(mm)
F = load	(N)
L = free length	(mm)
E = elastic modulus 70000	(N/mm^2)
I = second moment of area	(mm^4)

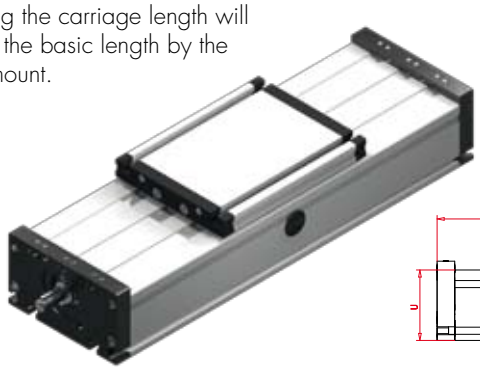
For the diagram for critical speeds of lead screws refer to chapter 5.2 page 3

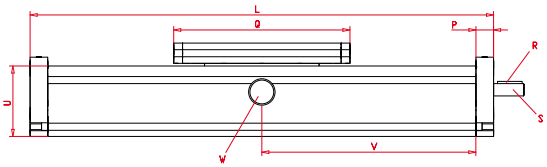
Positioning system DLT/DLK 120, 160, 200

Dimensions (mm)



Increasing the carriage length will increase the basic length by the same amount.





*For slide nuts refer to chapter 2.2 page 2 V = Q + 100 mm W = servicing position

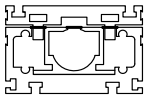
Size □	Basic length L	A	B	C	D	E	F	G	H	J	K	M for	N for	O for	P	Q	Shaft R Key	Shaft S Ø x length	T	U	Basic weight	Weight per 100 mm
DL 120	200	120	96	39	47	78	42	42	10	68	79	M 5	M 6	M 6	15	156	3x3x25	10 h6 x 27	M 6	60	3,9 kg	0,92 kg
DL 160	260	160	130	53	62	90	50	60	11	90	106	M 6	M 8	M 8	20	200	5x5x28	14 h6 x 35	M 8	80	8,2 kg	1,96 kg
DL 200	320	200	160	66	68	140	60	60	15	110	129	M 8	M10	M10	20	270	6x6x40	22 h6 x 45	M 8	100	19,6 kg	2,82 kg

Spindle:
T **(T)** Trapezoidal thread **(K)** Ballscrew

Selection of screw:
1 **(1)** right hand **(2)** left hand (Ballscrew by inquiry)

Choice of guide body profile:
0

(0)



internal profile with cover bands

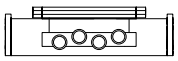
(3)

with bellows

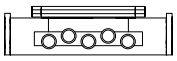
Stainless versions upon request.

Choice of carriages:
0

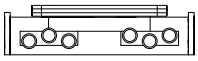
(0)



(2)



(3)



Size	Version 0 Q	Version 0 L	Version 2 Q	Version 2 L	Version 3 Q	Version 3 L
120	156	200	196	240	>236	>280
160	200	260	250	310	>300	>360
200	270	320	330	380	>410	>460

Drive version:
0 **(0)** one shaft (locating bearing side) **(1)** one shaft (non-locating bearing side) **(2)** shaft on both sides

Selection of screw:	Size	Standard	Multistart screw
Ballscrew right hand	120	**(0)** 16x5	**(1)** 16x10 **(2)** 16x16 **(3)** 20x20 **(4)** 25x5 **(5)** 25x10
	160	**(0)** 25x5	**(1)** 20x20 **(2)** 25x10 **(3)** 25x25
	200	**(0)** 32x5	**(1)** 32x10 **(2)** 32x20 **(3)** 32x32
Ballscrew left hand	upon request		
0 Trapezoidal right hand thread	120	**(0)** 18x4	**(1)** 18x8
	160	**(0)** 24x5	**(1)** 24x10
	200	**(0)** 32x6	**(1)** 32x12
Trapezoidal left hand thread	120	**(0)** 18x4	**(1)** 18x8
	160	**(0)** 24x5	**(1)** 24x10
	200	**(0)** 32x6	**(1)** 32x12

Ballscrew pitch accuracy:
0 **(0)** 0,1 mm / 300 mm (Standard) **(1)** 0,05 mm / 300 mm **(2)** 0,025 mm / 300 mm

End play of ball nut:
0 **(0)** 0,04 mm (Standard), **(1)*** < 0,02 mm, **(2)*** 2% apply prestress
* only in combination with **pitch accuracy (1)** or **(2)**

1500 Basic length + stroke = total length

Repeatability:
± 0,2 mm Trapezoidal
± 0,025 mm Ballscrew

DL	T	160	1	0	0	0	0	0	0	01500
		Pos.	1	2	3	4	5	6	7	

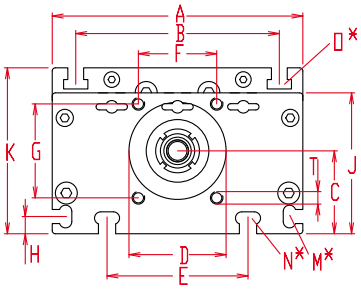
Inductive proximity switch sets, which can be mounted inside of the square profile, are available as accessories. Coupling and a special plug are mounted from the outside. For additional accessories refer to chapter 2.2 – 4.2.

Sample ordering code:
DLT160, trapezoidal right hand thread, with internal profile and cover bands, standard carriage, one shaft (locating bearing side), spindle 24x5, 1240 mm stroke.

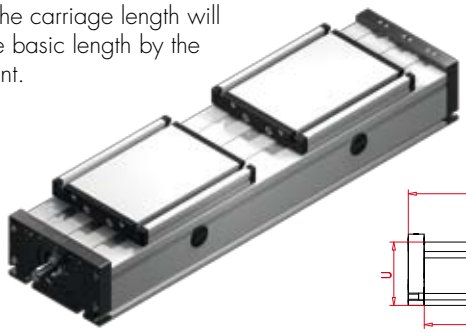
Positioning system DLT/DLK 120, 160, 200

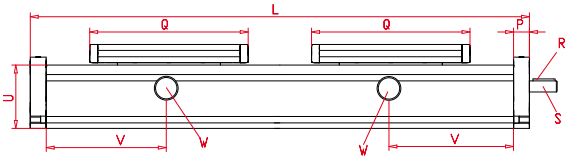
Dimensions (mm)

with trapezoidal thread or ballscrew, right-hand and left-hand thread or divided spindles



Increasing the carriage length will increase the basic length by the same amount.





*For slide nuts refer to chapter 2.2 page 2 V = Q + 100 mm W = servicing position

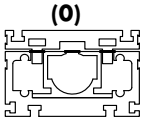
Size ❒	Basic length L	A	B	C	D	E	F	G	H	J	K	M for	N for	O for	P	Q	Shaft R Key	Shaft S Ø x length	T	U	Basic weight	Weight per 100 mm
DL 120	360	120	96	39	47	78	42	42	10	68	79	M 5	M 6	M 6	15	156	3x3x25	10 h6 x 27	M 6	60	5,1 kg	0,92 kg
DL 160	470	160	130	53	62	90	50	60	11	90	106	M 6	M 8	M 8	20	200	5x5x28	14 h6 x 35	M 8	80	12,0 kg	1,96 kg
DL 200	600	200	160	66	68	140	60	60	15	110	129	M 8	M10	M10	20	270	6x6x40	22 h6 x 45	M 8	100	27,1 kg	2,82 kg

Spindle:
T **(T)** Trapezoidal thread **(K)** Ballscrew

Selection of screw:
3 **(3)** right - left hand **(4)** divided spindle

Choice of guide body profile:
0

(0)



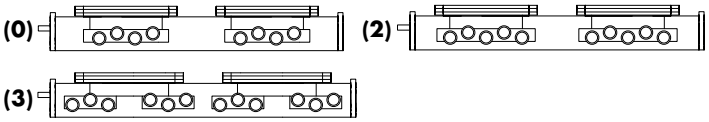
internal profile with cover bands

(3)

with bellows

Stainless versions upon request.

Choice of carriages:
0



Size	Version 0 Q	Version 0 L	Version 2 Q	Version 2 L	Version 3 Q	Version 3 L
120	156	360	196	440	>236	>530
160	200	470	250	570	>300	>670
200	270	600	330	720	>410	>880

Drive version:
0 **(0)** shaft right hand thread **(1)** shaft left hand thread **(2)** shaft on both sides

Selection of screw:

	Size	Standard	Multistart screw
Ballscrew right hand	120	**(0)** 16x5	**(1)** 16x10* **(2)** 16x16* **(3)** 20x20* **(4)** 25x5* **(5)** 25x10*
	160	**(0)** 25x5	**(1)** 20x20* **(2)** 25x10* **(3)** 25x25*
	200	**(0)** 32x5	**(1)** 32x10* **(2)** 32x20* **(3)** 32x32*
Ballscrew left hand	upon request		
0 Trapezoidal right hand thread	120	**(0)** 18x4	**(1)** 18x8
	160	**(0)** 24x5	**(1)** 24x10
	200	**(0)** 32x6	**(1)** 32x12
Trapezoidal left hand thread	120	**(0)** 18x4	**(1)** 18x8
	160	**(0)** 24x5	**(1)** 24x10
	200	**(0)** 32x6	**(1)** 32x12

* = only for selection of divided spindle

Ballscrew pitch accuracy:
0 **(0)** 0,1 mm / 300 mm (Standard) **(1)** 0,05 mm / 300 mm **(2)** 0,025 mm / 300 mm

End play of ball nut:
0 **(0)** 0,04 mm (Standard), **(1)*** < 0,02 mm, **(2)*** 2% apply prestress
* only in combination with **pitch accuracy (1)** or **(2)**

1500 Basic length + stroke = total length

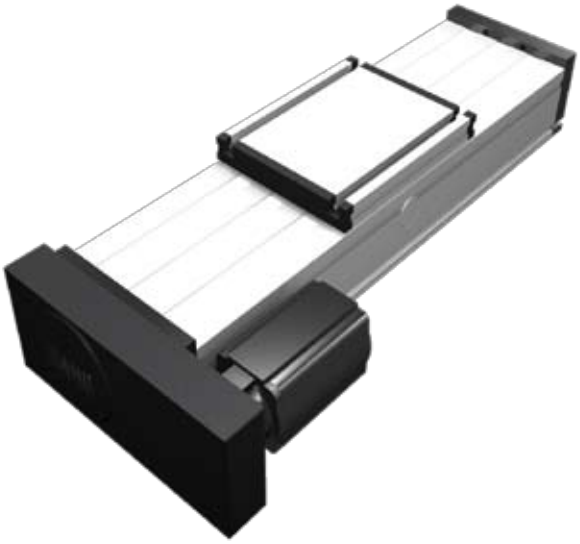
DL	T	160	3	0	0	0	0	0	0	01500
		Pos.	1	2	3	4	5	6	7	

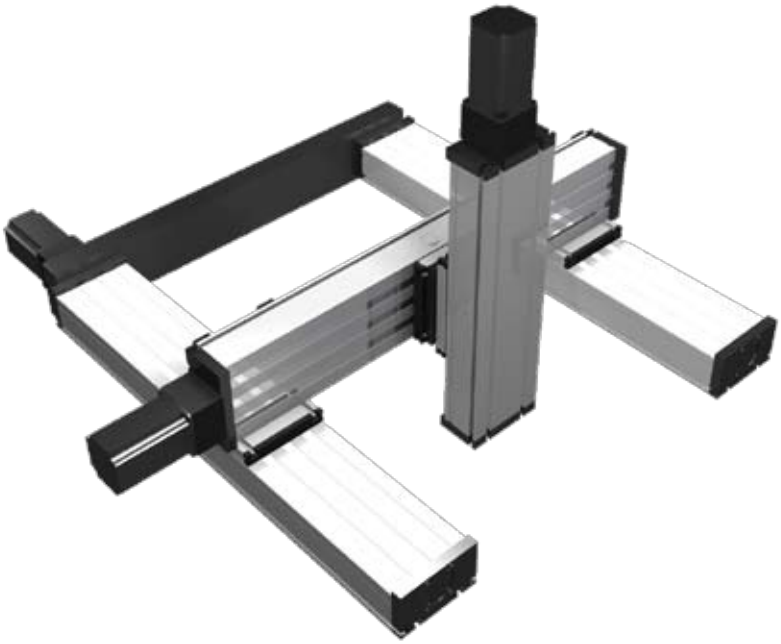
Repeatability:
± 0,2 mm Trapezoidal
± 0,025 mm Ballscrew

Inductive proximity switch sets, which can be mounted inside of the square profile, are available as accessories. Coupling and a special plug are mounted from the outside. For additional accessories refer to chapter 2.2 – 4.2.

Sample ordering code:
DLT160, trapezoidal right - left hand thread, with internal profile and cover bands, standard carriage, shaft on the right hand side, spindle 24x5, 1030 mm stroke

Possible mounting styles





Positioning system DLZ 120, 160, 200

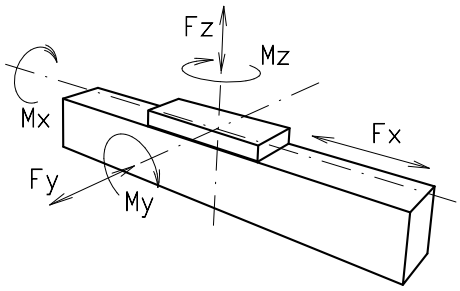
Belt drive

Function:

This unit consists of a rectangular aluminium profile with 2 integrated roller guides. The carriage is moved by a belt drive. Each standard pulley has got one coupling claw on one side. Belt tension can be readjusted by a simple screw adjustment device in the carriage. This device can also be used for symmetrical adjustment of two or more linear units running parallel. The openings of the guide body are sealed with 3 stainless steel cover bands to protect the guide from splash water and dust. Alternatively, the opening can also be covered with a bellow or can be delivered without cover bands.

Fitting position: As required. Max. length 6.000 mm without joints.
Carriage mounting: By T-slots.
Unit mounting: By T-slots and mounting sets. The linear axis can be combined with any T-slot profile.
Belt type: HTD with steel reinforcement, no backlash when changing direction, repeatability ± 0,1 mm.
Carriage support: In the standard version, the carriage runs on 8 rollers which can be adjusted and serviced at a central servicing position. For longer carriages the number of rollers can be increased.

Forces and torques



Size	120		160		200	
Forces/Torques	static	dynamic	static	dynamic	static	dynamic.
F_x (N)	894	800	1900	1800	4000	3800
F_y (N)	1100	900	3000	2000	4400	3100
F_z (N)	1250	1000	3500	2800	4900	4400
M_x (Nm)	150	125	400	320	600	510
M_y (Nm)	140	120	360	300	560	480
M_z (Nm)	100	90	180	150	310	275
All forces and torques related to the following: existing values / table values $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$						
No-load torque						
Nm without cover bands	1,2		1,5		1,8	
Nm with cover bands	1,6		2,1		3,2	
Speed						
(m/sec) max	4		6		8	
Tensile force						
permanent (N)	900		1900		4000	
0,2 sec (N)	1000		2090		4300	
Geometrical moments of inertia of aluminium profile						
I_x mm^4	6,6x10^5		22,2x10^5		63,8x10^5	
I_y mm^4	38,6x10^5		122,0x10^5		335x10^5	
Elastic modulus N/mm^2	70000		70000		70000	

For life-time calculation of rollers use our CD-ROM or homepage!

Formula: DLZ

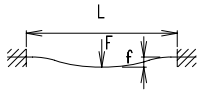
Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F	= force	(N)
P	= pulley action perimeter	(mm)
S_i	= safety factor 1,2 … 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm pulley	(min^{-1})
M_a	= driving torque	(Nm)
P_a	= motor power	(KW)

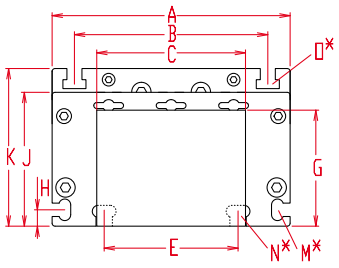
$$f = \frac{F*l^3}{E*I*192}$$



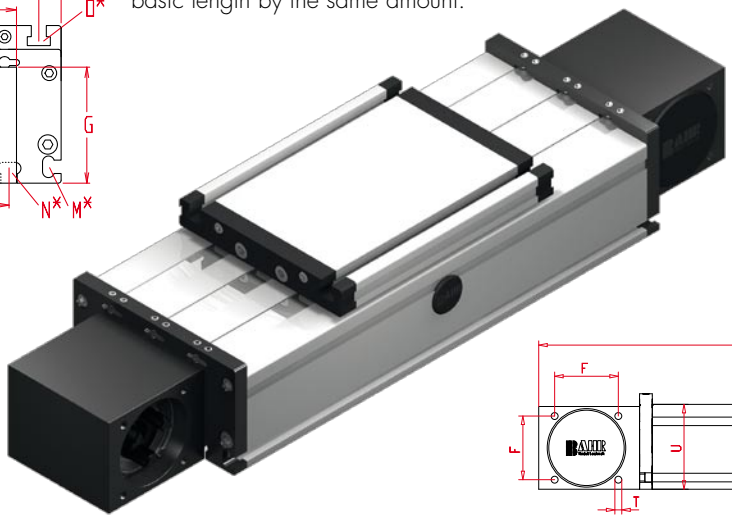
f= deflection	(mm)
F = load	(N)
L= free length	(mm)
E= elastic modulus 70000	(N/mm^2)
I= second moment of area	(mm^4)

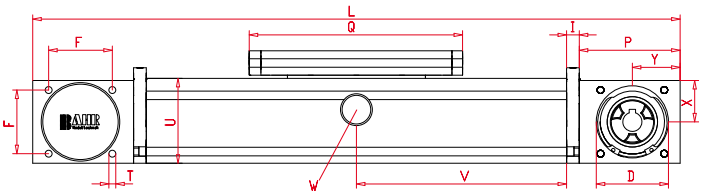
Positioning system DLZ 120, 160, 200

Dimensions (mm)



Increasing the carriage length will increase the basic length by the same amount.





*For slide nuts refer to chapter 2.2 page 2 V = Q + 100 mm W = servicing position

Size ❒	Basic length L	A	B	C	D	E	F	G	H	I	J	K	M for	N for	O for	P	Q	T	U	X	Y	Basic weight	Weight per 100 mm
DLZ 120	330	120	96	80	47	78	42	58	10	10	68	79	M 5	M 6	M 6	70	156	M 6	60	28	35	5,1 Kg	0,85 Kg
DLZ 160	440	160	130	100	68	90	60	78	11	12	90	106	M 6	M 8	M 8	95	200	M 8	80	39	45	13,0 kg	1,69 kg
DLZ 200	530	200	160	130	90	140	80	97	15	15	110	129	M 8	M10	M10	110	270	M10	100	49	50	23,4 kg	2,33 kg

Choice of guide body profile:

0

(0) internal profile with cover bands

(1) internal profile without cover bands

(2) without internal profile and cover bands

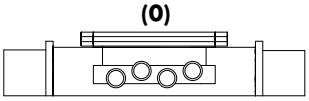
(3) with bellows

Stainless versions upon request.

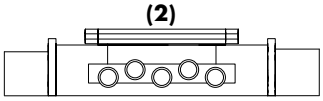
Choice of carriage:

0

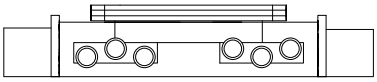
(0)



(2)



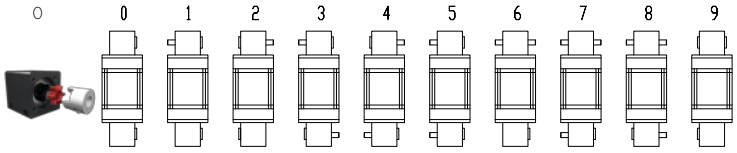
(3)



Size	Version 0		Version 2		Version 3	
	Q	L	Q	L	Q	L
120	156	330	196	370	>236	>410
160	200	440	250	490	>300	>540
200	270	530	330	600	>410	>680

Drive version:

0



9 is as 0, but with coupling claws on both sides.
The standard version is supplied without shaft. A shaft can be retrofitted by inserting it into the pulley bore and securing it with 2 locking rings or tension sets (size 200).

Belt table

Code No.		Size	Belt	mm/rev.	Number of teeth
0	**4**	120	5M25	130	26
0	**7**	160	8M30	176	22
0	**9**	160	8M50	176	22
0	**9**	200	8M50	224	28
1	**0**	200	8M70	224	28

Shaft dimensions

Size	Shaft ø h6 x length	Key
120	14 x 35	5x5x28
160	18 x 45	6x6x40
160(8M50)	25 x 35	8x8x32
200	22 x 45	6x6x40
200(8M70)	30 x 55	8x7x50

Basic length + stroke = total length

DLZ	160	1	0	0	0	0	7	1	01500
	Pos.	1	2	3	4	5	6	7	

Inductive proximity switch sets, which can be mounted inside of the square profile, are available as accessories. Coupling and a special plug are mounted from the outside. For additional accessories refer to chapter 2.2 – 4.2.

Sample ordering code:
DLZ160 with internal profile and cover bands, standard carriage, coupling claw on one side, 1060 mm stroke.

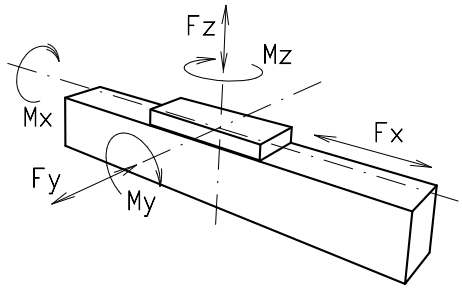
Positioning system DLZA 120, 160, 200

Rack and pinion drive

Function:
This unit consists of a rectangular aluminium profile with 2 integrated roller guides. The carriage, which has internal linear ball bearings that can be adjusted free of play, is driven along the guide rods by a high precision rack. The rack and pinion system is suitable for highly dynamic servo operation and ideal for lifting movements. The pinion is equipped with maintenance-free ball bearings. The rack is lubricated by a toothed felt wheel.

Fitting position: As required. Max. length 6.000 mm without joints.
Carriage mounting: By T-slots.
Unit mounting: By T-slots and mounting sets. The linear axis can be combined with any T-slot profile.
Rack: 6h23 Modul 2 (hardened and ground), repeatability ± 0,1 mm.
Carriage support: In the standard version, the carriage runs on 8 rollers which can be adjusted and serviced at a central servicing position. For longer carriages the number of rollers can be increased.

Forces and torques



Size	120		160		200	
Forces/Torques	statisch	dynam.	statisch	dynam.	statisch	dynam.
F_x (N)			1900	1800		
F_y (N)			3000	2000		
F_z (N)			3500	2800		
M_x (Nm)			400	320		
M_y (Nm)			360	300		
M_z (Nm)			180	150		
All forces and torques related to the following: existing values / table values $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$						
No-load torque						
Nm			1,5		2,6	
Speed						
(m/sec) max			3		5,0	
Tensile force						
permanent (N)			1900		3000	
Geometrical moments of inertia of aluminium profile						
I_x mm^4			22,2x10^5			
I_y mm^4			122,0x10^5			
Elastic modulus N/mm^2			70000			

For life-time calculation of rollers use our CD-ROM or homepage!

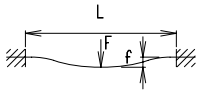
Formula: DLZA
Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F	= force	(N)
P	= pulley action perimeter	(mm)
S_i	= safety factor 1,2 ... 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm pulley	(min^{-1})
M_a	= driving torque	(Nm)
P_a	= motor power	(KW)

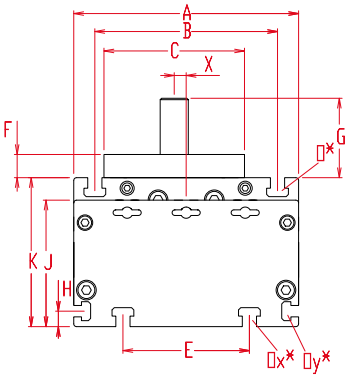
$$f = \frac{F*l^3}{E*I*192}$$



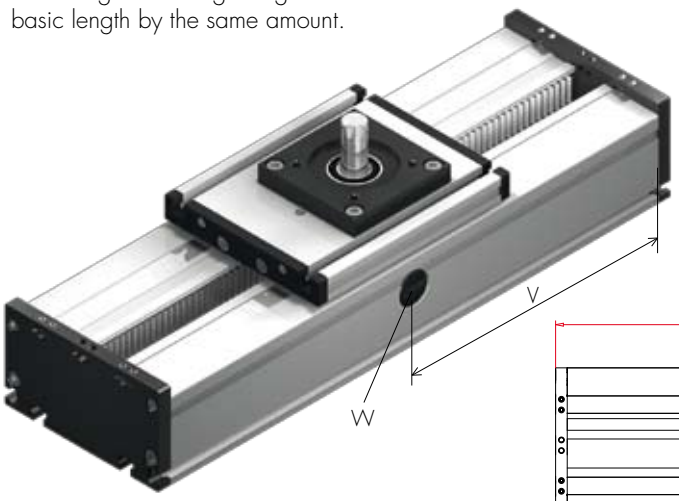
f= deflection (mm)
F = load (N)
L= free length (mm)
E= elastic modulus 70000 (N/mm^2)
I= second moment of area (mm^4)

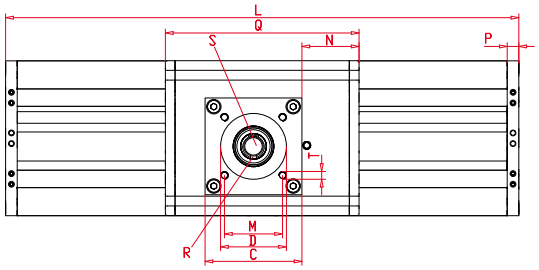
Positioning system DLZA 120, 160, 200

Dimensions (mm)



Increasing the carriage length will increase the basic length by the same amount.





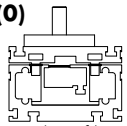
*For slide nuts refer to chapter 2.2 page 2 V = Q + 100 mm W = servicing position

Size ❒	Basic length L	A	B	C	D	E	F	G	H	J	K	M	N	O for	Ox for	Oy for	P	Q	T for	U	X	Basic weight	Weight per 100 mm
DLZA 120																							
DLZA 160	240	160	130	100	68	90	16,5	56,5	11	90	106	60	59	M 8	M 8	M 6	12	200	M 8	80	8,5	13,0 kg	2,10 kg
DLZA 200																							

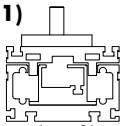
Choice of guide body profile:

0

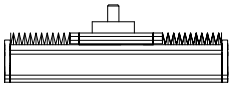
(0) internal profile with cover bands



(1) internal profile without cover bands



(3) with bellows

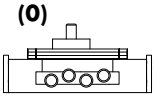


Stainless versions upon request.

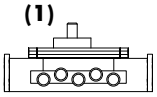
Choice of carriage:

0

(0)



(1)



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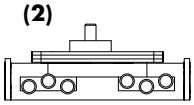
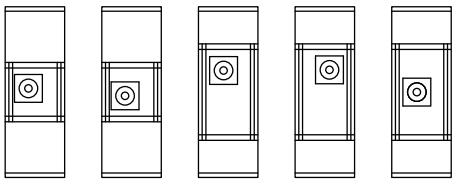


Size ❒	Version 0		Version 1		Version 2	
	Q	L	Q	L	Q	L
120						
160	200	240	250	290	>300	>340
200						

1

Drive version:

1 2 3 4 5

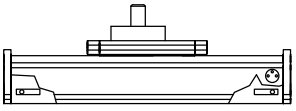


Shaft dimensions

Size ❒	Shaft ø h6 x length	Key	Pinion	
	S	R	mm/rev.	Modul
120				
160	20 x 40	6x6x35	100,53	2
200				

Basic length + stroke = total length

DLZA	160	1	0	0	1	0	0	1	01500
	Pos.	1	2	3	4	5	6	7	



Inductive proximity switch sets, which can be mounted inside of the square profile, are available as accessories. Coupling and a special plug are mounted from the outside. For additional accessories refer to chapter 2.2 – 4.2.

Sample ordering code:
DLZA160 with internal profile and cover bands, standard carriage, 1260 mm stroke.

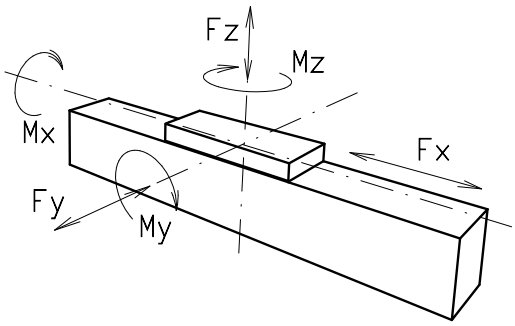
Positioning system DLSZ 120, 160, 200

Belt drive

Function:
This linear unit consists of a rectangular aluminium profile with integrated, hardened steel guide rods. The carriage, which has linear ball bearings that can be adjusted free of play, is driven along the guide rods by a timing belt. Each standard pulley includes a coupling claw on one side and is equipped with maintenance-free ball bearings. Belt tension can be readjusted by a simple screw adjustment device in the carriage. This device can also be used for symmetrical adjustment of two or more linear units running parallel.

Fitting position: As required. Max. length 6.000 mm without joints.
Carriage mounting: By T-slots.
Unit mounting: By T-slots and mounting sets. The linear axis can be combined with any T-slot profile.
Belt performance: HTD with steel reinforcement, no backlash when changing direction, repeatability ± 0,1 mm.
Carriage support: In the standard version, the carriage runs on 8 rollers which can be adjusted and serviced at a central servicing position. For longer carriages the number of rollers can be increased.

Forces and torques



Size	120		160		200	
Forces/Torques	static	dynamic	static	dynamic	static	dynamic
F_x (N)	1900	1800	4000	3800	5900	5750
F_y (N)	1100	900	3000	2000	4400	3100
F_z (N)	1250	1000	3500	2800	4900	4400
M_x (Nm)	150	125	400	320	600	510
M_y (Nm)	140	120	360	300	560	480
M_z (Nm)	100	90	180	150	310	275
All forces and torques related to the following: existing values / table values: $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$						
No-load torque						
Nm	1,1		1,5		1,8	
Speed						
(m/sec) max	4		6		8	
Tensile force						
permanent (N)	1900		4000		5900	
0,2 sec (N)	2090		4300		6350	
Geometrical moments of inertia of aluminium profile						
I_x mm^4	$6{,}6 \times 10^5$		$2{,}22 \times 10^6$		$6{,}38 \times 10^6$	
I_y mm^4	$38{,}6 \times 10^5$		$12{,}20 \times 10^6$		$33{,}5 \times 10^6$	
Elastic modulus N/mm^2	70000		70000		70000	

For life-time calculation of rollers use our CD-ROM or homepage!

Formula: DLSZ

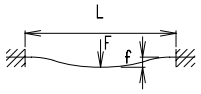
Driving torque:

$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_{leer}$$

$$P_a = \frac{M_a * n}{9550}$$

F	= force	(N)
P	= thread pitch	(mm)
S_i	= safety factor 1,2 ... 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm of screw	(min^{-1})
M_a	= driving torque	(Nm)
P_a	= motor power	(KW)

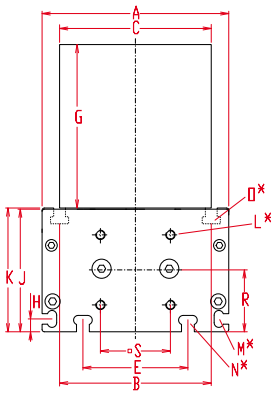
$$f = \frac{F * L^3}{E * I * 192}$$



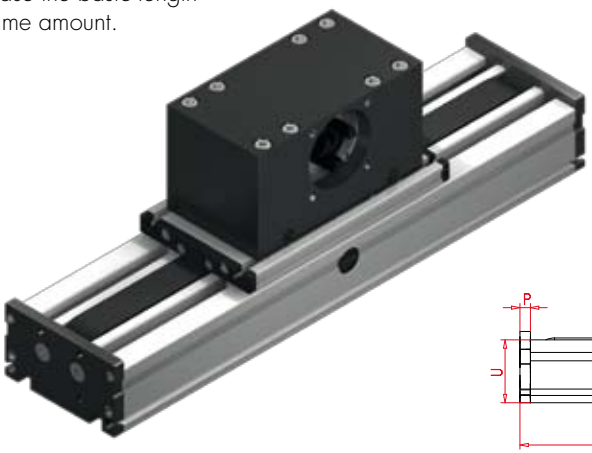
f= deflection	(mm)
F= load	(N)
L= free length	(mm)
E= elastic modulus 70000	(N/mm^2)
I= second moment of area	(mm^4)

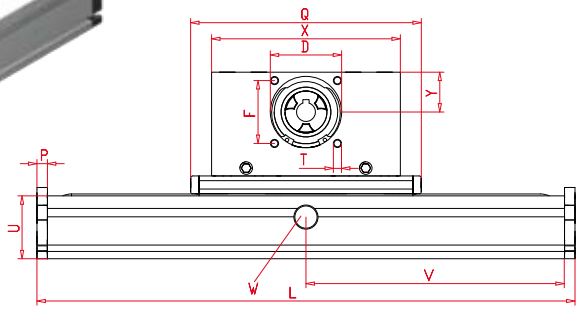
Positioning system DLSZ 120, 160, 200

Dimensions (mm)



Increasing the carriage length will increase the basic length by the same amount.





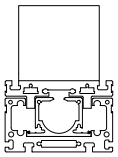
*For slide nuts refer to chapter 2.2 page 2 V = Q + 100 mm W = servicing position

Size ❒	Basic length L	A	B	C	D	E	F	G	H	J	K	L	M for	N for	O for	P	Q	R	S	T	U	X	Y	Basic weight	Weight per 100 mm
DLSZ 120	230	120	96	100	68	78	60	100	10	68	79	M 6	M 5	M 6	M 6	10	200	39	42	M 8	60	180	39	12,0 kg	1,2 kg
DLSZ 160	330	160	130	130	90	90	80	130	11	105	106	M 8	M 6	M 8	M 8	12	290	53	60	M 10	80	270	60	27,0 kg	1,8 kg
DLSZ 200	380	200	160	160	110	140	100	145	15	128	129	M 10	M 8	M 10	M 10	15	340	69	95	M 10	100	310	62	53,0 kg	2,6 kg

Choice of guide body profile:

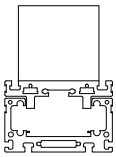
1

(1)



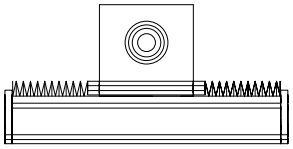
internal profile without cover bands

(2)



without internal profile and cover bands

(3)



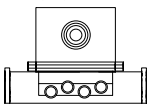
with bellows

Stainless versions upon request.

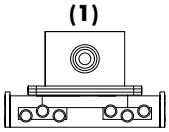
Choice of carriages:

0

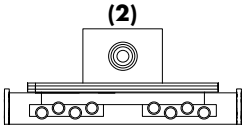
(0)



(1)



(2)

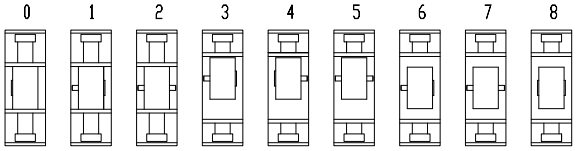


Size	Version 0		Version 1		Version 2	
	Q	L	Q	L	Q	L
120	200	230	>280	>310	>360	>390
160	290	330	>390	>430	>490	>530
200	340	380	>480	>520	>610	>650

Drive version:

0

0



8 is as 0, but with coupling claws on both sides. The standard version is supplied without shaft. A shaft can be retrofitted by inserting it into the pulley bore and securing it with 2 locking rings or tension sets (size 160 and 200).

Belt table

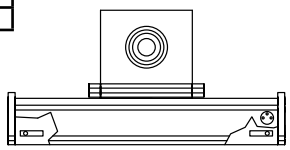
Code No.		Size	Belt	mm/rev.	Number of teeth
0	**7**	120	8M30	192	24
0	**9**	160	8M50	256	32
1	**0**	200	8M70	304	38

Shaft dimensions

Size	Shaft ø h6 x length	Key
120	18 x 45	6x6x40
160	22 x 45	6x6x40
200	30 x 55	8x7x50

Basic length + stroke = total length

DLSZ	120	1	1	0	0	0	7	2	01500
Pos.	1	2	3	4	5	6	7		

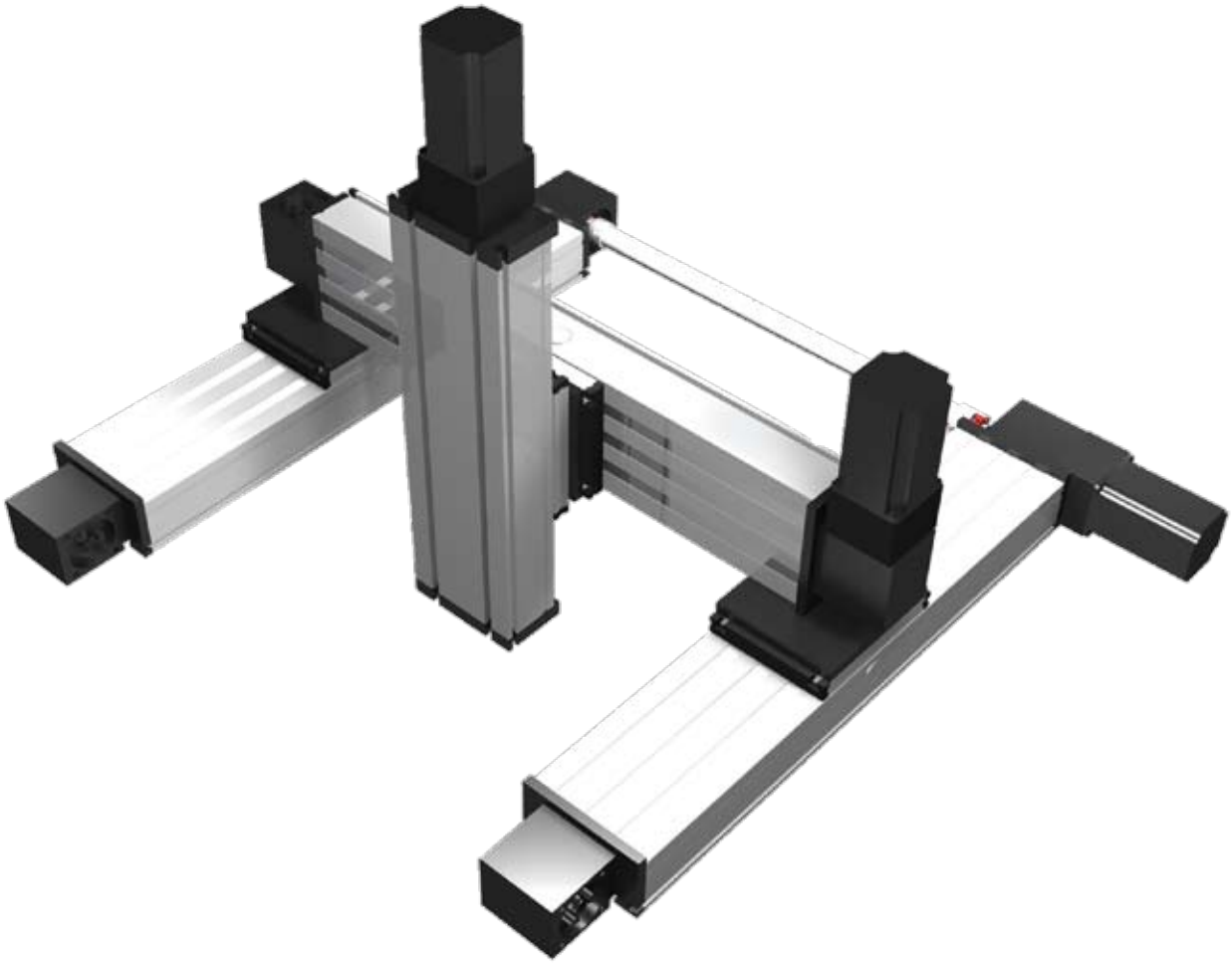


Inductive proximity switch sets, which can be mounted inside of the square profile, are available as accessories. Coupling and a special plug are mounted from the outside. For additional accessories refer to chapter 2.2 – 4.2.

Sample ordering code:
DLSZ120, body profile with internal profile without cover bands, standard carriage, coupling claws on one side, 1270 mm stroke

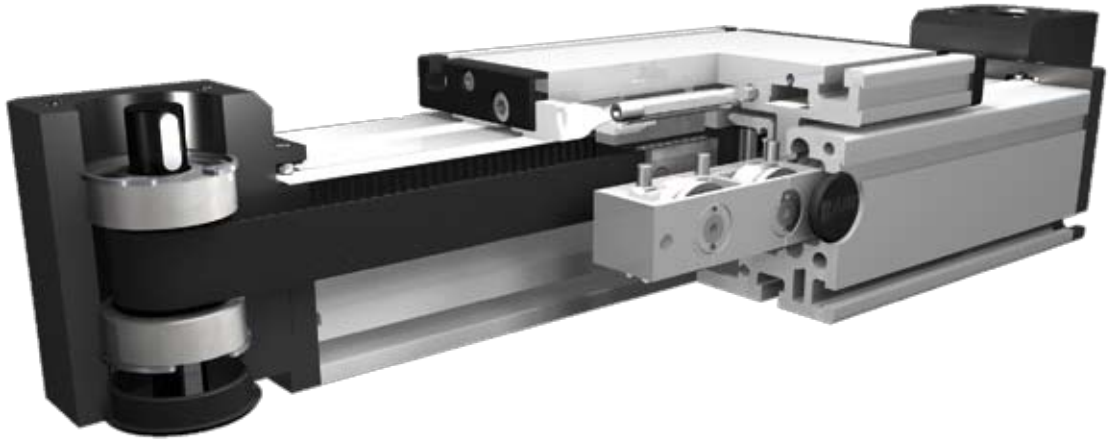
Possible mounting styles

Possible mounting styles



Positioning system DLVZ 120, 160

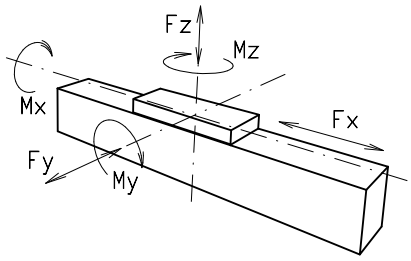
Internal belt drive



Function:
This unit consists of a rectangular aluminium profile with 2 integrated roller guides. The carriage is moved by a belt drive. Belt tension can be readjusted by a simple screw adjustment device in the carriage. This device can also be used for symmetrical adjustment of two or more linear units running parallel. The openings of the guide body are sealed with 3 stainless steel cover bands to protect the guide from splash water and dust. Alternatively, the opening can also be covered with a bellow or can be delivered without cover bands.

Fitting position: As required. Max. length 3.000 mm without joints.
Carriage mounting: By T-slots.
Unit mounting: By T-slots and mounting sets. The linear axis can be combined with any T-slot profile.
Belt type: HTD with steel reinforcement, no backlash when changing direction, repeatability ± 0,1 mm.
Carriage support: In the standard version, the carriage runs on 8 rollers which can be adjusted and serviced at a central servicing position. For longer carriages the number of rollers can be increased.

Forces and torques



Size	DLVZ 120		DLVZ 160		DLVZ 200	
Forces/Torques	static	dynamic	static	dynamic	static	dynamic
F_x (N)	894	800	1000	840		
F_y (N)	1100	900	3000	2000		
F_z (N)	1250	1000	3500	2800		
M_x (Nm)	150	125	400	320		
M_y (Nm)	140	120	360	300		
M_z (Nm)	100	90	180	150		
All forces and torques relate to the following: existing values / table values $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$						
No-load torque						
Nm	1,4		1,8			
Speed						
(m/sec) max	3		4			
Tensile force						
permanent (N)	900		1000			
0,2 sec (N)	1000		1150			
Geometrical moments of inertia of aluminium profile						
I_x mm^4	6,6x10^5		22,2x10^5			
I_y mm^4	38,6x10^5		122,0x10^5			
E-Modulus N/mm^2	70000		70000			

For life-time calculation of rollers use our CD-ROM or homepage!

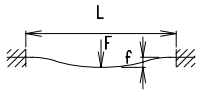
Formula: DLVZ
Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F	= force	(N)
P	= pulley action perimeter	(mm)
S_i	= safety factor 1,2 … 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm pulley	(min^{-1})
M_a	= driving torque	(Nm)
P_a	= motor power	(KW)

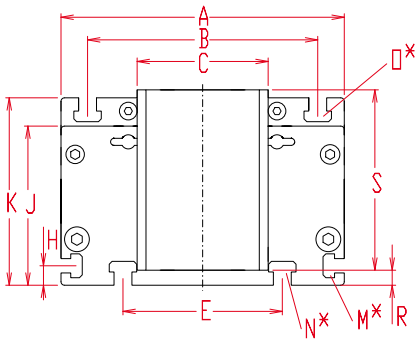
$$f = \frac{F*L^3}{E*I*192}$$

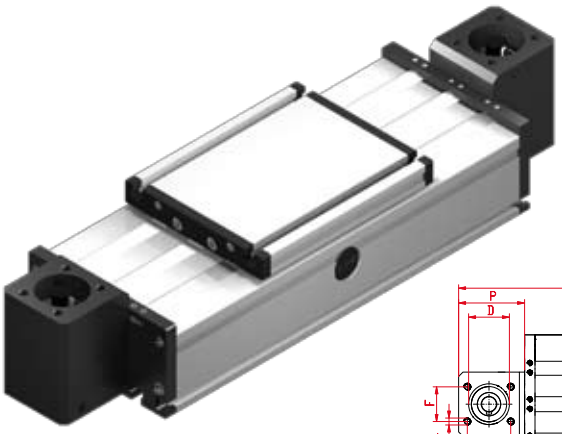


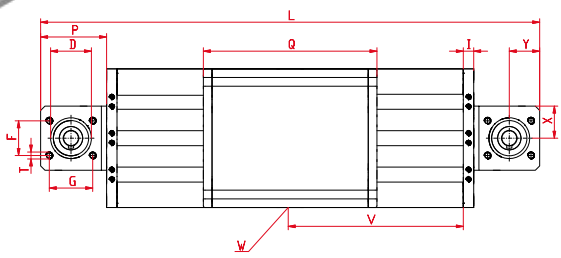
f= deflection (mm)
F = load (N)
L= free length
E= elastic modulus 70000 (N/mm^2)
I= second moment of area (mm^4)

Positioning system DLVZ 120, 160

Dimensions (mm)



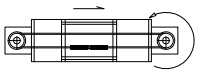
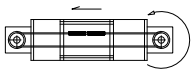




Increasing the carriage length will increase the basic length by the same amount

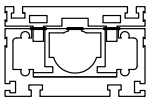
*For slide nuts refer to chapter 2.2 page 2 V = Q + 100 mm W = servicing position

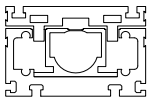
Size □	Basic length L	A	B	C	D	E	F	G	H	I	J	K	M for	N for	O for	P	Q	R	S	T	U	X	Y	Basic weight	Weight per 100 mm
DLVZ 120	300	120	96	56	37	78	30	36	10	10	68	79	M5	M6	M6	56	156	2,5	82	M6	60	28	24	4,62 kg	0,82 kg
DLVZ 160	410	160	130	74	47	90	40	50	11	12	90	106	M6	M8	M8	76	200	8,5	102	M 8	80	37	35	11,23 kg	1,76 kg
DLVZ 200																									

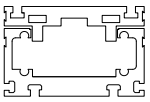
1 **(1)** Belt connection right  **(2)** Belt connection left 

Choice of guide body profile:

0

(0) 
internal profile with cover bands

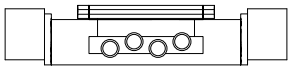
(1) 
internal profile without cover bands

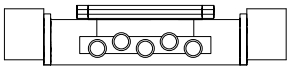
(2) 
without internal profile and cover bands

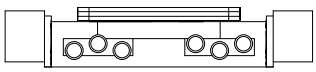
(3) 
with bellows

Stainless versions upon request.

0 **Choice of carriages:**

(0) 

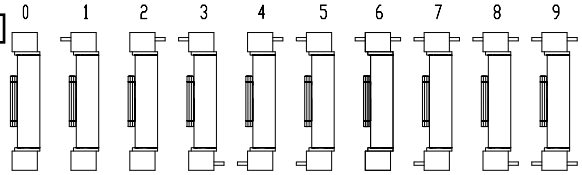
(2) 

(3) 

Size	Version 0		Version 2		Version 3	
	Q	L	Q	L	Q	L
120	156	300	196	340	236	380
160	200	410	250	460	>300	>510
200						

Drive version:

0



The standard version 0 is supplied with 4 flush mounted shafts.

Belt table

Code No.		Size	Belt	mm/rev.	Number of teeth
0	**4**	120	5M25	80	16
0	**4**	160	5M25	110	22
0	**9**	200			

Shaft dimensions

Size	Shaft ø h6 x length	Key
120	14 x 35	5x5x28
160	18 x 45	6x6x40
200		

Basic length + stroke = total length

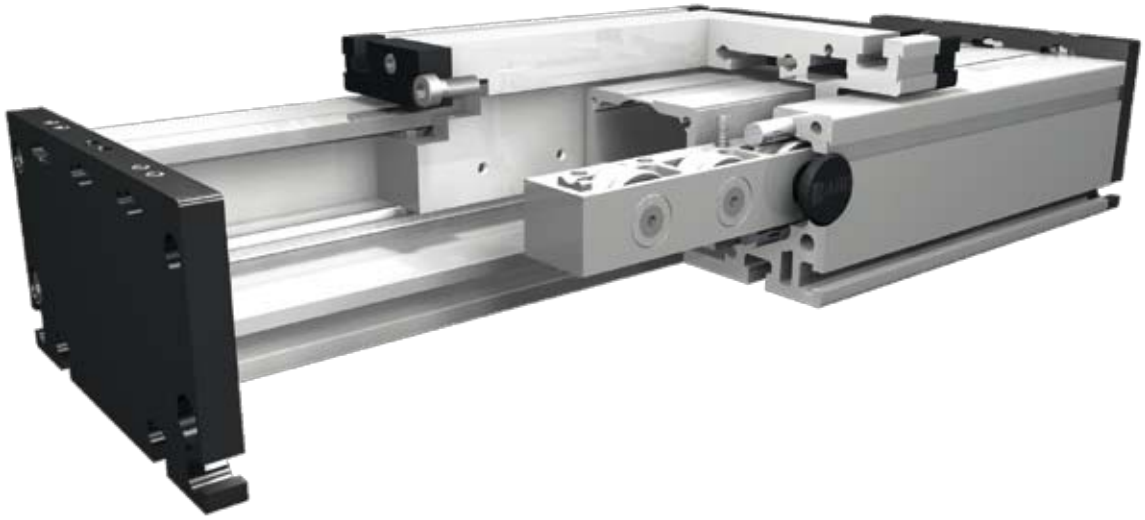
DLVZ	160	1	0	0	0	0	4	1	01500
	Pos.	1	2	3	4	5	6	7	

For combination kits and connecting elements refer to chapter 2.2

Sample ordering code:
DLVZ 160 with belt connection right, internal profile with cover bands, standard carriage and 4 flush mounted shafts, 1090 mm stroke

Positioning system DLR 120, 160, 200

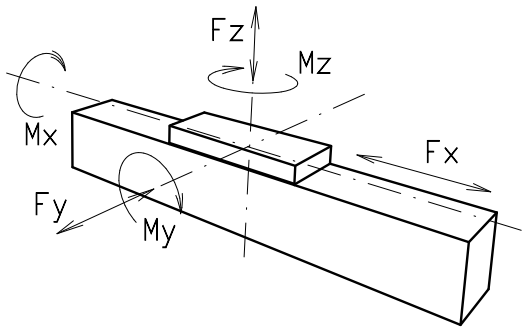
Roller unit without drive



Function:
This unit consists of a rectangular aluminium profile with 2 integrated roller guides. The openings of the guide body are sealed with 3 stainless steel cover bands to protect the guide from splash water and dust. Alternatively, the opening can also be covered with a bellow or can be delivered without cover bands. The roller guide can be either driven by an internal pneumatic cylinder or other additional drives or it serves as load carrying linear slide.

Fitting position: As required. Max. length 6.000 mm without joints.
Carriage mounting: By T-slots.
Unit mounting: By T-slots and mounting sets. The linear axis can be combined with any T-slot profile.
Carriage support: In the standard version, the carriage runs on 8 rollers which can be adjusted and serviced at a central servicing position. For longer carriages the number of rollers can be increased.

Forces and torques

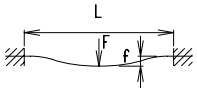


Size	120		160		200	
Forces/Torques	static	dynamic	statisch	dynam.	statisch	dynam.
F_x (N)	-	-	-	-	-	-
F_y (N)	1100	900	3000	2000	4400	3100
F_z (N)	1250	1000	3500	2800	4900	4400
M_x (Nm)	150	125	400	320	600	510
M_y (Nm)	140	120	360	300	560	480
M_z (Nm)	100	90	180	150	310	275
All forces and torques related to the following:						
existing values / table values	$\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$					
Speed						
(m/sec) max	4		6		8	
Geometrical moments of inertia of aluminium profile						
I_x mm^4	6,6x10^5		22,2x10^5		63,8x10^5	
I_y mm^4	38,6x10^5		122,0x10^5		335,0x10^5	
Elastic modulus N/mm^2	70000		70000		70000	

For life-time calculation of rollers use our CD-ROM or homepage!

Formula: DLR

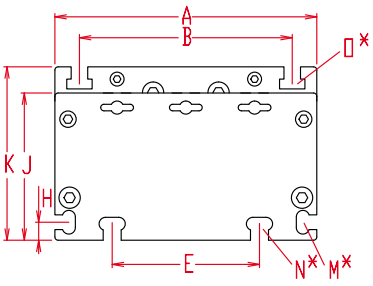
$$f = \frac{F*L^3}{E*I*192}$$



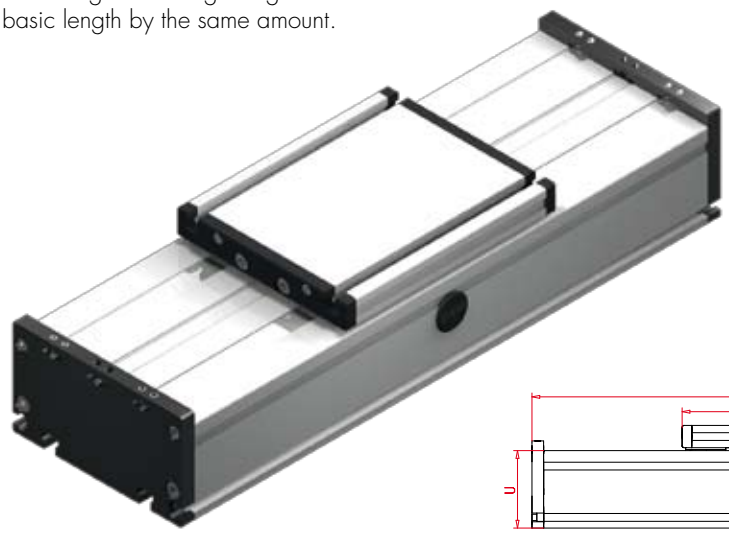
f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

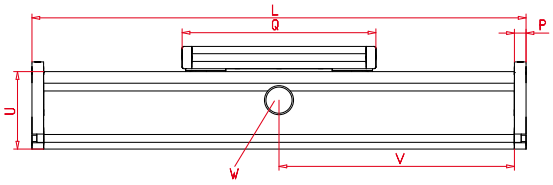
Positioning system DLR 120, 160, 200

Dimensions (mm)



Increasing the carriage length will increase the basic length by the same amount.





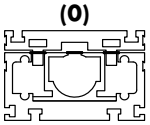
*For slide nuts refer to chapter 2.2 page 2 V = Q + 100 mm W = servicing position

Size □	Basic length L	A	B	E	H	J	K	M for	N for	O for	P	Q	U	Basic weight	Weight per 100 mm
DLR 120	200	120	96	78	10	68	79	M 5	M 6	M 6	10	156	60	3,2 kg	0,71 kg
DLR 160	240	160	130	90	11	90	106	M 6	M 8	M 8	12	200	80	6,9 kg	1,42 kg
DLR 200	320	200	160	140	15	110	129	M 8	M 10	M 10	15	270	100	11,4 kg	2,30 kg

Choice of guide body profile:

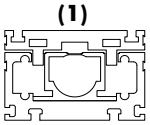
0

(0)



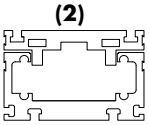
internal profile with cover bands

(1)



internal profile without cover bands

(2)



without internal profile and cover bands

(3)

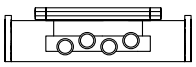
with bellows

Stainless versions upon request.

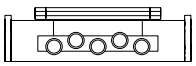
Choice of carriages:

0

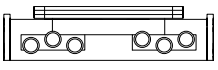
(0)



(2)



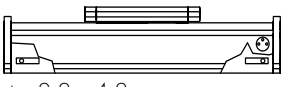
(3)



Size	Version 0		Version 2		Version 3	
	Q	L	Q	L	Q	L
120	156	200	196	240	>236	>280
160	200	240	250	290	>300	>340
200	270	320	330	380	>410	>470

1500 Basic length + stroke = total length

DLR	160	0	0	0	0	0	0	0	01500
Pos.	1	2	3	4	5	6	7		

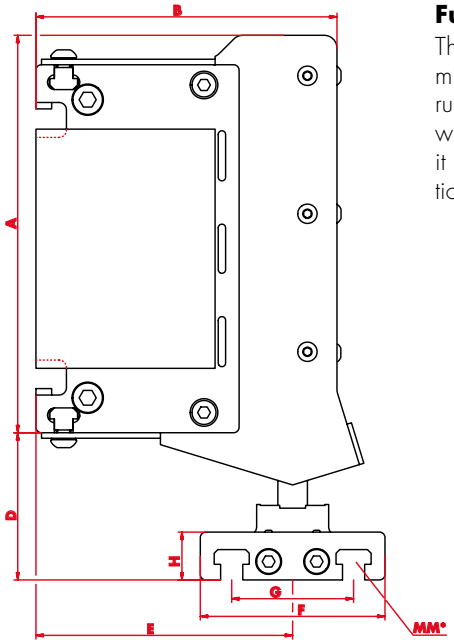


Inductive proximity switch sets, which can be mounted inside of the square profile, are available as accessories. Coupling and a special plug are mounted from the outside. For additional accessories refer to chapter 2.2 – 4.2.

Sample ordering code:
DLR160, with internal profile and cover bands, standard rollers, 1260 mm stroke.

Dust sealing D 160, 200 Systems

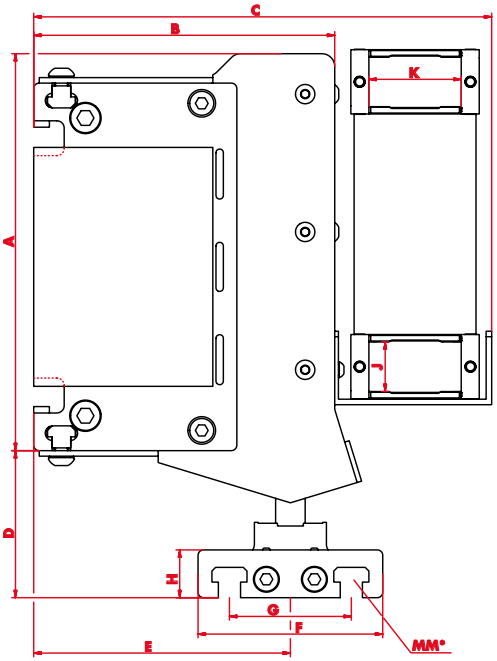
Without cable chain
Code-No.: 028x0



Function:

The dust seal consists of a specially formed aluminium sheet which is provided with a smooth running brush and is available either with or without energy chain take-up. This cover makes it possible to retrofit existing D 160, 200 positioning systems with a sealing.

With cable chain
Code-No.:028x1



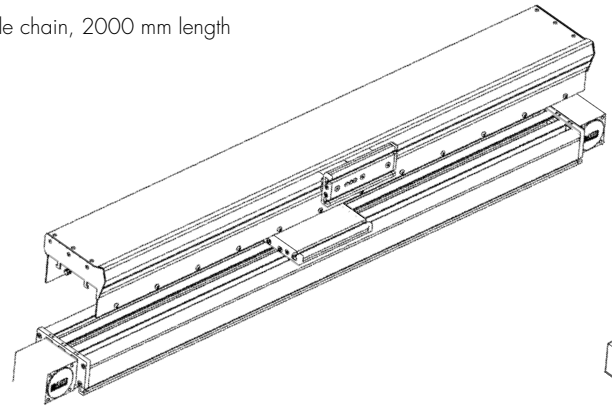
*For slide nuts refer to carriage profile QL/QS chapter 2.2 page 2

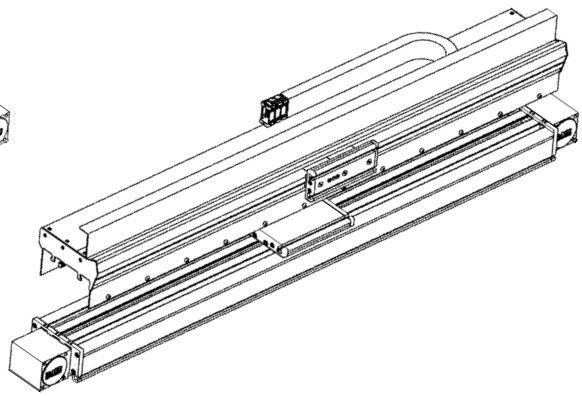
Code-No.	for Size	Basic length L	A	B	C	D	E	F	G	H	J	K	MM for	Basic weight	Weight per 100 mm
02830	**D** 120	**													
02831	**D** 120	**													
02840	**D** 160	**	176	143	-	78	119	80	50	23	-	-	M 8	** kg	0,40 kg
02841	**D** 160	**	176	143	228	78	119	80	50	23	27	50	M 8	** kg	0,54 kg
02850	**D** 200	**	216	163	-	80	139	100	66	26	-	-	M 10	** kg	0,46 kg
02851	**D** 200	**	216	163	248	80	139	100	66	26	27	50	M 10	** kg	0,60 kg

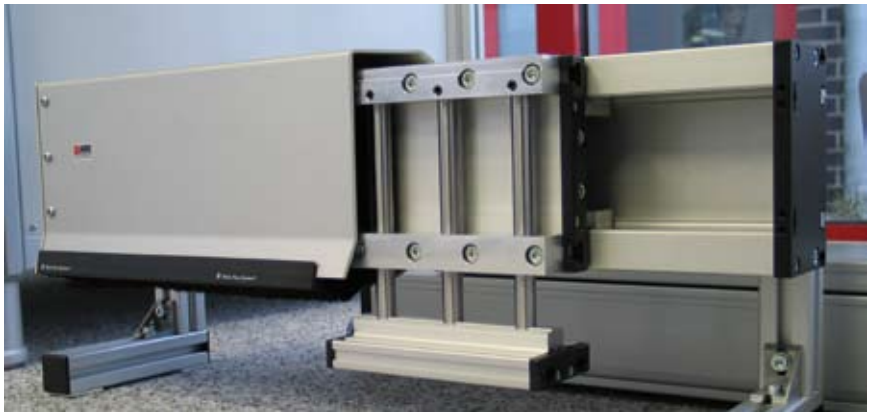
** System dependent

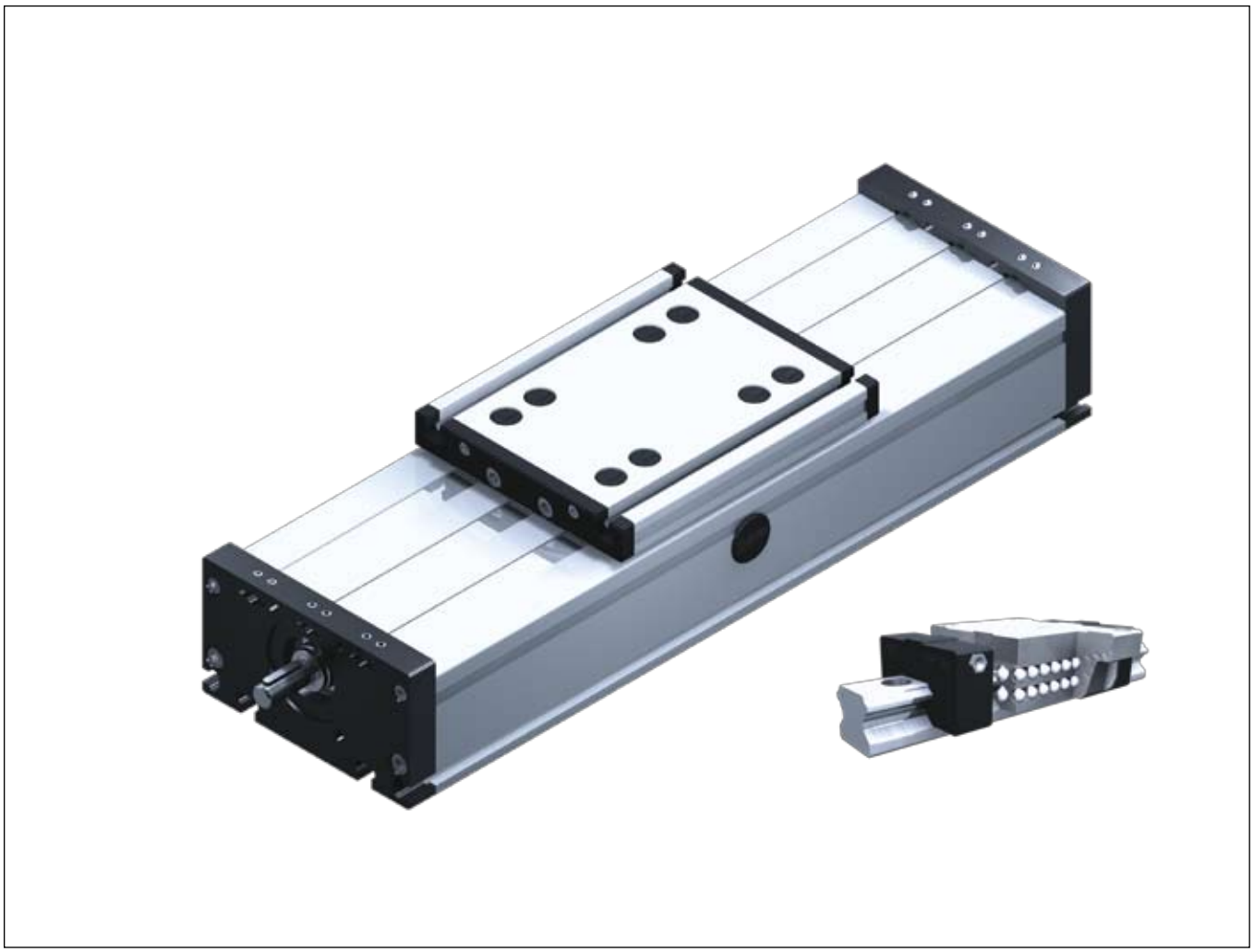
02851	2000

Sample ordering code:
D200 Dust sealing with cable chain, 2000 mm length





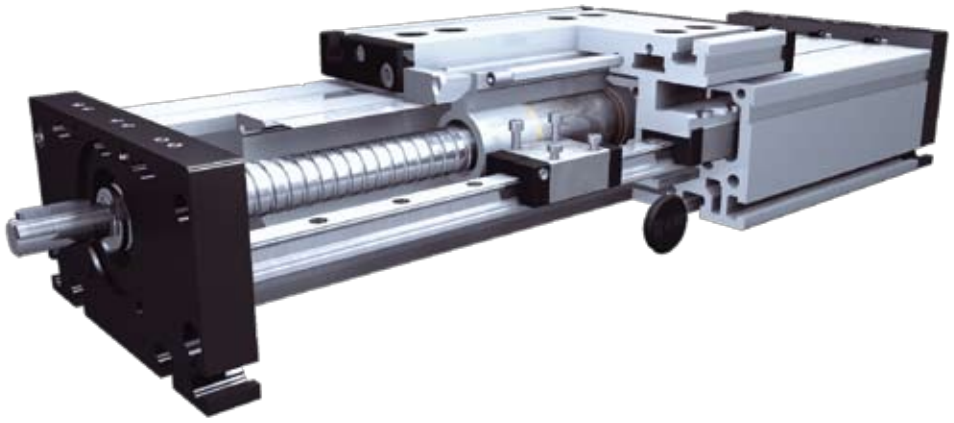




Rail guide
positioning systems
DS

Positioning system DST/DSK 120, 160, 200

Spindle drives

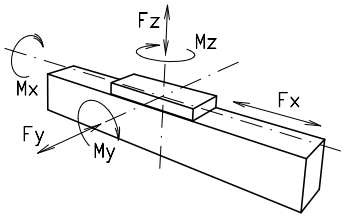


Function:
This unit consists of a rectangular aluminium profile with 2 integrated rail guides. The carriage is driven by means of a rotating spindle with leading nut. Where two parallel linear units are used or where two carriages are mounted on one unit, the leading-nut receiver can be used to adjust the symmetry of the carriages. The openings of the guide body are sealed with 3 stainless steel cover bands to protect the drive from splash water and dust. Another option is to cover the opening with a bellows.

Fitting position: As required. Max. length 3.000 mm without joints.
Carriage mounting: By T-slots.
Unit mounting: By T-slots and mounting sets. The linear axis can be combined with any T-slot profile.
Carriage support: In the standard version, the carriage runs on 4 runner blocks which can be serviced at a central servicing position. For longer carriages the number of runner blocks can be increased.
Repeatability: Ballscrew ± 0,025 mm, trapezoidal thread ± 0,2 mm.

8.1

Forces and torques



Size	120		160		200	
permitted dyn. Forces*	5000 km	10000 km	5000 km	10000 km	5000 km	10000 km
F_x (N)	900	800	5000	4000	10000	8000
F_y (N)	1776	1405	5570	3900	15600	11080
F_z (N)	2090	1650	7050	5020	20600	14600
M_x (Nm)	81	64	358	255	1285	915
M_y (Nm)	97	77	369	262	1375	980
M_z (Nm)	96	76	364	258	1345	960
C (N)	2310		7800		22800	

All forces and torques related to the following:

existing values / table values

$$\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$$

No-load torque								
Trapezoidal thread	18 x 4	18 x 8	24 x5	24 x 10	32 x 6	32 x 12		
(Nm)	0,8	1,1	1,0	1,3	1,5	1,7		
Ballscrew	16 x 5	16 x 10	25 x 5	20 x 20	32 x 5	32 x 10	32 x 20	32 x 32
(Nm)	0,7	1,0	1,0	1,2	1,3	1,6	1,7	1,7
Geometrical moments of inertia of aluminium profile								
I_x mm⁴	$5{,}61 \times 10^5$		$2{,}13 \times 10^6$		$4{,}81 \times 10^6$			
I_y mm⁴	$34{,}19 \times 10^5$		$12{,}33 \times 10^6$		$26{,}0 \times 10^6$			
Elastic modulus N/mm²	70000		70000		70000			

* referred to life-time

Formula: DST/K

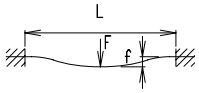
Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi*\mu} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F	= force		(N)
P	= thread pitch		(mm)
S_i	= safety factor 1,2 … 2		
M_{leer}	= no-load torque		(Nm)
n	= rpm of screw		(min^{-1})
M_a	= driving torque		(Nm)
μ	= screw efficiency		
P_a	= motor power		(KW)

Deflection:



$$f = \frac{F*L^3}{E*I*192}$$

f	= deflection	(mm)
F	= load	(N)
L	= free length	(mm)
E	= elastic moduusl 70000(N/mm²)	
I	= second moment of area (mm⁴)	

Efficiency of lead screws:

All ballscrew	0,900
Tr 24x5	0,384
Tr 24x10	0,550
Tr 32x6	0,360
Tr 32x12	0,524

Nominal lifetime:

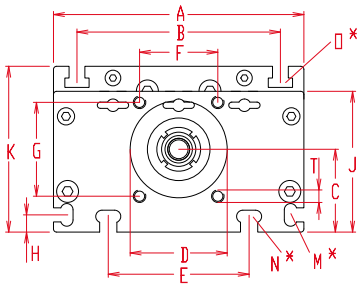
$$L = \left(\frac{C}{F}\right)^3 \times 10^5$$

L	= Lifetime in meter	
C	= Dynamic load factor	(N)
F	= Middle load	(N)

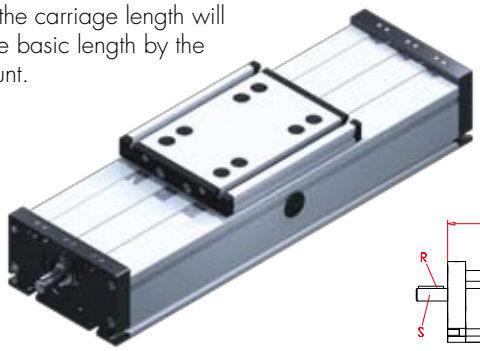
For the diagram for critical speeds of lead screws refer to chapter 5.2 page 3

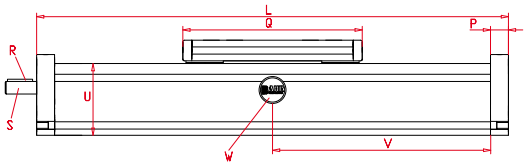
Positioning system DST/DSK 120, 160, 200

Dimensions (mm)



Increasing the carriage length will increase the basic length by the same amount.





*For slide nuts refer to chapter 2.2 page 2 V = Q + 100 mm W = servicing position

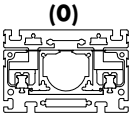
Size ❒	Basic length L	A	B	C	D	E	F	G	H	J	K	M for	N for	O for	P	Q	Shaft R Key	Shaft S Ø x length	T	U	Basic weight	Weight per 100 mm
DS 120	200	120	96	39	47	78	42	42	10	68	79	M 5	M 6	M 6	15	156	3x3x25	10 h6 x 27	M 6	60	3,9 kg	0,92 kg
DS 160	260	160	130	53	62	90	50	60	11	90	106	M 6	M 8	M 8	20	200	5x5x28	14 h6 x 35	M 8	80	7,2 kg	2,1 kg
DS 200	320	200	160	66	68	140	60	60	15	110	129	M 8	M 10	M 10	20	270	6x6x40	22 h6 x 45	M 8	100	19,4 kg	3,5 kg

T **Spindle:**
(T) Trapezoidal thread **(K)** Ballscrew

1 **Selection of screw:**
(1) right hand **(2)** left hand (Ballscrew by inquiry)

0 **Choice of guide body profile:**

(0)



internal profile with cover bands

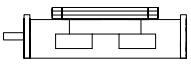
(3)

with bellows

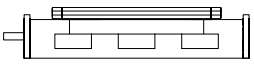
Stainless versions upon request.

0 **Choice of carriages:**

(0)



(1)



Size	Version 0 Q	Version 0 L	Version 1 Q	Version 1 L
120	156	200	156	200
160	200	260	>230	>290
200	270	320	>310	>360

0 **Drive version:**
(0) one shaft (locating bearing side) **(1)** one shaft (non-locating bearing side) **(2)** shaft on both sides

0 **Selection of screw:**

	Size	Standard	Multistart screw
Ballscrew right hand	120	**(0)** 16x5	**(1)** 16x10 **(2)** 16x16 **(3)** 20x20 **(4)** 25x5 **(5)** 25x10
	160	**(0)** 25x5	**(1)** 20x20 **(2)** 25x10 **(3)** 25x25
	200	**(0)** 32x5	**(1)** 32x10 **(2)** 32x20 **(3)** 32x32
Ballscrew left hand	upon request		
Trapezoidal right hand thread	120	**(0)** 18x4	**(1)** 18x8
	160	**(0)** 24x5	**(1)** 24x10
	200	**(0)** 32x6	**(1)** 32x12
Trapezoidal left hand thread	120	**(0)** 18x4	**(1)** 18x8
	160	**(0)** 24x5	**(1)** 24x10
	200	**(0)** 32x6	**(1)** 32x12

0 **Ballscrew pitch accuracy:**
(0) 0,1 mm / 300 mm (Standard) **(1)** 0,05 mm / 300 mm **(2)** 0,025 mm / 300 mm

0 **End play of ball nut:**
(0) 0,04 mm (Standard) **(1)*** < 0,02 mm **(2)*** 2% apply prestress
* only in combination with **pitch accuracy (1)** or **(2)**

1500 Basic length + stroke = total length

DS	T	160	1	0	0	0	0	0	0	01500
Pos.		1	2	3	4	5	6	7		

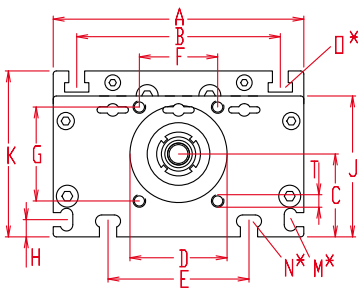
Inductive proximity switch sets, which can be mounted inside of the square profile, are available as accessories. Coupling and a special plug are mounted from the outside. For additional accessories refer to chapter 2.2 – 4.2.

Sample ordering code:
DST160, trapezoidal right hand thread, with internal profile and cover bands, standard carriage, one shaft (locating bearing side), spindle 24x5, 1240 mm stroke.

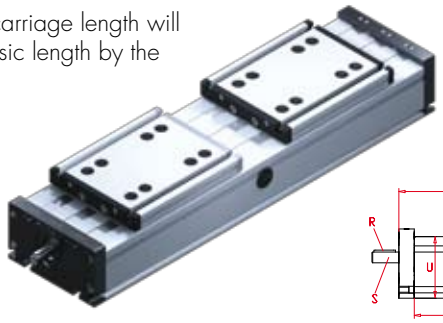
Positioning system DST/DSK 120, 160, 200

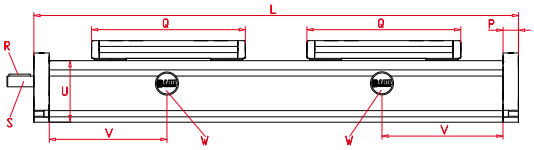
Dimensions (mm)

with trapezoidal thread or ballscrew, right-hand and left-hand thread or divided spindles



Increasing the carriage length will increase the basic length by the same amount.





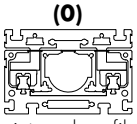
*For slide nuts refer to chapter 2.2 page 2 V = Q + 100 mm W = servicing position

Size ❒	Basic length L	A	B	C	D	E	F	G	H	J	K	M for	N for	O for	P	Q	Shaft R Key	Shaft S ∅ x length	T	U	Basic weight	Weight per 100 mm
DS 120	360	120	96	39	47	78	42	42	10	68	79	M 5	M 6	M 6	15	156	3x3x25	10 h6 x 27	M 6	60	5,1 kg	0,92 kg
DS 160	470	160	130	53	62	90	50	60	11	90	106	M 6	M 8	M 8	20	200	5x5x28	14 h6 x 35	M 8	80	10,1 kg	2,1 kg
DS 200	590	200	160	66	68	140	60	60	15	110	129	M 8	M 10	M 10	20	270	6x6x40	22 h6 x 45	M 8	100	35,9 kg	3,5 kg

Spindle:
T **(T)** Trapezoidal thread **(K)** Ballscrew

Selection of screw:
3 **(3)** right - left hand (ballscrew by inquiry) **(4)** divided spindle

Choice of guide body profile:
0

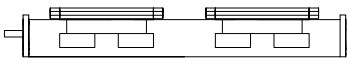
(0)

internal profile with cover bands

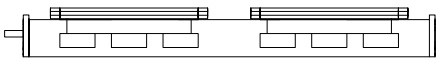
(3)

with bellows

Stainless versions upon request.

Choice of carriages:
0

(0)


(1)


Size	Version 0 Q	Version 0 L	Version 1 Q	Version 1 L
120	156	360	156	360
160	200	470	>230	>530
200	270	590	>310	>680

0 **Drive version:**
(0) shaft right hand thread **(1)** shaft left hand thread **(2)** shaft on both sides

Selection of screw:
0

	Size	Standard	Multistart screw
Ballscrew right hand	120	**(0)** 16x5	**(1)** 16x10* **(2)** 16x16* **(3)** 20x20* **(4)** 25x5 **(5)** 25x10*
	160	**(0)** 25x5	**(1)** 20x20* **(2)** 25x10* **(3)** 25x25*
	200	**(0)** 32x5	**(1)** 32x10* **(2)** 32x20* **(3)** 32x32*
Ballscrew left hand	upon request		
Trapezoidal right hand thread	120	**(0)** 18x4	**(1)** 18x8
	160	**(0)** 24x5	**(1)** 24x10
	200	**(0)** 32x6	**(1)** 32x12
Trapezoidal left hand thread	120	**(0)** 18x4	**(1)** 18x8
	160	**(0)** 24x5	**(1)** 24x10
	200	**(0)** 32x6	**(1)** 32x12

* = only for selection of divided spindle

Ballscrew pitch accuracy:
0 **(0)** 0,1 mm / 300 mm (Standard) **(1)** 0,05 mm / 300 mm **(2)** 0,025 mm / 300 mm

End play of ball nut:
0 **(0)** 0,04 mm (Standard) **(1)*** < 0,02 mm **(2)*** 2% apply prestress
* only in combination with **pitch accuracy (1)** or **(2)**

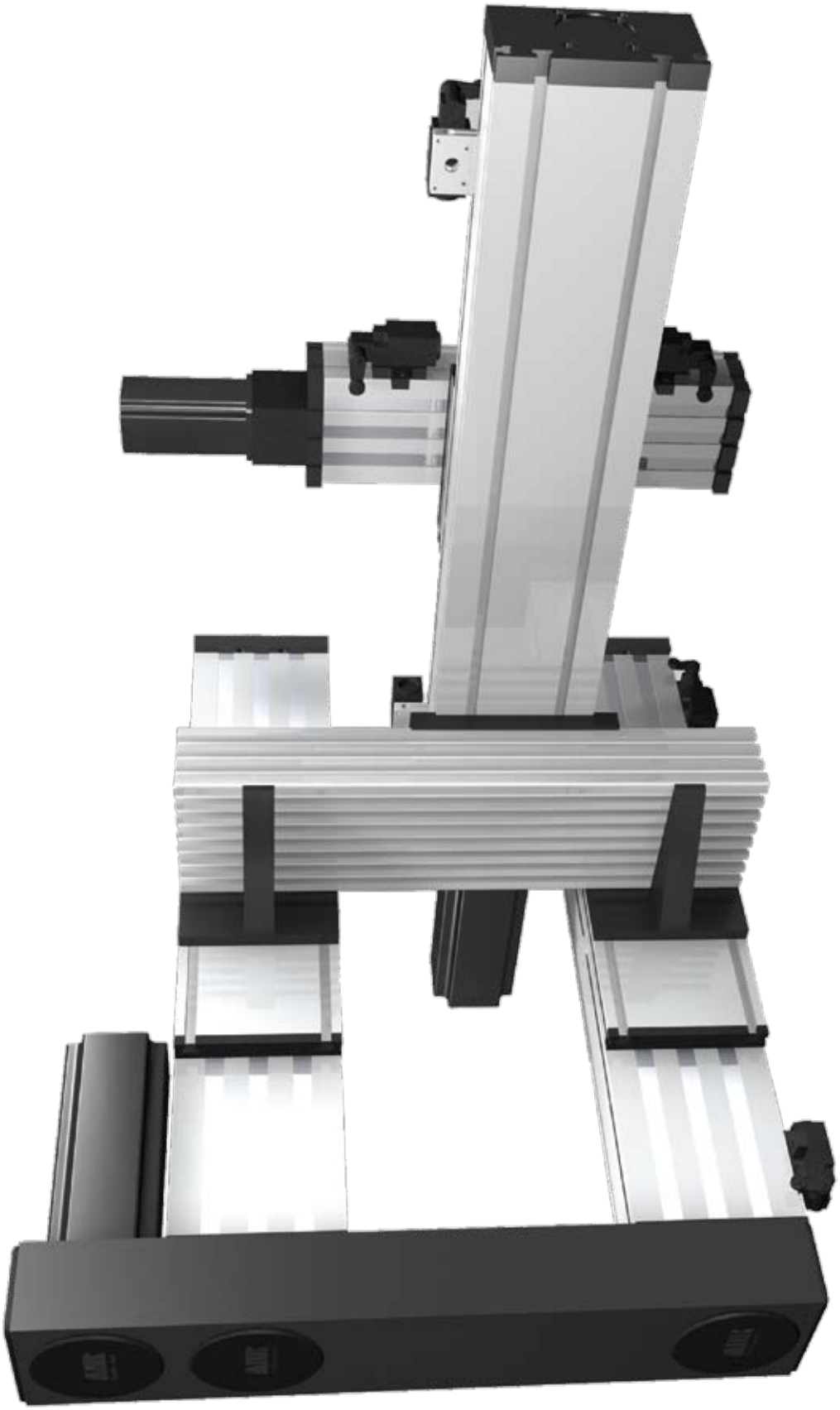
1500 Basic length + stroke = total length

Pos.	1	2	3	4	5	6	7
DS	T	160	3	0	0	0	0	0	0	01500

Inductive proximity switch sets, which can be mounted inside of the square profile, are available as accessories. Coupling and a special plug are mounted from the outside. For additional accessories refer to chapter 2.2 – 4.2.

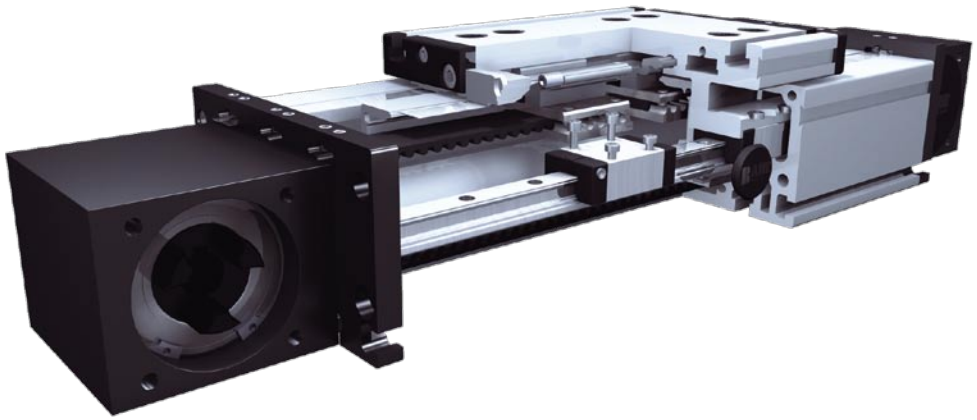
Sample ordering code:
DST160, trapezoidal right - left hand thread, with internal profile and cover bands, standard carriage, shaft on right hand thread, spindle 24x5,1030 mm stroke.

Possible mounting styles



Positioning system DSZ 120, 160, 200

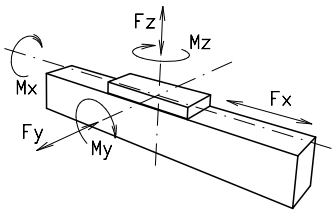
Belt drive



Function:
This unit consists of a rectangular aluminium profile with 2 integrated rail guidess. The carriage is moved by a belt drive. Each standard pulley has got one coupling claw on one side. Belt tension can be readjusted by a simple screw adjustment device in the carriage. This device can also be used for symmetrical adjustment of two or more linear units running parallel. The openings of the guide body are sealed with 3 stainless steel cover bands to protect the guide from splash water and dust. Alternatively, the opening can also be covered with a bellow or can be delivered without cover bands.

Fitting position: As required. Max. length 6.000 mm without joints.
Carriage mounting: By T-slots.
Unit mounting: By T-slots and mounting sets. The linear axis can be combined with any T-slot profile.
Belt type: HTD with steel reinforcement, no backlash when changing direction, repeatability ± 0,1 mm.
Carriage support: In the standard version, the carriage runs on 4 runner blocks which can be serviced at a central servicing position. For longer carriages the number of runner blocks can be increased.

Forces and torques



Size	120		160		200	
permitted dyn. Forces*	5000 km	10000 km	5000 km	10000 km	5000 km	10000 km
F_x (N)	894	800	1900	1800	4000	3800
F_y (N)	1776	1405	2236	1775	5155	4092
F_z (N)	2090	1650	5278	4189	11311	8977
M_x (Nm)	81	64	282	224	752	597
M_y (Nm)	97	77	283	225	813	646
M_z (Nm)	96	76	300	238	862	684
C (N)	2310		7800		22800	
All forces and torques related to the following: existing values / table values $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$						
No-load torque						
Nm without cover bands	1,2		1,5		2,0	
Nm with cover bands	1,6		2,1		2,9	
Speed						
(m/sec) max	5		5		5	
Tensile force						
permanent (N)	900		1900		4000	
0,2 sec (N)	1000		2090		4300	
Geometrical moments of inertia of aluminium profile						
I_x mm⁴	5,61x10⁵		2,13x10⁶		4,81 x10⁶	
I_y mm⁴	34,19x10⁵		12,33x10⁶		26,0 x10⁶	
Elastic modulus N/mm²	70000		70000		70000	

* referred to life-time

Formula: DSZ

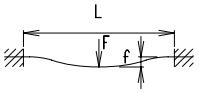
Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F = force (N)
P = pulley action perimeter (mm)
S_i = safety factor 1,2 … 2
M_{lee} = no-load torque (Nm)
n = rpm pulley (min^{-1})
M_a = driving torque (Nm)
P_a = motor power (KW)

Deflection:



$$f = \frac{F*L^3}{E*I*192}$$

f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000
I = second moment of area (mm^4)

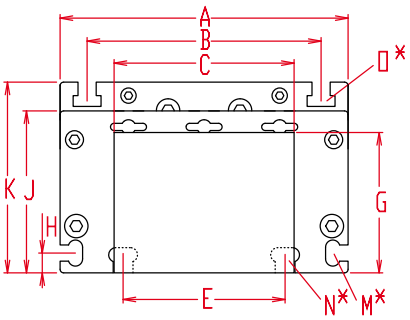
Nominal lifetime:

$$L = \left(\frac{C}{F}\right)^3 x10^5$$

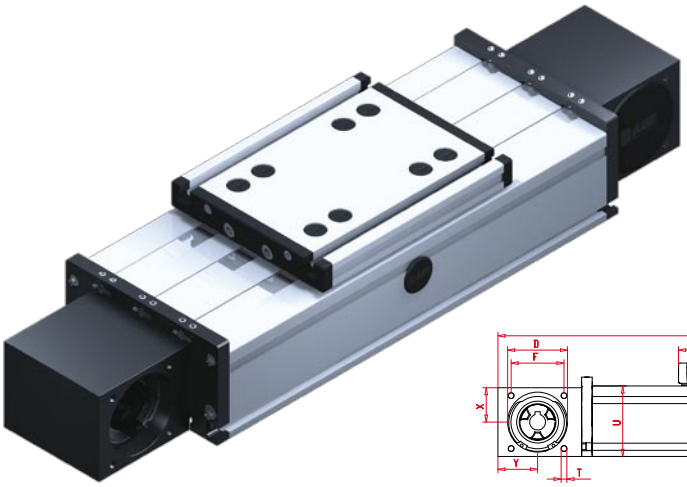
L = Lifetime in meter
C = Dynamic load factor (N)
F = Middle load (N)

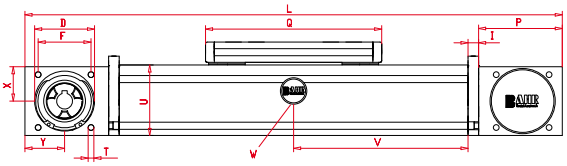
Positioning system DSZ 120, 160, 200

Dimensions (mm)



Increasing the carriage length will increase the basic length by the same amount.





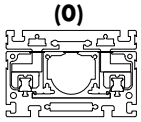
*For slide nuts refer to chapter 2.2 page 2 V = Q + 100 mm W = servicing position

Size ❒	Basic length L	A	B	C	D	E	F	G	H	I	J	K	M for	N for	O for	P	Q	T	U	X	Y	Basic weight	Weight per 100 mm
DSZ 120	330	120	96	80	47	78	42	58	10	10	68	79	M 5	M 6	M 6	70	156	M 6	60	28	35	5,1 Kg	0,85 Kg
DSZ 160	440	160	130	100	68	90	60	78	11	12	90	106	M 6	M 8	M 8	95	200	M 8	80	39	45	12,0 kg	1,9 kg
DSZ 200	530	200	160	130	90	140	80	97	15	15	110	129	M 8	M 10	M 10	110	270	M 10	100	49	50	21,3 kg	2,9 kg

Choice of guide body profile:

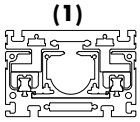
0

(0)



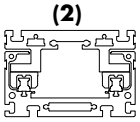
internal profile with cover bands

(1)



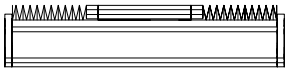
internal profile without cover bands

(2)



without internal profile and cover bands

(3)



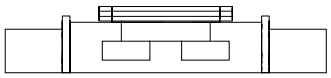
with bellows

Stainless versions upon request.

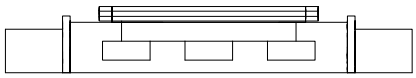
Choice of carriages:

0

(0)



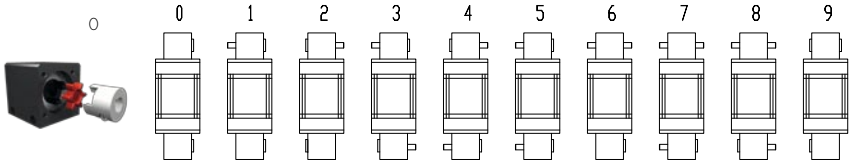
(1)



Size	Version 0		Version 1	
	Q	L	Q	L
120	156	330	156	330
160	200	440	>230	>470
200	270	530	>310	>570

Drive version:

0



9 is as 0, but with coupling claws on both sides.
The standard version is supplied without shaft. A shaft can be retrofitted by inserting it into the pulley bore and securing it with 2 locking rings or tension sets (size 200).

Belt table

Code No.		Size	Belt	mm/rev.	Number of teeth
0	**4**	120	5M25	130	26
0	**7**	160	8M30	176	22
0	**9**	160	8M50	176	22
0	**9**	200	8M50	224	28
1	**0**	200	8M70	224	28

Shaft dimensions

Size	Shaft ø h6 x length	Key
120(5M25)	14 x 35	5x5x28
160(8M30)	18 x 45	6x6x40
160(8M50)	25 x 35	8x8x32
200(8M50)	22 x 45	6x6x40
200(8M70)	30 x 55	8x7x50

Basic length + stroke = total length

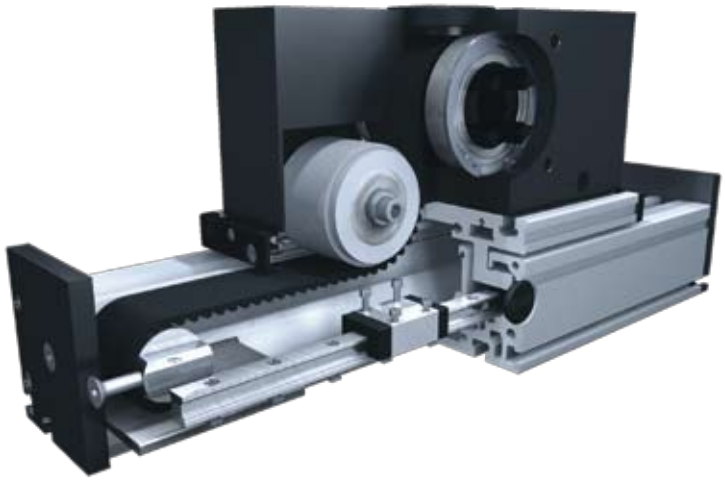
DSZ	160	1	0	0	0	0	7	1	01500
	Pos.	1	2	3	4	5	6	7	

Sample ordering code:
DSZ160 with internal profile and cover bands, standard carriage, coupling claw on one side, 1060 mm stroke.

Inductive proximity switch sets, which can be mounted inside of the square profile, are available as accessories. Coupling and a special plug are mounted from the outside. For additional accessories refer to chapter 2.2 – 4.2.

Positioning system DSSZ 120, 160, 200

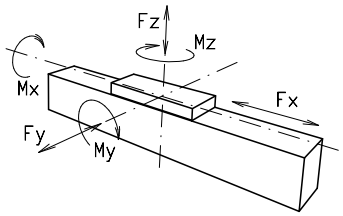
Belt drive



Function:
This linear unit consists of a rectangular aluminium profile with integrated rail guides . The carriage, which has runner blocks, is driven by a timing belt. Each standard pulley includes a coupling claw on one side and is equipped with maintenance-free ball bearings. Belt tension can be readjusted by a simple screw adjustment device in the carriage. This device can also be used for symmetrical adjustment of two or more linear units running parallel.

Fitting position: As required. Max. length 6.000 mm without joints.
Carriage mounting: By T-slots.
Unit mounting: By T-slots and mounting sets. The linear axis can be combined with any T-slot profile.
Belt performance: HTD with steel reinforcement, no backlash when changing direction, repeatability ± 0,1 mm.
Carriage support: In the standard version, the carriage runs on 4 runner blocks which can be serviced at a central servicing position. For longer carriages the number of runner blocks can be increased.

Forces and torques



Size	120		160		200	
permitted dyn. Forces*	5000 km	10000 km	5000 km	10000 km	5000 km	10000 km
F_x (N)	1900	1800	4000	3800	5900	5750
F_y (N)	1776	1405	2236	1775	15600	11080
F_z (N)	2090	1650	5278	4189	20600	14600
M_x (Nm)	81	64	282	224	1285	915
M_y (Nm)	97	77	283	225	1375	980
M_z (Nm)	96	76	300	238	1345	960
C (N)	2310		7800		22800	
All forces and torques related to the following: existing values / table values $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$						
No-load torque						
(Nm)	1,4		1,8		2,2	
Speed						
(m/sec) max	5		5		5	
Tensile force						
permanent (N)	1900		4000		5900	
0,2 sec (N)	2090		4300		6350	
Geometrical moments of inertia of aluminium profile						
I_x mm⁴	5,61x10⁵		2,13x10⁶		48,07 x10⁵	
I_y mm⁴	34,19x10⁵		12,33x10⁶		259,99 x10⁵	
Elastic modulus N/mm²	70000		70000		70000	

* referred to life-time

Formula: DSSZ

Driving torque:

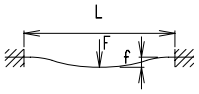
$$M_a = \frac{F*P*S_i}{2000*\pi} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F = force (N)
P = pulley action perimeter (mm)
S_i = safety factor 1,2 … 2
M_{lee} = no-load torque (Nm)
n = rpm pulley (min^{-1})
M_a = driving torque (Nm)
P_a = motor power (KW)

Deflection:

$$f = \frac{F*l^3}{E*I*192}$$



f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

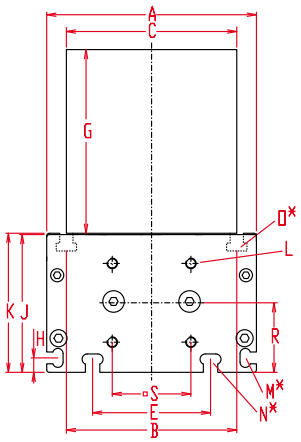
Nominal lifetime:

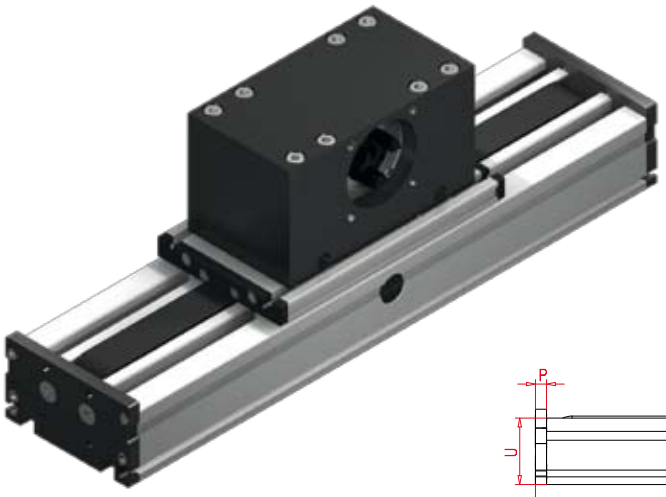
$$L = \left(\frac{C}{F}\right)^3 x10^5$$

L = Lifetime in meter
C = Dynamic load factor (N)
F = Middle load (N)

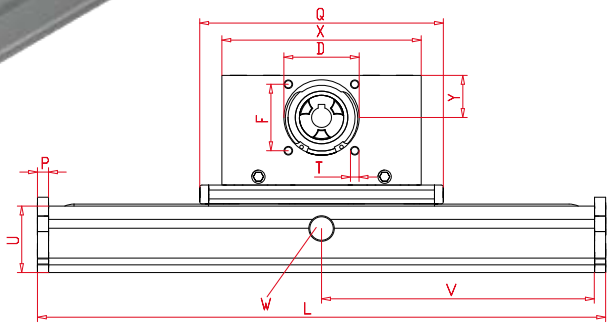
Positioning system DSSZ 120, 160, 200

Dimensions (mm)





Increasing the carriage length will increase the basic length by the same amount.

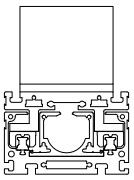


*For slide nuts refer to chapter 2.2 page 2 V = Q + 100 mm W = servicing position

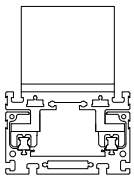
Size ❒	Basic length L	A	B	C	D	E	F	G	H	J	K	L for	M for	N for	O for	P	Q	R	S ❒	T	U	X	Y	Basic weight	Weight per 100 mm
DSSZ 120	230	120	96	100	68	78	60	100	10	68	79	M 6	M 5	M 6	M 6	10	200	39	42	M 8	60	180	39	12,0 kg	1,2 kg
DSSZ 160	330	160	130	130	90	90	80	130	11	105	106	M 8	M 6	M 8	M 8	12	290	53	60	M 10	80	270	60	27,8 kg	1,8 kg
DSSZ 200	380	200	160	160	110	140	100	145	15	128	129	M 10	M 8	M 10	M 10	15	340	62,5	95	M 10	100	310	62	53,0 kg	2,6 kg

Choice of guide body profile:

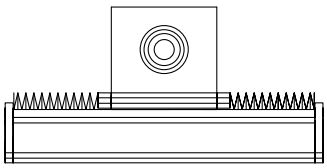
1



(1) internal profile without cover bands



(2) without internal profile and cover bands



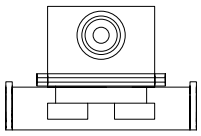
(3) with bellows

Stainless versions upon request.

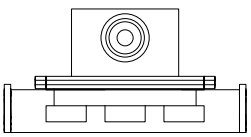
Choice of carriages:

0

(0)



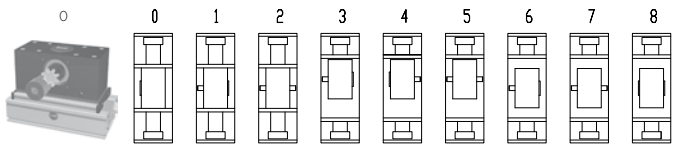
(1)



Size	Version 0		Version 1	
	Q	L	Q	L
120	200	230	200	230
160	290	330	>370	>410
200	340	380	360	400

Drive version:

0



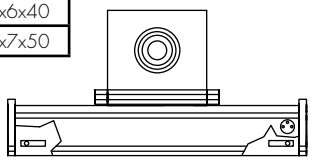
8 is as 0, but with coupling claws on both sides.The standard version is supplied without shaft. A shaft can be retrofitted by inserting it into the pulley bore and securing it with 2 locking rings or tension sets (size 200).

Belt table

Code No.		Size	Belt	mm/rev.	Number of teeth
0	**7**	120	8M30	192	24
0	**9**	160	8M50	256	32
1	**0**	200	8M70	304	38

Shaft dimensions

Size	Shaft ø h6 x length	Key
120	18 x 45	6x6x40
160	22 x 45	6x6x40
200	30 x 55	8x7x50



DSSZ	160	1	1	0	0	0	9	1	01500
	Pos.	1	2	3	4	5	6	7	

Basic length + stroke = total length

Inductive proximity switch sets, which can be mounted inside of the square profile, are available as accessories. Coupling and a special plug are mounted from the outside. For additional accessories refer to chapter 2.2 – 4.2.

Sample ordering code:
DSSZ160, body profile with internal profile without cover bands, standard carriage, coupling claws on one side, 1170 mm stroke

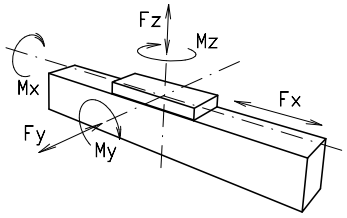
Positioning system DSR 120, 160, 200

Roller unit without drive

Function:
This unit consists of a rectangular aluminium profile with 2 integrated rail guidess. The openings of the guide body are sealed with 3 stainless steel cover bands to protect the guide from splash water and dust. Alternatively, the opening can also be covered with a bellow or can be delivered without cover bands. The positioning system can be either driven by an internal pneumatic cylinder or other additional drives or it serves as load carrying linear slide.

Fitting position: As required. Max. length 6.000 mm without joints.
Carriage mounting: By T-slots.
Unit mounting: By T-slots and mounting sets. The linear axis can be combined with any T-slot profile.
Carriage support: In the standard version, the carriage runs on 4 runner blocks which can be adjusted and serviced at a central servicing position. For longer carriages the number of runner blocks can be increased.

Forces and torques



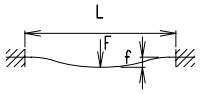
Size	120		160		200	
permitted dyn. Forces*	5000 km	10000 km	5000 km	10000 km	5000 km	10000 km
F_Y (N)	1776	1405	2236	1775	5155	4092
F_z (N)	2090	1650	5278	4189	11311	8977
M_x (Nm)	81	64	282	224	752	597
M_y (Nm)	97	77	283	225	813	646
M_z (Nm)	96	76	300	238	862	684
C (N)	2310		7800		22800	
All forces and torques related to the following: existing values / table values $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$						
Speed						
(m/sec) max	5		5		5	
Geometrical moments of inertia of aluminium profile						
I_x mm^4	5,61x10^5		2,13x10^6		4,81 x10^6	
I_y mm^4	34,19x10^5		12,33x10^6		26,0 x10^6	
Elastic modulus N/mm^2	70000		70000		70000	

* referred to life-time

Formula: DSR

Deflection:

$$f = \frac{F*L^3}{E*I*192}$$



f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

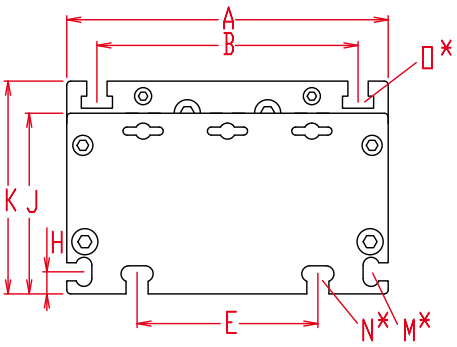
Nominal lifetime:

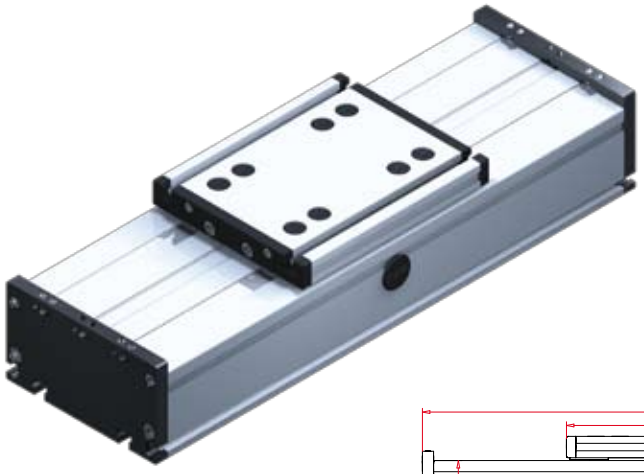
$$L = \left(\frac{C}{F}\right)^3 x10^5$$

L = Lifetime in meter
C = Dynamic load factor (N)
F = Middle load (N)

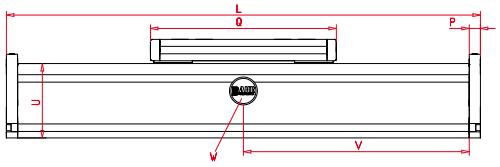
Positioning system DSR 120, 160, 200

Dimensions (mm)





Increasing the carriage length will increase the basic length by the same amount.



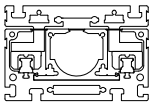
*For slide nuts refer to chapter 2.2 page 2 V = Q + 100 mm W = servicing position

Size □	Basic length L	A	B	E	H	J	K	M for	N for	O for	P	Q	U	Basic weight	Weight per 100 mm
DSR 120	200	120	96	78	10	68	79	M 5	M 6	M 6	10	156	60	3,2 kg	0,71 kg
DSR 160	240	160	130	90	11	90	106	M 6	M 8	M 8	12	200	80	7,0 kg	1,5 kg
DSR 200	320	200	160	140	15	110	129	M 8	M 10	M 10	15	270	100	15,0 kg	2,9 kg

Choice of guide body profile:

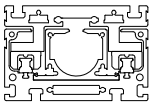
0

(0)



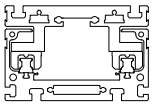
internal profile with cover bands

(1)



internal profile without cover bands

(2)



without internal profile and cover bands

(3)

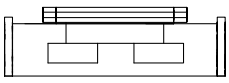
with bellows

Stainless versions upon request.

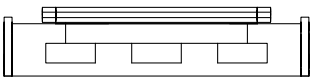
Choice of carriages:

0

(0)



(1)



Size	Version 0		Version 1	
	Q	L	Q	L
120	156	200	156	200
160	200	240	>230	>270
200	270	320	>310	>360

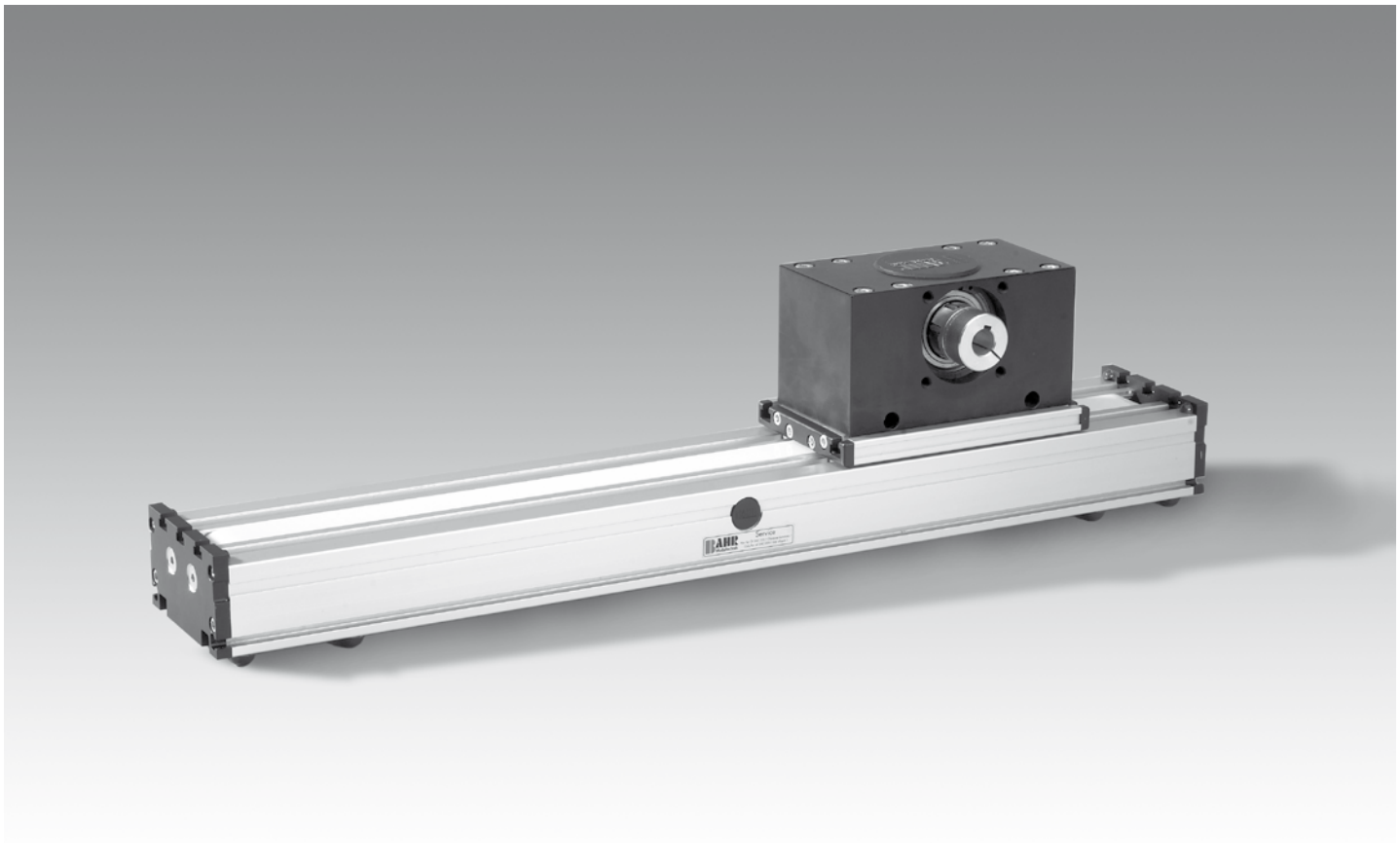
1500 Basic length + stroke = total length

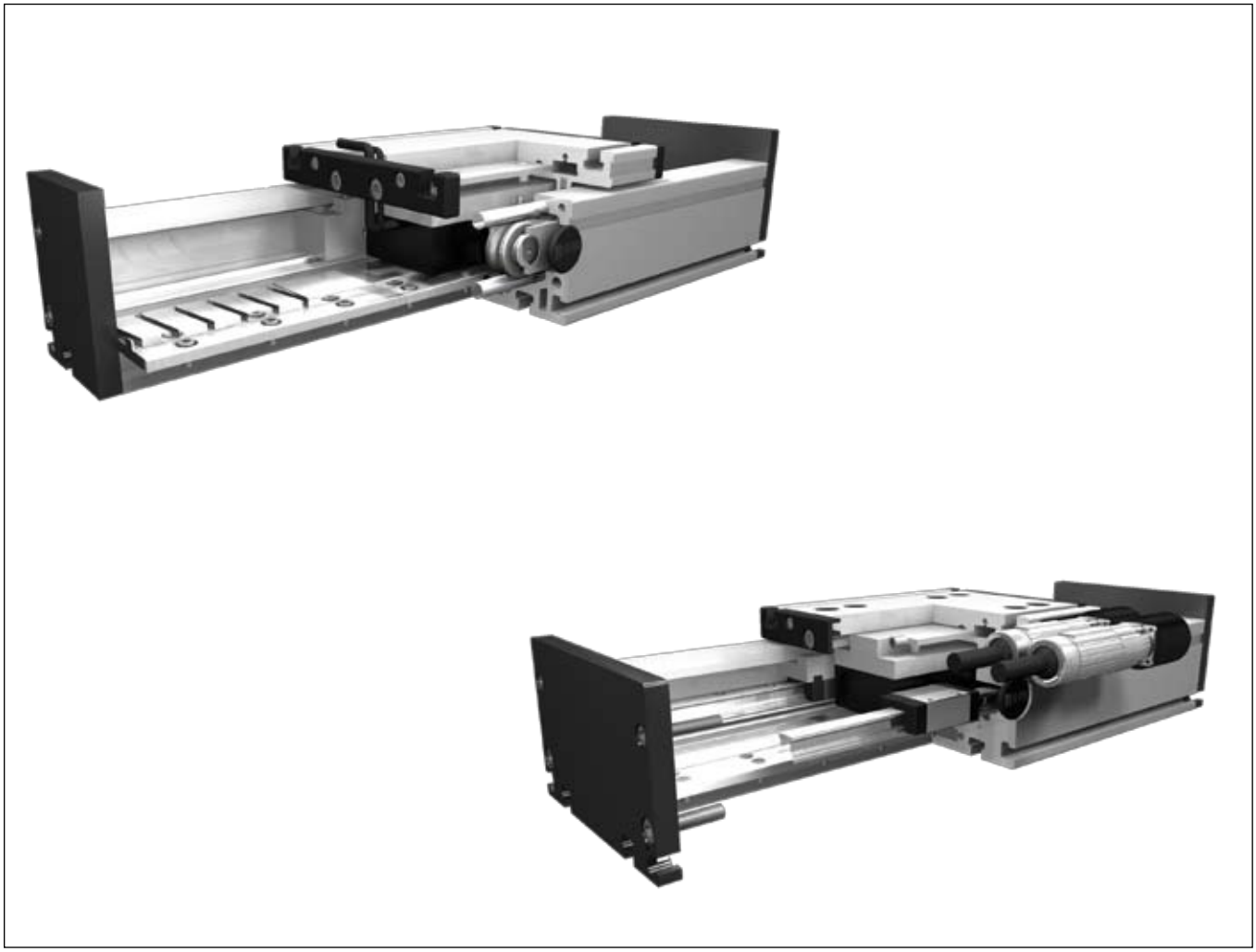
DSR	160	0	0	0	0	0	0	0	01500
	Pos.	1	2	3	4	5	6	7	

Sample ordering code:
DSR160, with internal profile and cover bands, standard runner blocks, 1260 mm stroke.

Inductive proximity switch sets, which can be mounted inside of the square profile, are available as accessories. Coupling and a special plug are mounted from the outside. For additional accessories refer to chapter 2.2 – 4.2.

Possible mounting styles



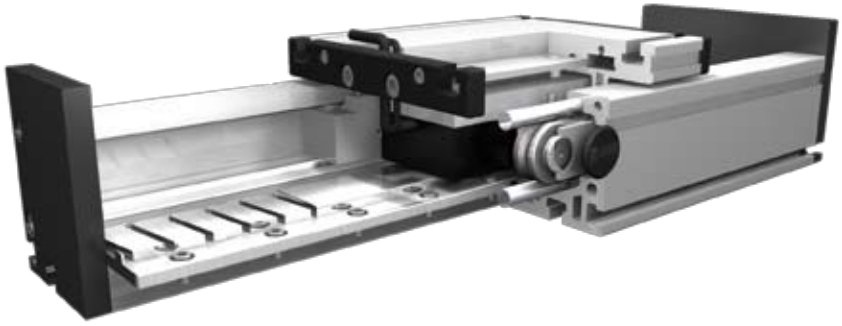


Roller guide
positioning systems
DLM, DLVM

Rail guide
positioning system
DSM, DSB

Positioning system DLM 120, 160, 200

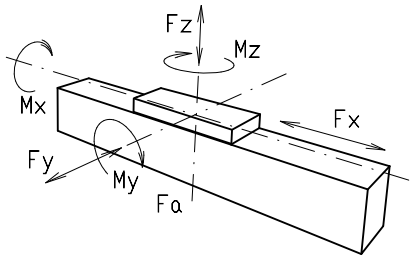
Linear motor drive



Function:
This unit consists of a rectangular aluminium profile with 2 integrated roller guides. The linear motor DLM unit is based on the principle of a linear, synchronous AC motor.
The guiding profile is fitted with permanent magnets as stator (secondary part). The carriage is fitted with the actuator (primary part). The magnetic attraction causes a force between carriage and guiding profile also in the absence of current. This force can be used for the initial tension of the bearings. Several carriages (primary parts) can be driven independently on one guiding profile.

Fitting position: As required. Max. length 6.000 mm without joints.
Carriage mounting: By T-slots.
Unit mounting: By T-slots and mounting sets. The linear axis can be combined with any T-slot profile.
Carriage support: In the standard version, the carriage runs on 10 or 12 rollers which can be adjusted and serviced at a central servicing position. For longer carriages the number of rollers can be increased.
Repeatability ± 0,05 mm. Repeated accuracy max. ± 0,05 bis 4.000 mm, ± 0,1 >4.000 mm.

Forces and torques

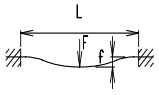


F_z = external force by load
F_a = magnetic attraction force
F_{zm} = maximum force in consideration of motor power
$F_{zm} = F_z + F_a$

Size	120			160			200		
Motor size	1	2	3	1	2	3	1	2	3
Forces/Torques $_{dyn}$									
F_a (N)	600	1200	1800	1200	1800	5500	3600	5500	11000
F_{zm} (N)	820	1640	2460	1590	8800	7030	5000	7500	13800
F_y (N)	700	700	470	1500	1000	450	3300	2200	1200
M_x (Nm)	180	90	60	280	190	130	600	400	220
M_y (Nm)	50	100	70	320	210	140	640	420	230
M_z (Nm)	22	33	50	90	100	120	200	170	210
Number of rollers	10	12	12	12	12	12	12	12	12
All forces and torques related to the following: existing values / table values $\frac{Fy}{Fy_{dyn}} + \frac{Fzm}{Fzm_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1{,}5$									
Motor specifications Fx									
Motor size	1	2	3	1	2	3	1	2	3
Carriage weight (kg)	1,7	2,5	3,1	5,1	4,7	5,4	9,4	10,5	12,7
Weight primary part (kg)	0,7	1,4	2,0	1,4	3,7	5,2	4,5	6,4	8,4
permanent (N)	61	115	173	115	271	406	383	574	766
Max. (N) (1sek.)	162	323	485	323	607	911	868	1301	1735
Moving force without current									
N	3	5	6	5	8	9	7	11	12
Speed									
(m/sec) max	4			6			6		
Geometrical moments of inertia of aluminium profile									
I_x mm^4	6,6x10^5			22,2x10^5			63,8x10^5		
I_y mm^4	38,6x10^5			122,0x10^5			335,0x10^5		
Elastic modulus N/mm²	70000			70000			70000		

Formula: DLM

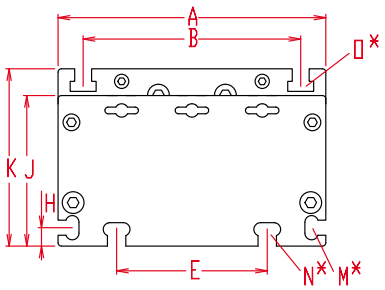
$$f = \frac{F * L^3}{E * I * 192}$$

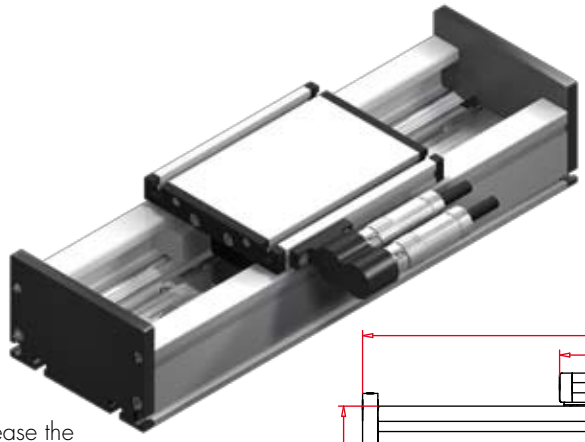


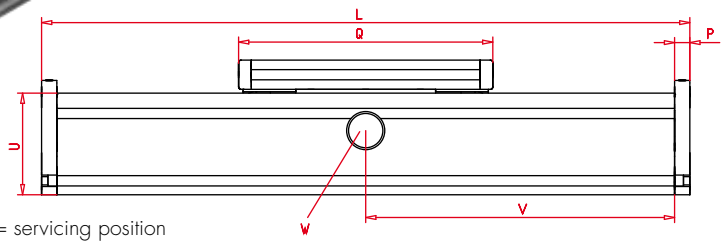
f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm²)
I = second moment of area (mm⁴)

Positioning system DLM 120, 160, 200

Dimensions (mm)







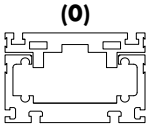
Increasing the carriage length will increase the basic length by the same amount.

*For slide nuts refer to chapter 2.2 page 2 V = Q + 100 mm W = servicing position

Size □	Basic length L	A	B	E	H	J	K	M for	N for	O for	P	U	Basic weight Motor size 1/2/3	Weight per 100 mm Motor size 1/2/3
DLM 120	Q + 30	120	96	78	10	68	79	M 5	M 6	M 6	10	60	5,2/7,2/9,2 Kg	1,0/1,0/1,0 Kg
DLM 160	Q + 30	160	130	90	11	90	106	M 6	M 8	M 8	12	80	12,6/15,6/20,7 Kg	1,6/2,0/2,0 Kg
DLM 200	Q + 35	200	160	140	15	110	129	M 8	M 10	M 10	15	100	26,9/30,5/37,9 Kg	2,6/2,6/2,6 Kg

0 **Choice of guide body profile:**

(0)



without internal profile and cover bands

(3)

with bellows

Stainless version upon request.

1 **Measurement system:**

(1) Measurement system LE100 5V Resolution 0.05 **(2)** Measurement system LE100 10,5-30V Resolution 0.05 **(3)** Hall sensor **(4)** Measurement system provided by customer

1 **Plug:**

(1) Plug Pos. 1 **(2)** Plug Pos. 2 **(3)** open unconnected cable end

1 **Motor size:**

(1) Motor size 1 with Q_1 **(2)** Motor size 2 with Q_2 **(3)** Motor size 3 with Q_3

(4) Supply with Q_1* **(5)** Supply with Q_2* **(6)** Supply with Q_3*

* = provided by customer

Dimensioning criteria for motor output						
	l_p □	b_p □	h_{ps} □	Q_1	Q_2	Q_3
120	**Q - 70**	**55**	**38**	**196**	**276**	**372**
160	**Q - 70**	**71**	**50**	**316**	**360**	**461**
200	**Q - 70**	**85**	**62**	**410**	**444**	**610**

l_p = length primary part; b_p = width primary part;
h_{ps} = height primary part + height secondary part + interspaces primary-/secondary part

For standard carriage length see 'Q' in table.
For digital controllers and linear encoder refer to chapter 9.1 page 10.

1500 Basic length + stroke = total length

DLM	160	0	0	1	1	0	0	1	01500
	Pos.	1	2	3	4	5	6	7	

Sample ordering code:
DLM160, Bahr Modultechnik Linearmotor, standard body profile, Measurement system LE100 5V, Plug Pos. 1, motor size 1, 1154 mm stroke.

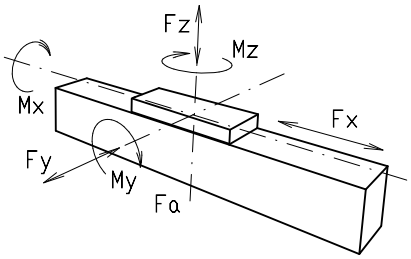
Positioning system DLVM 200

Linear motor drive

Function:
This unit consists of a rectangular aluminium profile with 2 integrated roller guides. The linear motor DLVM unit is based on the principle of a linear, synchronous AC motor.
The guiding profile is fitted with permanent magnets as stator (secondary part). The carriage is fitted with the actuator (primary part). The magnetic attraction causes a force between carriage and guiding profile also in the absence of current. This force can be used for the initial tension of the bearings. Several carriages (primary parts) can be driven independently on one guiding profile.

Fitting position: As required. Max. length 6.000 mm without joints.
Carriage mounting: By T-slots.
Unit mounting: By T-slots and mounting sets. The linear axis can be combined with any T-slot profile.
Carriage support: In the standard version, the carriage runs on 8 rollers which can be adjusted and serviced at a central servicing position. For longer carriages the number of rollers can be increased.
Repeatability ± 0,05 mm. Repeated accuracy max. ± 0,05 bis 4.000 mm, ± 0,1 >4.000 mm.

Forces and torques



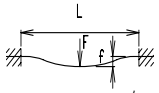
F_z = external force by load
F_a = magnetic attraction force
F_{zm} = maximum force in consideration of motor power
F_{zm} = $F_z + F_a$

Size	200
Motor size	3
Forces/Torques $_{dyn}$	
F_a (N)	11000
F_{zm} (N)	13800
F_y (N)	1200
M_x (Nm)	220
M_y (Nm)	230
M_z (Nm)	210
Number of rollers	12
All forces and torques related to the following: existing values / table values	$\frac{Fy}{Fy_{dyn}} + \frac{Fzm}{Fzm_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1{,}5$
Motor specifications Fx	
Motor size	3
Carriage weight (kg)	12,7
Weight primary part (kg)	8,4
permanent (N)	766
Max. (N) (1sek.)	1735
Moving force without current	
N	12
Speed	
(m/sec) max	6
Geometrical moments of inertia of aluminium profile	
I_x mm^4	6,38x10^6
I_y mm^4	33,5x10^6
Elastic modulus N/mm^2	70000

For life-time calculation of rollers use our CD-ROM or homepage!

Formula: DLVM

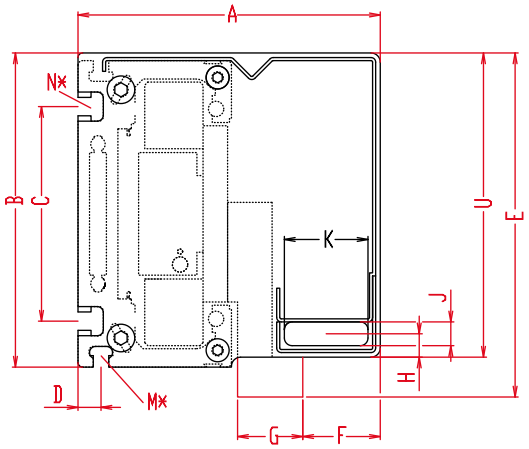
$$f = \frac{F*L^3}{E*I*192}$$



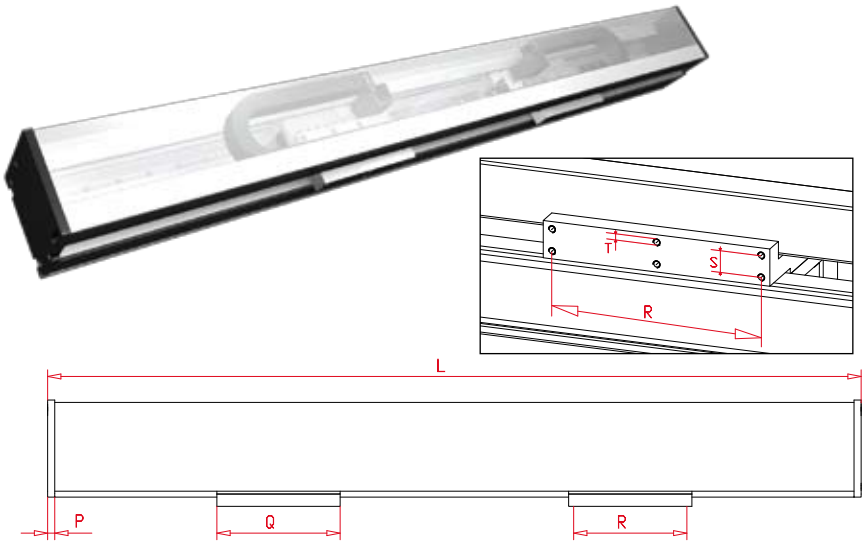
f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

Positioning system DLVM 200

Dimensions (mm)



Increasing the carriage length will increase the basic length by the same amount.



*For slide nuts refer to chapter 2.2 page 2

Size ❐	Basic length L	A	B	C	D	E	F	G	H	J	K	M for	N for	P	Q	R	S	T for	U	Basic weight	Weight per 100 mm
DLVM 200	602	197	205	140	15	224,5	50,5	42,5	15	15,5	54,5	M 8	M10	15	260	240	25	M8	198,5	39,4 kg	2,8 kg

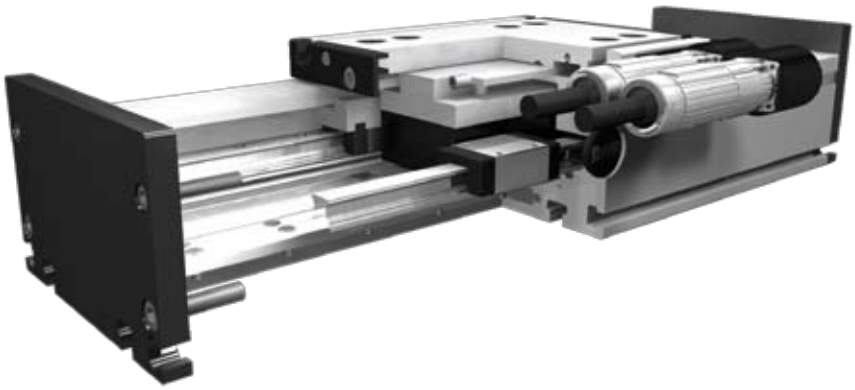
1500	Basic length + stroke = total length

DLVM	**200**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**01500**
Pos.	1	2	3	4	5	6	7		

Sample ordering code:
DLVM200, 898 mm stroke.

Positioning system DSM 120, 160, 200

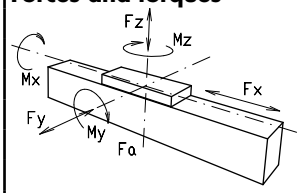
Linear motor drive



Function:
This unit consists of a rectangular aluminium profile with 2 integrated rail guidance. The linear motor DSM unit is based on the principle of a linear, synchronous AC motor.
The guiding profile is fitted with permanent magnets as stator (secondary part). The carriage is fitted with the actuator (primary part). The magnetic attraction causes a force between carriage and guiding profile also in the absence of current. This force can be used for the initial tension of the bearings. Several carriages (primary parts) can be driven independently on one guiding profile.

Fitting position: As required. Max. length 6.000 mm without joints.
Carriage mounting: By T-slots.
Unit mounting: By T-slots and mounting sets. The linear axis can be combined with any T-slot profile.
Carriage support: In the standard version, the carriage runs on 4 runner blocks which can be serviced at a central servicing position. For longer carriages the number of runner blocks can be increased.
Repeatability ± 0,05mm mm. Repeated accuracy max. ± 0,05mm bis 4.000 mm, ± 0,1 >4.000 mm.

Forces and torques



F_z = external force by load
F_a = magnetic attraction force
F_{zm} = maximum force in consideration of motor power
$F_{zm} = F_z + F_a$

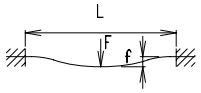
Size	120		160			200		
Motor size	1	2	1	2	3	1	2	3
permitted dyn.Forces*	10000 km		10000 km			10000 km		
F_a (N)	600	1200	1200	1800	5500	3600	5500	11000
F_{zm} (N)	820	1640	1590	2800	7030	4990	7640	13860
F_z (N)	650	500	1775	1775	3550	4092	4092	8184
M_x (Nm)	35	32	160	128	153	357	231	462
M_y (Nm)	40	58	373	351	532	769	556	1540
M_z (Nm)	40	57	222	261	328	585	654	906
C (N)	2310		7800			22800		
Number of runner blocks	6	8	4	4	8	4	4	8
All forces and torques related to the following: existing values / table values $\frac{Fy}{Fy_{dyn}} + \frac{Fzm}{Fzm_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1{,}5$								
Motor specifications Fx								
Motor size	1	2	1	2	3	1	2	3
Carriage weight (kg)	1,4	2,7	4,8	5,3	7,1	10,9	11,4	16,9
Weight primary part (kg)	0,7	1,4	1,4	3,7	5,2	4,5	6,4	8,4
permanent (N)	61	115	115	271	406	383	574	766
Max. (N) 1sec.	162	323	323	607	911	868	1301	1735
Moving force without current								
N	15	15	30	30	60	40	40	80
Geometrical moments of inertia of aluminium profile								
I_x mm⁴	5,60 x10⁵		2,13 x10⁶			4,81 x10⁶		
I_y mm⁴	34,19 x10⁵		12,3 x10⁶			26,0 x10⁶		
Elastic modulus N/mm²	70000		70000			70000		

* referred to life-time

Formula: DSM

Deflection:

$$f = \frac{F * L^3}{E * I * 192}$$



f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm²)
I = second moment of area (mm⁴)

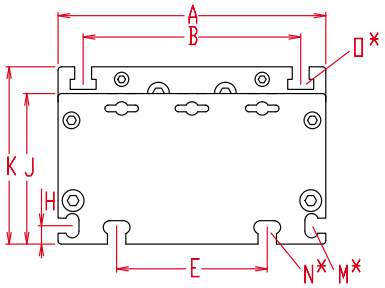
Nominal lifetime:

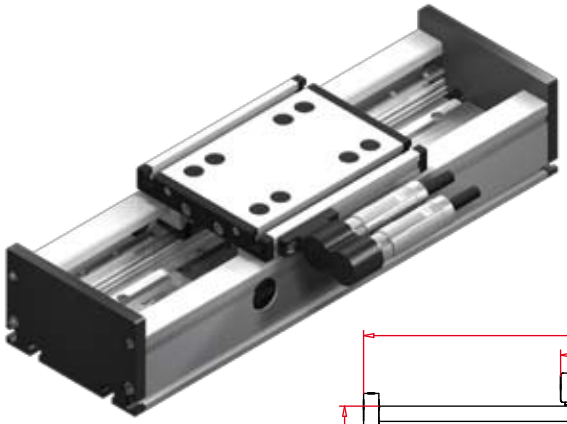
$$L = \left(\frac{C}{F}\right)^3 \times 10^5$$

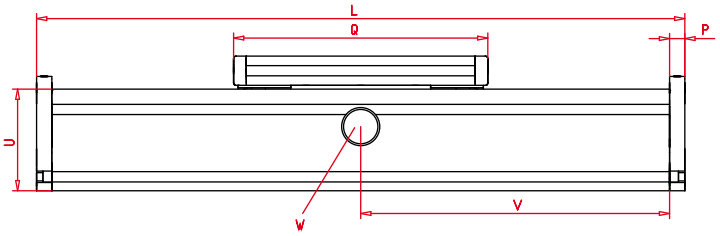
C = Dynamic load faktor (N)
F = Middle load (N)

Positioning system DSM 120, 160, 200

Dimensions (mm)







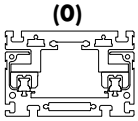
Increasing the carriage length will increase the basic length by the same amount.

*For slide nuts refer to chapter 2.2 page 2 V = Q + 100 mm W = servicing position

Size ❒	Basic length L	A	B	E	H	J	K	M for	N for	O for	P	U	Basic weight Motor size 1/2/3	Weight per 100 mm Motor size 1/2/3
DSM 120	Q + 30	120	96	78	10	68	79	M 5	M 6	M 6	10	60	4,8/6,9 kg	1,0/1,0
DSM 160	Q + 30	160	130	90	11	90	106	M 6	M 8	M 8	12	80	12,4/16,7/22,6 kg	1,7/2,0/2,0 kg
DSM 200	Q + 35	200	160	140	15	110	129	M 8	M 10	M 10	15	100	30,0 /33,0 /44,2kg	3,1/3,1/3,1 kg

0 **Choice of guide body profile:**

(0)



without internal profile and cover bands

(3)

with bellows

Stainless version upon request.

1 **Measurement system:**

(1) Measurement system LE100 5V Resolution 0.05 **(2)** Measurement system LE100 10,5-30V Resolution 0.05 **(3)** Hall sensor **(4)** Measurement system provided by customer

1 **Plug:**

(1) Plug Pos. 1 **(2)** Plug Pos. 2 **(3)** open unconnected cable end

1 **Motor size:**

(1) Motor size 1 with Q_1 **(2)** Motor size 2 with Q_2 **(3)** Motor size 3 with Q_3

(4) Supply with Q_1* **(5)** Supply with Q_2* **(6)** Supply with Q_3*

* = provided by customer

Dimensioning criteria for motor output						
	l_p ❒	b_p ❒	h_{ps} ❒	Q_1	Q_2	Q_3
120	Q - 70	55	38	196	276	-
160	Q - 70	71	50	316	360	461
200	Q - 70	85	62	410	444	610

l_p = length primary part; b_p = width primary part;
h_{ps} = height primary part + height secondary part + interspaces primary-/secondary part

1500 Basic length + stroke = total length

For standard carriage length see 'Q' in table. The carriages can be delivered in any non-standard length upon request; the longer the carriage, the greater the load capacity. For digital controllers and linear encoder refer to chapter 9.1 page 10.

DSM	160	0	0	1	1	0	0	1	01500
Pos.	1	2	3	4	5	6	7		

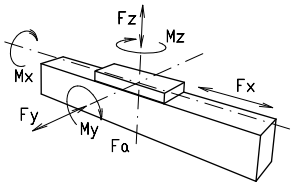
Sample ordering code:
DSM160, Bahr Modultechnik Linear motor, standard body profile, Measurement system LE100 5V, Plug Pos. 1, motor size 1, 1154 mm stroke

Positioning system DSB 200

Function:
The guide body consists of an aluminium square profile with two rail guides integrated into it, with four, six or eight runner blocks depending on the load and carriage type. The DSB linear motor axis is a highly dynamic short stroke unit, which is based on the principle of a linear three-phase synchronous motor. The secondary part is equipped with permanent magnets and serves as rotor. The primary part as stator has a three-phase winding. The symmetrical design of the motor results in a neutralisation of the magnetic attraction between stator and rotor and thus enables an optimum relief of the bearing. Combined with the elimination of moved cables, this results in an excellent lifetime of the axis. With a max. cooling capacity requirement of 0.5 – 1.0 l of water per minute (depending on the motor size), the temperature will rise by a max. of 10 degrees Kelvin.

Fitting position: As required
Carriage mounting: By T-slots.
Unit mounting: By T-slots and mounting sets. The linear axis can be combined with any T-slot profile.
Carriage support: In the standard version, the carriage runs on 4 runner blocks which can be serviced at a central servicing position. For longer carriages the number of runner blocks can be increased.
Repeatability ± 0,05mm mm. Repeated accuracy max. ± 0,05mm

Forces and torques



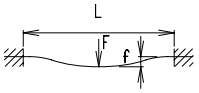
F_z = external force by load
F_a = magnetic attraction force
F_{zm} = maximum force in consideration of motor power
$F_{zm} = F_z + F_a$

Size	200			
Motor size	1	2	3	4
permitted dyn.Forces*	5000 km / 10000 km			
F_a (N)	10000 / 8000			
F_{zm} (N)	15600 / 11080			
F_z (N)	20600 / 14600			
M_x (Nm)	1285 / 815			
M_y (Nm)	1375 / 980			
M_z (Nm)	1345 / 960			
C (N)	22800			
Number of runner blocks	4	4	4	4
All forces and torques related to the following: existing values / table values $\frac{Fy}{Fy_{dyn}} + \frac{Fzm}{Fzm_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1{,}5$				
Motor specifications Fx				
Motor size	1	2	3	4
Carriage weight (kg)	4,66	5,06	5,46	5,86
Weight primary part (kg)	4,4	4,9	4,9	4,9
permanent force without Watercooling (N)	121	152	182	212
permanent force with Watercooling (N)	561	700	839	978
Max force (N) 1 sek.	868	1086	1303	1520
Moving force without current				
N	2,2	2,5	2,8	3,1
Geometrical moments of inertia of aluminium profile				
I_x mm⁴	4,81 x10⁶			
I_y mm⁴	26,0 x10⁶			
Elastic modulus N/mm²	70000			

* referred to lifetime

Formula: DSB

Deflection:



$f = \frac{F * L^3}{E * I * 192}$

f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm²)
I = second moment of area (mm⁴)

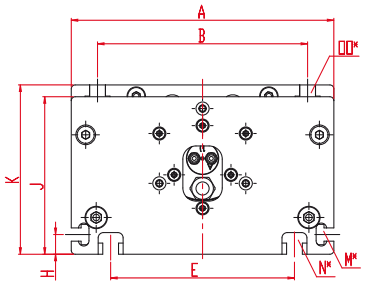
Nominal lifetime:

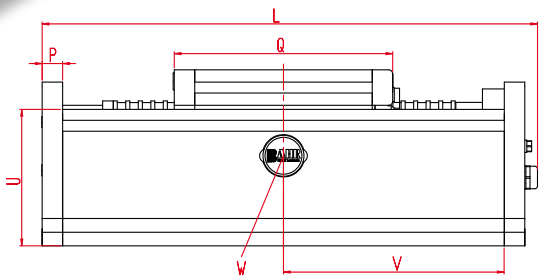
$L = \left(\frac{C}{F}\right)^3 \times 10^5$

C = dynamic load faktor (N)
F = middle load (N)

Positioning system DSB 200

Dimensions (mm)





*For slide nuts refer to main catalog chapter 2.2 page 2 V = 162 mm W = servicing position

Size ❒	Basic length L	A	B	E	H	J	K	M for	N for	OO for	P	U	Basic weight Motor size 1/2/3/4
DSB 200	353,5	200	160	140	15	120	129	M 8	M 10	M 10	15	100	18,0 /19,0 /19,4 /19,8 kg

1 **Motor size:**

(1) motor size 1 **(2)** motor size 2 **(3)** motor size 3 **(4)** motor size 4

Basic length, carriage length and stroke												
Size	motor size 1			motor size 2			motor size 3			motor size 4		
	L	Q	Stroke	L	Q	Stroke	L	Q	Stroke	L	Q	Stroke
200	353,5	160	137,5	381	160	137,5	381	160	110	381	160	82,5

For standard carriage length see 'Q' in table.
The carriages can be delivered in any non-standard length upon request; the longer the carriage, the greater the load capacity. For digital controllers and linear encoder refer to chapter 9.1 page 10.

353,5 Basic length

DSB	200	0	0	0	0	0	0	1	353,5
Pos.	1	2	3	4	5	6	7		

Sample ordering code:
DSB200, motor size 1, 137,5 mm stroke

Magnetic Sensor LE100/1 und Magnetic Band MB100

Specifications:

+ Supply voltage	10,5 - 30 VDC; 5 VDC +/- 5% optional 5 V DC +/- 5%
+ Power consumption	<25 mA @ 24VDC; <50mA @ 5VDC
+ Protection	reverse battery protection
+ Connection	flying leads
+ Material of casing	metal
+ Output circuit	line driver
+ Output signals	sinusA, B, phase-shifted by 90°
+ Output current	I out max. 5 mA per signal path
+ Signal size	approx. 1 Vss
+ Travel speed	max. 5m/s
+ System accuracy	depending on interpolation electronics
+ Gap strip/sensor	0,1 - 0,4 mm (without cover strip)
+ Working temperature	-10....+70 °C
+ Storage temperature	-30....+80°C
+ Interference protection class	3, accord. to ICE 801
+ Test mark	CE
+ System of protection	IP 67 reading S IP 65 reading 90°

Magnetic Sensor LE100/1

Contactlessly measuring scanning unit with integrated analog signal output (sine 1 Vss). Together with the magnetic scale MB100 and a follower interpolation electronics unit, the LE100/1 forms an open linear measuring system.

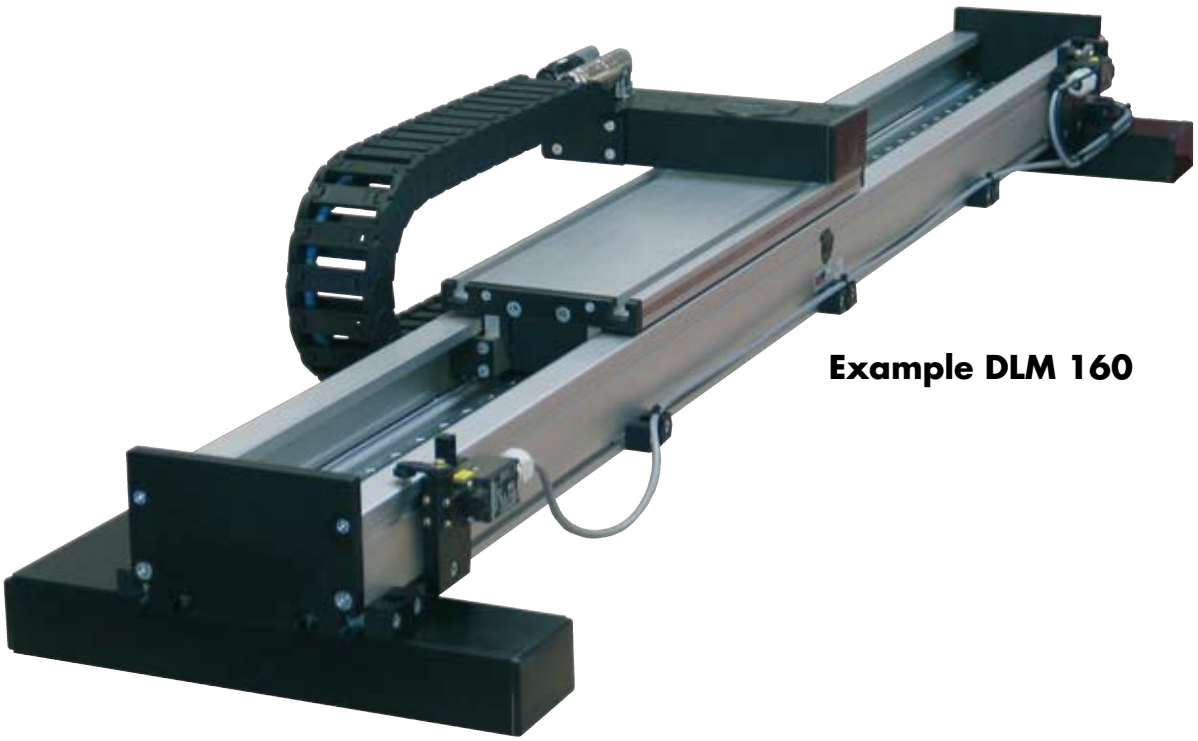
Features:
+ Easy mounting
+ LED status display
+ Signal period 1000 µm (analog)
+ Scale MB100
+ Reference signal (option)
+ Insensitive to dust, shavings, humidity

Magnetic Band MB100

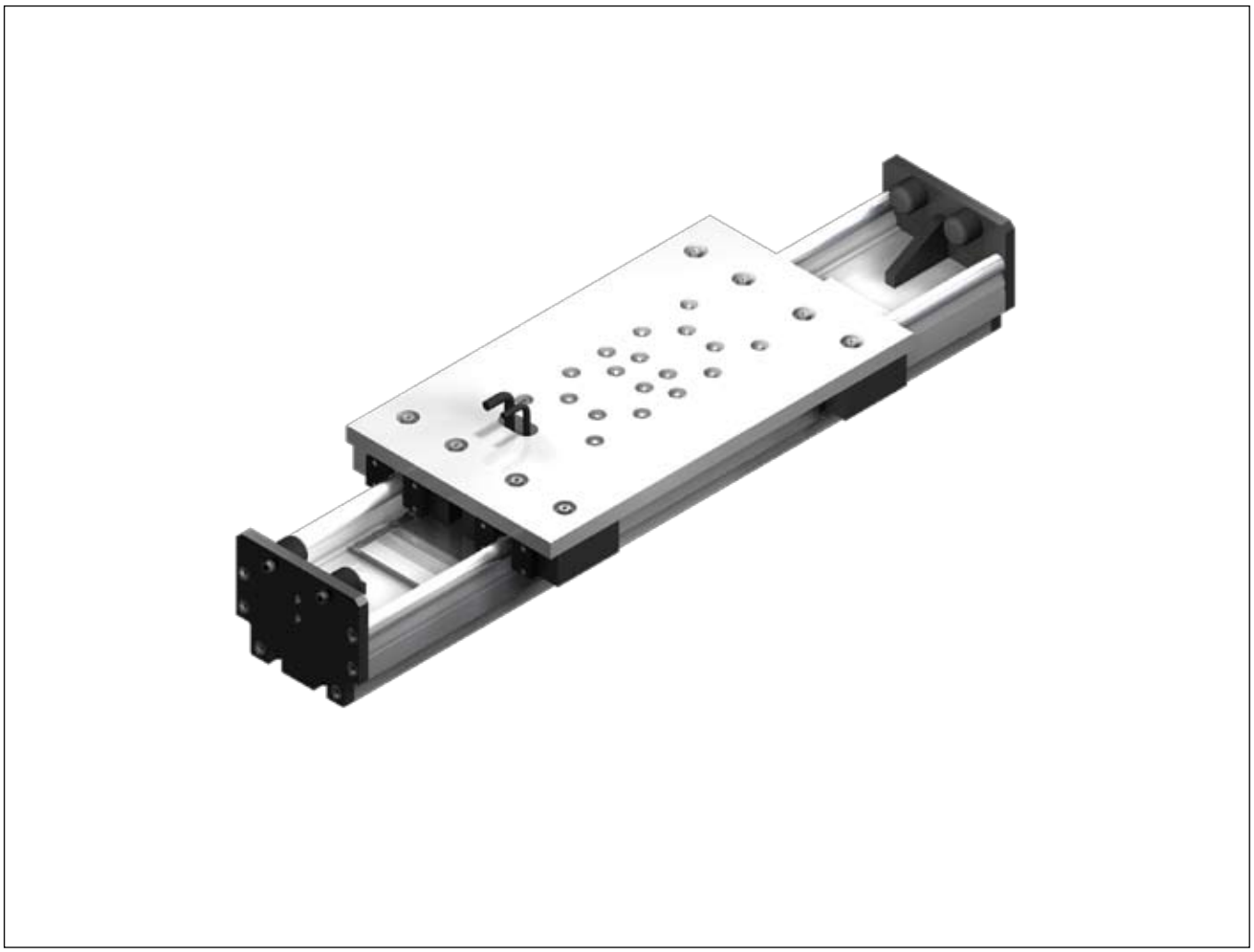
The magnetic band consists of a magnetic tape magnetized at regular distances and firmly joind with the carrier strip. For mounting a special adhesive tape is pre-mounted

Features:
+ Easy mounting by glueing
+ Insensitive to dust, shavings, humidity...
+ accuracy class 50 µm/1000 mm

Options
+ Stainless stell strip



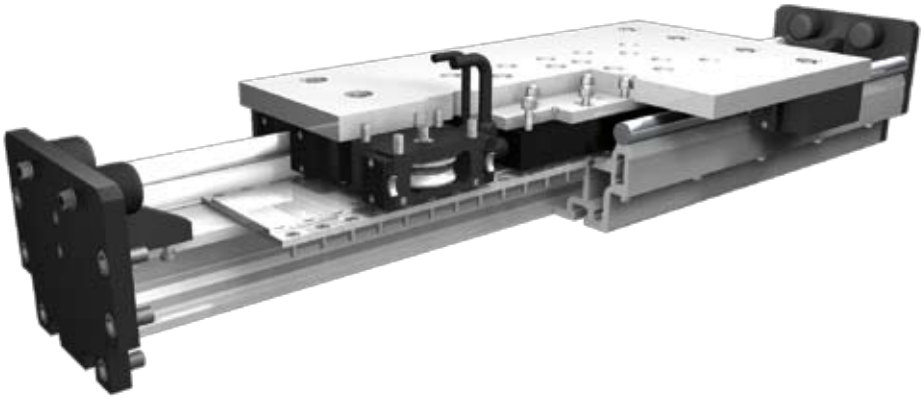
Example DLM 160



Roller guide
positioning systems
ALLM, ALLZ, ALLZQ, ALLR

Positioning system ALLM 203, 204

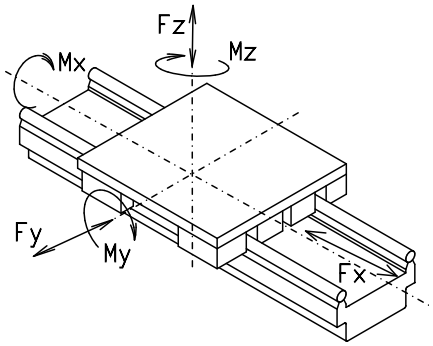
Linear motor drive



Function:
This unit consists of an aluminium profile with hardened steel spindles mounted on top of the profile. The carriage, which has internal linear ball bearings that can be adjusted free of play, moves along the unit. The linear-motor ALLM unit is based on the principle of a linear, synchronous AC motor.
The guiding profile is fitted with permanent magnets as stator. The carriage is fitted with the actuator. The magnetic attraction causes a force between carriage and guiding profile also in the absence of current. This force can be used for the initial tension of the bearings. Several carriages can be driven independently on one guiding profile.

Fitting position: As required. Max. length 6.400 mm without joints.
Carriage mounting: By tapped holes.
Unit mounting: By T-slots and mounting sets. The linear axis can be combined with any T-slot profile.
Carriage support: In the standard version, the carriage runs on 8 rollers which can be adjusted and serviced. For longer carriages the number of rollers can be increased. Repeatability ± 0,05 mm.

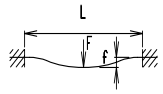
Forces and torques



Size	ALLM 203		ALLM 204	
Forces/Torques	static	dynamic	static	dynamic
F_y (N)	23000	18400	30000	24000
F_z (N)	11000	8800	16250	13000
M_x (Nm)	1200	950	1870	1500
M_y (Nm) Motor 1	3060	2450	5000	4000
M_z (Nm) Motor 1	6250	5100	9500	7600
M_y (Nm) Motor 2	4010	3210	6520	5220
M_z (Nm) Motor 2	8340	6670	12180	9750
All forces and torques related to the following: existing values / table values $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$				
Transverse force without current				
N	35		45	
Moved mass (g) without motor	43	48	55	62
Speed				
Motor size / weight (kg)	1 / 17,2	2 / 25,5	1 / 17,2	2 / 25,5
(m/sec) max	8	8	8	8
Thrust				
permanent (N)	2600	3900	2600	3900
Max. (N)	4000	6010	4000	6010
Geometrical moments of inertia of aluminium profile				
I_x mm⁴	2,26 x 10⁷		2,98 x 10⁷	
I_y mm⁴	8,75 x 10⁷		10,22 x 10⁷	
Elastic modulus N/mm²	70000		70000	

Formula: ALLM

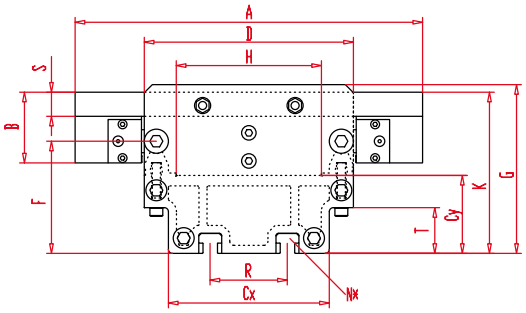
$$f = \frac{F * L^3}{E * I * 192}$$



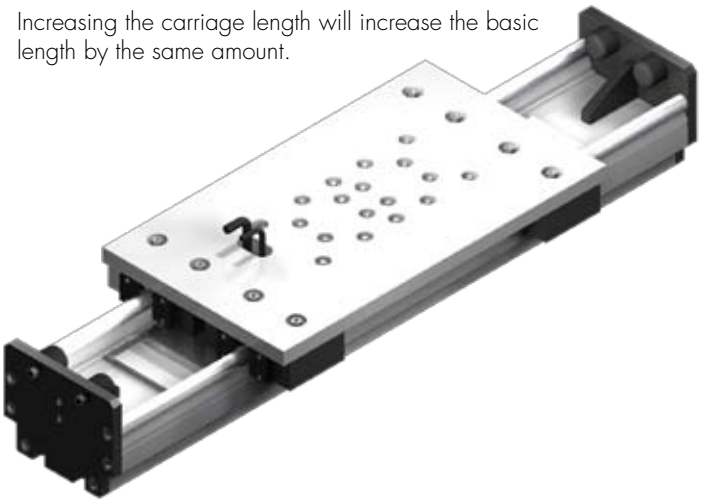
f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm²)
I = second moment of area (mm⁴)

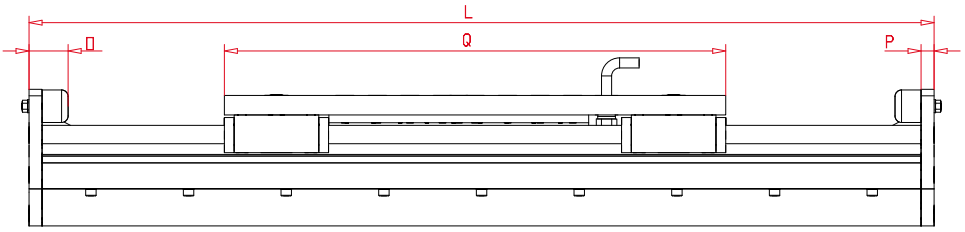
Positioning system ALLM 203, 204

Dimensions (mm)



Increasing the carriage length will increase the basic length by the same amount.





Size ❒	Basic length L motor size 1 / 2	A	B	Cx	Cy	D	F	G	H	K	N for	O	P	Q motor size 1 / 2	R	S	T	Basic weight motor size 1 / 2	Weight per 100 mm
ALLM 203	865/1050	432	88	200	97	260	139,6	210	180,5	200,5	M16	60	20	745/930	96	30	57	110 / 136 kg	5,6 kg
ALLM 204	925/1110	480	102,5	200	97	270	139,6	210	180,5	217,5	M16	60	20	805/990	96	30	57	136 / 163 kg	6,5 kg

3 **Guide rod size:**
(3) ∅=30 **(4)** ∅=40

0 **Choice of guide body profile:**
(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

0 **Motor size:**
(0) Motor size 1 (LMS-P 58-140 / 370 P -3st- S, weight 17,2 kg)
(1) Motor size 2 (LMS-P 58-140 / 555 P -3st- S, weight 25,5 kg)

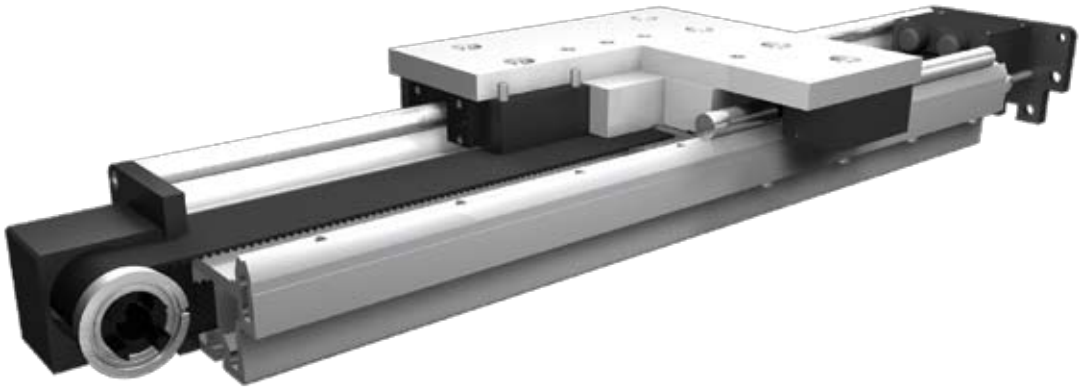
Basic length + stroke = total length

ALLM 20	3	0	0	0	0	0	0	2000
Pos.	1	2	3	4	5	6	7	

Sample ordering code:
ALLM203, guide rods 30 mm, standard body profile, motor size 1, 1135 mm stroke.

Positioning system ALLZ 203, 204

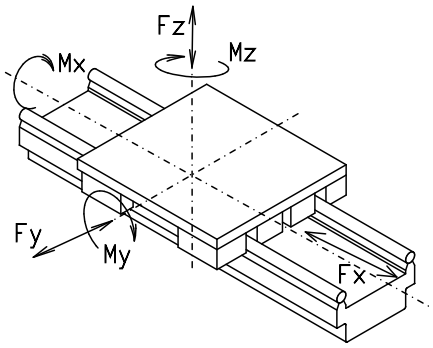
Belt drive



Function:
This unit consists of an aluminium profile with hardened steel guide rods mounted on top of the profile. The carriage, which has internal linear ball bearings that can be adjusted free of play, is driven along the guide rods by a timing belt. The pulleys have maintenance-free ball bearings. Opposite the driven side there is an integrated timing-belt tensioner which can be readjusted by 2 screws.

Fitting position: As required. Max. length 6.400 mm without joints.
Carriage mounting: By tapped holes.
Unit mounting: By T-slots and mounting sets. The linear axis can be combined with any T-slot profile.
Carriage support: In the standard version, the carriage runs on 8 rollers which can be adjusted and serviced at a central servicing position. For longer carriages the number of rollers can be increased.
Repeatability ± 0,1.
Belt type: HTD with steel reinforcement, no backlash when changing direction, repeatability: ± 0,1 mm.

Forces and torques



Size	ALLZ 203		ALLZ 204	
Forces/Torques	static	dynamic	static	dynamic
F_x (N)	-	5610	-	5610
F_y (N)	23000	18400	30000	24000
F_z (N)	11000	8800	16200	13000
M_x (Nm)	1180	950	1870	1500
M_y (Nm)	1870	1500	3000	2400
M_z (Nm)	3800	3100	5600	4500
All forces and torques related to the following: existing values / table values: $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$				
No-load torque				
Nm	4		4	
Speed				
(m/sec) max	8		8	
Geometrical moments of inertia of aluminium profile				
I_x mm⁴	2,26 x 10⁷		2,98 x 10⁷	
I_y mm⁴	8,75 x 10⁷		10,22 x 10⁷	
Elastic modulus N/mm²	70000		70000	

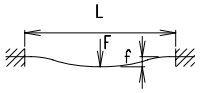
Formula: ALLZ
Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F = force (N)
P = pulley action perimeter (mm)
S_i = safety factor 1,2 ... 2
M_{leer} = no-load torque (Nm)
n = rpm pulley (min^{-1})
M_a = driving torque (Nm)
P_a = motor power (KW)

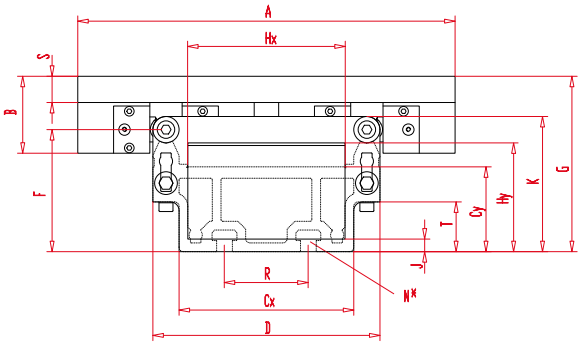
$$f = \frac{F*L^3}{E*I*192}$$

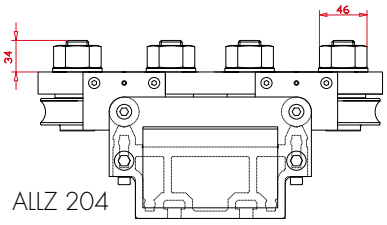


f= deflection (mm)
F = load (N)
L= free length (mm)
E= elastic modulus 70000 (N/mm²)
I= second moment of area (mm⁴)

Positioning system ALLZ 203, 204

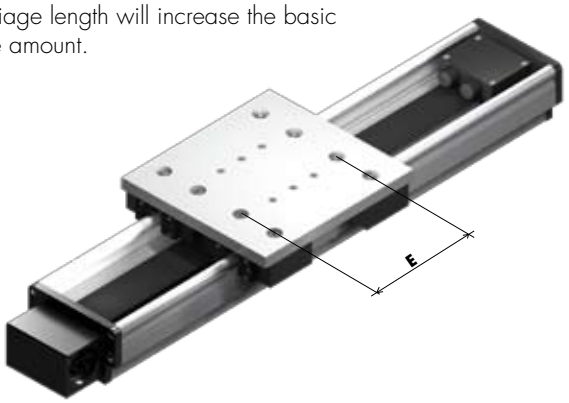
Dimensions (mm)

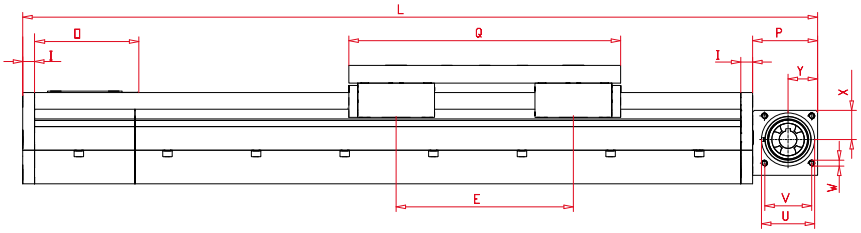




ALLZ 204

Increasing the carriage length will increase the basic length by the same amount.



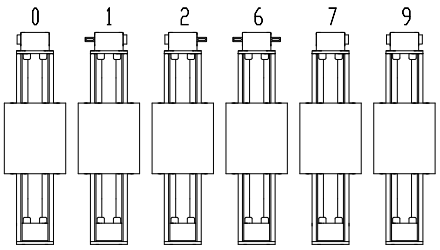


Size ❒	Basic length L	A	B	Cx	Cy	D	E	F	G	Hx	Hy	I	J	K	N for	O	P	Q	R	S	T	U	V	W	X	Y	Basic weight	Weight per 100 mm
ALLZ 203	792	432	88	200	97	260	300	140	200,5	180,5	124,5	20	14,5	154,5	M16	182	110	460	96	30	57	90	80	10	49,5	50	90 kg	4,0 kg
ALLZ 204	822	460	80	200	97	270	355	145	199	180,5	124,5	20	14,5	165	M16	182	110	490	96	30	57	90	80	10	49,5	50	92 kg	4,9 kg

3 **Guide rod size:**
(3) ∅=30 **(4)** ∅=40

0 **Choice of guide body profile:**
(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

0 **Drive version:**



9 is as 0, but with coupling claws on both sides.

Coupling claw on one side

Standard shaft

The standard version is supplied without shaft. A shaft can be retrofitted by inserting it into the pulley bore and securing it with 2 locking rings.

Belt table

Code No.		Belt	mm/rev.	Number of teeth
0	**7**	8M100	224	28

Size	Shaft ø h6 x length	Key
203	30 x 55	8x7x50
204	30 x 55	8x7x50

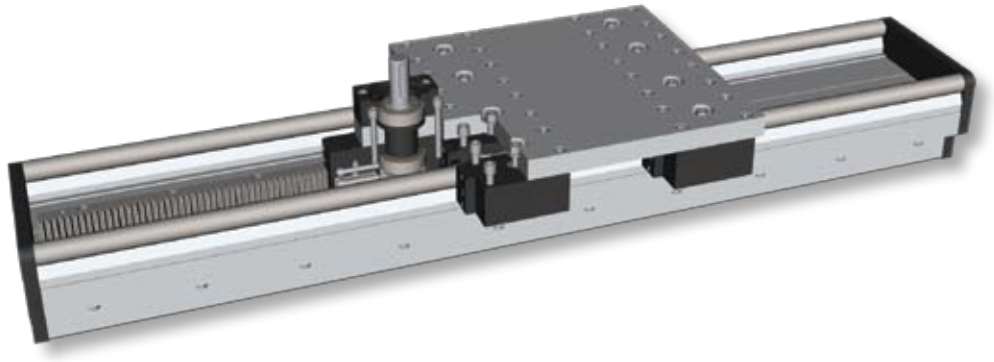
Basic length + stroke = total length

ALLZ 20	3	0	0	0	0	0	7	0	2000
	Pos.	1	2	3	4	5	6	7	

Sample ordering code:
ALLZ203, guide rods 30 mm, standard body profile, coupling claw on both side, toothed belt 8M100, 1208 mm stroke.

Positioning system ALLZQ 203

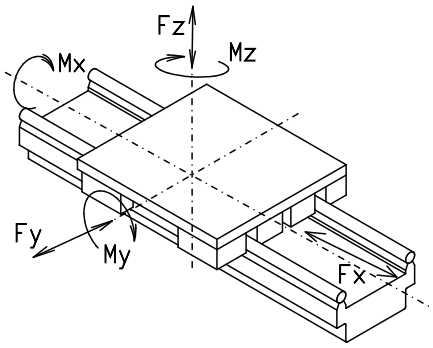
Rack and pinion drive



Function:
This unit consists of an aluminium profile with hardened steel guide rods mounted on top of the profile. The carriage, which has internal linear ball bearings that can be adjusted free of play, is driven along the guide rods by a high precision rack. The rack and pinion system is suitable for highly dynamic servo operation and ideal for lifting movements. The pinion has maintenance-free ball bearings. The rack is lubricated by a toothed felt wheel.

Fitting position: As required. Max. length 6.400 mm without joints.
Carriage mounting: By tapped holes.
Unit mounting: By T-slots and mounting sets. The linear axis can be combined with any T-slot profile.
Carriage support: In the standard version, the carriage runs on 8 rollers which can be adjusted and serviced at a central servicing position. For longer carriages the number of rollers can be increased.
Repeatability ± 0,1.
Rack: 8e27 hardened and ground. Repeatability: ± 0,1 mm.

Forces and torques



Size	ALLZQ 203
Forces/Torques	
F_x (N)	4610
F_y (N)	8700
F_z (N)	8300
M_x (Nm)	1050
M_y (Nm)	1240
M_z (Nm)	2600
All forces and torques related to the following: existing values / table values	$\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$
No-load torque	
Nm	3
Driving Tourque	
N	154
Geometrical moments of inertia of aluminium profile	
I_x mm⁴	2,26x10⁷
I_y mm⁴	8,75x10⁷
Elastic modulus N/mm²	70000

For lifetime calculation of rollers you have to use only our CD-ROM or homepage!

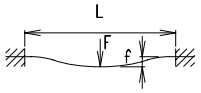
Formula: ALLZQ
Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F	= force	(N)
P	= pulley action perimeter	(mm)
S_i	= safety factor 1,2 ... 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm pulley	(min^{-1})
M_a	= driving torque	(Nm)
P_a	= motor power	(KW)

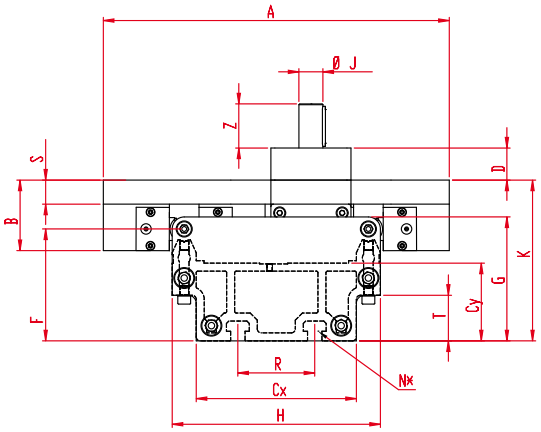
$$f = \frac{F*L^3}{E*I*192}$$



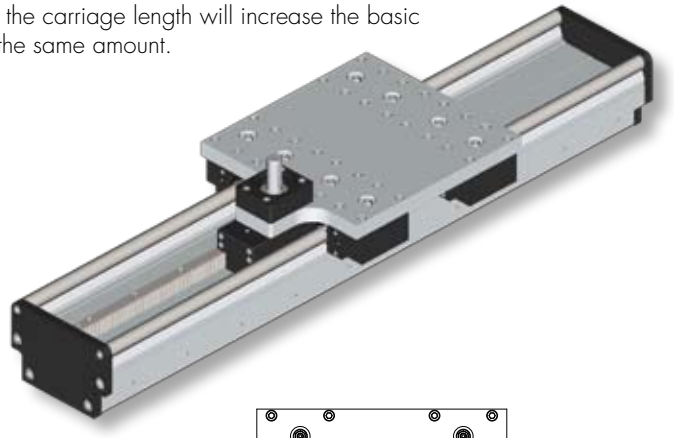
f= deflection (mm)
F= load (N)
L= free length (mm)
E= elastic modulus 70000 (N/mm²)
I= second moment of area (mm⁴)

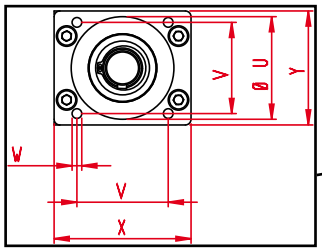
Positioning system ALLZQ 203

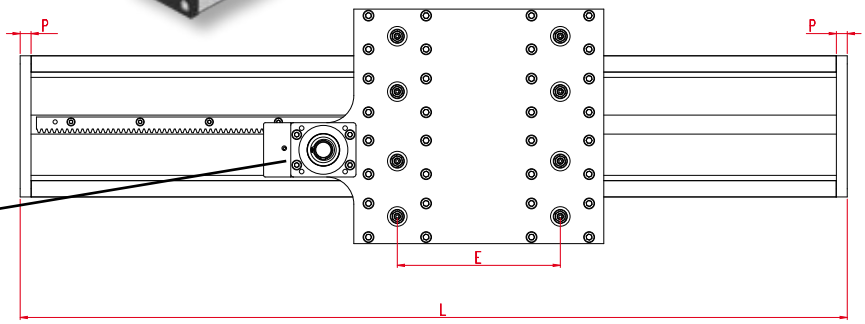
Dimensions (mm)



Increasing the carriage length will increase the basic length by the same amount.





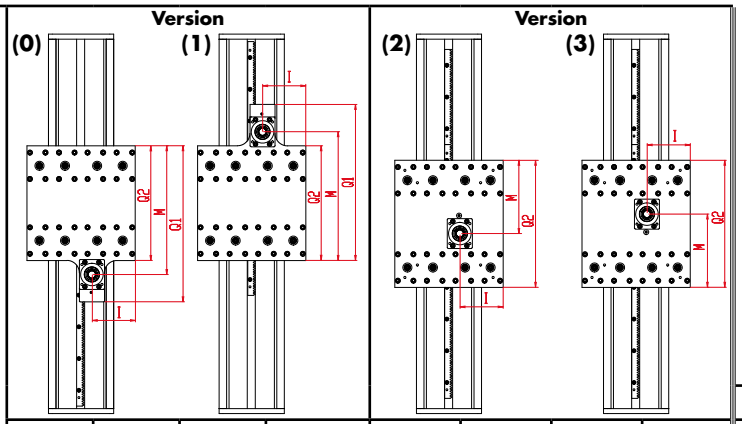


Size ❒	Basic length L	A	B	Cx	Cy	D	E	F	G	H	J	K	N for	P	R	S	T	U	V	W for	X	Y	Z	Basic weight	Weight per 100 mm
ALLZQ 203	670	432	88	200	97	40	300	139,6	154,6	260	30	200,6	M16	20	96	30	56,9	90	80	M10	120	100	55	71,9 kg	4,9 kg

3 **Guide rod size:**
(3) ∅=30

0 **Choice of guide body profile:**
(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

0 **Drive version:**



Size	I	M	Q1	Q2	I	M	Q2	L	Shaft dimensions: Shaft ø h6 x length	Key	Pinion mm/U	Pinion Modul
203	172,75	516	626	460	172,75	294	510	560	30 x 55	8x7x50	197,92	3

Rack and pinion accuracy

Code No.	Modul	Quality	Rack accuracy	Material	Marks
0	3	10	0,091 mm/300 mm	C45	Hardened teeth
1	3	9	0,065 mm/300 mm	C45	Milled teeth
2	3	8	0,046 mm/300 mm	X8CrNiS18-9	Milled teeth

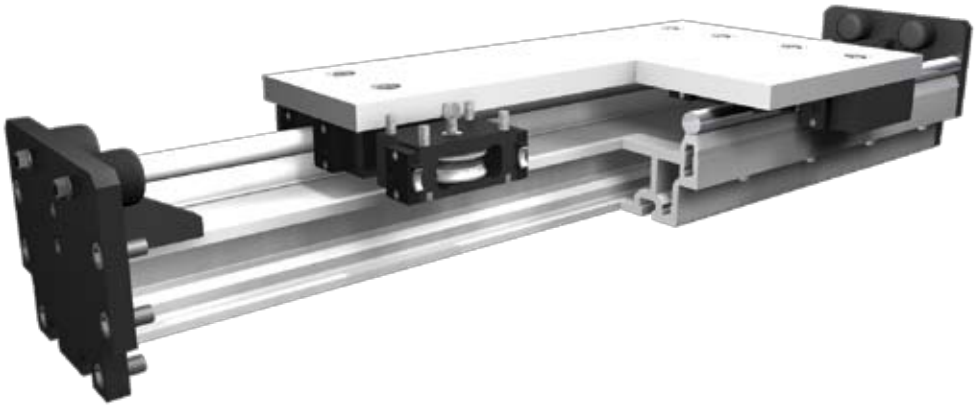
Basic length + stroke = total length

ALLZQ 20	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2000**
Pos.	1	2	3	4	5	6	7		

Sample ordering code:
ALLZQ203, guide rods 30 mm, standard body profile, coupling position 0, rack accuracy 0,091 mm/300 mm, 1330 mm stroke.

Positioning system ALLR 203, 204

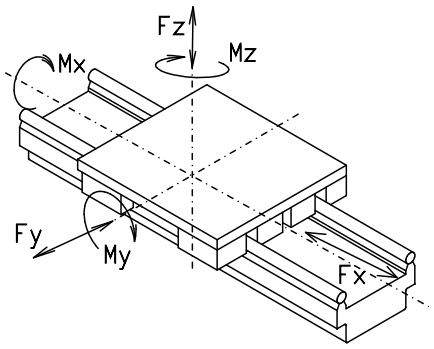
Roller guide unit without drive



Function:
This unit consists of an aluminium profile with hardened steel spindles mounted on top of the profile. The carriage has internal linear ball bearings that can be adjusted free of play. The unit is without drive.

Fitting position: As required. Max. length 6.400 mm without joints.
Carriage mounting: By tapped holes.
Unit mounting: By T-slots and mounting sets. The linear axis can be combined with any T-slot profile.
Carriage support: In the standard version, the carriage runs on 8 rollers which can be adjusted and serviced at a central servicing position. For longer carriages the number of rollers can be increased.

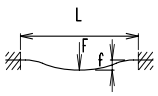
Forces and torques



Size	ALLR 203		ALLR 204	
Forces/Torques	static	dynamic	static	dynamic
F_y (N)	23000	18400	30000	24000
F_z (N)	11000	8800	16250	13000
M_x (Nm)	1200	950	1870	1500
M_y (Nm)	1870	1500	3000	2400
M_z (Nm)	3800	3100	5600	4500
All forces and torques related to the following: existing values / table values $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$				
Geometrical moments of inertia of aluminium profile				
I_x mm⁴	$2{,}26 \times 10^7$		$2{,}98 \times 10^7$	
I_y mm⁴	$8{,}75 \times 10^7$		$10{,}22 \times 10^7$	
Elastic modulus N/mm²	70000		70000	

Formula: ALLR

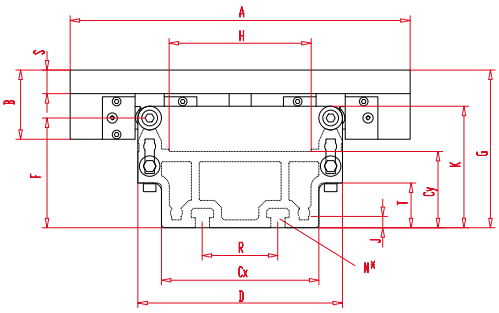
$$f = \frac{F * L^3}{E * I * 192}$$

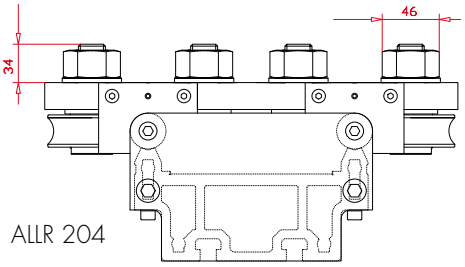


f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm²)
I = second moment of area (mm⁴)

Positioning system ALLR 203, 204

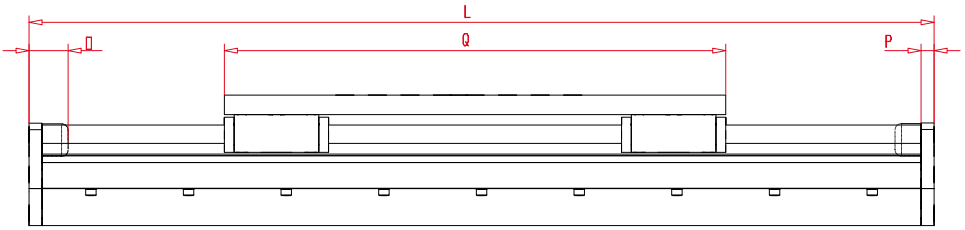
Dimensions (mm)





ALLR 204

Increasing the carriage length will increase the basic length by the same amount.



Size ❒	Basic length L	A	B	Cx	Cy	D	F	G	H	K	N for	O	P	Q	R	S	T	Basic weight	Weight per 100 mm
ALLR 203	580	432	88	200	97	260	139,6	200,5	180,5	154,5	M16	60	20	460	96	30	57	64 kg	3,9 kg
ALLR 204	610	460	80	200	97	270	139,6	199	180,5	165	M16	60	20	490	96	30	57	65 kg	4,8 kg

Guide rod size
3 **(3)** ∅=30 **(4)** ∅=40

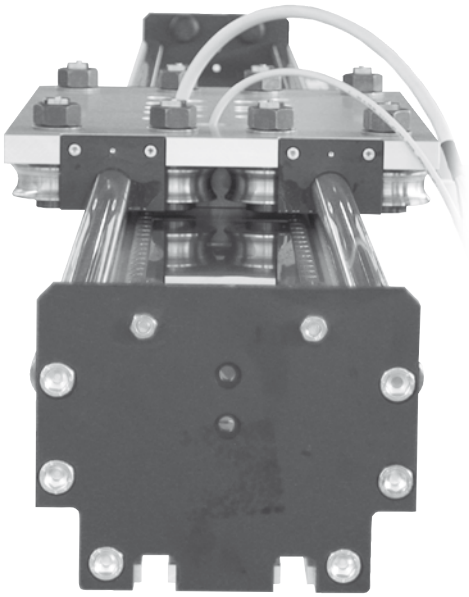
Choice of guide body profile:
0 **(0)** Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

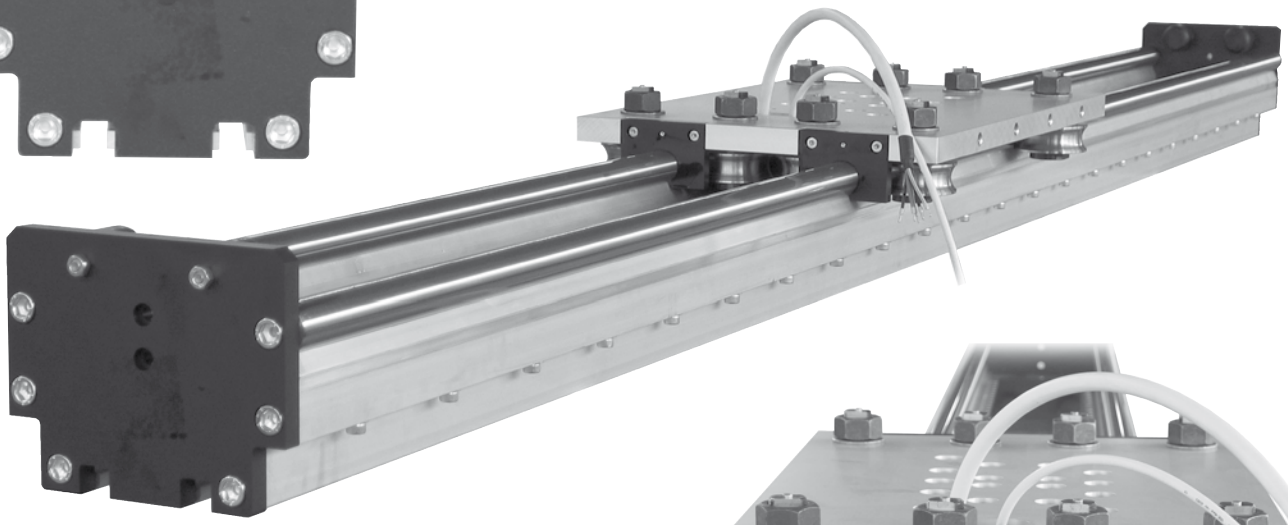
Basic length + stroke = total length

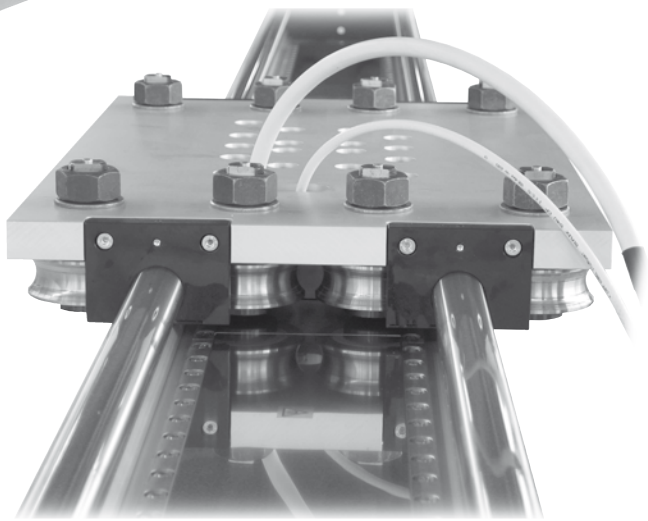
ALLR20	3	0	0	0	0	0	0	0	2000
Pos.	1	2	3	4	5	6	7		

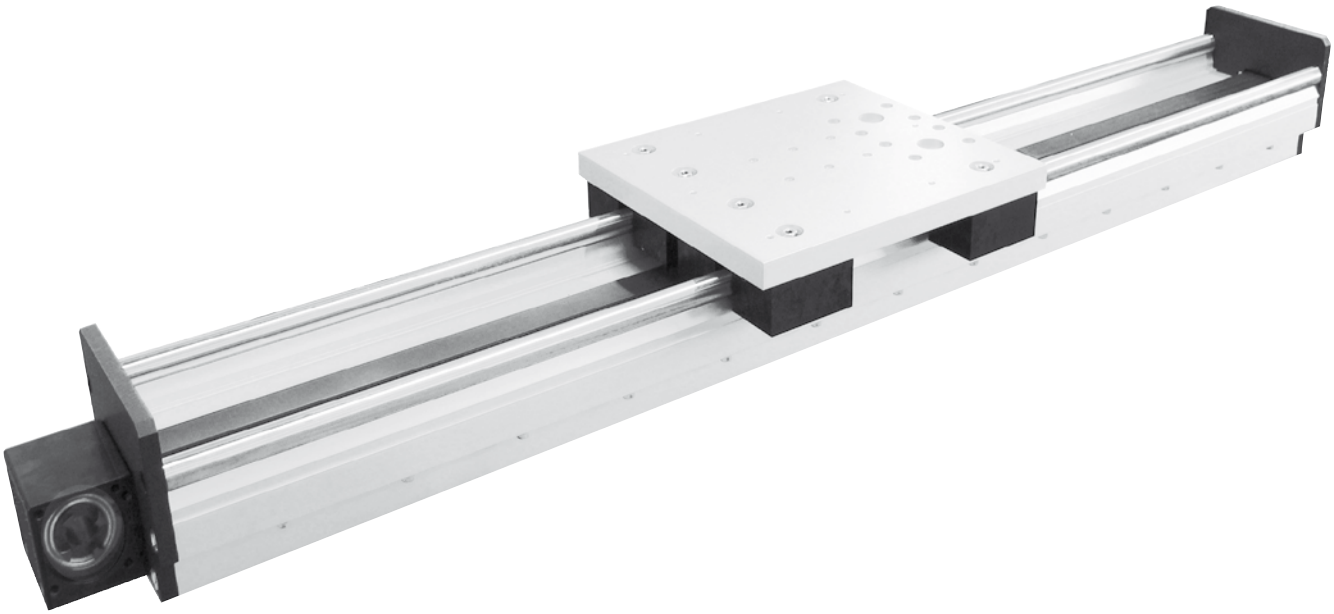
Sample ordering code:
ALLR203, guide rods 30 mm, standard body profile, 1420 mm stroke.

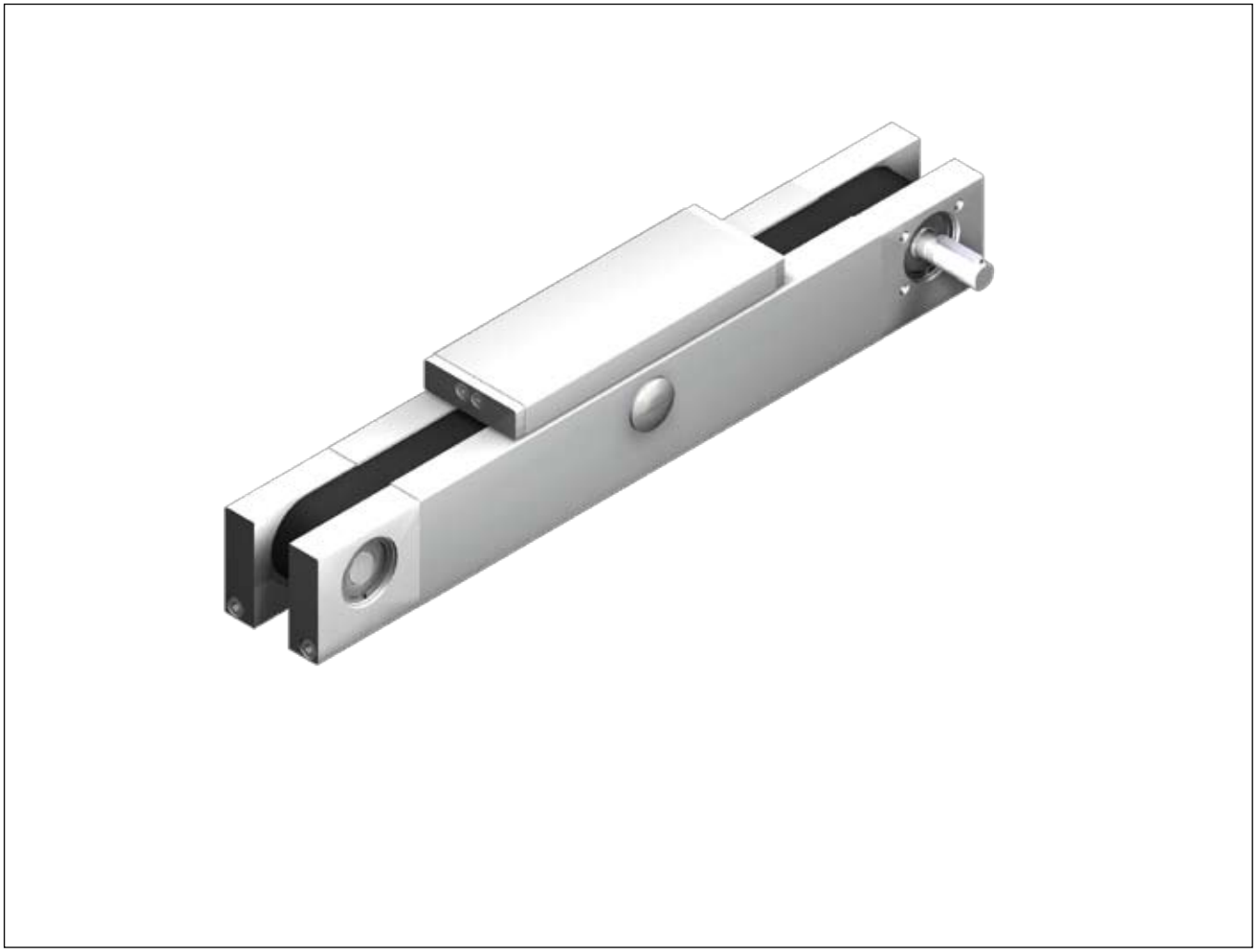
Positioning system ALLM/Z







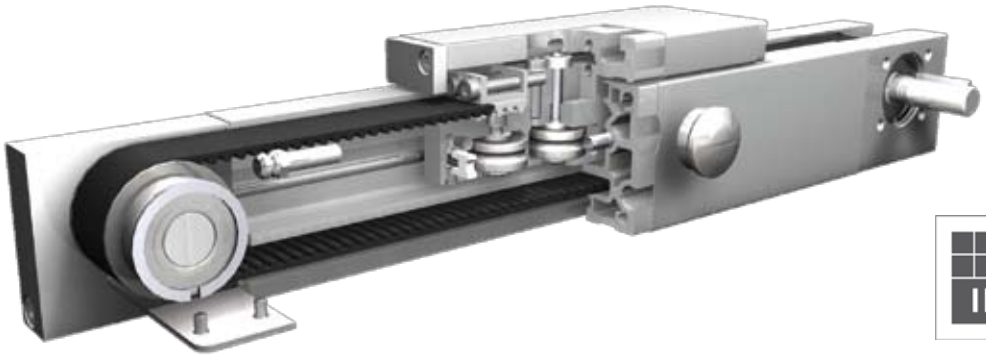




QLZE, QSZE, QST/KE
Stainless steel positioning system

Positioning system QLZE 60, 80, 100

Belt drive **Specifications**

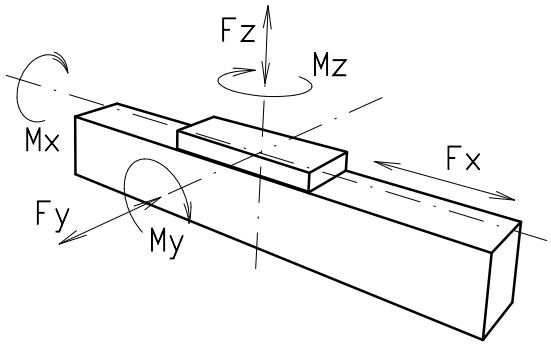


Fraunhofer TESTED DEVICE IPA Lineareinheit QLZ 80 Report No. BA 0005-171

Function:
This unit consists of a square aluminium profile with an integrated roller guide and is covered by a stainless steel sheet (thickness 0.37mm, material 1.4301). The carriage is driven by a timing belt. Belt tension can be readjusted by a simple screw adjustment device in the carriage. This device can also be used for symmetrical adjustment of two or more linear units running parallel. This linear unit is based on the QLZ and is suitable for application in clean rooms of clean-room classification 1000 (corresponding to US Fed. Standard 209 E).

Fitting position: As required. Max. length 3.000 mm without joints.
Carriage mounting: By T-nuts and bores through the cover.
Unit mounting: By T-nuts and bores through the cover.
Belt performance: HTD with kevlar reinforcement, no backlash when changing direction, repeatability ± 0,1 mm.
Carriage support: In the standard version, the carriage runs on 4 rollers which can be adjusted and serviced at a central servicing position. For longer carriages the number of rollers can be increased.

Forces and torques



Size	60		80		100	
Forces/Torques	static	dynamic	static	dynamic	static	dynamic
F_x (N)	894	800	1900	1800	4000	3800
F_y (N)	399	333	1065	825	1267	1000
F_z (N)	599	433	999	799	1400	1133
M_x (Nm)	10	7	33	26	128	40
M_y (Nm)	40	33	66	53	93	73
M_z (Nm)	26	20	50	40	73	60
All forces and torques related to the following: existing values / table values	$\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$					
No-load torque						
Nm	1,0		1,3		2,0	
Speed						
(m/sec) max	4		6		7	
Tensile force						
permanent (N)	900		1900		4000	
0,2 sec (N)	1000		2090		4300	
Geometrical moments of inertia of aluminium profile						
I_x mm^4	4,3x10^5		16,5x10^5		43,0x10^5	
I_y mm^4	4,8x10^5		18,7x10^5		48,8x10^5	
Elastic modulus N/mm^2	70000		70000		70000	

For life-time calculation of rollers use our CD-ROM or homepage!

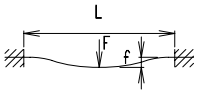
Formula: QLZE
Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F	= force	(N)
P	= pulley action perimeter	(mm)
S_i	= safety factor 1,2 ... 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm pulley	(min^{-1})
M_a	= driving torque	(Nm)
P_a	= motor power	(KW)

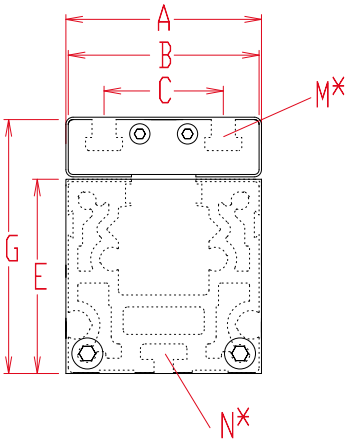
$$f = \frac{F*L^3}{E*I*192}$$



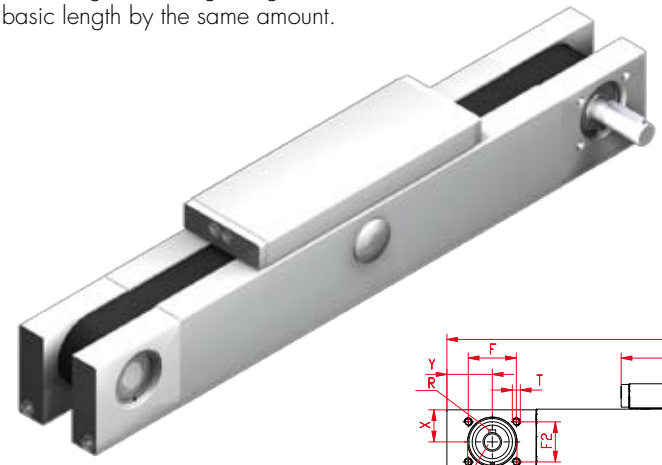
f= deflection (mm)
F = load (N)
L= free length (mm)
E= elastic modulus 70000 (N/mm^2)
I= second moment of area (mm^4)

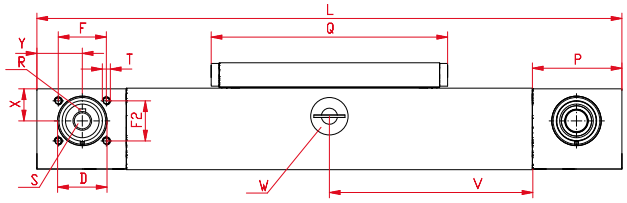
Positioning system QLZE 60, 80, 100

Dimensions (mm)



Increasing the carriage length will increase the basic length by the same amount.





*For slide nuts refer to chapter 2.2 page 2 V = Q + 100 mm W = servicing position

Size ❒	Basic length L	A	B	C	D	E	F/F2	G	N for	M for	P	Q	T	X	Y	Basic weight	Weight per 100 mm
QLZE 60	296	61	60	36	37	61	36/30	80	M 5	M 6	67	152	M 6	24,5	34	4,2 kg	0,48 kg
QLZE 80	400	81	80	50	55	81	50/50	107	M 6	M 8	95	196	M 8	32,5	47	10,6 kg	0,98 kg
QLZE 100	484	101	100	66	62	101	62/58	130	M 10	M 10	107	260	M 10	40	54	18,3 kg	1,37 kg

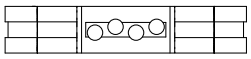
Choice of guide body profile:

0 **(0)** Version with corrosion-protected components

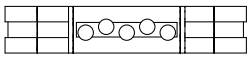
Choice of carriages:

0

(0)

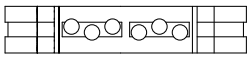


(1)



(2)

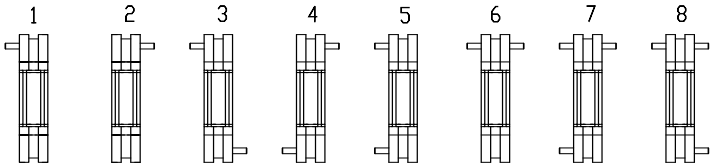
(3)



Size	Version 0		Version 1		Version 2		Version 3	
	Q	L	Q	L	Q	L	Q	L
60	152	296	192	336	232	376	232	376
80	196	400	246	450	296	500	296	500
100	260	484	320	544	388	604	388	604

Drive version:

2



The standard version is supplied shaft pos. 2

Size	Shaft	
	R Key	S ø h6 x length
60	5x5x28	14 x 35
80	6x6x40	18 x 45
100	6x6x40	22 x 45

Belt table

Code No.		Size	Belt	Pulley	
				mm/rev.	Number of teeth
0	**3**	60	5M25	130	26
0	**4**	80	8M30	176	22
0	**7**	100	8M50	224	28

Basic length + stroke = total length

QLZE	80	1	0	0	2	0	4	1	01500
	Pos.	1	2	3	4	5	6	7	

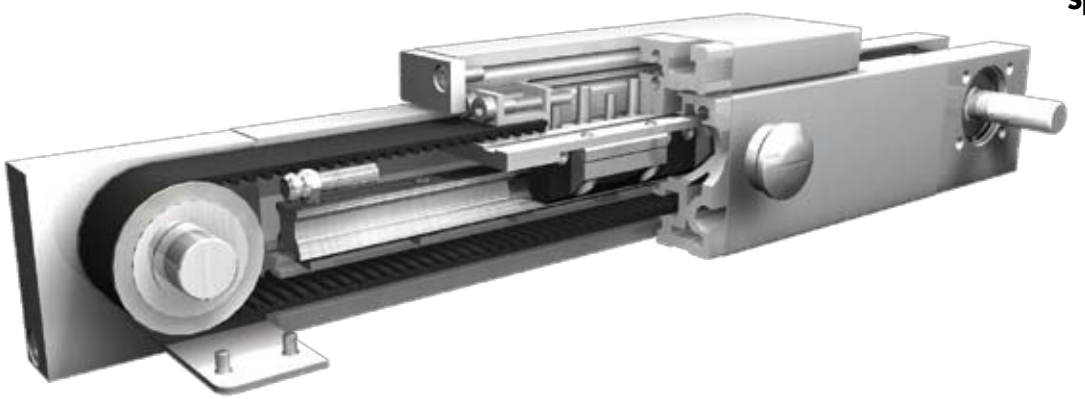
Sample ordering code:
QLZE80, standard body profile, standard carriage, shaft pos.2, 1100 mm stroke

For additional accessories refer to main catalogue chapter 2.2 – 4.2

Positioning system QSZE 60, 80, 100

Belt drive

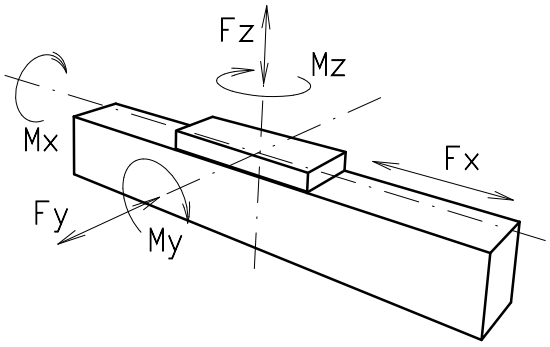
Specifications



Function:
This unit consists of a square aluminium profile with an integrated ball rail guide and is covered by a stainless steel sheet (thickness 0.37mm, material 1.4301). The carriage is moved by a belt drive. Belt tension can be readjusted by a simple screw adjustment device in the carriage. This device can also be used for symmetrical adjustment of two or more linear units running parallel.

Fitting position: As required. Max. length 3.000 mm without joints.
Carriage mounting: By T-nuts and bores through the cover.
Unit mounting: By T-nuts and bores through the cover.
Belt performance: HTD with kevlar reinforcement, no backlash when changing direction, repeatability ± 0,1 mm.
Carriage support: In the standard version, the carriage runs on two runner blocks which can be adjusted and serviced at a central servicing position. For longer carriages the number of runner blocks can be increased.

Forces and torques



Size	60		80		100	
permitted dyn. Forces*	5000 km	10000 km	5000 km	10000 km	5000 km	10000 km
F_x (N)	894	800	1900	1800	4000	3800
F_y (N)	1410	990	3570	2550	4080	2900
F_z (N)	3520	2500	8500	6050	10300	7270
M_x (Nm)	33	23	107	75	142	101
M_y (Nm)	104	73	310	222	439	311
M_z (Nm)	100	70	296	210	412	292
C (N)	7800		18800		22800	
All forces and torques related to the following: existing values / table values $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$						
No-load torque						
Nm	1,3		1,8		2,3	
Speed						
(m/sec) max	5		5		5	
Tensile force						
permanent (N)	900		1900		4000	
0,2 sec (N)	1000		2090		4300	
Geometrical moments of inertia of aluminium profile						
I_x mm^4	4,3x10^5		16,5x10^5		43,0x10^5	
I_y mm^4	4,8x10^5		18,7x10^5		48,8x10^5	
Elastic modulus N/mm^2	70000		70000		70000	

* referred to life-time

Formula: QSZE

Driving torque:

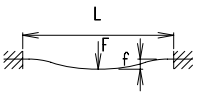
$$M_a = \frac{F*P*S_i}{2000*\pi} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F	= force	(N)
P	= pulley action perimeter	(mm)
S_i	= safety factor 1,2 ... 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm pulley	(min^{-1})
M_a	= driving torque	(Nm)
P_a	= motor power	(KW)

Deflection:

$$f = \frac{F*l^3}{E*I*192}$$



f	= deflection	(mm)
F	= load	(N)
L	= free length	(mm)
E	= elastic modulus 70000	(N/mm^2)
I	= second moment of area	(mm^4)

Nominal lifetime:

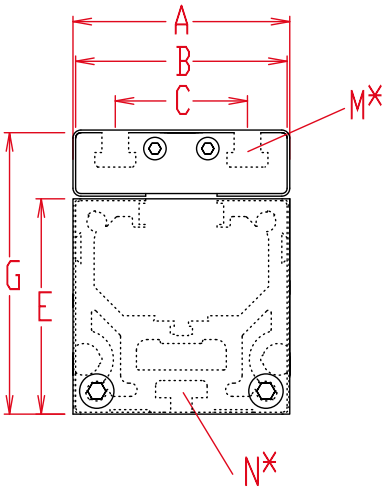
$$L = \left(\frac{C}{F}\right)^3 x10^5$$

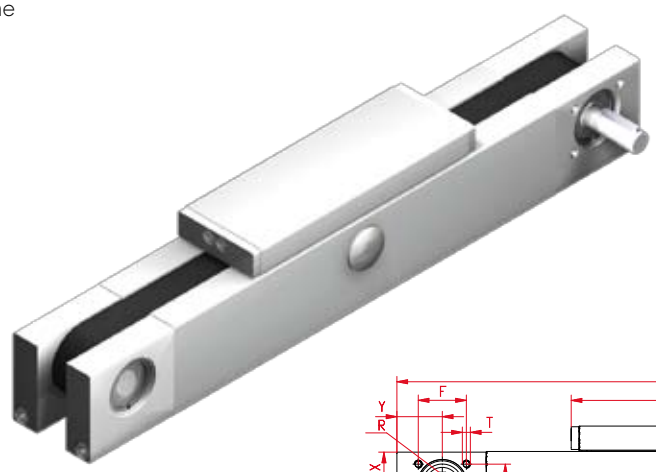
L	= Lifetime in meter	
C	= Dynamic load factor	(N)
F	= Middle load	(N)

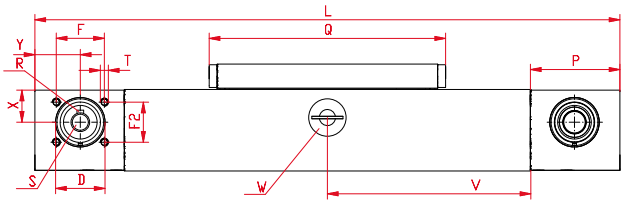
Positioning system QSZE 60, 80, 100

Increasing the carriage length will increase the basic length by the same amount.

Dimensions (mm)







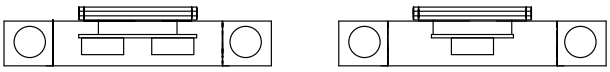
*For slide nuts refer to chapter 2.2 page 2 V = Q + 100 mm W = servicing position

Size ❒	Basic length L	A	B	C	D	E	F/F2	G	N for	M for	P	Q	T	X	Y	Basic weight	Weight per 100 mm
QSZE 60	316	61	60	36	37	61	36/30	80	M 5	M 6	67	177	M 6	24,5	34	4,2 Kg	0,64 kg
QSZE 80	440	81	80	50	55	81	50/50	107	M 6	M 8	95	232	M 8	32,5	47	10,6 Kg	1,08 Kg
QSZE 100	504	101	100	66	62	101	62/58	130	M 10	M 10	107	268	M 10	40	54	19,5 Kg	1,61 Kg

0 **Choice of guide body profile:**
(0) Version with corrosion-protected components
(1) Version 0 but with not corrosion-protected guidings

Choice of carriages:

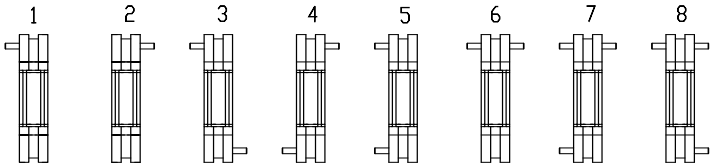
0



Size	Version 0		Version 1	
	Q	L	Q	L
60	177	316	152	296
80	232	440	196	400
100	268	504	260	494

Drive version:

2



The standard version is supplied shaft pos. 2

Size	Shaft	
	R Key	S ø h6 x length
60	5x5x28	14 x 35
80	6x6x40	18 x 45
100	6x6x40	22 x 45

Belt table

Code No.		Size	Belt	Pulley	
				mm/rev.	Number of teeth
0	**3**	60	5M25	130	26
0	**4**	80	8M30	176	22
0	**7**	100	8M50	224	28

Basic length + stroke = total length

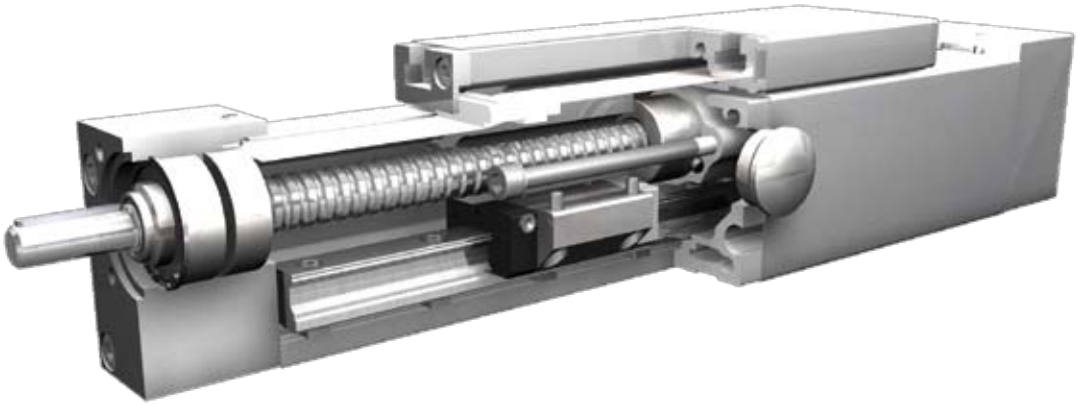
QSZE	80	1	0	0	2	0	4	1	01500
Pos.	1	2	3	4	5	6	7		

For additional accessories refer to main catalogue chapter 2.2 – 4.2

Sample ordering code:
QSZE80, standard body profile, standard carriage, shaft pos2, 1060 mm stroke

Positioning system QST/KE 60, 80, 100

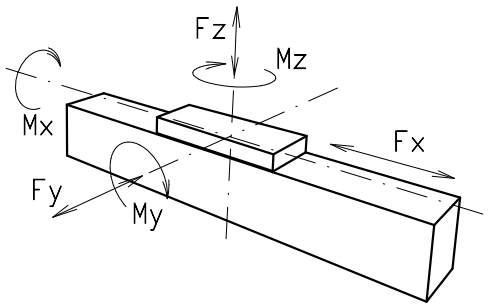
Spindle drives **Specifications**



Function:
This unit consists of a square aluminium profile with an integrated ball rail and is covered by a stainless steel sheet (thickness 0.37mm, material 1.4301). The carriage is driven by means of a rotating spindle with leading nut. The openings of the guide body are sealed by a stainless steel cover band to protect the drive from splash water and dust.

Fitting position: As required, max. length 3000mm
Carriage connection: By T-nuts and bores through the cover.
Unit mounting: By the bearing blocks

Forces and torques



Size	QST/KE 60		QST/KE 80		QST/KE 100	
permitted dyn. Forces*	5000 km	10000 km	5000 km	10000 km	5000 km	10000 km
F_x (N)	900	800	2500	2000	5000	4000
F_y (N)	1415	1010	3570	2542	4082	2910
F_z (N)	3525	2510	8500	6050	10300	7360
M_x (Nm)	33	23	107	76	142	101
M_y (Nm)	190	143	604	430	838	597
M_z (Nm)	176	125	550	392	745	532
All forces and torques related to the following: existing values / table values $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$						
No-load torque						
Trapezoidal	18x4/18x8		24x5/24x10		32x6/32x12	
Nm	0,8/0,9		0,8/1,0		2,0/2,2	
Ballscrew	16x5/16x10		25x5/20x20/25x10		32x5/32x10	
Nm	0,5/0,8		0,5/0,9/0,8		1,7/2,1	
Geometrical moments of inertia of aluminium profile						
I_x mm^4	$4,3x10^5$		$14,0x10^5$		$43,0x10^5$	
I_y mm^4	$4,8x10^5$		$16,6x10^5$		$48,8x10^5$	
E-Modulus N/mm^2	70000		70000		70000	

* referred to life-time

Formula: QST/KE

Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi*\mu} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

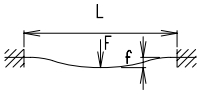
F	= force	(N)
P	= thread pitch	(mm)
S_i	= safety factor 1,2 ... 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm of screw	(min^{-1})
M_a	= driving torque	(Nm)
μ	= screw efficiency	
P_a	= motor power	(KW)

Efficiency of lead screws:

All ballscrew 0.900

Tr 18x4	0,399
Tr 18x8	0,565
Tr 24x5	0,384
Tr 24x10	0,550
Tr 32x6	0,360
Tr 32x12	0,524

$$f = \frac{F*L^3}{E*I*192}$$

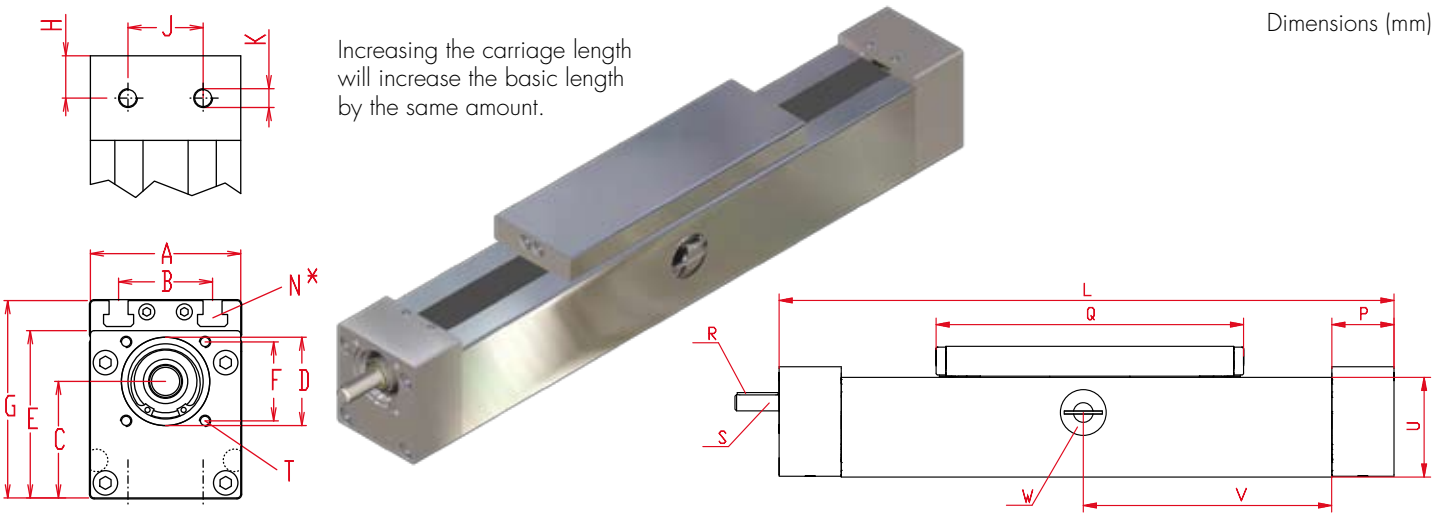


f = deflection	(mm)
F = load	(N)
L = free length	(mm)
E = elastic modulus 70000	(N/mm^2)
I = second moment of area	(mm^4)

For the diagram for critical speeds of lead screws refer to the main catalog chapter 5.2 page 3

Positioning system QST/KE 60, 80, 100

Dimensions (mm)



Increasing the carriage length will increase the basic length by the same amount.

*For slide nuts refer to chapter 2.2 page 2 V = Q + 100 mm W = servicing position

Size ❒	Basic length L	A	B	C	D	E	F ❒	G	H	J	K for	N for	P	Q	Shaft R Key	Shaft S Øh6 x length	T for	U	Basic weight	Weight per 100 mm
QST/KE 60	270	61	36	45,5	37	67,5	32	80	19	18	M6	M6	38	188	3x3x25	10h6x27	M5	61	4,1 kg	0,5 kg
QST/KE 80	350	81	50	62,5	47	89,5	42	107	22,5	40	M10	M8	45	250	5x5x28	14h6x35	M6	81	7,5 kg	0,9 kg
QST/KE 100	410	101	66	75,5	68	112,5	60	130	28,5	50	M10	M10	57	288	6x6x40	22h6x45	M8	101	14,8 kg	1,3 kg

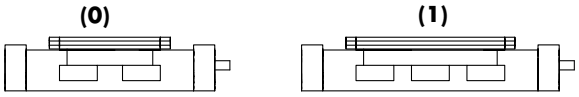
K **Spindle:**
(T) Trapezoidal thread **(K)** Ballscrew

1 **Selection of screw:**
(1) right hand (Standard) **(2)** left hand (Ballscrew by inquiry)

0 **Choice of guide body profile:**
(0) Version with corrosion-protected components
(1) Version 0 but with not corrosion-protected guidings

Choice of carriage:

0



Size	Carriage version 1 Q	Carriage version 1 Basic length L
60	255	350
80	336	436
100	383	510

0 **Drive version:**
(0) one shaft (locating bearing side) **(1)** one shaft (non-locating bearing side) **(2)** shaft on both sides

0 **Selection of screw:**

Size	Standard	Multistart screw	Standard	Multistart screw	
	trapezoidal thread standard		ballscrew standard		
60	**(0)** Tr 18x4	**(1)** Tr 18x8	**(0)** Kg 16x5	**(1)** Kg 16x10	**(2)** Kg 16x16
80	**(0)** Tr 24x5	**(1)** Tr 24x10	**(0)** Kg 25x5	**(1)** Kg 20x20	**(2)** Kg 25x10
100	**(0)** Tr 32x6	**(1)** Tr 32x12	**(0)** Kg 32x5	**(1)** Kg 32x10	**(2)** Kg 32x32 *
	trapezoidal thread stainless		ballscrew stainless (by inquiry)		
60	**(0)** Tr 18x4	**(1)** Tr 18x8	**(0)** Kg 16x5	**(1)** Kg 16x10	**(2)** Kg 16x16
80	**(0)** Tr 24x5	**(1)** Tr 24x10	**(0)** Kg 25x5	**(1)** Kg 20x20	**(2)** Kg 25x10
100	**(0)** Tr 32x6	**(1)** Tr 32x12	**(0)** Kg 32x5	**(1)** Kg 32x10	**(2)** Kg 32x32 *

* Basic and carriage length (L and Q) increase by 47 mm

0 **Ballscrew pitch accuracy:**
(0) 0,1 mm / 300 mm (Standard) **(1)** 0,05 mm / 300 mm **(2)** 0,025 mm / 300 mm

0 **End play of ball nut:**
(0) 0,04 mm (Standard) **(1)**** < 0,02 mm **(2)**** 2% apply prestress
** only in combination with **pitch accuracy (1)** or **(2)**

1500 Basic length + stroke = total length

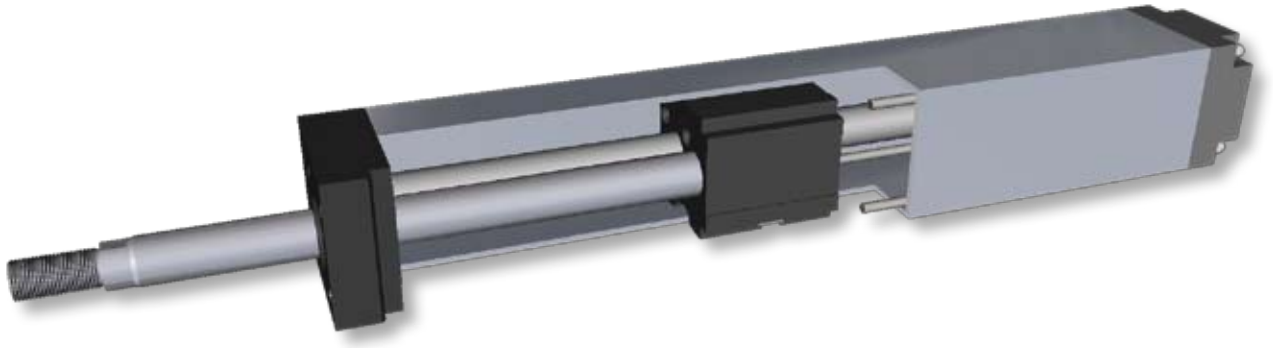
QS	K	E	80	1	0	0	0	0	0	0	01500
			Pos.	1	2	3	4	5	6	7	

Sample ordering code:
QSKE80, ballscrew right hand thread, full stainless version, standard carriage, one shaft (locating bearing side), spindle 25x5, 1150 mm stroke.

Positioning systems QLZE and QSKE-Lift

RHT/K A positioning system, RHT/K V positioning system piston rod with solid cylinder

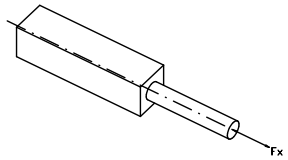
Positioning system RHT/K 60A, 80A, 100A, 120A



Function:
Due to the rotating motion of the threaded spindle and the leading nut integrated into the carriage, the piston rod is moved towards the outside in a linear movement. Spindle and piston rod are arranged parallel to each other within an enclosed system. The use of hardened and ground solid material ensures optimum surface quality and a long lifetime of the sealing.

Fitting position: As required. Max. length 1500 mm
Unit mounting: By tapped holes in the bearing blocks, mounting sets.

Forces and torques



Size	RHT/K 60A		RHT/K 80A		RHT/K 100A		RHT/K 120A	
Forces / Torques	static	dynam.	static	dynam.	static	dynam.	static	dynam.
F_x (N)	277	213	930	715	2636	2027	9619	7399

All forces and torques relate to the following:

existing values / values of table

$$\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$$

No-load torque

Trapezoidal thread	18x4		18x8		24 x 5		24 x 10		30x6		30x12		40x7		40x14	
(Nm)	0,60		0,70		0,60		0,80		1,00		1,20		1,40		1,60	
Ballscrew	16x5	16x10	16x16		25 x 5	25 x 10	20 x 20		32x5	32x10	32x20		40x5	40x10	40x20	
(Nm)	0,40	00,60	0,70		0,40	0,60	0,70		0,80	1,00	1,10		1,20	1,40	1,60	

12.1

Formula: RHT/K

Driving torque:

$$M_a = \frac{F*P*S_i*w}{2000*\pi*\mu} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

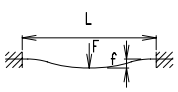
F	= force	(N)
P	= thread pitch	(mm)
S_i	= safety factor 1,2 ... 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm of screw	(min^{-1})
M_a	= driving torque	(Nm)
μ	= screw efficiency	
w	= friction coefficient	~ 1,22
P_a	= motor power	(KW)

Efficiency of lead screws:

All ballscrews: 0.900

Tr 18x4	0.399	Tr 18x8	0.565
Tr 24x5	0.384	Tr 24x10	0.550
Tr 28x5	0.349	Tr 28x10	0.513
Tr 40x7	0,344	Tr 40x14	0,509

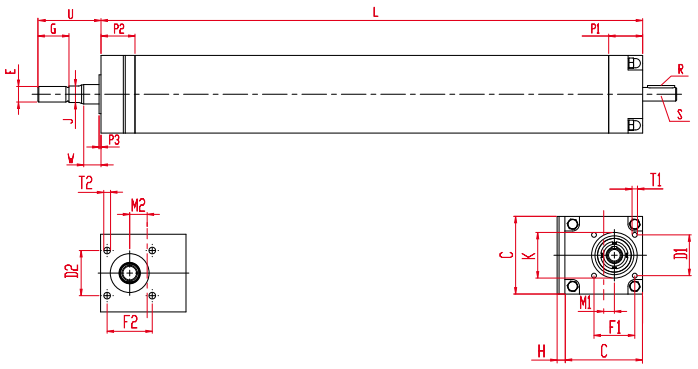
$$f = \frac{F*L^3}{E*I*192}$$



f	= deflection	(mm)
F	= load	(N)
L	= free length	(mm)
E	= elastic modulus 70000	(N/mm^2)
I	= second moment of area	(mm^4)

Positioning system 60A, 80A, 100A, 120A

Dimensions (mm)



Size ❒	Basic length L	❒ C	D1	D2	E	F1	F2	G	H	J	K	M1	M2	P1	P2	P3	R	S ∅ x length	T1	T2	U	Basic weight	Weight per 100 mm
RH 60**A**	110	60	25	32,5	M10x1,25	36	32,5	22		10	35	6,5		25	25	18	3x3x25	10x27	M5	M6	116	1,37 kg	0,55 kg
RH 80**A**	173	80	42	46,5	M16x1,5	42	46,5	32	8	17		13	14	35	35	12	5x5x28	14x35	M6	M8	60	4,90 kg	1,38 kg
RH 100**A**	194	100	48	80	M20x1,5	58	80	40		22	62	23	13	45	45	22,3	6x6x40	18x45	M8	M10	188	7,02 kg	1,54 kg
RH 120**A**	264	120	58	100	M36x2	78	100	72		36	72	29	14	65	65	2	8x7x55	25x58	M10	M12	233	17,2 kg	2,70 kg

K **Spindle:**
(T) trapezoidal thread **(K)** ballscrew

1 **Selection of screw:**
(1) right hand **(2)** left hand

0 **Choice of guide body profile:**
(0) corrosion-protected screws, pushing rod and bearings
(1) version 0 and add. corrosion-protected spindle (only trapezoidal thread screw)
(2) add. to version 0 and 1 with corrosion-protected bearing block

0 **Selection of screw:**

Size	Standard trapezoidal thread	Multistart screw trapezoidal thread	Standard ballscrew	Multistart screw ballscrew	
60	**(0)** Tr 18x4	**(1)** Tr 18x8	**(0)** Kg 16x5	**(1)** Kg 16x10	**(2)** Kg 16x16
80	**(0)** Tr 24x5	**(1)** Tr 24x10	**(0)** Kg 25x5	**(1)** Kg 25x10	**(2)** Kg 20x20
100	**(0)** Tr 30x6	**(1)** Tr 30x12	**(0)** Kg 32x5	**(1)** Kg 32x10	**(2)** Kg 32x20
120	**(0)** Tr 40x7	**(1)** Tr 40x14	**(0)** Kg 40x5	**(1)** Kg 40x10	**(2)** Kg 40x20

0 **Ballscrew pitch accuracy:**
(0) 0,1 mm / 300 mm (Standard) **(1)** 0,05 mm / 300 mm **(2)** 0,025 mm / 300 mm

0 **End play of ball nut:**
(0) 0,04 mm (Standard), **(1)*** < 0,02 mm, **(2)*** 2% apply prestress
* only in combination with **pitch accuracy (1)** or **(2)**

680 Basic length + stroke = total length

Repeatability:
± 0,2 mm trapezoidal
± 0,025 mm ballscrew

RHK	80A	1	0	0	0	0	0	0	00680
	Pos.	1	2	3	4	5	6	7	

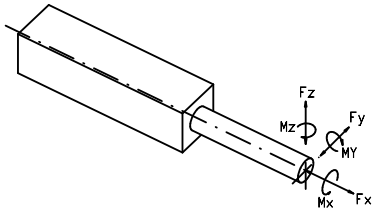
Sample ordering code:
RHK80A, ballscrew right hand thread, standard body profile, spindle 25x5, 507 mm stroke

Positioning system RHT/K 80V

Function:
Due to the rotating motion of the threaded spindle and the leading nut integrated into the carriage, the piston rod is moved towards the outside in a linear movement. Spindle and piston rod are arranged parallel to each other within an enclosed system. The use of hardened and ground solid material ensures optimum surface quality and a long lifetime of the sealing.

Fitting position: As required. Max. length size of RH 80 = 1500 mm
Unit mounting: By tapped holes in the bearing blocks, mounting sets.

Forces and torques



Size	RHT/K 80V		
Forces / Torques	static	dynam.	
F_x (N)	2600	2000	
F_y (N)	210	140	
F_z (N)	210	140	
M_x (Nm)	100	70	
M_y (Nm)	190	110	
M_z (Nm)	190	110	
All forces and torques relate to the following: existing values / values of table $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$			
No-load torque			
Trapezoidal thread	24 x 5	24 x 10	
(Nm)	0,60	0,80	
Ballscrew	25 x 5	25 x 10	20 x 20
(Nm)	0,40	0,60	0,70

12.1

Formula: RHT/K

Driving torque:

$$M_a = \frac{F*P*S_i*w}{2000*\pi*\mu} + M_{leer}$$

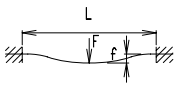
$$P_a = \frac{M_a*n}{9550}$$

F	= force	(N)
P	= thread pitch	(mm)
S_i	= safety factor 1,2 ... 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm of screw	(min^{-1})
M_a	= driving torque	(Nm)
μ	= screw efficiency	
w	= friction coefficient	~ 1,22
P_a	= motor power	(KW)

Efficiency of lead screws:

All ballscrew 0.900
Tr 24x5 0,384 Tr 24x10 0,550

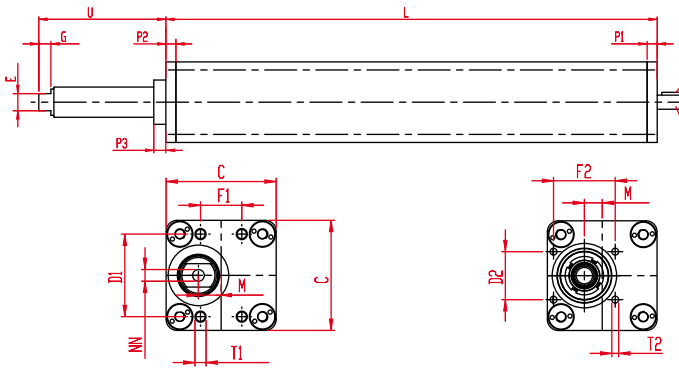
$$f = \frac{F*L^3}{E*I*192}$$



f =deflection	(mm)
F =load	(N)
L =free length	(mm)
E =elastic modulus 70000	(N/mm^2)
I =second moment of area	(mm^4)

Positioning system RHT/K 80V

Dimensions (mm)



Size ❐	Basic length L	❐ C	D1	D2	E	F1	F2	G	M	NN	P1	P2	P3	R	S ∅ x length	T1	T2	U	Basic weight	Weight per 100 mm
RH 80V	173	80	60	35	17	30	45	12	13	M10	10	10	12	5x5x28	14x35	M8	M5	60	4,90 kg	1,38 kg

Spindle:
(T) trapezoidal thread **(K)** ballscrew

Selection of screw:
(1) right hand **(2)** left hand

Choice of guide body profile:
(0) corrosion-protected screws, pushing rod and bearings
(1) version 0 and add. corrosion-protected spindle (only trapezoidal thread screw)
(2) add. to version 0 and 1 with corrosion-protected bearing block

Selection of screw:

Size	Standard	Multistart screw	Standard	Multistart screw
	trapezoidal thread		ballscrew	
80	**(0)** Tr 24x5	**(1)** Tr 24x10	**(0)** Kg 25x5	**(1)** Kg 25x10 **(2)** Kg 20x20

Ballscrew pitch accuracy:
(0) 0,1 mm / 300 mm (Standard) **(1)** 0,05 mm / 300 mm **(2)** 0,025 mm / 300 mm

End play of ball nut:
(0) 0,04 mm (Standard), **(1)*** < 0,02 mm, **(2)*** 2% apply prestress
* only in combination with **pitch accuracy (1)** or **(2)**

680 Basic length + stroke = total length

Repeatability:
± 0,2 mm trapezoidal
± 0,025 mm ballscrew

RHK	80V	1	0	0	0	0	0	0	00680
	Pos.	1	2	3	4	5	6	7	

Sample ordering code:
RHK80V, ballscrew right hand thread, standard body profile, spindle 25x5, 507 mm stroke

Combination QLZE - RHT/K

Combined lifting/rotating positioning system HDT/K

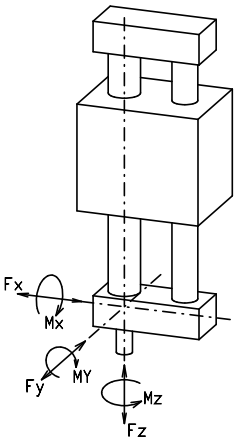
Positioning system HDT/K 16

Function:
Combined lifting/rotating unit, in which a rotating motion of the leading nut is transferred into a linear movement.
A splined shaft is mounted parallel to the spindle and serves in a double function both as a guide and as a transfer element for a rotating motion of a gripper or tool that is mounted on the pivot of the splined shaft.

Fitting position:
As required. Max. length size HD 16 = 600 mm

Unit mounting:
By bores, mounting sets.

Forces and torques



Size	HDT/K		
Forces / Torques	static	dynam.	
F_x (N)	150	90	
F_y (N)	150	90	
F_z (N)	260	180	
M_x (Nm)	90	70	
M_y (Nm)	90	70	
M_z (Nm)	110	48	
All forces and torques relate to the following: existing values / table values $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$			
No-load torque			
Trapezoidal thread	18x4		18x8
(Nm)	0,60		0,80
Ballscrew	16 x 5	16 x 10	16 x 16
(Nm)	0,40	0,6	0,7

13.1

Formula: HDT/K

Driving torque:

$$M_a = \frac{F*P*S_i*w}{2000*\pi*\mu} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

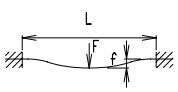
F	= force	(N)
P	= thread pitch	(mm)
S_i	= safety factor 1,2 ... 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm of screw	(min^{-1})
M_a	= driving torque	(Nm)
μ	= screw efficiency	
w	= friction coefficient	~ 1,22
P_a	= motor power	(KW)

Efficiency of lead screws:

All ballscrew 0.900

Tr 18x4 0,399 Tr 18x8 0,565

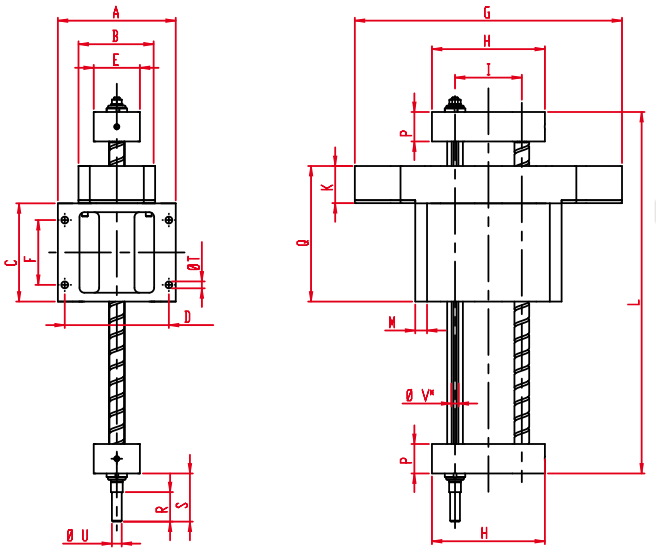
$$f = \frac{F*L^3}{E*I*192}$$

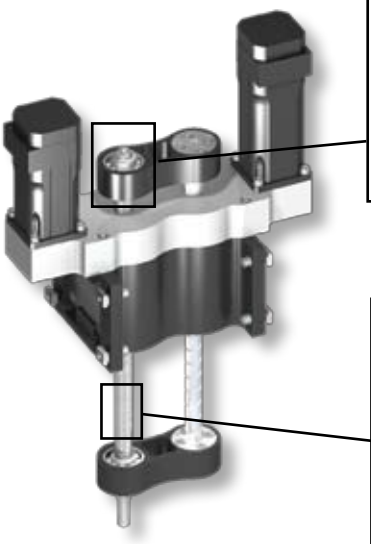


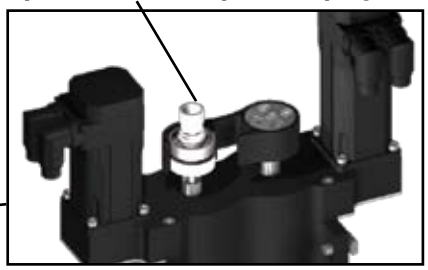
f =deflection	(mm)
F =load	(N)
L =free length	(mm)
E =elastic modulus 70000	(N/mm^2)
I =second moment of area	(mm^4)

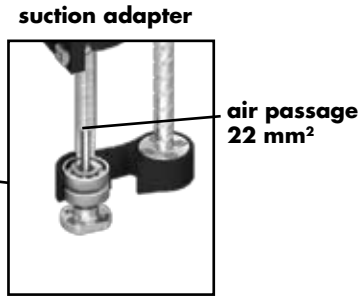
Positioning system HDT/K 16

Dimensions (mm)









Sizee ❒	Basic length L	A	B	C	D	F	G	H	I	K	M	P	Q	R	S	T ∅	U ∅	V** ∅	Basic weight	Weight per 100 mm
HD 16	200	120	78	100	106	66	272	115	68	37,8	12	30	138	30	49	7	10	8	6,48 kg	0,25 kg

** Hollow shaftdiameter

K **Spindle:**
(T) trapezoidal thread **(K)** ballscrew

1 **Selection of screw:**
(1) right hand **(2)** left hand

0 **Choice of guide body profile:**
(0) standard **(1)** corrosion-protected screws

0 **Selection of screw:**

Size	Standard	Multistart screw	Standard	Multistart screw	
	trapezoidal thread		ballscrew		
16	**(0)** Tr 18x4	**(1)** Tr 18x8	**(0)** Kg 16x5	**(1)** Kg 16x10	**(2)** Kg 16x16

0 **Ballscrew pitch accuracy:**
(0) 0,1 mm / 300 mm (standard) **(1)** 0,05 mm / 300 mm **(2)** 0,025 mm / 300 mm

0 **End play of ball nut:**
(0) 0,04 mm (standard), **(1)*** < 0,02 mm, **(2)*** 2% apply prestress
* only in combination with **pitch accuracy (1)** or **(2)**

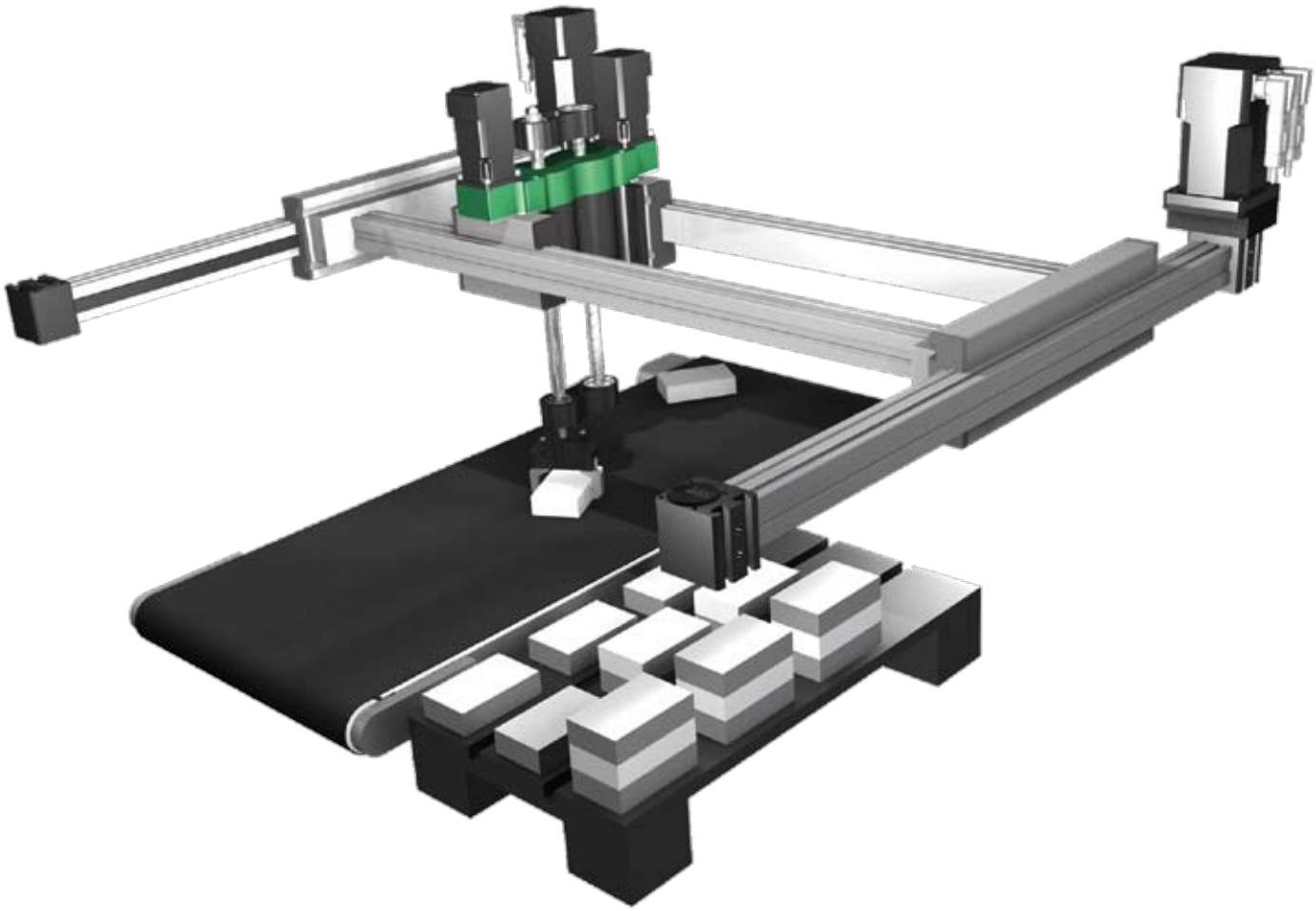
380 Basic length + stroke = total length

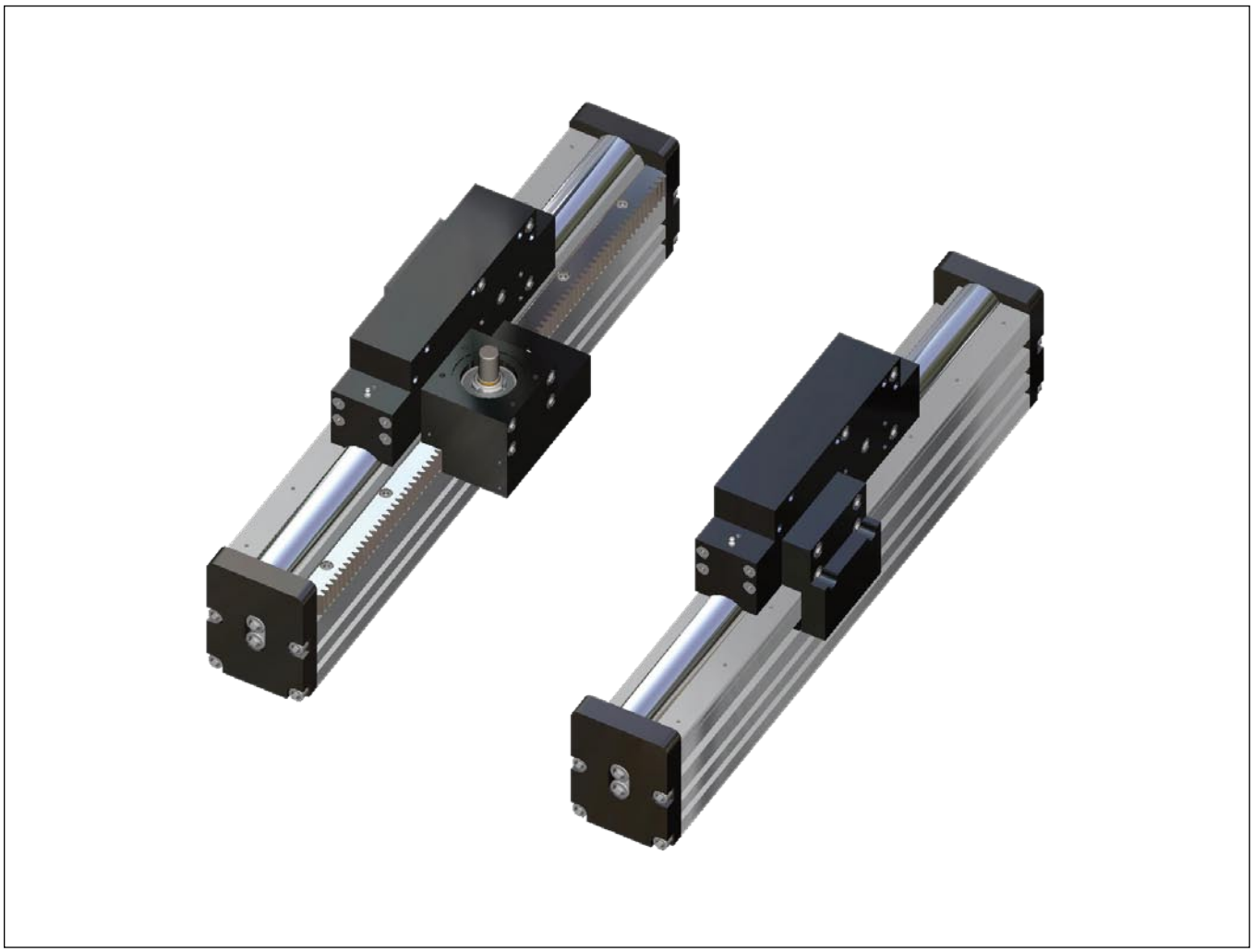
Repeatability:
± 0,2 mm trapezoidal
± 0,025 mm ballscrew

HDK	16	1	0	0	0	0	0	0	00380
	Pos.	1	2	3	4	5	6	7	

Sample ordering code:
HDK16, ballscrew right hand thread, standard body profile, spindle 16x5, 180 mm stroke

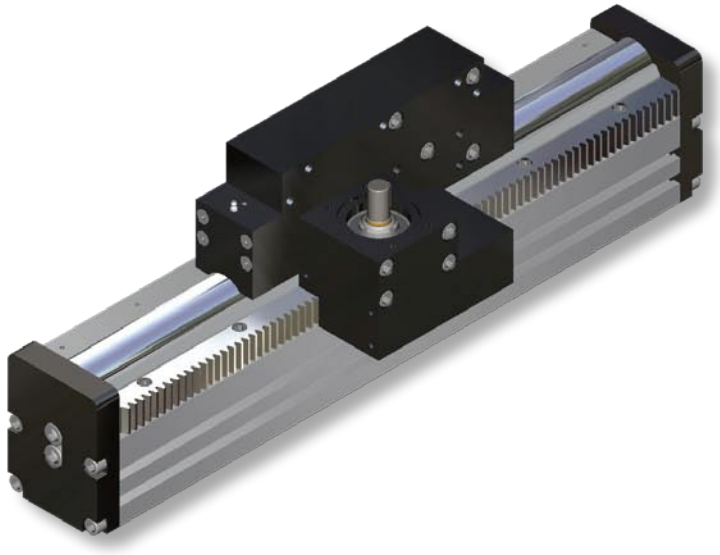
Combination of different systems





SLTZA/SLTR heavy duty traverse with rack and pinion drive and without

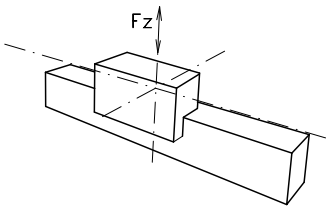
Positioning system SLTZA 30, 50



Function:
The guide body consists of an aluminium square profile with a guide rod clamped into it on the upper side free of play. A roller pack containing 2 rollers moves along the guide body. The roller pack is secured against derailing by means of a lateral claw. The system is rack and pinion driven. The number of roller packs is limited due to the length. The system may be extended according to your needs by means of the connecting brackets available as accessories.

Fitting position: horizontal, any max. length
Unit mounting: by T-Nuts and mounting profiles at the side of the profile

Forces and torques



Size	STLZA 30	STLZA 50
Forces / Torques	static	static
F_z (N)		
All forces and torques relate to the following:		
existing values / table values	$\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$	
No-load torque		
Nm		1,5
Geometrical moments of inertia of aluminium profile		
I_x mm^4	2,10 x 10^7	8,70 x 10^7
I_y mm^4	3,00 x 10^7	10,80 x 10^7
Elastic modulus N/mm^2	70000	70000

14.1

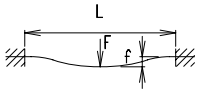
Formula: SLTZA
Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi} + M_{leer}$$

$$P_a = \frac{M_a*n}{9550}$$

F	= force	(N)
P	= pulley action perimeter	(mm)
S_i	= safety factor 1,2 ... 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm pulley	(min^{-1})
M_a	= driving torque	(Nm)
P_a	= motor power	(KW)

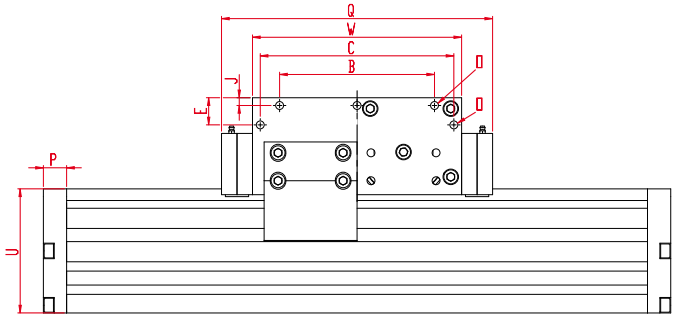
$$f = \frac{F*L^3}{E*I*192}$$

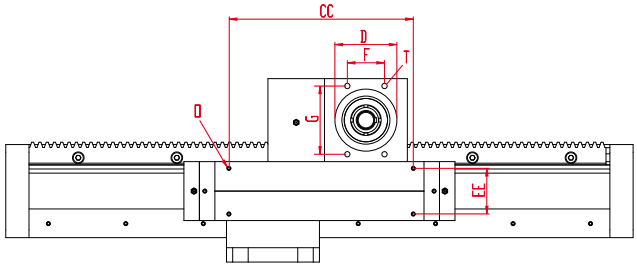


f= deflection (mm)
F= load (N)
L= free length (mm)
E= elastic modulus 70000 (N/mm^2)
I= second moment of area (mm^4)

Positioning system SLTZA 30, 50

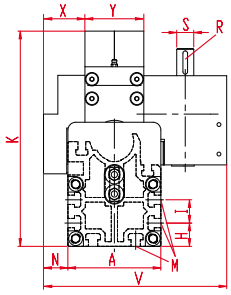
Dimensions (mm)





Size ❐	Basic length L	B	C	CC	D	E	EE	F	G	J	O	P	Q	T	U	W	Basic weight	Weight per 100 mm
SLTZA 30	340	160	210	184	68	23	36	75	42	12	M10	25	290	M8	115	230	19,8 kg	2,00 kg
SLTZA 50	410	186	250	215	80	35	50	48	88	10	M12	30	350	M8	160	270	40,5 kg	4,00 kg

SLTZA



Size ❐	A	H	I	K	M	N	R	S	V	X	Y	Shaft ∅ h6 x length	Key	Pinion	
														mm/rev.	Modul
SLTZA 30	80	24	22	206	M8	28	6x6x30	22h6x35	188	40	56	22 x 35	6x6x30	201,1	2
SLTZA 50	120	30	30	277,5	M10	31,5	6x6x30	22h6x35	236,5	53,5	76	22 x 35	6x6x30	197,9	3

ZA **Drive variation:**
(ZA) rack and pinion driven

50 **Guide rod size / size**
∅=30 mm (SLTZA30), ∅=50 mm (SLTZA50)

0 **Choice of guide body profile:**
(0) Standard **(2)** corrosion-protected guide rods and screws **(4)** expanded corrosion-protected version (depending on the availability of components) **(9)** corrosion-protected guide rods, rollers, screws and rack

2 **Choice of carriage***
(0) without **(1)** 1 carriage **(2)** 2 carriages **(3)** 3 carriages **(4)** 4 carriages
*= each carriage has got 2 rollers

2 **Carriage drives**
(0) without **(1)** 1 drive **(2)** 2 drives **(3)** 3 drives **(4)** 4 drives

Rack and pinion accuracy

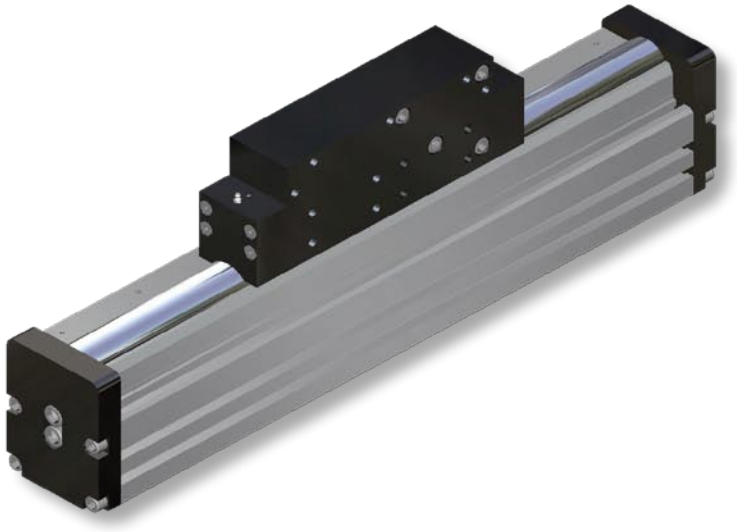
Code No.	Modul	Quality	Rack accuracy	Material	Marks
0	3	10	0,091 mm/300 mm	C45	Hardened teeth
1	3	9	0,065 mm/300 mm	C45	Milled teeth

910 Basic length + stroke = total length

SLT	ZA	50	0	0	2	2	0	0	0	00910
		Pos.	1	2	3	4	5	6	7	

Sample ordering code:
SLTZA 50, 50 mm guide rods, Standard profil, 2 carriages, 2 drives, rack and pinion accuracy 0,091 mm/300 mm, Stroke 500 mm

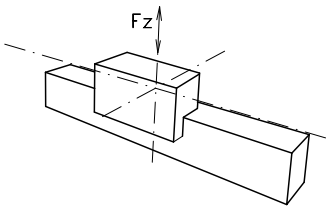
Positioning system SLTR 30, 50



Function:
The guide body consists of an aluminium square profile with a guide rod clamped into it on the upper side free of play. A roller pack containing 2 rollers moves along the guide body. The roller pack is secured against derailing by means of a lateral claw. The system is not driven. The number of roller packs is limited due to the length. The system may be extended according to your needs by means of the connecting brackets available as accessories.

Fitting position: horizontal, any max. length
Unit mounting: by T-Nuts and mounting profiles at the side of the profile

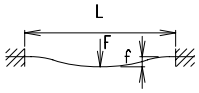
Forces and torques



Size	SLTR 30	SLTR 50
Forces / Torques	static	static
F_z (N)		
All forces and torques relate to the following:		
existing values / table values	$\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$	
Geometrical moments of inertia of aluminium profile		
I_x mm^4	2,10 x 10^7	8,70 x 10^7
I_y mm^4	3,00 x 10^7	10,80 x 10^7
Elastic modulus N/mm^2	70000	70000

Formula: SLTR
Deflection:

$$f = \frac{F * L^3}{E * I * 192}$$

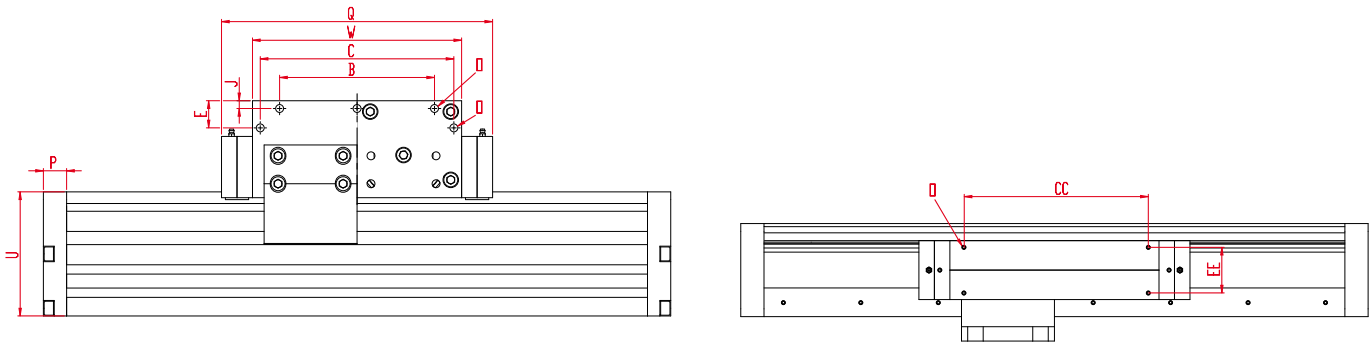


f	= deflection	(mm)
F	= load	(N)
L	= free length	(mm)
E	= elastic modulus 70000	(N/mm^2)
I	= second moment of area	(mm^4)

14.1

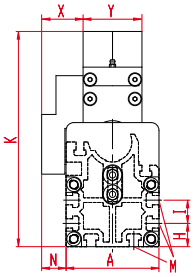
Positioning system SLTR 30, 50

Dimensions (mm)



Size ❐	Basic length L	B	C	CC	E	EE	J	O	P	Q	U	W	Basic weight	Weight per 100 mm
SLTR 30	340	160	210	184	23	36	12	M10	25	290	115	230	14,5 kg	1,58 kg
SLTR 50	410	186	250	215	35	50	10	M12	30	350	160	270	33,0 kg	3,37 kg

SLTR



Size ❐	A	H	I	K	M	N	X	Y
SLTR 30	80	24	22	206	M8	28	40	56
SLTR 50	120	30	30	277,5	M10	31,5	53,5	76

R **Drive variation:**
(R) without drive

50 **Guide rod size / size**
Ø=30 mm (SLTR30), Ø=50 mm (SLTR50)

0 **Choice of guide body profile:**
(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

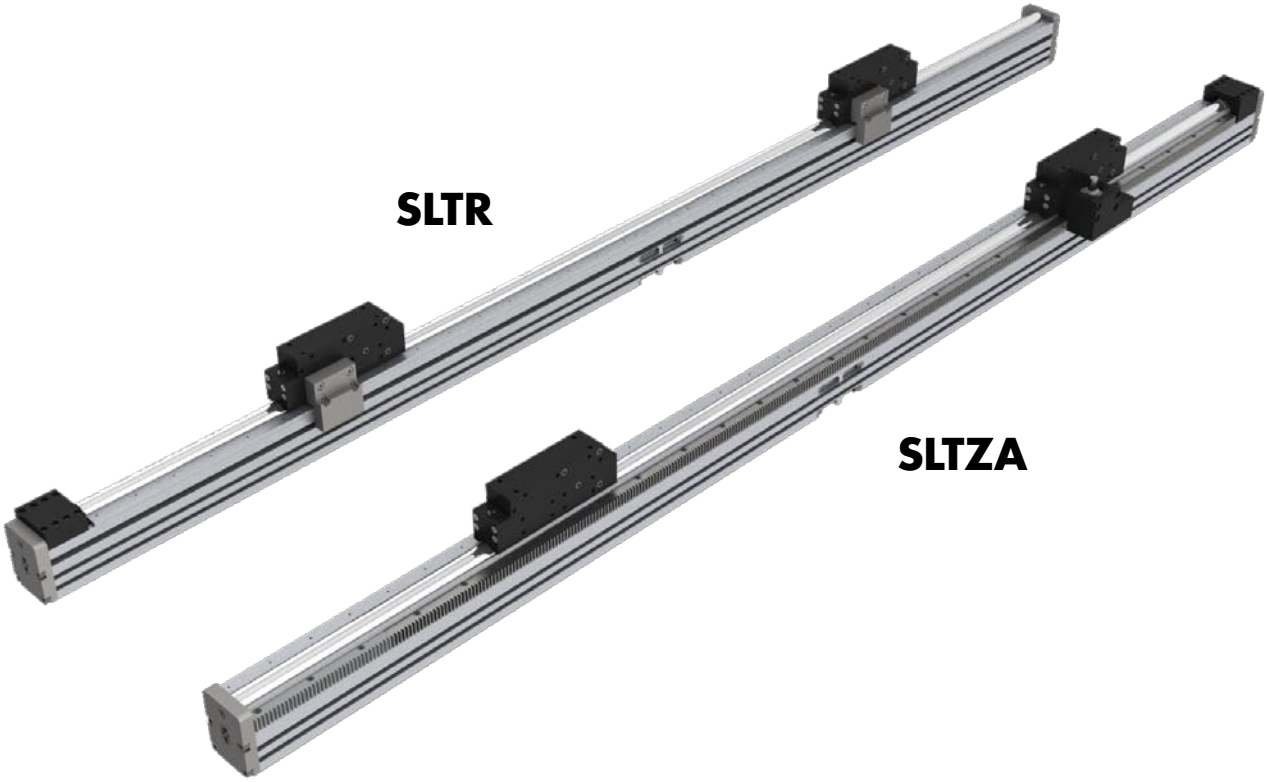
2 **Choice of carriage***
(0) without **(1)** 1 carriage **(2)** 2 carriages **(3)** 3 carriages **(4)** 4 carriages
*= each carriage has got 2 rollers

910 Basic length + stroke = total length

SLT	R	50	0	0	2	0	0	0	0	00910
		Pos.	1	2	3	4	5	6	7	

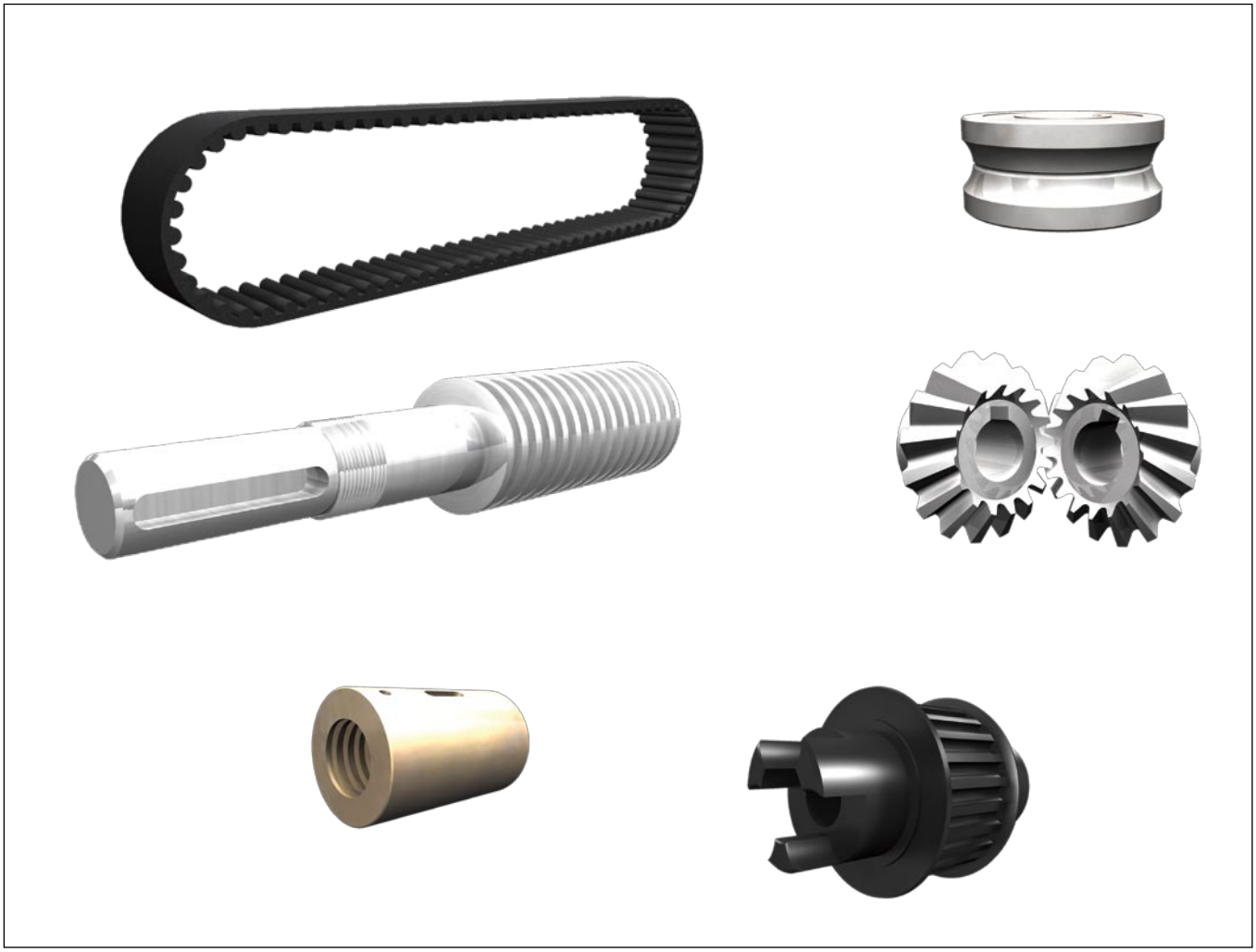
Sample ordering code:
SLTR 50, 50 mm guide rods, Standard profil, 2 carriages, Stroke 500 mm

Combination of different systems



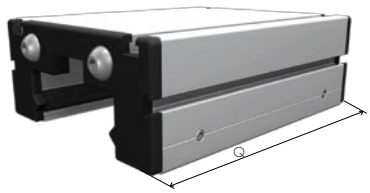
Jointing block SLTR/SLTZA

Code-No.	Type	A	B	C	D	E	H
030703	SLT 30	80	160	77	65	100	105
030705	SLT 50	120	200	93,5	79	135	145



Spare parts

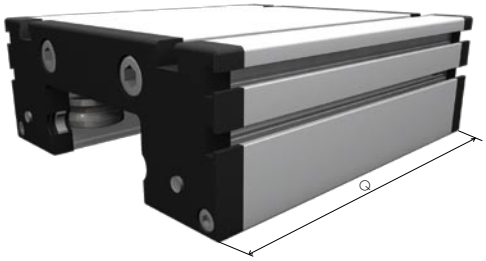
Complete carriage EG



Additional complete carriage with V-slides and end plates.

Code-No.	Type	Q Standard	Q min.	Q max.
04532	EG 30	82	50	1000
04542	EG 40	118	80	1000
04562	EG 60	164	125	1000
04582	EG 80	193	150	1000

Complete carriage EL/ML



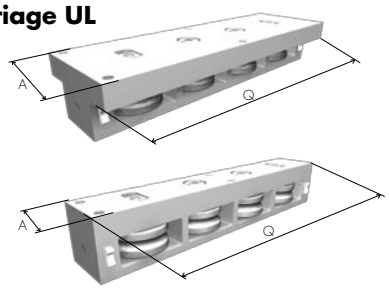
Additional complete carriage with rollers, eccentrics and wiper end plates for free rolling.
Temperature: Up to 100° C.

	Code-No.	Type	Q Standard	Q min.	Q max.
without Slider 2)	04531	EL 30	82	50	3000
	04541	EL 40	122	80	3000
	04561	EL/ML 60	168	125	3000
	04560	EL/ML 60S	194	125	3000
	04581	EL/ML 80	194	150	3000
	04580	EL/ML 80S	214	190	3000
	04511	EL/ML 100	300	200	2000
	04521	EL 125	365	250	2000

	Code-No.	Type	Q Standard	Q min.	Q max.
with Slider 1)	045311	EL 30	82	50	3000
	045411	EL 40	122	80	3000
	045611	EL 60	168	125	3000
	045601	EL 60S	194	125	3000
	045811	EL 80	194	150	3000
	045801	EL 80S	214	190	3000
	045111	EL 100	300	200	2000
	045211	EL 125	365	250	2000

1) ELT/K, ELVZ, ELHZ
2) ELZ, ELZT, ELZU, ELZA, ELZQ, MLZ

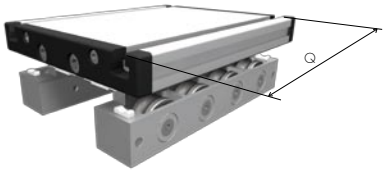
Complete carriage UL



Carriage with rollers, eccentrics and end plates.
Temperature: Up to 100° C.

Code-No.	Type	A	Q
045471	UL 40	40	146
045472	UL 40	20	146
045671	UL 60	60	194
045672	UL 60	29	194
045871	UL 80	80	260
045872	UL 80	42	260

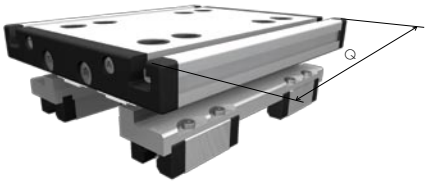
Complete carriage DL



Standardcarriage with 2x4 rollers, eccentrics and end plates.
Temperature: Up to 100° C.
Different versions by inquiry.

Code-No.	Type	Q Standard	Q max.
04591	DL 120	156	3000
04590	DL 160	200	3000
04592	DL 200	270	3000

Complete carriage DS

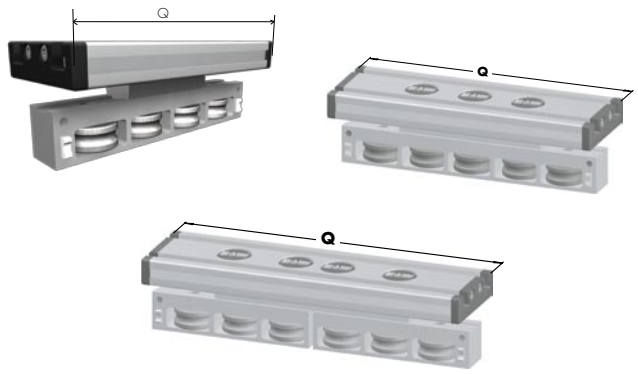


Carriage with four runner blocks and end plates.
Temperature: Up to 100° C.
Different versions by inquiry.

Code-No.	Type	Q Standard	Q max.
045700	DS 120	156	3000
045710	DS 160	200	3000
045720	DS 200	270	3000

Spare parts

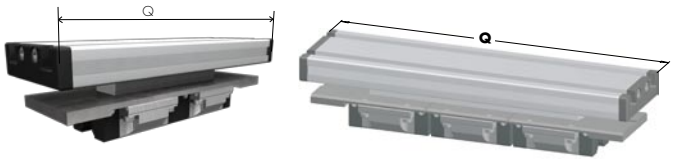
Carriage QL



Carriage with rollers, eccentrics and end plates.
Temperature: Up to 100° C.
Different versions by inquiry.

Code-No.	Type	$Q_{Standard}$	Number of rollers
04593A	**QL 60**	152	4
04593B	**QL 60**	192	5
04593C	**QL 60**	232	6
04594A	**QL 80**	196	4
04594B	**QL 80**	246	5
04594C	**QL 80**	296	6
04595A	**QL 100**	260	4
04595B	**QL 100**	320	5
04595C	**QL 100**	388	6

Carriage QS



Carriage with 2 runner blocks and end plates.
Temperature: Up to 100° C.
Different versions by inquiry.

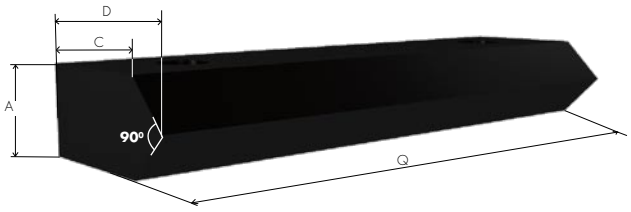
Code-No.	Type	$Q_{Standard}$	Number of Runnerblocks
045970	**QS 60**	177	2
045973	**QS 60**	242	3
045980	**QS 80**	232	2
045983	**QS 80**	312	3
045990	**QS 100**	268	2
045993	**QS 100**	362	3
04550	**QS 125**	300	2
045502	**QS 125**	365	3

Carriage QST/K

Carriage with 2 runner blocks and end plates without leading nut.
Temperature: Up to 100° C.
Different versions by inquiry.

Code-No.	Type	$Q_{Standard}$	$Q_{max.}$
045974	**QST/K 60**	188	3000
045984	**QST/K 80**	250	3000
045997	**QST/K 100**	188	3000

V-slide EG



Made of low-wear plastic with good sliding characteristics.
2 pieces per carriage.

Code-No.	Type	A	$B_{max.}$	C	D
04233	**30**	9,3	1.000	-	17,6
04243	**40**	8	1.000	9	13
04263	**60**	10	1.000	16	21
04283	**80**	14	1.000	22	29

Carriage roller

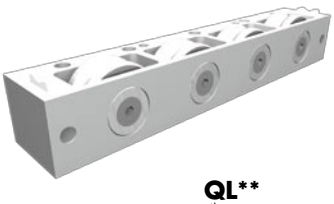
Standard roller.
Stainless steel upon request

Code-No.	Type	Name
04000	**EL 30**	LFR 687-2Z
04001	**EL 40 / DL 120 / QL 60**	LFR 608-2Z
04002	**EL/ML 60 / DL 160 / QL 80**	LR 10/12
04039	**EL/ML 60S / DL 200 / QL 100**	LFR 5302 KDD
04003	**EL/ML 80**	LR 12
04038	**EL/ML 80S**	LFR 5202-12 NPP
04004	**EL/ML 100**	LFR 5204-16 NPP
04009	**EL 125**	LFR 5206-20 KDD

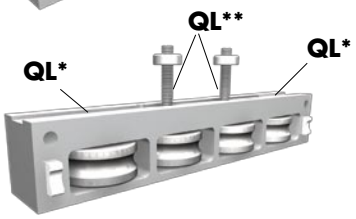
Spare parts

1.2

Carriage roller block DL - QL



DL



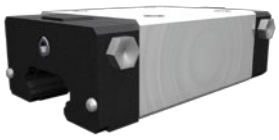
QL

Made of aluminium, complete with rollers, eccentric and screws.

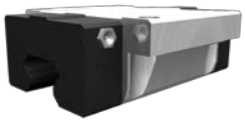
Code-No.	Type	Standard	By inqury
04100	DL 120	4 rollers	3; 5; 2x3 rollers
04110	DL 160	4 rollers	3; 5; 2x3 rollers
04115	DL 200	4 rollers	3; 5; 2x3 rollers
04116	QL 60	4 rollers	5; 2x2; 2x3 rollers
04117	QL 80	4 rollers	5; 2x2; 2x3 rollers
04119	QL 100	4 rollers	5; 2x2; 2x3 rollers

* for outside fixed roller
** for inner movable roller

Runner block for DS - QS



DS



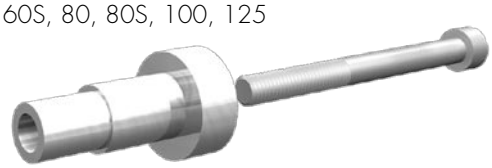
QS

Code-No.	Type
04150	QS 60
04152	QS 80
04154	QS 100
04156	DS 120
04157	DS 160
04158	DS 200

Eccentric EL/ML

Size 40, 60

Size 30, 60S, 80, 80S, 100, 125

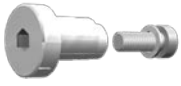


Eccentric made of stainless steel with mounting accessories (Screw, spring washer).

Code-No.	Type	For roller
04050	EL 30	LFR 687-2Z
04051	EL 40	LFR 608-2Z
04052	EL/ML 60	LFR 5201 - KDD
040521	EL/ML 60S	LFR 5302 - KDD
04053	EL/ML 80	LFR 5201-12 - KDD
04049	EL/ML 80S	LFR 5202-12 - NPP
04054	EL 100	LFR 5204-16 - NPP
04055	EL 125	LFR 5206-20 - KDD

Eccentric DL - QL

DL



QL*

QL**

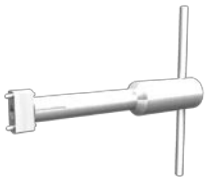
Eccentric made of stainless steel with mounting set, screw and locking rings. The front side has an embossed marking to enable uniformly adjustment of rollers.

Code-No.	Type	For roller
04057	DL 120	LFR 608-2Z
04058	DL 160	LFR 5201 - KDD
04059	DL 200	LR 5302 - KDD
06060	QL 60*	LFR 608-2Z
06061	QL 60**	LFR 608-2Z
06080	QL 80*	LFR 5201 - KDD
06081	QL 80**	LFR 5201 - KDD
06010	QL 100*	LR 5302 - KDD
06011	QL 100**	LR 5302 - KDD

* for outside fixed roller
** for inner movable roller
For arrangement of the different rollers see „carriage roller block" above.

Spare parts

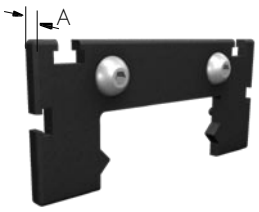
Tool for eccentric adjustment



Fix tool			Adjust tool	
Type	**Code-No.**	**Dimension**	**Code-No.**	**Dimension**
EL 30	**09020**	SW 2	**09030**	LK 9,5 ⌀ 1,3
EL 40	**09021**	SW 4	**09022**	SW 5
EL 60	**09022**	SW 5	**09023**	SW 6
EL 60S	**09023**	SW 6	**09036**	LK 20 ⌀ 2
EL 80	**09022**	SW 5	**09031**	LK 15 ⌀ 2
EL 80S	**09023**	SW 6	**09036**	LK 20 ⌀ 2
EL 100	**09023**	SW 6	**09032**	LK 24 ⌀ 3
EL 125	**09024**	SW 8	**09033**	LK 32 ⌀ 4

Fix tool			Adjust tool	
Type	**Code-No.**	**Dimension**	**Code-No.**	**Dimension**
DL 120	**09025**	SW 3	**09034**	LK 10,5 ⌀ 1,3
DL 160	**09021**	SW 4	**09031**	LK 15 ⌀ 2
DL 200	**09023**	SW 6	**09036**	LK 20 ⌀ 2
QL 60	**09038**	LK 8 ⌀ 1,5	**09026**	SW 2,5
	09021	SW 4	**09022**	SW 5
QL 80	**09037**	LK 10 ⌀ 2	**09025**	SW 3
	09022	SW 5	**09023**	SW 6
QL 100	**09035**	LK 13 ⌀ 2,5	**09021**	SW 4
	09023	SW 6	**09036**	LK 20 ⌀ 2

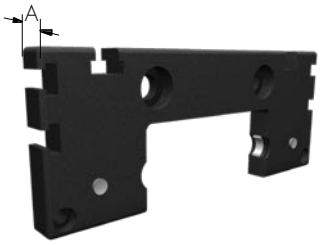
End plates EG



Material ABS, for temperatures up to 100°C

Code-No.	Type	A
04241	**EG 40**	5
04261	**EG 60**	6
04281	**EG 80**	6

Wiper end plate complete for EL/ML



Material ABS, for temperatures up to 100°C

without slider [2]		
Code-No.	**Type**	**A**
04230	**EL 30**	6
04240	**EL 40**	11
04260	**EL/ML 60**	12
04268	**EL/ML 60S**	12
04280	**EL/ML 80**	12
04288	**EL/ML 80S**	12
04210	**EL/ML 100**	15
04220	**EL 125**	15

with slider [1]		
Code-No.	**Type**	**A**
04234	**EL 30**	6
04244	**EL 40**	11
04264	**EL 60**	12
04269	**EL 60S**	12
04284	**EL 80**	12
04289	**EL 80S**	12
04214	**EL100**	15
04224	**EL125**	15

1) ELT/K, ELVZ, ELHZ
2) ELZ, ELZT, ELZU, ELZA, ELZQ, MLZ

Slider inset for ELT / ELK
Slider inset for DLT / DLK

When changing the cover band, it is necessary to replace the slide.

ELT / ELK	
Code-No.	**Type**
03132	**EL 30**
03142	**EL 40**
03162	**EL 60**

DLT / DLK	
Code-No.	**Type**
03164	**DL 120**
03184	**DL 160**
03114	**DL 200**

Wiper end plate DL /DS - QL / QS

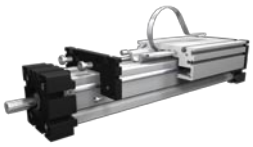
DL / DS **QL / QS**

Code-No.	Type	D	Material
04211	**DL 120**	8	ABS
04212	**DL/DS 160**	10	ABS
04213	**DL 200**	15	ABS
04267	**QL/QS 60**	6	ABS
04287	**QL/QS 80**	8	ABS
04217	**QL/QS 100**	10	ABS

Spare parts

Cover band

EL / EG



DL / DS

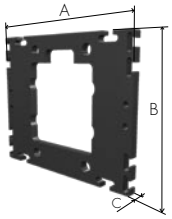
Spring steel (stainless steel)

Code-No.	Type	A x B
01020....	EL/EG 30	8 x 0,15
01021....	EL/EG 40/60/80 DL/DS 120	13,5 x 0,3
01026....	DL/DS 160	17,3 x 0,3
01022....	EL 100/125 DL/DS 200	22 x 0,3
01023	QST/K 60	24 x 0,3
01024	QST/K 80	32,3 x 0,3
01025	QST/K 100	38,5 x 0,3

Code-No.	length in mm
01026	2300

Sample ordering code:
Cover band 17,3 x 0,3 2.300 mm long.

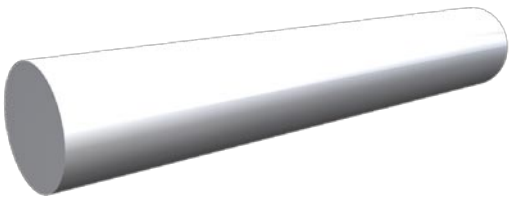
Jointing plate for closed carriage



Aluminium plate with connection bores.

Code-No.	Type	A	B	C
03045	EG 40	70	70	8
03065	EG 60	100	98	8
03085	EG 80	140	140	8
03036	EL 30	70	52	6
03046	EL 40	100	70	8
03066	EL/ML 60	144	98	8
03067	EL/ML 60S	170	106	10
03086	EL/ML 80	170	140	8
03087	EL/ML 80S	190	142	10
03016	EL 100	230	180	8
03026	EL 125	295	215	12

Guide rod

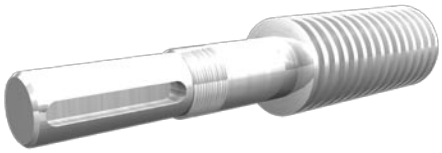


Code-No.	Type	Ø	Material	Hardness
04131....	EL/EG 30	5 h6	Cf 53	HRC 62
04132....	EL/EG 30	5 h6	x 90 CrMoV18	HRC 56
04141....	EL 40 DL 120 QL 60	6 h6	Cf 53	HRC 62
04142....	EL 40 DL 120 QL 60	6 h6	x 90 CrMoV18	HRC 56
04161....	EL 60(S) DL 160/200 QL 80/100	10 h6	Cf 53	HRC 62
04162....	EL 60(S) DL 160/200 QL 80/100	10 h6	x 90 CrMoV18	HRC 56
04181....	EL 80(S)	12 h6	Cf 53	HRC 62
04182....	EL 80(S)	12 h6	x 90 CrMoV18	HRC 56
04111....	EL 100	16 h6	Cf 53	HRC 62
04112....	EL 100	16 h6	x 90 CrMoV18	HRC 56
04113....	EL 125	20 h6	Cf 53	HRC 62
04114....	EL 125	20 h6	x 90 CrMoV18	HRC 56

Code-No.	length in mm
04131	2000

Sample ordering code:
Guiding rod steel ø 5 2.000 mm long.

Trapezoidal spindle



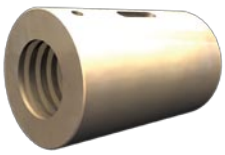
Code-No.	Type	Pitch	Unit length L max.
04609....	**EL/EG 30**	10x03 R	1.500 mm
04629....	**EL/EG 30**	10x03 L	1.500 mm
04600....	**EL/EG 40**	18x04 R	3.000 mm
04620....	**EL/EG 40**	18x04 L	3.000 mm
04640....	**DL 120 / QS 60**	18x04 R	3.000 mm
04650....	**DL 120 / QS 60**	18x04 L	3.000 mm
04601....	**EL/EG 40**	18x08 R	3.000 mm
04621....	**EL/EG 40**	18x08 L	3.000 mm
04641....	**DL 120 / QS 60**	18x08 R	3.000 mm
04651....	**DL 120 / QS 60**	18x08 L	3.000 mm
04602....	**EL/EG 60**	24x05 R	4.000 mm
04622....	**EL/EG 60**	24x05 L	3.000 mm
04642....	**DL/DS 160 QS 80**	24x05 R	4.000 mm
04652....	**DL/DS 160 QS 80**	24x05 L	3.000 mm
04603....	**EL/EG 60**	24x10 R	3.000 mm

Code-No.	Type	Pitch	Unit length L max.
04623....	**EL/EG 60**	24x10 L	3.000 mm
04643....	**DL/DS 160 / QS 80**	24x10 R	3.000 mm
04643....	**DL/DS 160 / QS 80**	24x10 L	3.000 mm
04604....	**EL/EG 80(S)**	28x05 R	3.000 mm
04624....	**EL/EG 80(S)**	28x05 L	3.000 mm
04605....	**EL/EG 80(S)**	28x10 R	3.000 mm
04625....	**EL/EG 80(S)**	28x10 L	3.000 mm
04606....	**EL / QS 100 DL/DS 200**	32x06 R	4.500 mm
04626....	**EL / QS 100 DL/DS 200**	32x06 L	3.000 mm
04607....	**EL / QS 100 DL/DS 200**	32x12 R	3.000 mm
04627....	**EL / QS 100 DL/DS 200**	32x12 L	3.000 mm
04630....	**EL 125**	40x07 R	4.000 mm
04631....	**EL 125**	40x07 L	3.000 mm
04632....	**EL 125**	40x14 R	3.000 mm
04633....	**EL 125**	40x14 L	3.000 mm

Code-No.	unit length in mm
04603	1000

Sample ordering code:
Trapezoidal spindle Tr 24x10 right, unit length 1000 mm.

Trapezoidal screw made of RG 7

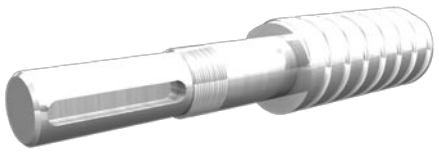


Code-No.	Type	Pitch
04332	**EL/EG 30**	10x03 R
04333	**EL/EG 30**	10x03 L
04340	**EL/EG 40 / DL 120 / QS 60**	18x04 R
04341	**EL/EG 40 / DL 120 / QS 60**	18x04 L
04342	**EL/EG 40 / DL 120 / QS 60**	18x08 R
04343	**EL/EG 40 / DL 120 / QS 60**	18x08 L
04360	**EL/EG 60 / DL/DS 160 QS 80**	24x05 R
04361	**EL/EG 60 / DL/DS 160 QS 80**	24x05 L
04362	**EL/EG 60 / DL/DS 160 QS 80**	24x10 R
04363	**EL/EG 60 / DL/DS 160 QS 80**	24x10 L
04380	**EL/EG 80(S)**	28x05 R

Code-No.	Type	Pitch
04381	**EL/EG 80(S)**	28x05 L
04382	**EL/EG 80(S)**	28x10 R
04383	**EL/EG 80(S)**	28x10 L
04310	**EL / QS 100 / DL/DS 200**	32x06 R
04311	**EL / QS 100 / DL/DS 200**	32x06 L
04312	**EL / QS 100 / DL/DS 200**	32x12 R
04313	**EL / QS 100 / DL/DS 200**	32x12 L
04320	**EL 125**	40x07 R
04321	**EL 125**	40x07 L
04322	**EL 125**	40x14 R
04323	**EL 125**	40x14 L

Spare parts

Ballscrew spindle



Code-No.	Type	Pitch	Unit length L max
04610....	**EL/EG 30**	8x2,5 R	2.000 mm
04611....	**EL/EG 40**	16x05 R	3.000 mm
04661....	**DL 120 / QS 60**	16x05 R	3.000 mm
04612....	**EL/EG 40**	16x10 R	3.000 mm
04662....	**DL 120 / QS 60**	16x10 R	3.000 mm
04614....	**EL/EG 60**	25x05 R	3.000 mm
04615....	**EL/EG 60**	25x10 R	3.000 mm
04613....	**EL/EG 60**	20x20 R	3.000 mm
04663....	**DL 120 / QS 80 DL/DS 160**	20x20 R	3.000 mm
04631....	**EL/EG 60**	20x05 L	3.000 mm

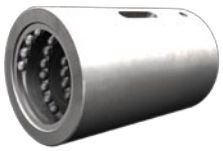
Code-No.	Type	Pitch	Unit length L max
04664....	**DL 120 DL/DS 160 QS 80**	25x05R	3.000 mm
04665....	**DL 120 DL/DS 160 QS 80**	25x10 R	3.000 mm
04616....	**EL/EG 80(S)**	25x25 R	3.000 mm
04666....	**DL 120 DL/DS 160**	25x25 R	3.000 mm
04617....	**EL/EG 80(S) EL/QS 100 DL/DS 200**	32x05 R	3.000 mm
04684....	**EL/EG 80(S) EL/QS 100 DL/DS 200**	32x05 L	3.000 mm
04618....	**EL/EG 80(S) EL/QS 100 DL/DS 200**	32x10 R	3.000 mm
04683....	**EL 100 DL/DS 200**	32x20 R	3.000 mm
04619....	**EL 100 DL/DS 200**	32x32 R	3.000 mm
04634....	**EL 125**	40x10 R	3.000 mm
04635....	**EL 125**	40x20 R	3.000 mm
04636....	**EL 125**	40x40 R	3.000 mm

Code-Nr. unit length in mm

04617	1000

Sample ordering code:
Ballscrew spindle 32x05 right, unit length 1.000 mm.

Ballscrew nut



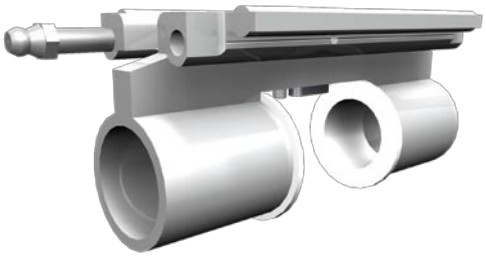
Code-No.	Type	Pitch	first greasing	re-greasing*
04430	**EL/EG 30**	8x2,5 R	0,02 g	0,01 g
04440	**EL/EG 40 DL 120 QS 60**	16x05 R	4,0 g	1,3 g
04441	**EL/EG 40 DL 120 QS 60**	16x10 R	2,5 g	0,8 g
04442	**DL 120 QS 60**	16x16 R	2,0 g	0,6 g
04460	**EL/EG 60 DL 120 DL/DS 160 QS 80**	25x05 R	6,0 g	2,0 g
04461	**EL/EG 60 DL 120 DL/DS 160 QS 80**	25x10 R	8,0 g	2,6 g
04462	**EL/EG 60 DL 120 DL/DS 160 QS 80**	20x20 R	8,0 g	2,6 g

Code-No.	Type	Pitch	first greasing	re-greasing*
04463	**EL/EG 60**	20x05 L	5,0 g	2,0 g
04464	**EL/EG 80(S) DL/DS 160**	25x25 R	10,0 g	3,0 g
04480	**EL/EG 80(S) EL/QS 100 DL/DS 200**	32x05 R	8,0 g	3,0 g
04485	**EL/EG 80(S) EL/QS 100 DL/DS 200**	32x05 L	8,0 g	3,0 g
04481	**EL/EG 80(S) EL/QS 100 DL/DS 200**	32x10 R	11,0 g	4,0 g
04483	**EL 100 DL/DS 200**	32x20 R	11,8 g	4,0 g
04482	**EL 100 DL/DS 200**	32x32 R	12,6 g	4,0 g
04420	**EL 125**	40x10 R	25,0 g	8,3 g
04421	**EL 125**	40x20 R	29,0 g	9,6 g
04422	**EL 125**	40x40 R	34,0 g	011,3 g

* after approx. 500 hours

Spare parts

Leading nut receiver



For EL / EG units

Ballscrew

Code-No.	Type
03130	30
03140	40
03160	60(S)
03180	80(S)
03110	100
03120	125

Trapezoidal

Code-No.	Type
03131	30
03141	40
03161	60(S)
03181	80(S)
03111	100
03121	125

For DL / DS units

Code-No.	Type
03163	DL 120
03183	DL/DS 160
03113	DL 200

Ballscrew QSK

Code-No.	Type
03167	60
03187	80
03117	100

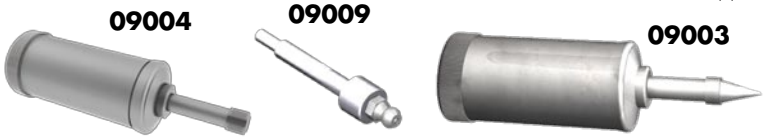
Trapezoidal QST/K

Code-No.	Type
03166	60
03186	80
03116	100

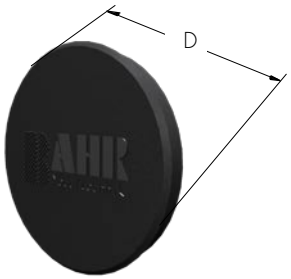
Lubricants

Code-No.	Name
09001	Molyduval, 1 litre
09003	Steel oil gun for carriage rollers
09010	One hand oil gun 125cm³ (with peak und angle adapter)
09004	Steel grease gun for ballscrew
09009	regreasing adapter DLT/K 160
09012	One hand grease gun 125cm³ (with peak und angle adapter)
09002	SKF grease LGMT 2/1 (1kg)
09006	Grease gun filling device LAGF 5 (for 5kg canister)
09007	SKF grease LGMT 2/5 (5kg)
09013	Grease gun filling device LAGF 18 (for 18kg canister)
09014	SKF grease LGMT 2/18 (18kg)

* for from outside difficult to reach nipples



Cover caps



Code-No.	Type	D	Position
04206	QL/QS 60	15	Servicing bores
04205	ELK 30	19	Bearing-block
	QL/QS 80, DL/DS 120		Servicing bores
	QL 60		Carriage
04235	ELZ 30	28	Bearing-block
	ELT/K 40		Bearing-block
	EGT/K 40		Bearing-block
	DL/DS 160		Servicing bores
	QL 80 - 100		Carriage
04245	ELZ 40, ELHZ 60, ELVZ 60	37	Bearing-block
			Carriage
04265	ELZ/MLZ 60, ELHZ 80, ELVZ80, DLZ 120, QLZ/QSZ 60	47	Bearing-block
04285	ELZ/MLZ 80, ELHZ 100, ELVZ 100, DLZ/DSZ 160, QLZ/QSZ 80	68	Bearing-block
04215	ELZ/MLZ 100, DLZ/DSZ 200, QLZ/QSZ 100	90	Bearing-block
04225	ELZ 125 / QS 125	110	Bearing-block

Spare parts

Toothed belt

The maximum length of one belt is 60 m. You can use the maximum power range of belt only from -10 C° to +60 C°. For every increase of temperature of +10 C° you have to reduce capability of belt by 20%. For applications with more than 80 C° the humidity should not be higher than 50%.

Code-No.	length in mm
00534	5000

Sample ordering code:
Belt HTD LL-5M 25 steel, 5 m long

PU-belt with steel reinforcement				
Code No.	**Type**	**Standard belt**	**Code No.**	**Widened belt**
00531	**ELZ 30**	HTD LL-3M12		
00532	**ELZ 40**	HTD LL-5M15		
00534	**ELZ/ML 60(S)**	HTD LL-5M25		
00536	**ELZ/ML 80(S)**	HTD LL-8M30		
00538	**ELZ/ML 100**	HTD LL-8M50		
00540	**ELZ 125**	HTD LL-8M70		
00531	**ELZG 30**	HTD LL-3M12		
00532	**ELZG 40**	HTD LL-5M15		
00534	**ELZG 60(S)**	HTD LL-5M25		
00536	**ELZG 80(S)**	HTD LL-8M30		
00542	**ELZZ 60**	HTD LL-5M09		
00543	**ELZZ 80**	HTD LL-8M12		
00544	**ELZZ 100**	HTD LL-8M20		
00536	**ELZZ 125**	HTD LL-8M30		
00531	**ELSZ 30**	HTD LL-3M12	**00532**	HTD LL-5M15
00532	**ELSZ 40**	HTD LL-5M15	**00534**	HTD LL-5M25
00534	**ELSZ 60(S)**	HTD LL-5M25	**00536**	HTD LL-8M30
00536	**ELSZ 80(S)**	HTD LL-8M30	**00538**	HTD LL-8M50
00538	**ELSZ 100**	HTD LL-8M50	**00540**	HTD LL-8M70
00540	**ELSZ 125**	HTD LL-8M70		
00532	**ELSD 40**	HTD LL-5M15	**00534**	HTD LL-5M25
00534	**ELSD 60(S)**	HTD LL-5M25	**00536**	HTD LL-8M30
00536	**ELSD 80(S)**	HTD LL-8M30	**00538**	HTD LL-8M50
00538	**ELSD 100**	HTD LL-8M50	**00540**	HTD LL-8M70
		Main belt		Rotating belt
00534	**ELZT 40**	HTD LL-5M25	**00532**	HTD LL-5M15
00536	**ELZT 60(S)**	HTD LL-8M30	**00534**	HTD LL-5M25
00538	**ELZT 80(S)**	HTD LL-8M50	**00536**	HTD LL-8M30
00540	**ELZT 100**	HTD LL-8M70	**00538**	HTD LL-8M50
00534	**ELHZ 60(S)**	HTD LL-5M25		
00534	**ELHZ 80(S)**	HTD LL-5M25		
00538	**ELHZ 100**	HTD LL-8M50		
00545	**ELHZ 125**	HTD LL-8M50		

PU-belt with steel reinforcement				
Code No.	**Type**	**Standard belt**	**Code No.**	**Widened belt**
00534	**ELVZ 60(S)**	HTD LL-5M25		
00534	**ELVZ 80(S)**	HTD LL-5M25		
00538	**ELVZ 100/125**	HTD LL-8M50		
00534	**ELZW 60(S)**	HTD LL-5M25		
00536	**ELZW 80(S)**	HTD LL-8M30		
00538	**ELZW 100**	HTD LL-8M50		
00531	**ELZU 30**	HTD LL-3M12		
00532	**ELZU 40**	HTD LL-5M15		
00534	**ELZU 60(S)**	HTD LL-5M25		
00536	**ELZU 80(S)**	HTD LL-8M30		
00534	**DLZ 120**	HTD LL-5M25		
00536	**DLZ/DSZ 160**	HTD LL-8M30		
00538	**DLZ 200**	HTD LL-8M50		
		Main belt		Rotating belt
00536	**DLZT/DSZT 120**	HTD LL-8M30	**00534**	HTD LL-5M25
00538	**DLZT/DSZT 160**	HTD LL-8M50	**00536**	HTD LL-8M30
00540	**DLZT/DSZT 200**	HTD LL-8M70	**00538**	HTD LL-8M50
00536	**DLSZ/DSSZ 120**	HTD LL-8M30		
00538	**DLSZ/DSSZ 160**	HTD LL-8M50		
00540	**DLSZ/DSSZ 200**	HTD LL-8M70		
00534	**QLZ/QSZ 60**	HTD LL-5M25		
00536	**QLZ/QSZ 80**	HTD LL-8M30		
00538	**QLZ/QSZ 100**	HTD LL-8M50		
00540	**QSZ 125**	HTD LL-8M70		
00534	**QLSZ/QSSZ 80**	HTD LL-5M25		

Spare parts

Toothed pulleys

coupling claw on one side

coupling claws on both sides

shaft on one side

shaft on both sides

Pulley size 30-80 bronzed steel, size 100 hard-coated aluminium. Coupling claws compatible with Rotex GS system.

	Code No.		Code No.					
Size	**Coupling claw on one side**	**Coupling claw on both sides**	**Shaft on one side**	**Shaft on both sides**	**Belt**	**Number of teeth**	**mm/ rev.**	**Coupling Rotex**
ELZ / ELSZ / MLZ with standard belt								
30	04010	04020	04828	04829	3M12	25	75	7
40	04011	04021	04830	04831	5M15	20	100	9
60(S)	04012	04022	04832	04833	5M25	26	130	14
80(S)	04013	04023	04834	04835	8M30	24	192	19
100	04014	04024	04836	04837	8M50	32	256	24
125	04015	04025	04838	04839	8M70	38	304	28
ELSZ with widened belt								
30	04011	04021	04830	04831	5M15	20	100	9
40	04012	04022	04832	04833	5M25	26	130	14
60(S)	04013	04023	04834	04835	8M30	24	192	19
80(S)	04014	04024	04836	04837	8M50	32	256	24
100	04015	04025	04838	04839	8M70	38	304	28
125	040150	-	-	-	8M100	38	304	-
ELZG								
30	04820	04821	04840	04841	3M12	40	120	7
40	04822	04823	04842	04843	5M15	32	160	9
60(S)	04824	04825	04844	04845	5M25	44	220	14
80(S)	04826	04827	04846	04847	8M30	40	320	19
ELSD with standard belt								
40	04011	04021	04830	04831	5M15	20	100	9
60(S)	04012	04022	04832	04833	5M25	26	130	14
80(S)	04013	04023	04834	04835	8M30	24	192	19
100	04014	04024	04836	04837	8M50	32	256	24
ELSD with widened belt								
40	04012	04022	04832	04833	5M25	26	130	14
60(S)	04013	04023	04834	04835	8M30	24	192	19
80(S)	04014	04024	04836	04837	8M50	32	256	24
100	04015	04025	04838	04839	8M70	38	304	28
ELZU								
30	04010	04020	04828	04829	3M12	25	75	7
40	04011	04021	04830	04831	5M15	20	100	9
60(S)	04012	04022	04832	04833	5M25	26	130	14
80(S)	04013	04023	04834	04835	8M30	24	192	19

Spare parts

Toothed pulleys

	Code No.		Code No.					
Size	**Coupling claw on one side**	**Coupling claw on both sides**	**Shaft on one side**	**Shaft on both sides**	**Belt**	**Number of teeth**	**mm/ rev.**	**Coupling Rotex**
ELZT internal belt								
40	04011				5M15	20	100	9
60(S)	04012				5M25	26	130	14
80(S)	04013				8M30	24	192	19
100	04014				8M50	32	256	24
ELZT external belt								
40	04012	04022	04832	04833	5M25	26	130	14
60(S)	04013	04023	04834	04835	8M30	24	192	19
80(S)	04014	04024	04836	04837	8M50	32	256	24
100	04015	04025	04838	04839	8M70	38	304	28
DLZ / DSZ								
DLZ/DSZ 120	04012	04022	04832	04833	5M25	26	130	14
DLZ/DSZ 160	04852	04853	04848	04849	8M30	22	176	19
DLZ/DSZ 200	04854	04855	04850	04851	8M50	28	224	24
DLZT / DSZT internal belt								
120	04012				5M25	26	130	14
DLZT / DSZT external belt								
120	04013	04023	04834	04835	8M30	24	192	19
QLZ / QSZ								
60	04012	04022	04832	04833	5M25	26	130	14
80	04852	04853	04848	04849	8M30	22	176	19
100	04854	04855	04850	04851	8M50	28	224	24
QLSZ / QSSZ								
80	04852	04853	048	04849	8M30	22	176	19

two shafts short

one shaft long

two shafts long

	Code No.						
Size	**Two shafts short**	**One shaft long**	**Two shafts long**	**Belt**	**Number of teeth**	**mm/ rev.**	**Coupling Rotex**
ELHZ / ELVZ							
60(S)	04026	04860	04861	5M25	16	80	14
80(S)	04027	04862	04863	5M25	22	110	19
100	04028	04864	04865	8M50	18	114	24
125	04029	04866	04867	8M50	24	192	28

Spare parts

Toothed pulleys

Coupling claw on one side

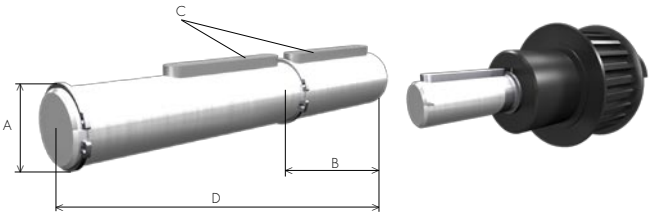
Shaft on one side

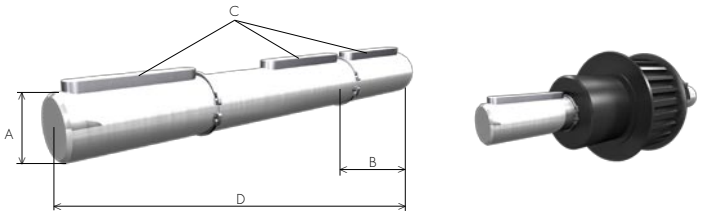
Shafts on both sides

Size	Code No. Coupling claw on one side	Shaft on one side	Shaft on both sides	Belt	Number of teeth	mm/ rev.	Coupling Rotex
ELZZ							
60(S)	04856			5M09	26	130	14
80(S)	04857			8M12	24	192	19
100	04858			8M20	32	256	24
125	04859			8M30	38	304	28

Plug-in shaft for pulleys

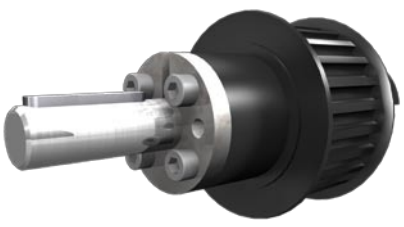
Plug–in shaft made of stainless steel, complete with key and locking rings for retrofitting.





Shaft on one side							Shaft on both sides						
Code-No.	**Type**	**Size**	**A_{h7}**	**B**	**C**	**D**	**Code-No.**	**Type**	**Size**	**A_{h7}**	**B**	**C**	**D**
04030	**ELZ/ELSZ**	**30**	6	15	2x2x12	57	**04040**	**ELZ/ELSZ**	**30**	6	15	2x2x12	72
04031	**ELZ/ELSZ**	**40**	10	27	3x3x25	85	**04041**	**ELZ/ELSZ**	**40**	10	27	3x3x25	112
04032	**ELZ/ELSZ/ MLZ QLZ/QSZ**	**60**	14	35	5x5x28	115	**04042**	**ELZ/ELSZ QLZ/QSZ**	**60**	14	35	5x5x28	150
	DLZ/DSZ DLZT/DSZT	**120**						**DLZ/DSZ DLZT/DSZT**	**120**				
04033	**ELZ/ELSZ/ MLZ QLZ/QSZ**	**80**	18	45	6x6x40	145	**04043**	**ELZ/ELSZ QLZ/QSZ**	**80**	18	45	6x6x40	190
	DLZ/DSZ	**160**						**DLZ/DSZ**	**160**				
	DLSZ/DSSZ	**120**						**DLSZ/DSSZ**	**120**				
04034	**ELZ/ELSZ/ MLZ**	**100**	22	45	6x6x40	175	**04044**	**ELZ/ELSZ**	**100**	22	45	6x6x40	220
	DLSZ	**160**						**DLSZ**	**160**				
04035	**ELZ**	**125**	30	45	8x7x40	215	**04045**	**ELZ**	**125**	30	45	8x7x40	270

Tensioning set for sizes EL 100 - 125, DL/DS 200, ML / QL / QS 100



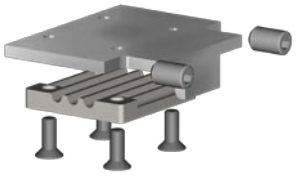
Code-No.	Type	Tension ring
00472	**EL/ML 100 DL/DS 200 QL/QS 100**	22 x 32
00476	**E 125**	30 x 41

Spare parts

Belt adjuster ELZ / MLZ

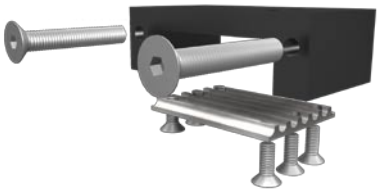
ELZ

MLZ



Code-No.	Type	Material
04060	30	Zinc coated steel
04061	40	Zinc coated steel
04062	ELZ 60(S)	Zinc coated steel
040621	MLZ 60(S)	Zinc coated steel
04063	ELZ 80(S)	Zinc coated steel
040631	MLZ 80(S)	Zinc coated steel
04064	ELZ 100	Zinc coated steel
040641	MLZ 100	Zinc coated steel
04065	125	Zinc coated steel

Belt adjuster ELSZ

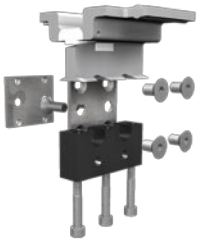


Code-No.	Type	Material
04071	30/40	Zinc coated steel
04076	30/40	Nickel faced steel
04072	60(S)	Zinc coated steel
04077	60(S)	Nickel faced steel
04073	80(S)	Zinc coated steel
04078	80(S)	Nickel faced steel
04074	100	Zinc coated steel
04079	100	Nickel faced steel
04075	125	Zinc coated steel
04070	125	Nickel faced steel

Belt adjuster ELHZ

Code-No.	Type	Material
04080	60(S)	Black anodized Al and zinc coated steel
04081	80(S)	Black anodized Al and zinc coated steel
04082	100	Black anodized Al and zinc coated steel
04083	125	Black anodized Al and zinc coated steel

Belt adjuster ELVZ

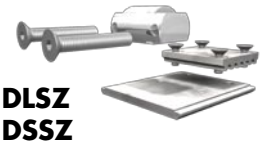


Code-No.	Type	Material
04090	60(S)	Black anodized Al and zinc coated steel
04091	80(S)	Black anodized Al and zinc coated steel
04092	100	Black anodized Al and zinc coated steel
04093	125	Black anodized Al and zinc coated steel

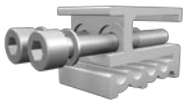
Belt adjuster

DLZ
DSZ

DLSZ
DSSZ



QLZ
QSZ



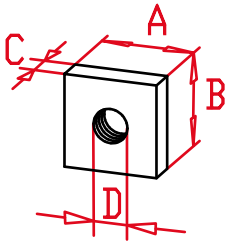
Code-No.	Type	Material
04084	DLZ/DSZ 120	Nature anodized Al and zinc coated steel
04086	DLZ/DSZ 160	Nature anodized Al and zinc coated steel
04085	DLZ/DSZ 200	Nature anodized Al and zinc coated steel
04066	DLSZ 120	Zinc coated steel
04067	DLSZ/DSSZ 160	Zinc coated steel
04087	QLZ/QSZ 60	Nature anodized Al
04088	QLZ/QSZ 80	Nature anodized Al
04089	QLZ/QSZ 100	Nature anodized Al
04094	QSZ 125	Nature anodized Al

Accessories

Accessories

Square nut

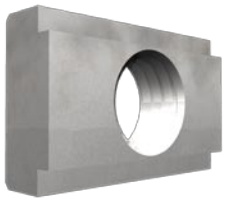
DIN 562

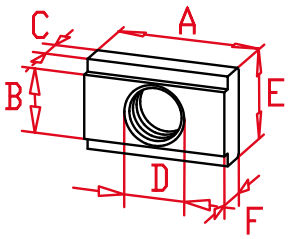


Slide nuts position refer to chapter 2.2 page 3
Material: galvanized steel

Code-No.	Type	A	B	C	D
02708	M 4	7	7	2,2	M 4
02710	M 5	8	8	2,7	M 5
02715	M 6	10	10	3,2	M 6
02714	M 8	13	13	4	M 8
02713	M 10	17	17	5	M 10
02721	M 10	25	20	8	M 10

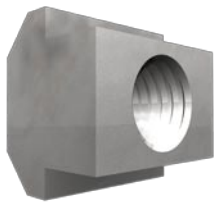
T-nut



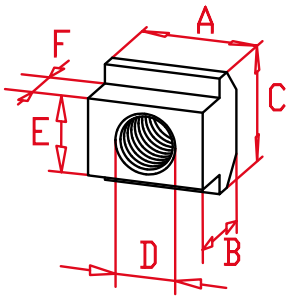


Slide nuts position refer to chapter 2.2 page 3
Material: galvanized steel

Code-No.	Type	A	B	C	D	E	F
02717	M3	8	4,2	2,1	M 3	6,9	4,3
02739	M4	10	4,2	2,1	M 4	6,9	3,3
02742	M 5	12	5,3	3	M 5	8	4
02709	M 5	14	8,1	4,5	M 5	14	6
02716	M 6	14	8,1	4,5	M 6	14	6
02718	M 8	18	8,1	4,5	M 8	14	6
02719	M10	22	8,1	4,5	M 10	14	6
02730	M 6	13	10	4	M 6	15	8
02731	M 8	13	10	4	M 8	15	8

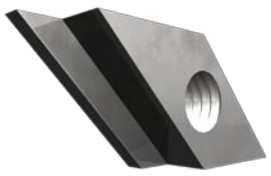


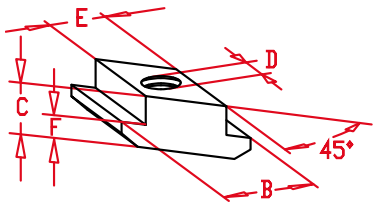
DIN 508



Code-No.	Type	A	B	C	D	E	F
02734	M 5	10	8	10	M 5	6	4
02735	M 6	13	10	13	M 6	8	4
02736	M 8	15	12	15	M 8	10	6
02720	M 10	18	14	18	M 10	12	7
02722	M 12	22	16	22	M 12	14	8
02737	M 16	28	20	28	M 16	18	10

Rhombus nut

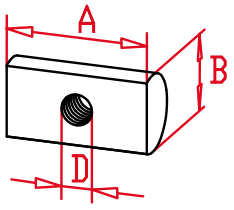




Slide nuts position refer to chapter 2.2 page 3
Material: galvanized steel

Code-No.	Type	B	C	D	E	F
02732	M 8	15	9	M 8	10	4,2
02733	M 6	15	9	M 6	10	4,2

Half round nut

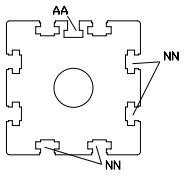


For guide body profile EL, ML, QL / QS and for fastening of jointing and mounting blocks. Material: galvanized steel

Size	Code-No.	Type	A	B	D
30	02724	M 3	28	5	2x M 3
40	02725	M 5	14	6	M 5
60 (S)	02726	M 6	18	10	M 6
80 (S)	02728	M 8	22	12	M 8
100	02729	M 8	22	16	M 8
125	02723	M10	25	20	M10

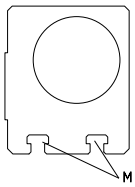
T-nut allocation

Bearing block profile EL



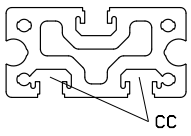
Size	T-slot nut slot AA Code No.	T-slot nut slot NN Code No.
30	02715	02715
40	02710	02715
60 (S)	02710	02718
80 (S)	02714	02719
100	02714	02720
125	02736	02722

Bearing block profile ELZ



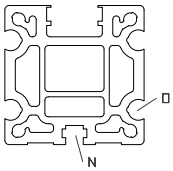
Size	T-slot nut slot M Code No.
30	02709 / 02710
40	02735
60 (S)	02731 / 02719
80 (S)	02736
100	02720
125	02722

Guide body profile E



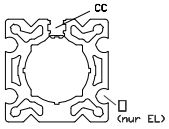
Size	T-slot nut slot CC Code No.
40	02730 / 02731
60	02730 / 02731
80	02730 / 02731

Guide body profile ML



Size	T-slot nut slot N Code No.	T-slot nut slot O Code No.
60 (S)	02716 / 02718	02726
80 (S)	02719	02728
100	02720	02729

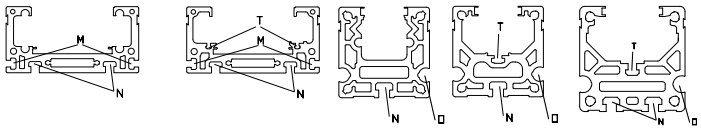
Guide body profile EL / EG



Size	T-slot nut slot CC Code No.	T-slot nut slot O Code No.
EL 30	02715	02724
EL/EG 40	02718	02725
EL/EG 60	02718	02726
EL/EG 80(S)	02718	02728
EL 100	02721	02729
EL 125	02721	02723

Guide body profile

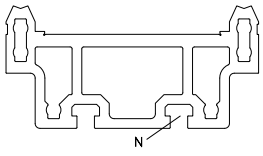
DL / DS / QL / QS / QS125



Size	T-slot nut slot N Code No.	T-slot nut slot M Code No.	T-slot nut slot T* Code No.	T-slot nut slot O* Code No.
DL/DS 120	02735	02734	02717	-
DL/DS 160	02736	02735	02739	-
DL/DS 200	02720	02736	02735	-
QL /QS 60	02734**	-	02739	02726
QL /QS 80	02735**	-	02742	02728
QL /QS 100	02720**	-	02716	02729
QS 125	02720	-	02736	02723

* only for DS/QS guide body profile
** not in QST/K guide body profile

Guide body profile ALLM

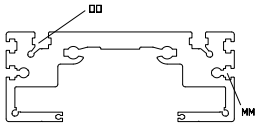


Size	T-slot nut slot N Code No.
200	02737

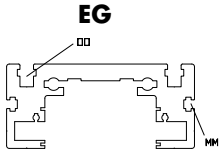
Carriage profile EL / EG

Size	T-slot nut slot OO Code No.	T-slot nut slot MM Code No.
30	02715	-
40	02716 / 02709	-
60	02718	-
60 S	02736	-
80	02718 / 02719	02715
80S	02736	02735
100	02720	02713
125	02722	02720

EL/ML



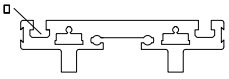
EG



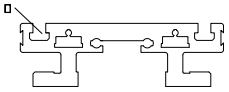
Carriage profile DL / DS / QL / QS

Size	T-slot nut slot O Code No.	T-slot nut slot M Code No.
DL/DS 120	02735	-
DL/DS 160	02736	-
DL/DS 200	02720	-
QL/QS 60	-	02735
QL /QS 80	-	02736
QL/QS 100	-	02720
QS 125	-	02722

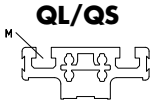
DL



DS



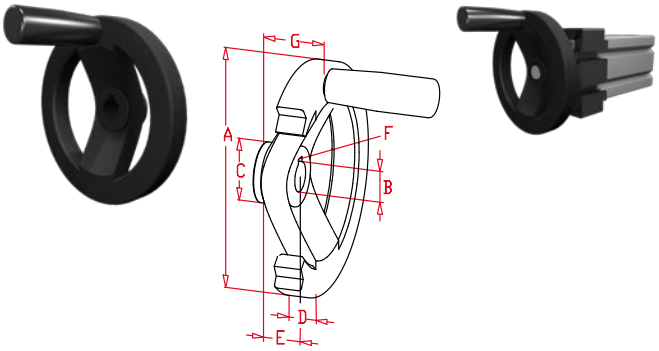
QL/QS



Slide nut dimensions refer to chapter 2.2 page 2

Accessories

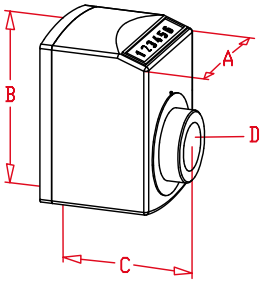
Handwheel with keyway and locking screw



A plastic coated aluminium handwheel with a matt black finish. Equiped with a black handle.

Code-No.	Type	A	B	C	D	E	F	G
00050	**30**	70	5	17	13	15	-	20
00100	**40**	100	10	29	14,5	17	3x3	30
00160	**60**	140	14	36	16,5	19	5x5	36
00200	**80**	200	18	42	20,5	24	6x6	45
00222	**100**	200	22	42	20,5	24	6x6	45

Positional indicator EL / EG



Code No. 00265 - 00268
electronical indicator

SH-FH

SV-FV

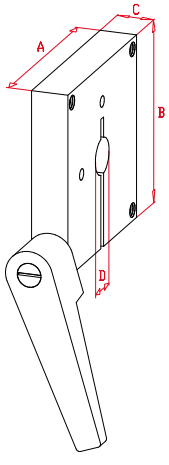
Shell made of polyamide orange. Ambient temperature 80°C. Any fitting position possible. Numeral height 6 mm. Accuracy of reading 0,1 mm.

Code-No.	Size	AxBxC	D	type	pitch (mm)
00231..	**30**	33x47x31	6	SH	2,5 or 3
00232..	**30**	33x47x31	6	FH	2,5 or 3
00233..	**30**	33x47x31	6	SV	2,5 or 3
00234..	**30**	33x47x31	6	FV	2,5 or 3
00241..	**40, 60, 80**	48x67x51	12,17,20	SH	4 or 8
00242..	**40, 60, 80**	48x67x51	12,17,20	FH	4 or 8
00243..	**40, 60, 80**	48x67x51	12,17,20	SV	4 or 8
00244..	**40, 60, 80**	48x67x51	12,17,20	FV	4 or 8
00251..	**40, 60, 80**	48x67x51	12,17,20	SH	5 or 10
00252..	**40, 60, 80**	48x67x51	12,17,20	FH	5 or 10
00253..	**40, 60, 80**	48x67x51	12,17,20	SV	5 or 10
00254..	**40, 60, 80**	48x67x51	12,17,20	FV	5 or 10
00261..	**100, 125**	56x75x64	25,30	SH	6 or 12
00262..	**100, 125**	56x75x64	25,30	FH	6 or 12
00263..	**100,125**	56x75x64	25,30	SV	6 or 12
00264..	**100, 125**	56x75x64	25,30	FV	6 or 12
00265..	**40, 60, 80**	48x87x71	12,17,20	SH	0,01 - 10
00266..	**40, 60, 80**	48x87x71	12,17,20	FH	0,01 - 10
00267..	**40, 60, 80**	48x87x71	12,17,20	SV	0,01 - 10
00268..	**40, 60, 80**	48x87x71	12,17,20	FV	0,01 - 10

0024108

Sample odering code: size 40, 8 mm pitch increasing horizontal.

Spindle clamp EL / EG, DL / DS /QST/K

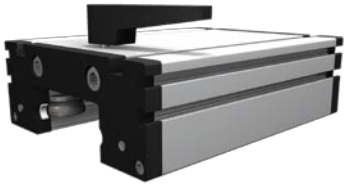


Black anodized aluminium, steel hand lever.

Code-No.	Type	A	B	C	D	Hand-lever
00291	**EL/EG 30**	43	50	10	6	M 6
00292	**EL/EG 40**	58	70	10	12	M 6
00293	**EL/EG 60**	80	80	15	17	M 8
00294	**EL/EG 80**	100	100	20	20	M10
00295	**E 100**	130	130	20	25	M10
00296	**E 125**	-	-	-	-	-
00283	**DL/DS 120**	62	80	15	12	M 6
00284	**DL/DS 160**	80	90	20	17	M 8
00285	**DL/DS 200 QS 100**	90	99	20	25	M 8
00286	**QS 80**	80	90	20	17	M 8
00287	**QS 60**	62	80	15	12	M 6

Accessories

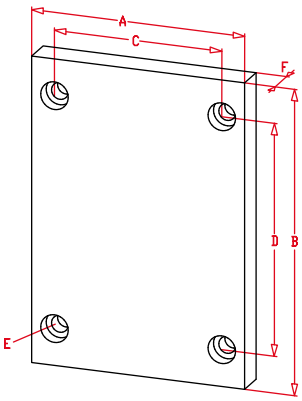
Carriage clamp EL / ML / EG



Carriage with carriage clam. Carriage length can be chosen as required. Depending on type of drive (spindle or belt) the position of clamp can be different. Dimensions by inquiry.

Code-No.	Type
00311	EG 30
00312	EG 40
00313	EG 60
00314	EG 80
00301	EL 30
00302	EL 40
00303	EL/ML 60
00304	EL/ML 80
00305	EL/ML 100
00306	EL 125

Assembly plate



EL/EG

QL/QS

DL/DS

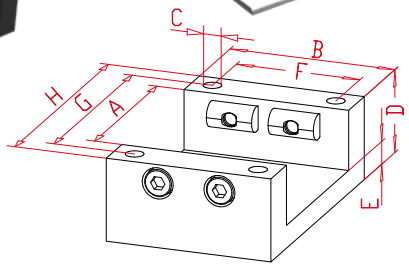
Assembly plate, anodized aluminium, enables various units to be assembled in a simple manner when combinations of linear units are to be used. Complete with screws and slide-nuts. Tapped holes can be made on request.

Code-No.	Type	A	B	C	D	E for	F
00940	EG 40	100	70	86	52	M 6	12
00960	EG 60	144	100	126	80	M 8	15
00980	EG 80	170	140	152	110	M10	15
00935	EL 30	70	70	56	56	M 6	10
00945	EL 40	100	100	84	66	M 6	12
00965	EL/ML 60	144	144	126	96	M 8	15
00964	EL/ML 60 S	170	170	152	108	M 8	15
00985	EL/ML 80	170	170	152	117	M10	15
00984	EL/ML 80 S	190	190	172	126	M 8	15
00915	EL/ML 100	270	230	248	155	M10	20
00925	EL 125	335	295	285	200	M12	20
00966	DL/DS 120	140	120	122	96	M 6	12
00986	DL/DS 160	180	160	162	130	M 8	15
00916	DL/DS 200	240	200	218	160	M 10	20
00967	QL 60	140	60	122	36	M 6	12
00987	QL 80	180	80	162	50	M 8	15
00917	QL 100	240	100	218	66	M10	20
00926	QS 60	165	60	147	36	M6	12
00928	QS 80	216	80	198	50	M8	15
00911	QS 100	248	100	226	66	M10	20

Accessories

Support and mounting block

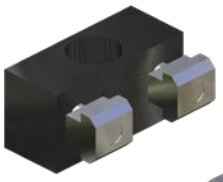
EG

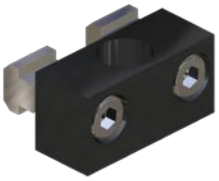


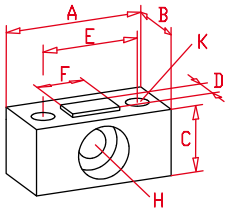
Black anodized aluminium, for mounting and for supporting long units. These components can be ready mounted on the units by us to customer's specification. Mounting can be clear or tapped holes and slide-nuts.

Code-No.	Type	A	B	C	D	E	F	G	H
03043	EG 40	40	40	6,5	24,0	9	1 hole	50	60
03063	EG 60	60	60	9,0	35,0	11		75	90
03083	EG 80	80	80	10,5	39,0	11	60	100	120

DL/DS



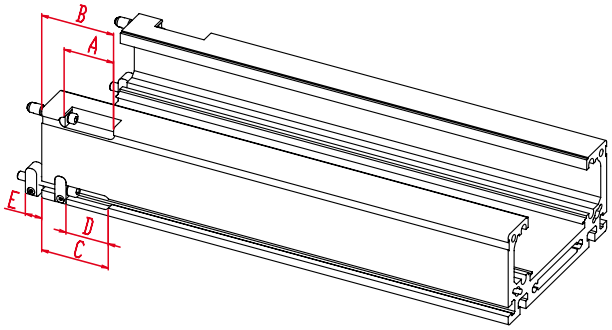




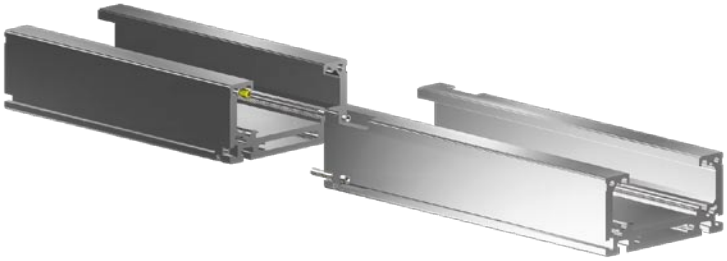
Code-No.	Type	A	B	C	D	E	F	G	H for	K for
03001	DL/DS 120	34	17	14	6	22	10	134	M6	M5
03002	DL/DS 160	40	20	19	8	28	14	179	M8	M6
03003	DL/DS 200	50	30	24	10	34	18	224	M10	M8

Connecting profiles DL / DS

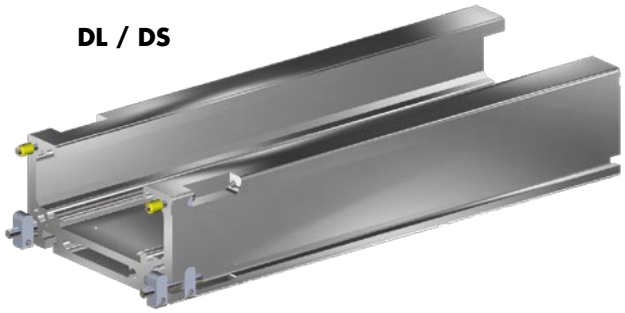
Anodized aluminium. For joining body profiles longer than standard.



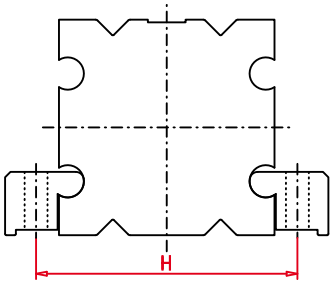
Code-No.	Type	A	B	C	D	E
03090	DS 120	47,5	66	78	56	12
03090_01	DL 120	47,5	66	78	56	12
03091	DS 160	39	58	78,5	56,5	12
03091_01	DL 160	39	58	78,5	56,5	12
03092	DS 200	53	77	71,3	45,3	17,55
03092_01	DL 200	53	77	71,3	45,3	17,55

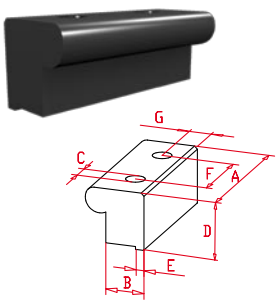


DL / DS



Mounting profile EL / ML / Q



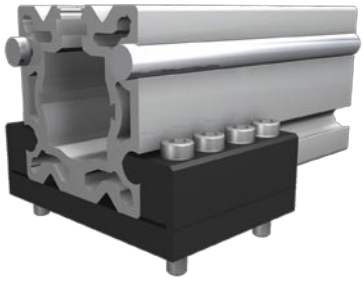


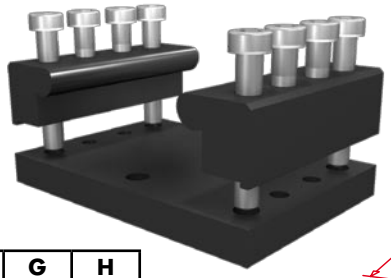
Black anodized aluminium, for mounting.
Mounting can be clear or tapped holes. Pair (without screws)

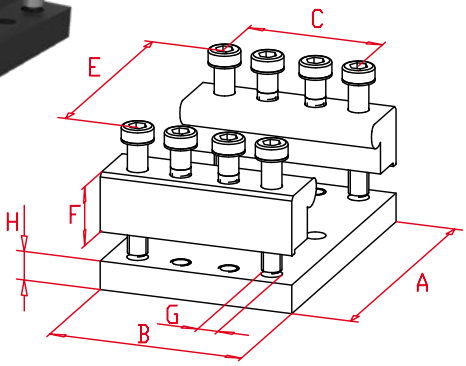
Code-No.	Type	A	B	C	D	E	F	G	H
03039	EL 30	24	11,5	5,5	10	3	12	6,5	41
03049	EL 40	32	15,5	6,5	13	4	16	9	54
03069	EL/ML/Q 60	48	17,5	8,5	18	4	24	9,5	77
03089	EL/ML/Q 80	64	19,5	8,5	23,5	4	32	11,5	97
03019	EL/Q 100	80	21,5	10,5	30,5	4	40	12	120
03029	EL/QS 125	100	27	13	40	6	50	15,5	149

Mounting profile EL / ML / Q

Black anodized aluminium, for mounting and for supporting long units. These components can be ready mounted on the units by us to customer's specification. Mounting can be clear or tapped holes and slide-nuts.



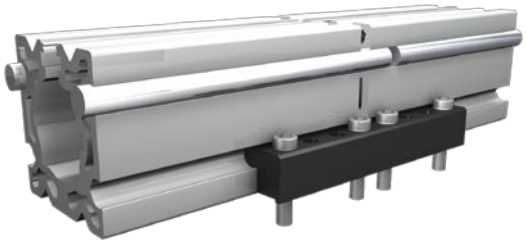


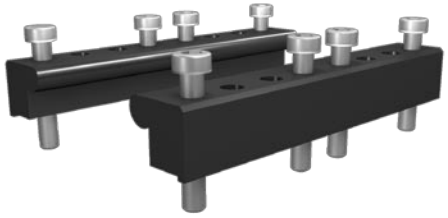


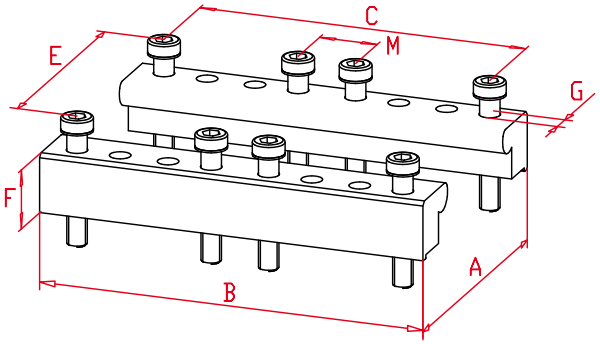
Code-No.	Type	A	B	C	E	F	G	H
030301	EL 30	54	30	20	38	10	4,2	6
030401	EL 40	72	40	26	50	13	6,4	9
030601	EL/ML/Q 60	96	60	40	75	18	8,5	10,8
030801	EL/ML/Q 80	120	80	60	100	23,5	10,5	10,8
030101	EL/ML/Q 100	144	100	70	120	30,5	10,5	14,8
030201	EL/QS 125	180	125	85	150	40	11	20

Jointing profile EL / ML / Q

Black anodized aluminium. For joining body profiles longer than standard.



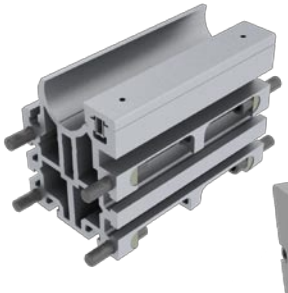


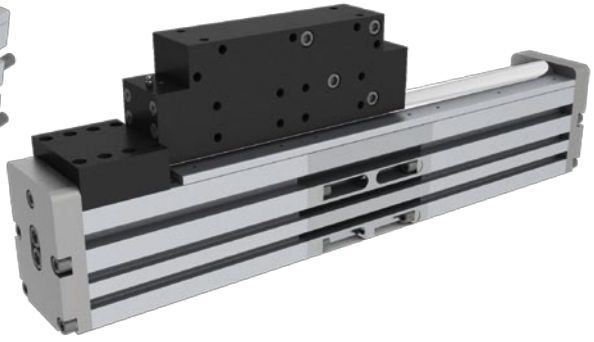


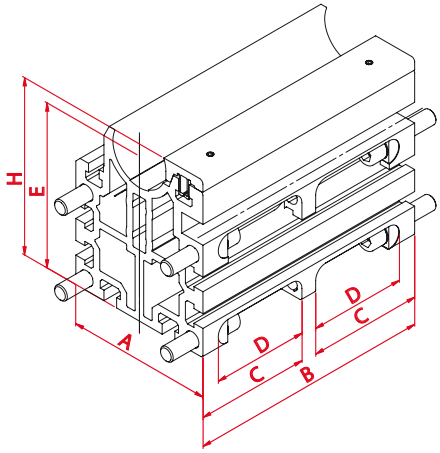
Code-No.	Type	A	B	C	E	F	G	M
030312	EL 30	54	60	50	38	10	4,2	10
030412	EL 40	72	80	66	50	13	6,4	14
030612	EL/ML/Q 60	96	120	100	75	18	8,5	20
030812	EL/ML/Q 80	120	160	140	100	23,5	10,5	20
030112	EL/ML/Q 100	144	200	170	120	30,5	10,5	30
030212	EL/QS 125	180	250	210	150	40	11	40

Jointing block SLT

Anodized aluminium. For joining body profiles longer than standard.







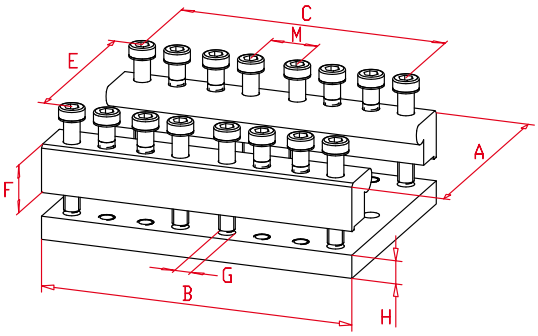
Code-No.	Type	A	B	C	D	E	H
030703	SLT 30	80	160	77	65	100	105
030705	SLT 50	120	200	93,5	79	135	145

Accessories

Jointing profile EL / ML / Q

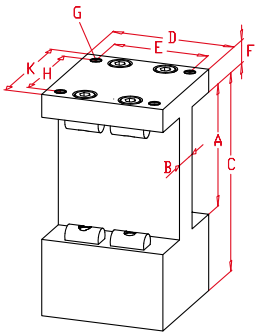
Black anodized aluminium, for jointing, mounting and supporting long units. These components can be ready mounted on the units by us to customer's specification. Mounting can be clear or tapped holes and slide-nuts.

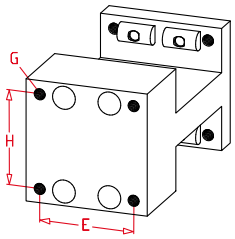
Code-No.	Type	A	B	C	E	F	G	H	M
030311	EL 30	54	60	50	38	10	4,2	6	10
030411	EL 40	72	80	66	50	13	6,4	9	14
030611	EL/ML/Q 60	96	120	100	75	18	8,5	10,8	20
030811	EL/ML/Q 80	120	160	140	100	23,5	10,5	10,8	20
030111	EL/ML/Q 100	144	200	170	120	30,5	10,5	14,8	30
030211	EL/QS 125	180	250	210	150	40	11	20	40



Parallel mounting block EL / ML

Black anodized aluminium. For parallel mounting of two units.

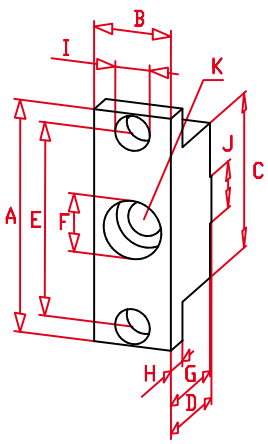




Code-No.	Type	A	B	C	D	E	F	G	H	K
03042	40	40	18	85	58	50	10	M 6	50	58
03062	60	60	22	123	70	54	15	M 8	54	70
03064	60S	60	22		60	54	15	M 8	54	70
03082	80	80	22	145	80	62	15	M 8	62	80
03084	80S	80	22	155	80	62	15	M 8	62	80
03012	100	100	30	200	110	90	20	M10	90	110
03022	125	125	40	253	135	115	22,5	M12	115	135

Mounting block E - units

Black anodized aluminium. Support and mounting block for E40, 60, 80. By using this mounting block you will reach the same level of heigths as EL-units with support. Assembling by through holes (frame) and slide-nuts (unit).

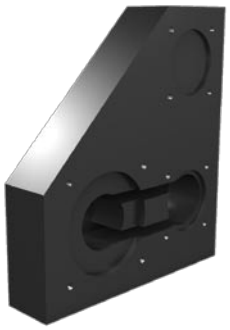


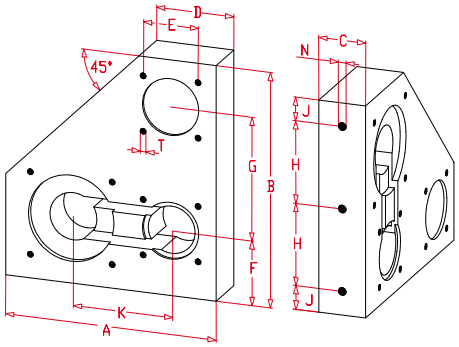
Code-No.	Type	A	B	C	D	E	Ø F	G	H	Ø I	J	Ø K
03048	E 40	60	20	40	28	50	15	27	8	6,6	12	9
03068	E 60	90	25	59	41,7	75	15	40,7	10	9	12	9
03088	E 80	120	30	80	51,8	100	15	50,8	15	10,5	12	9

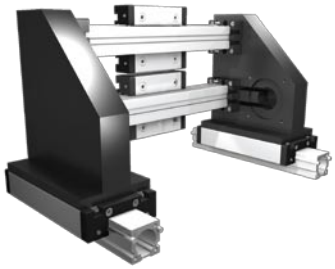
Accessories

Double mounting block with motor housing

Black anodized aluminium, including pulleys and belt for the drive.
Ratio 1:1



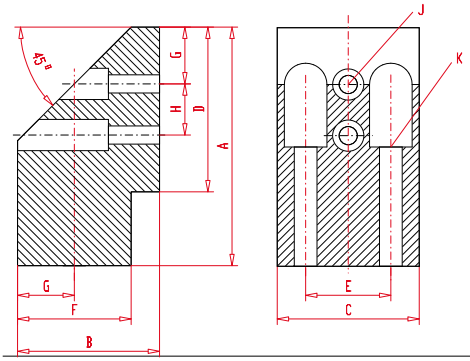


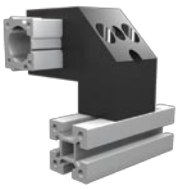


Code-No.	Type	A	B	C	D	E	F	G	H	J	K	N	T
03050	40	180	200	40	66	❑ 47	55	105	70	20	85	M8	M6
03051	60	205	304	50	74	❑ 68,6	80	164	87,5	15	125	M8	M8

Angular mounting block

Black anodized aluminium.

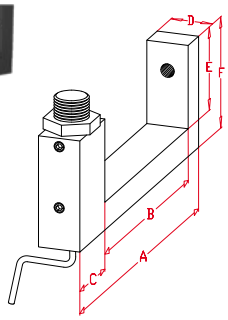




Code-No.	Type	A	B	C	D	E	F	G	H	J ∅	K ∅
03055	40	84	50	50	58	30	40	20	18	6,4	8,4
03056	60	117	50	59	80	36	40	20	30	9	9

Proximity / limit switch holder EG

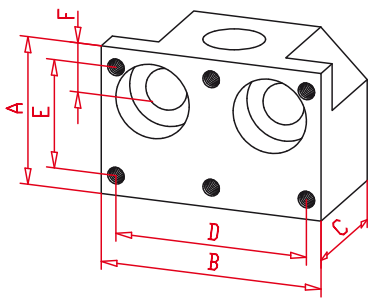
Black anodized aluminium bracket, fixed by grub screws. Position along the length of the units is adjustable. Fixing holes for proximity and limit switches are provided.



Code-Nr.	Type	A	B	C	D	E	F	Drill hole
01340	EG 40	72	40	24	15	19	28	8,2
01360	EG 60	92	60	24	15	26	35	12,2
01380	EG 80	114	81	24	15	30	40	12,2

Proximity / limit switch holder EL

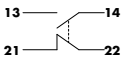
Black anodized aluminium bracket, fixed by screws into with half-round nuts in the body half-round-slots, hence position axially adjustable. Fixing holes for proximity and limit switches are provided. Complete with screws and half-round nuts.

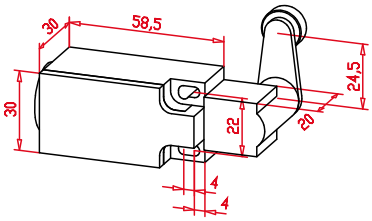


Code-No.	Type	A	B	C	D	E	F	Drill hole
01331	EL 30	12	30	12	-	-	6	8,2
01341	EL 40	28	32	25	26	22	8	8,2
01361	EL 60	30	40	25	32	22	11	12,2
01381	EL 80	30	45	25	39	22	10	12,2
01311	EL 100	40	55	20	49	22	12	12,2
01321	EL 125	45	60	25	52	22	12,5	12,2
01300	EL60-125	Reducing sleeve ∅ 12 to ∅ 8						

Accessories

Limit switch



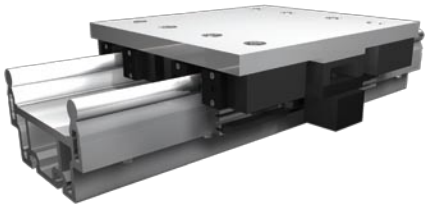


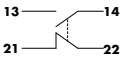
Fully insulated thermoplastic switch with adjustable operation lever. The operation device can be turned by 90°, the lever can be turned to engage by 360°.

Max. voltage	380 V
Max. constant current	6 A
Max. current at make	16 A
Duty classification	max.6000/h
Mechanical lifetime	1 x 10^7
Operating repeatability	± 0,01
Transit time/snap switch	ca. 10 ms
Protection class	IP 65 (DIN 40050)
Working temperature	-30° C to +80° C

Code-No.	choice
01101	standard
01102	M16x1,5 connector
01101ex	Version ATEX

Limit switch





3 electromechanical switches in a row.

Nominal voltage	250 V
Cont. current	6 A
Switch rate	max.300/min.
Mech. Lifetime	>30 Mio.
Repeatability	± 0,01 mm
Transit time/snap switch	ca. 10 ms
Protection class	IP 67 (DIN 60529)
Working temperature	-5° C bis +80° C

Code-No.	choice
01105	switch system *

* consisting of 2 cam ledges and 3 cams

Proximity switch

Inductive proximity switches. Protection class IP67

Code-No.	Type	Switching distance	Voltage	Output	Function
01003	M8	1 mm	10 - 30 V	200 mA	PNP NC
01004	M8	1 mm	10 - 30 V	200 mA	PNP NO
01001	M12	2 mm	10 - 30 V	200 mA	PNP NC
01002	M12	2 mm	10 - 30 V	200 mA	PNP NO
010014	Q 8x8	2 mm	10 - 30 V	200 mA	PNP NC
010013	Q 8x8	2 mm	10 - 30 V	200 mA	PNP NO

PNP NO (normally open) =

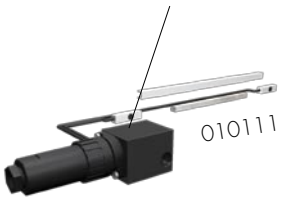
PNP NC (normally closed) =

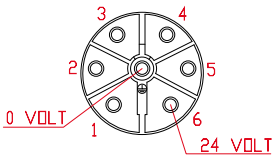
Accessories

Proximity switch DL / DS

Inductive proximity switch, integrated in guide body profile DL/DS.
In standard version, limit switches are designed as break contacts, and reference switches are designed as make contacts

Plug holder





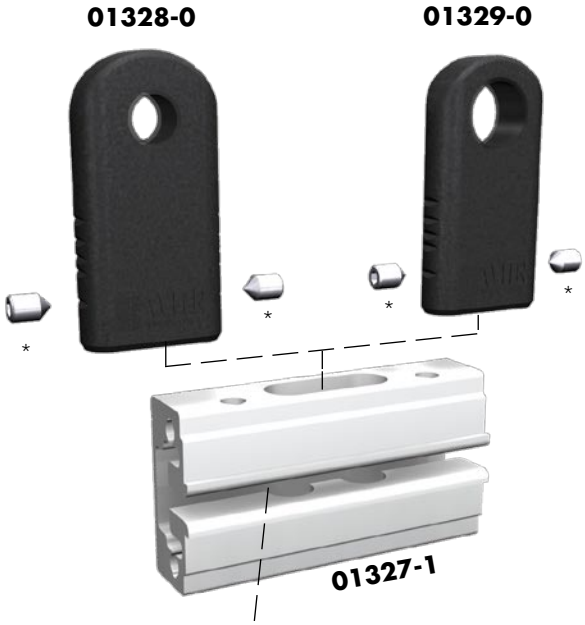
Code-No.	Type
010111	2 integrated inductive proximity switches as limit switch
010122	2 integrated inductive proximity switches as limit switch, 1 reference switch right
010133	2 integrated inductive proximity switches as limit switch, 1 reference switch left
01322	Plug holder right
01323	Plug holder left

Technical data for plug:
Working temperature -40° / +90°
Protection class IP65
inflammability UL-standard 94VO

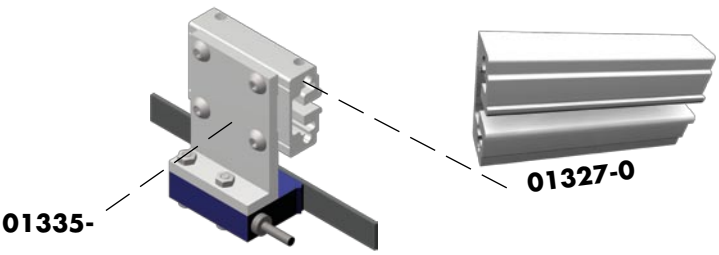
Proximity / limit switch holder DL / DS / QL / QS

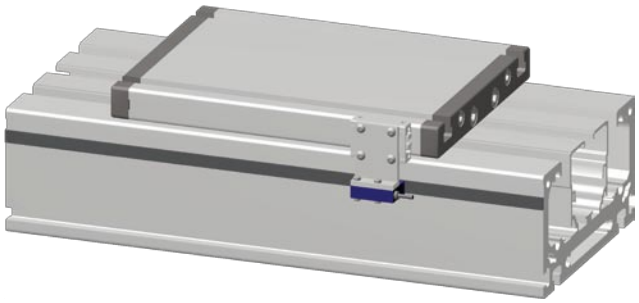
Proximity / limit switch holder for guide body profile DL./DS/QL/QS

Code-Nr.	Type
01327-0	Base holder for a limit switch
01327-1	Base holder for a proximity and a limit switch
01328-0	plug in holder for a proximity switch M8x1
01329-0	plug in holder for a proximity switch M12x1
01330-0	plug in holder for a proximity switch Q 8x8
01335-0	Sensor holder DL/DS 120 / QL/QS 60 H = 46,5mm
01335-1	Sensor holder DL/DS 160 H = 50,5mm
01335-2	Sensor holder QL/QS 80 H = 52,5mm
01335-3	Sensor holder DL/DS 200 H = 48 mm
01335-4	Sensor holder QL/QS 100 H = 57 mm



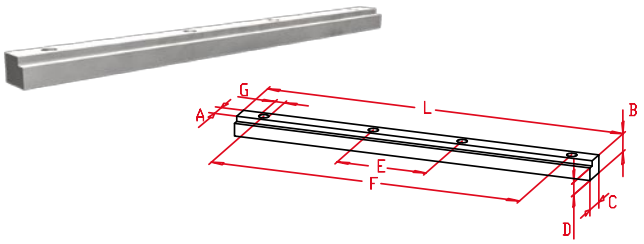
* stainless steel grub screws





Accessories

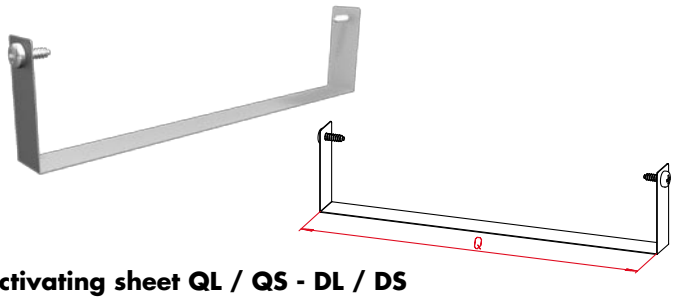
Activating strip DL / DS



For internal proximity switches.

Code-No.	Type	A	B	C	D	E	F	G	L
04870	DL/DS 120	2,9	8,5	7	5,9	46	99	3,5	120
04871	DL/DS 160	6	6	8	4,3	30	104	3,5	120
04872	DL /DS 200								

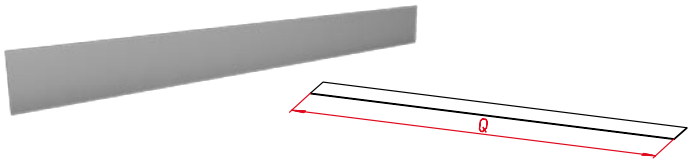
Activating sheet EL / ML / EG



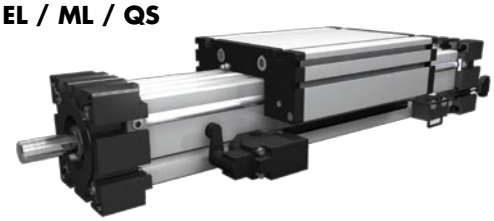
For external mounting proximity switches.

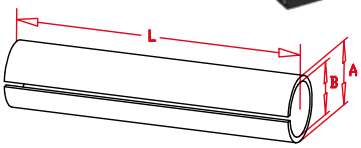
Code-No.	Type	Q
01000	EL 30	Carriage length
01005	EL 40	Carriage length
01006	EL/ML 60	Carriage length
01011	EL/ML 60S	Carriage length
01007	EL/ML 80	Carriage length
01010	EL/ML 80S	Carriage length
01008	EL/ML 100	Carriage length
01009	EL 125	Carriage length
01018	DL/DS 120	Carriage length
01017	DL/DS 160	Carriage length
01016	DL/DS 200	Carriage length
01030	QL/QS 60	Carriage length
01031	QL/QS 80	Carriage length
01032	QL/QS 100	Carriage length
01032	QS 125	Carriage length

Activating sheet QL / QS - DL / DS



Cable conduit EL / ML / QS





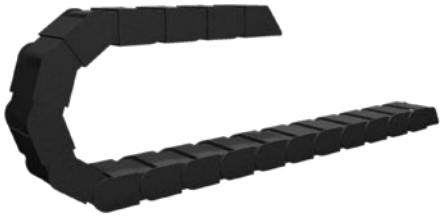
Slotted plastic tube for cabling directly onto body of linear unit. The tube can simply be pressed into the half-round slot in the body and will be securely retained there.

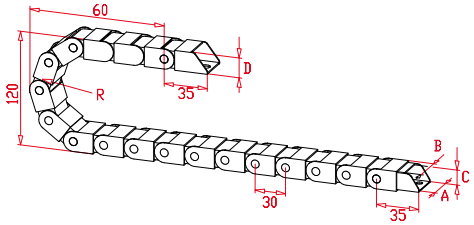
Code-No.	Type	A	B	L
02806	EL 40	6	4	max. 50m
02810	EL/ML/Q 60	10	7,5	max. 50m
02812	EL/ML/Q 80	12	8,5	max. 50m
02816	EL/ML/Q 100	16	12	max. 50m
02820	EL/QS 125	20	15	max. 50m

02816	1000

Sample ordering code:
Plastic tube for EL 100, 1000 mm long.

Cable chain

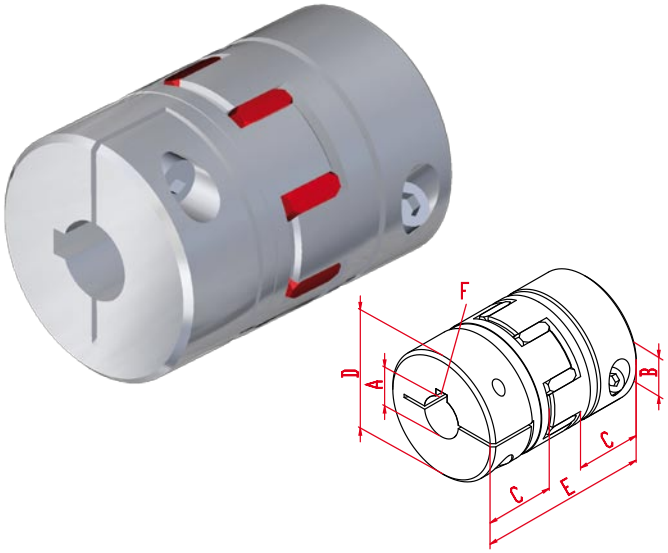




Black plastic, one floating and one fixed mounting bracket. The inner face opens like a zip, enabling cable to be inserted easily.

Code-No.	Type	Name	A	B	C	D
02115	15	Cable chain	25,5	15	18	23
02125	25	Cable chain	35,5	25	18	23
02138	38	Cable chain	48	38	18	23
02150	50	Cable chain	60	50	18	23
02116	15	fixing brackets (2 pieces)				
02126	25	fixing brackets (2 pieces)				
02139	38	fixing brackets (2 pieces)				
02151	50	fixing brackets (2 pieces)				

Coupling



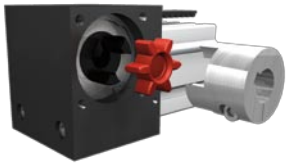
Torsionally elastic coupling with keyway and clamp. Light pre-load provides backlash-free torque transmission.

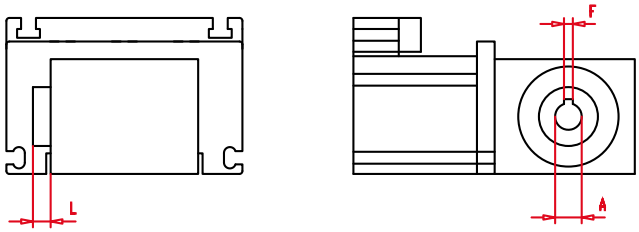
Code-No.	Type	ØA/B (min/max)	C	D	E	F	Torque	
01400-	7	3 / 7	7	14	22	DIN-key	2 Nm	top torque x2
01401-	9	5 / 12	10	20	30		6 Nm	
01410-	14	5 / 16	11	30	35		12 Nm	
01420-	19	6 / 22	25	40	66		17 Nm	
01430-	24	10 / 28	30	55	78		60 Nm	
01440-	28	18 / 38	35	65	90		160 Nm	
01450-	38	30 / 45	45	80	114		325 Nm	

01401-	08	10

Sample ordering code:
Coupling type 9, ØA = 8 mm, ØB = 10 mm

Coupling for toothed belt units





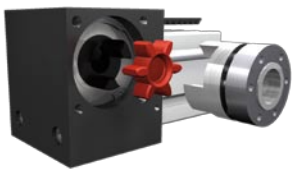
Torsionally elastic coupling with keyway and clamp. Light pre-load provides backlash-free torque transmission.

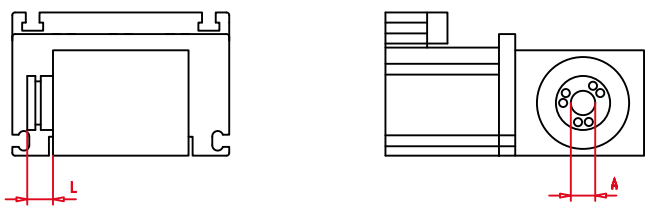
Code-No.	Type	Ø A (min/max)	L	Size	F	Torque	
03400-	7	3 / 7	7	EL 30	DIN-key	2 Nm	top torque x2
03401-	9	5 / 12	10	EL 40		6 Nm	
03410-	14	5 / 16	11	EL/ML 60 DL 120 QL/QS 60		12 Nm	
03420-	19	6 / 22	25	EL/ML 80 DL/DS 160 QL/QS 80		17 Nm	
03430-	24	10 / 28	30	EL/ML 100 QL/QS 100 DL 200		60 Nm	
03440-	28	18 / 38	35	EL/QS 125		160 Nm	

03410-	12

Sample ordering code:
Coupling type 14, ØA = 12 mm

Coupling with tension ring





Coupling, to be clamped by tension ring.

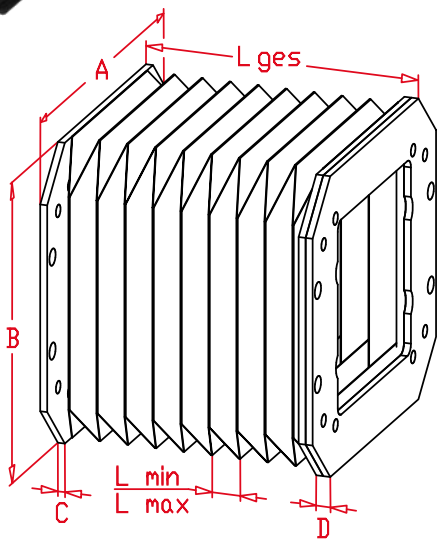
Code-No.	Type	Ø A	L	Size	Torque	
03501-	14	5, 10, 14	19	EL/ML 60 DL 120 QL/QS60	12 Nm	top torque x2
03510-	19	10, 14, 16, 19	25	EL/ML 80 DL/DS 160 QL/QS 80	17 Nm	
03520-	24	19, 20, 22, 24	30	EL/ML 100 QL/QS 100 DL 200	60 Nm	
03530-	28	38	35	EL/QS 125	160 Nm	

03510-	16

Sample ordering code:
Coupling type 19, ØA = 16 mm

Accessories

Complete bellows EL / ML / EG



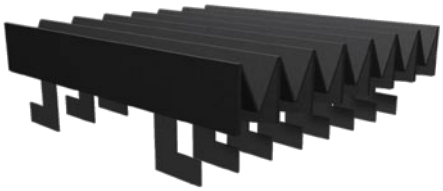
Code-No.	Type	A	B	C	D	Fold	
						L_{min}	L_{max}
02940	**EL/EG 40** spindle	73	69	5	10	3	15
02941	**EL/EG 40** belt drive	73	75	5	10	3	15
02960	**EL/EG 60** spindle	99	94	5	10	3	20
02961	**EL/ML/EG 60** belt drive	99	101	5	10	3	20
02980	**EL/EG 80** spindle	130	124	5	10	3	25
02981	**EL/ML/EG 80** belt drive	130	138	5	10	3	25
02910	**EL 100** spindle	165	155	5	10	3	30
02911	**EL/ML 100** belt drive	165	170	5	10	3	30

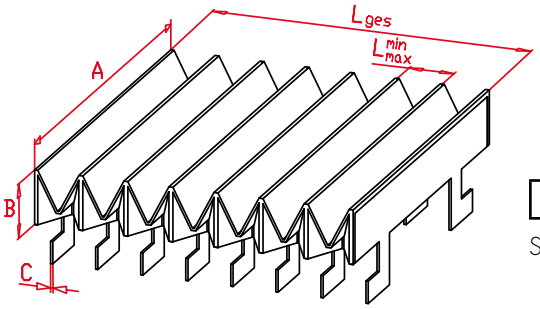
Bellow frame, zinc-plated plastic bellows with steel connection plates, max. 60° C.

02980	500

Sample ordering code: Size 80 spindle, unit length L = 500 mm.

Complete bellows DL / DS





Bellow ERA7815, max. 120°, bellow frame PVC.

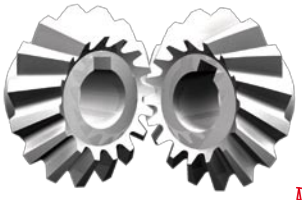
Code-No.	Type	A	B	C	Fold	
					L_{min}	L_{max}
02901	**DL/DS 120**	120	19	1	4	22
02902	**DL/DS 160**	160	24	1	4	31
02903	**DL/DS 200**	200	28	1	4	28

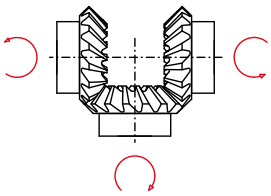
02902	500

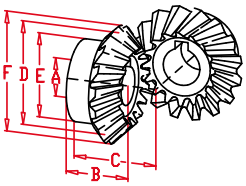
Sample ordering code: Size 160, unit length L = 500 mm.

Accessories

Bevel gear pair EL / EG



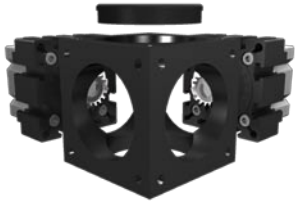


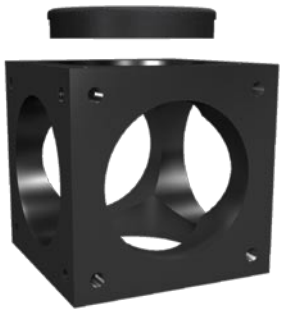


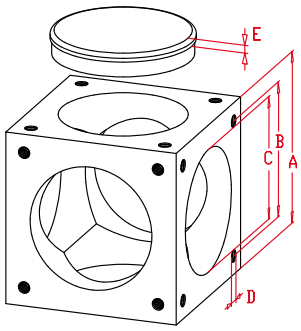
C 45 steel, helical gear, with keyway.

Code-No.	Type	i	Modul	Number of teeth	A_{h7}	B	C	D	E	F	max. rpm (min^{-1})
00641	**40**	1:1	2	16	10	13	28	-	22	35	560
00642	**40**	1:1,5	1,5	16	10	17	30	24	20	27	560
				24		17,5	27	36	26	38	840
00661	**60**	1:1	2,5	16	14	18,5	33	-	30	43	750
00662	**60**	1:1,5	2	16	14	21	38	32	26	36	560
				24		23	35	48	35	51	840
00681	**80**	1:1	3	16	18	23	40	-	35	51,5	750
00682	**80**	1:1,5	3	16	18	28	54	48	40	53	560
				24	19	30	49	72	50	76	840
00611	**100**	1:1	4	16	22	35,5	54	-	45	69,7	750
00612	**100**	1:1,5	3	16	22	27,7	50	48	34	53	560
				24		31	44	72	38	76	840

Combination cube EL / EG
Cover caps





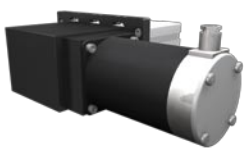


Combination cube					
Code-No.	**Type**	**A**	**B**	**C**	**D**
00830	**30**	52	35	40	M 4
00840	**40**	66	47	48	M 6
00860	**60**	92	69	62	M 8
00880	**80**	112	88	80	M 8
00810	**100**	148	112	110	M10

Cover caps			
Code-No.	**Type**	**E**	
01830	**30**	**2**	Black plastic. To cover empty cube sides.
01840	**40**	**5**	
01860	**60**	**6**	
01880	**80**	**6**	
01810	**100**	**3**	

Black anodized aluminium.
Used for connecting modules at right angles or in line.

Motor adapter

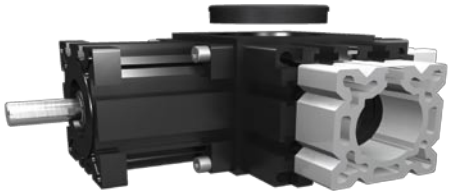


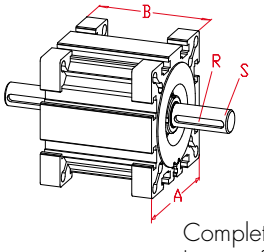
Black anodized aluminium, can be designed for any motor. Simple assembly, accurate alignment.

Code-No.	Type
01531	**EL/EG 30** spindle
01541	**EL/EG 40** spindle
01561	**EL/ML/EG/QS 60 / DL/DS 120** spindle
01581	**EL/ML/EG 80 / DL/DS 160 / QS 80** spindle
01511	**EL/ML 100 / DL/DS 200** spindle
01521	**EL 125** spindle
01831	**EL 30** belt-drive
01841	**EL 40** belt-drive
01861	**EL/ML 60 / DL/DS 120 / QL/QS 60** belt-drive
01881	**EL/ML 80 / DL/DS 160 / QL/QS 80** belt-drive
01811	**EL/ML 100 / QL/QS 100 / DL/DS 200** belt-drive
01821	**EL125 / QS 125** belt-drive

Accessories

Angular gear box EL / EG

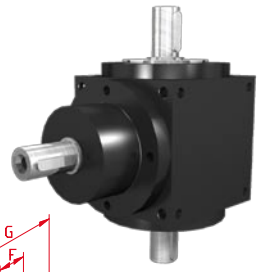


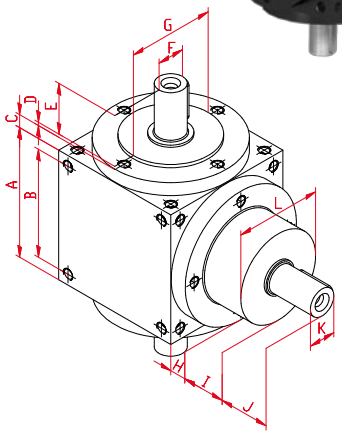


Complete self- centering gear. Can easily be retrofitted to any EG or EL unit. Packed with grease for lubrication.

Code No.	Type	i	m	A	B	R	S ∅ x l	Torque	max. rpm(min⁻¹)
00731	30	1:1	1	42	37	2x2	5x15	2 Nm	250
00741	40	1:1	2	58	50	3x3	10x27	5 Nm	560
00742	40	1:1,5	1,5	58	50	3x3	10x27	5 Nm	560
									840
00761	60	1:1	2,5	82	70	5x5	14x35	15 Nm	750
00762	60	1:1,5	2	82	70	5x5	14x35	15 Nm	560
									840
00781	80	1:1	3	102	90	6x6	18x45	25 Nm	750
00782	80	1:1,5	3	102	90	6x6	18x45	25 Nm	560
									840
00711	100	1:1	4	130	110	6x6	22x45	30 Nm	750
00712	100	1:1,5	3	130	110	6x6	22x45	30 Nm	560
									840

Bevel gear box E / D / Q - series





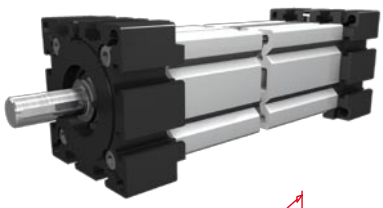
For driving two parallel spindle units, one side with hollow shaft for the spindle unit, one side with journal for splined shaft, two sides with journal for splined shaft and motor, max. 3000 rpm.

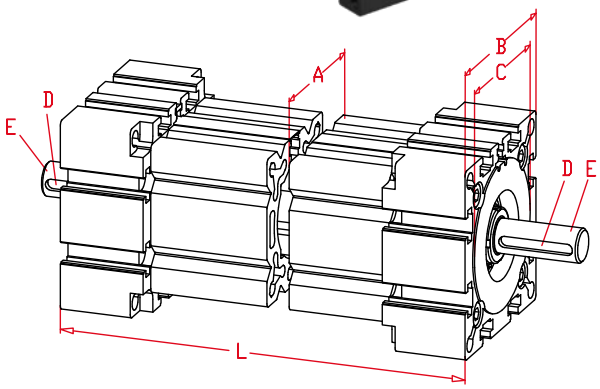
V065 = for Size E 40, 60; D 120, 160; Q 60, 80
V090 = for Size E 60, 80(S); D 160, 200; Q 80, 100
V120 = for Size E 80(S), 100, 125; D 160, 200; Q 80, 100

Code-No.	Type	A	B	C	D	E	F	G	H	I	J	K	L	i
00750	V065 - 1 Shaft	65	45	9,5	2	28	12_{j6}	44_{f7}	9,5	30	28	12_{j6}	44_{f7}	1:1 / 3:1
00751	V065 - 2 Shafts													
00752	V090 - 1 Shaft	90	70	10	2	38	18_{j6}	60_{f7}	10	30	37	18_{j6}	60_{f7}	1:1 / 6:1
00753	V090 - 2 Shafts													
00754	V120 - 1 Shaft	120	100	12	3	47	25_{j6}	80_{f7}	15	40	47	25_{j6}	80_{f7}	1:1 / 6:1
00755	V120 - 2 Shafts													

00751 Sample order code: Angular gear box size 60 with 2 journals

Transmission unit EL / EG





A shaft carried on ball bearings in an aluminium hollow section can be used to transmit torque or as a joining element for combining parallel linear units or as an individual element in angular operation.

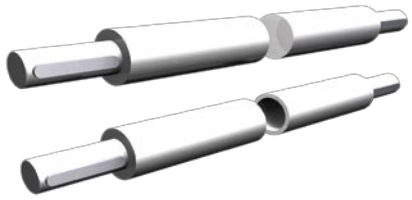
Code-No.	Type	A	B	C	D	E	L_{min}	L_{max}
01931	30	30	42	40 x 0,7	2 x 2	5 x 15	38	3.000
01932	30 no shaft	30	42	40 x 0,7	-	-	38	3.000
01941	40	40	58	48 x 1	3 x 3	10 x 27	50	6.000
01942	40 no shaft	40	58	48 x 1	-	-	50	6.000
01961	60	60	82	62 x 1	5 x 5	14 x 35	70	6.000
01962	60 no shaft	60	82	62 x 1	-	-	70	6.000
01981	80	80	102	80 x 1	6 x 6	18 x 45	90	6.000
01982	80 no shaft	80	102	80 x 1	-	-	90	6.000
01911	100	100	130	110 x 1	6 x 6	22 x 45	110	6.000
01912	100 no shaft	100	130	110 x 1	-	-	110	6.000

01941 0750 Sample order code: Size 40, length L = 750 mm

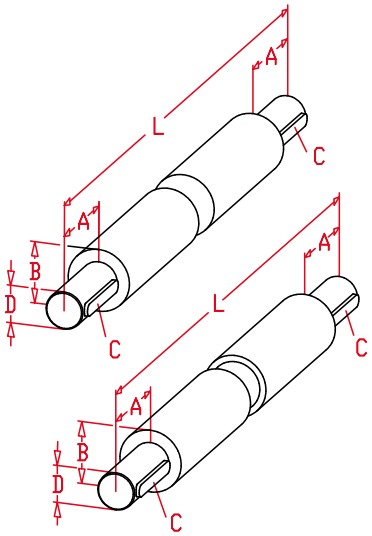
Accessories

Splined shaft EL / ML / EG - DL / DS

Steel splined shaft, for torque transfer between two parallel drives.
Shafts longer than 1200 mm are hollow shafts with welded journals.

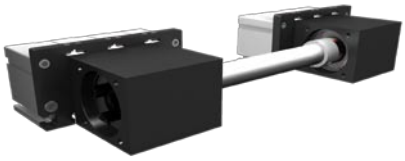


Code-No.	Type	A	B	C	D	L_{max}
02230	**EL/EG 30**	15	12	2x2x12	6_{h7}	1.500
02240	**EL/EG 40**	27	20	3x3x25	10_{h7}	3.000
02260	**EL/ML/EG 60 QL/QS 60 DL 120**	35	24	5x5x28	14_{h7}	3.000
02280	**EL/ML/EG 80 QL/QS 80 DL/DS160**	45	30	6x6x40	18_{h7}	3.000
02210	**EL/ML 100 QL/QS 100 DL/DS 200**	55	40	6x6x50	22_{h7}	4.500
02220	**EL/QS 125**	55	50	8x7x50	30_{h7}	5.000



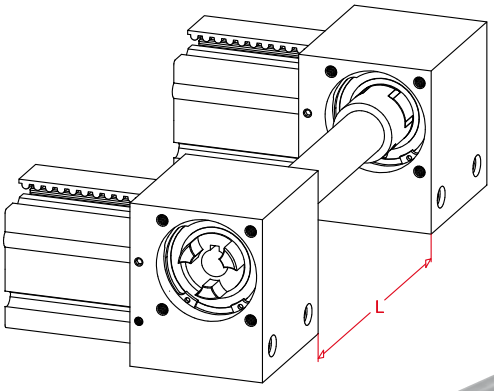
02240	0500

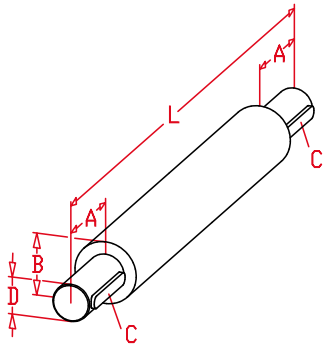
Sample order code:
Size 40, length L = 500 mm

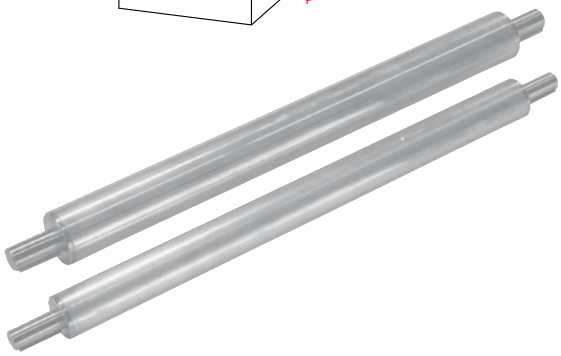


Splined shafts based on an aluminium tube

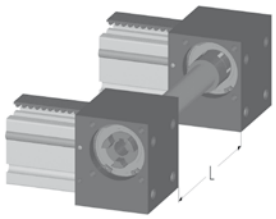
Aluminum splined shaft parallel to the torque transmission with adjustment units arranged. The splined shaft consists of an aluminum hollow shaft with bonded journals of stainless steel.

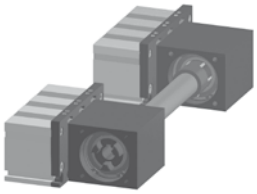






Code-No.	Type	A	B	C	D	L_{max}
02264	**EL/ML/EG 60 QL/QS 60-80 DL 120**	35	27	5x5x28	14_{h7}	3000
02284	**EL/ML/EG 80 QL/QS 80 DL/DS 160**	45	40	6x6x40	18_{h7}	3000
02214	**EL/ML 100 QL/QS 100 DL/DS 200**	45	50	6x6x50	22_{h7}	4500
02224	**EL/QS 125**	55	60	8x7x50	30_{h7}	5000





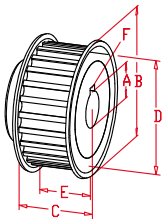
Sample ordering code:

Code-No.	L
02214	2000

Spindle shaft for EL/QL/QS 100 and DL/DS 200 with keyway, length 2000 mm

Accessories

Toothed pulley HTD



Material St 50, secured with key.

Code-No.	Type	A	B	C	D	E	F	Number of teeth	Spacing
00450	EL/EG 30	6	23	26	18,3	15	2x2	20	3x15
00451	EL/EG 40	10	36	26	30,7	15	3x3	20	5x15
00452	EL/EG 60 DL/DS120	14	44	38	40,2	25	5x5	26	5x25
00453	EL/EG 80 DL/DS160	18	54	38	49,8	25	6x6	32	5x25
00454	EL100	22	66	48	61,1	38	6x6	24	8x30

Toothed belt endless HTD

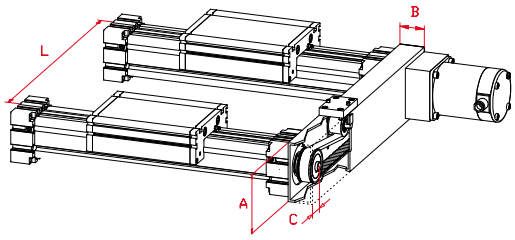
Code-No.	Type	Belt	Tensile force
00550	EL/EG 30	3M15	200 N
00551	EL/EG 40	5M15	390 N
00556	EL/EG 40	5M09	298 N
00552	EL/EG60	5M25	894 N
00553	EL/EG80	5M25	894 N
00554	EL100	8M30	1070 N
00555	EL100	8M20	980 N

00551	0700

Sample order code:
Belt 5M15 perimeter: 700 mm

Parallel transfer unit for spindle drives

DL / DS



EL / EG / Q

Black anodized aluminium tube with plastic end caps, pulleys fixed with keys or tension rings. Spindle centers are multiples of 5 or 8 mm, according to belt pitch.

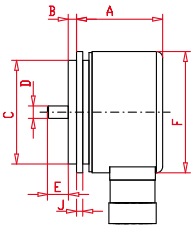
Code-No.	Type	A	B	C	L_{max}	Belt
T13030	EL/EG 30	50	25	25	1.200	5M-9
T13040	EL/EG 40	80	40	30	1.500	5M-15
T13060	EL/EG/Q 60	100	50	42	2.000	5M-25
T13061	DL/DS 120	60	50		2.000	5M-25
T13080	EL/EG/Q 80	120	50	52	2.000	5M25
T13081	DL/DS 160	80	50		2.000	5M-25
T13010	EL/Q 100	160	80	66	3.000	8M-30
T13020	EL 125					
T13011	DL/DS 200					

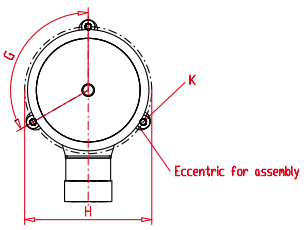
T13060	500

Sample ordering code: Center-distance of axis L = 500 mm

For center-distances higher than 800mm
you have to use an additional tensioning device code-number 04099.

Incremental encoder





With flange and coupling, ready for assembly to any linear unit. 500 increments per revolution. Other resolutions on request.

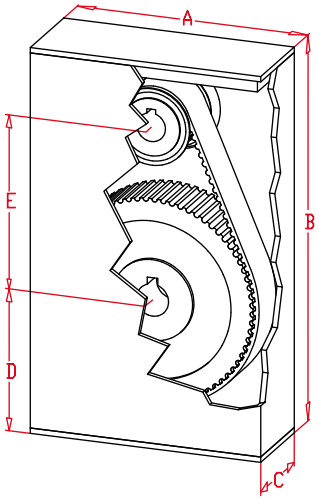
Code-No.	A	B	C	D	E	F	G	H	J	K for
E 05500	57,5	4	50_{h7}	6_{h9}	10	58,5	120°	65	3	M3

Accessories

Toothed belt gear

Rectangular aluminium tubular housing, ends covered with plastic end caps. Toothed pulley fitted to motor shaft with key or tension ring. Housing can be used for adapting nearly any motor.

Dimensions in the table are examples. In general dimensions depend on motor-shaft, flange and ratio.



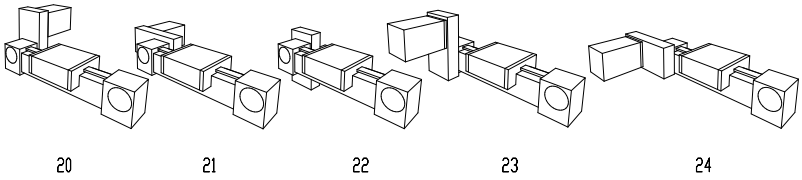
***depends on motor shaft diameter**

Code-No.	Type	A	B	C	D	E	Belt	Ratio *	Driving torque
T1- 30-	30	60	117	30	22	60	3M15	1:1 2:1 2,4:1 3:1	max. 2 Nm
T1- 40-	40	100	190	40	55	87	5M-15		max. 4 Nm
T1- 60-	60	100	190	50	55	87	5M25		max. 8 Nm
T1- 80-	80	120	220	54	54	107	5M25		max. 12 Nm
T1- 10-	100	180	340	60	80	163	8M30	others on request	max. 20 Nm
T1- 12-	125								

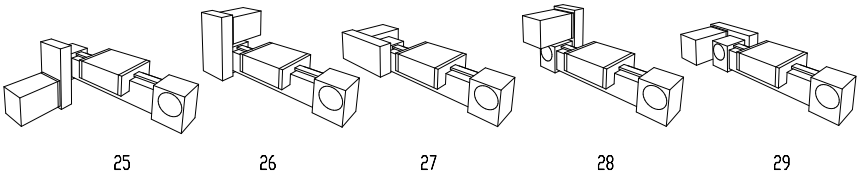
Motor mounting

Ratio

Motor mounting with belt reducing gear for belt driven units

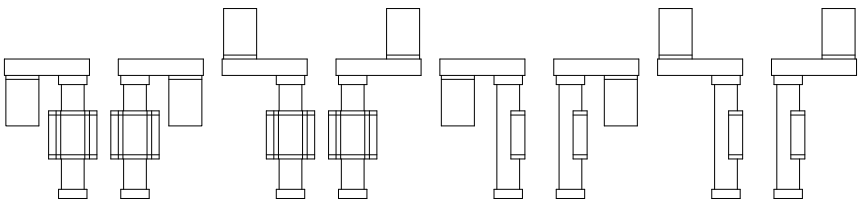


20 21 22 23 24



25 26 27 28 29

Motor mounting with belt reducing gear for spindle drives



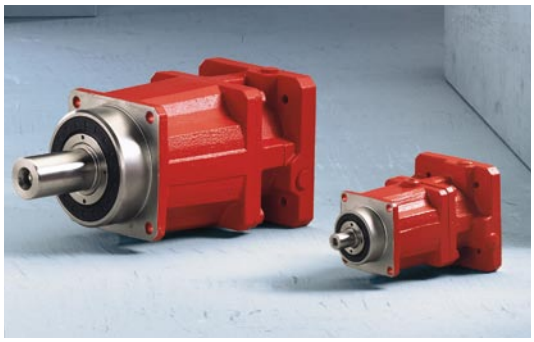
31 32 33 34 35 36 37 38

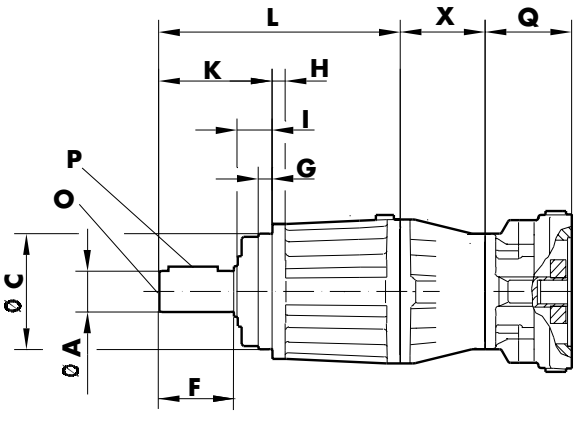
T1-	22	40-	2,4

Sample order code:
Size 40, for belt drive units, motor mounting 22, ratio 2,4:1.

Accessories

High performance Planetary gear box, single- or two-stage for servo motors





Type	A_{k6}***	C_{g6}	D	E	F	G	H	I	K	L	N	O	P	Q_j**		X
PSKF 2	16	60	5,5	68	28	8	7	18	48	118	65	M5x12,5	5x2x25	1-stufig single stage	38 (11x23) 47 (14x30) 56 (19x40)	-
														2-stufig two-stage	44 (11x23) 57 (14x30)	35
PSKF 3	22	70	6,6	85	36	8	8,5	18	56	145	76	M8x19	6x2,5x28	1-stufig single stage	51 (11x23) 51 (14x30) 51 (19x40) 67 (24x50)	-
														2-stufig two-stage	38 (11x23) 47 (14x30) 56 (19x40)	52
PSKF 5	32	90	9	120	58	10	11	28	88	190	105	M12x28	10x3x50	1-stufig single stage	46 (19x40) 62 (24x50) 77 (32x60)	-
														2-stufig two-stage	51 (19x40) 67 (24x50)	66,5

Code No. single-stage				Driving torque	Moment of inertia about input in $J_G 10^{-4}$ Kgm²		Forces on output shaft at n_a=150 min⁻¹		Input rpm	
		Type		**T_2 max**	**for i=5**	**for i=10**	**radial**	**axial**	**N_1 max**	**Weight**
T10	**11-**	**PSKF 221**		55 Nm	0,57 (14)	0,52 (14)	2680 N	1340 N	6500 min⁻¹	2,8 kg
T10	**12-**	**PSKF 321**		110 Nm	0,96 (14)	0,80 (14)	5100 N	2550 N	6000 min⁻¹	4,7 kg
T10	**13-**	**PSKF 521**		300 Nm	1,70 (19)	0,98 (19)	7170 N	3600 N	4500 min⁻¹	8,1 kg
two-stage		**Type**		**T_2 max**	**for i=25**	**for i=100**	**radial**	**axial**	**N_1 max**	**Weight**
T10	**14-**	**PSKF 222**		55 Nm	0,52 (14)	0,50 (14)	2680 N	1340 N	7000 min⁻¹	3,5 kg
T10	**15-**	**PSKF 322**		110 Nm	0,76 (14)	0,74 (14)	5480 N	2740 N	6500 min⁻¹	6,0 kg
T10	**16-**	**PSKF 522**		300 Nm	0,96 (19)	0,79 (19)	9410 N	4700 N	6000 min⁻¹	11,0 kg

( ) = Motor shaft diameter

Gear reduction:
Single-stage: i= 3, 4, 5, 7, 10 (i=10, torque is reduced by 10%)
Two-stage: i= 16, 20, 25, 28, 35, 40, 49, 70, 100

Circumferential backlash:

1	α < 6 angular minutes } single-stage gear box
2	α < 3 angular minutes
3	α < 8 angular minutes } two-stage gear box
4	α < 4 angular minutes

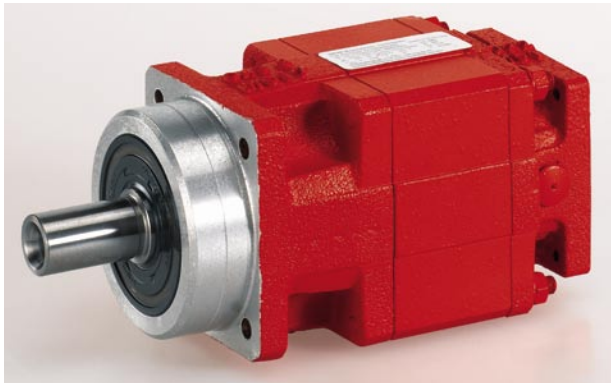
04

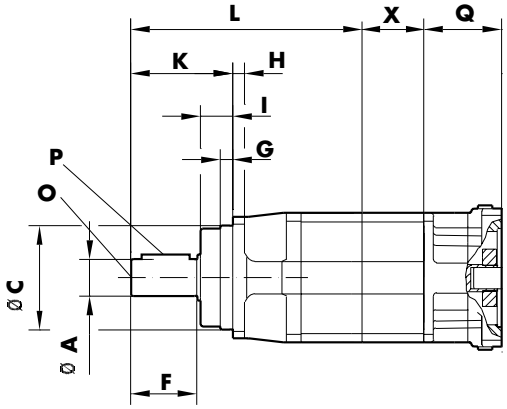
T10-	1	11-	04

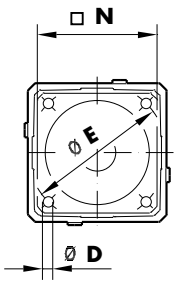
Sample order code:
Type PSKF 221 i=4 α < 6 angular minutes

Accessories

B5 ECO-Planetary gear box, single- or two-stage for servo motors







Type	$A_{\ddot{u}6}$ ***	C_{a6}	D	E	F	G	H	I	K	L	N	O	P	Q_1 **		X
PSKC 2	16	60	5,5	68	28	8	8	18	48	121	65	M5x12,5	5x2x25	1-stufig single stage	38 (11x23) 47 (14x30) 56 (19x40)	-
														2-stufig two-stage	38 (11x23) 47 (14x30) 56 (19x40)	35
PSKC 3	22	70	6,6	85	36	8	10,5	18	56	144	76	M8x19	6x2,5x28	1-stufig single stage	51 (11x23) 51 (14x30) 51 (19x40) 52 (24x50)	-
														2-stufig two-stage	51 (11x23) 51 (14x30) 51 (19x40) 67 (24x50)	42
PSKC 5	32	90	9	120	58	10	13	28	88	201	105	M12x28	10x3x50	1-stufig single stage	46 (19x40) 62 (24x50) 77 (32x60)	-
														2-stufig two-stage	46 (19x40) 62 (24x50) 77 (32x60)	53

Code No. single-stage					Driving torque	Moment of inertia about input in $J_G 10^{-4}$ Kgm²		Forces on output shaft at n_a=100 min⁻¹		Input rpm	
				Type	T_2 max	for i=5	for i=10	radial	axial	N_1 max	Weight
T11		11-		PSKC 221	34 Nm	0,56 (14)	0,52 (14)	2000 N	1000 N	7000 min⁻¹	2,5 kg
T11		12-		PSKC 321	74 Nm	0,97 (14)	0,84 (14)	2930 N	1500 N	6500 min⁻¹	4,4 kg
T11		13-		PSKC 521	180 Nm	1,60 (19)	0,98 (19)	4960 N	2500 N	6000 min⁻¹	7,7 kg
two-stage				**Type**	**T_2 max**	**for i=25**	**for i=100**	**radial**	**axial**	**N_1 max**	**Weight**
T11		14-		PSKC 222	34 Nm	0,56 (14)	0,52 (14)	2000 N	1000 N	7000 min⁻¹	3,1 kg
T11		15-		PSKC 322	74 Nm	0,94 (14)	0,83 (14)	2930 N	1500 N	6500 min⁻¹	7,1 kg
T11		16-		PSKC 522	180 Nm	1,60 (19)	0,95 (19)	4960 N	2500 N	6000 min⁻¹	11,0 kg

( ) = Motor shaft diameter

Gear reduction:
Single-stage: i= 3, 5, 7, 10 (i=10, torque is reduced by 10%)
Two-stage: i= 15, 21, 25, 30, 35, 49, 50, 70, 100

Circumferential backlash:

1 α < 10 angular minutes for single-stage gear box

2 α < 15 angular minutes for two-stage gear box

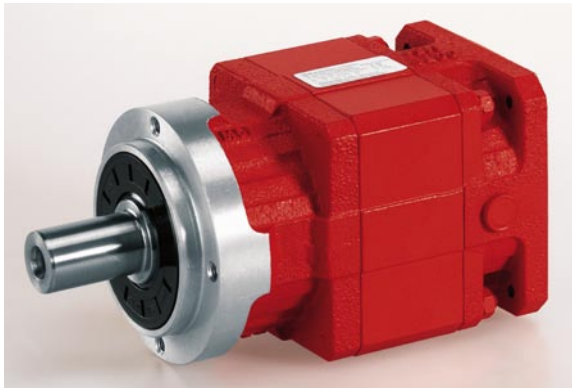
05

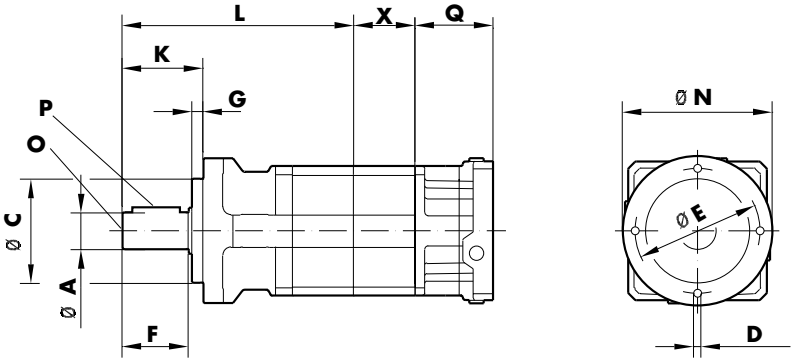
T11-	1	11-	05

Sample order code:
Type PSKC 221 i=5 α < 10 angular minutes

Accessories

B14 ECO-Planetary gear box, single- or two-stage for servo motors





Type	A_{f6} ***	C_{h6}	D	E	F	G	K	L	N	O	P	Q_1 **		X
PSKCZ 2	16	52	M5x10	62	28	6	36	121	70	M5x12,5	5x2x25	1-stufig single stage	38 (11x23) 47 (14x30) 56 (19x40)	-
												2-stufig two-stage	38 (11x23) 47 (14x30) 56 (19x40)	35
PSKCZ 3	22	68	M6x12	80	36	8	46	144	90	M8x19	6x2,5x28	1-stufig single stage	51 (11x23) 51 (14x30) 51 (19x40) 52 (24x50)	-
												2-stufig two-stage	51 (11x23) 51 (14x30) 51 (19x40) 67 (24x50)	42
PSKCZ 5	32	90	M8x16	108	58	10	70	201	120	M12x28	10x3x50	1-stufig single stage	46 (19x40) 62 (24x50) 77 (32x60)	-
												2-stufig two-stage	46 (19x40) 62 (24x50) 77 (32x60)	53

Code No.				Driving torque	Moment of inertia about input in $J_G 10^{-4}$ Kgm²		Forces on output shaft at n_a=100 min⁻¹		Input rpm	
single-stage			**Type**	**T_2 max**	**for i=5**	**for i=10**	**radial**	**axial**	**N_1 max**	**Weight**
T15		**11-**	**PSKCZ 221**	34 Nm	0,56 (14)	0,52 (14)	2000 N	1000 N	7000 min⁻¹	2,5 kg
T15		**12-**	**PSKCZ 321**	74 Nm	0,97 (14)	0,84 (14)	2930 N	1500 N	6500 min⁻¹	4,4 kg
T15		**13-**	**PSKCZ 521**	180 Nm	1,60 (19)	0,98 (19)	4960 N	2500 N	6000 min⁻¹	7,7 kg
two-stage			**Type**	**T_2 max**	**for i=25**	**for i=100**	**radial**	**axial**	**N_1 max**	**Weight**
T15		**14-**	**PSKCZ 222**	34 Nm	0,56 (14)	0,52 (14)	2000 N	1000 N	7000 min⁻¹	3,1 kg
T15		**15-**	**PSKCZ 322**	74 Nm	0,94 (14)	0,83 (14)	2930 N	1500 N	6500 min⁻¹	7,1 kg
T15		**16-**	**PSKCZ 522**	180 Nm	1,60 (19)	0,95 (19)	4960 N	2500 N	6000 min⁻¹	11,0 kg

( ) = Motor shaft diameter

Gear reduction:
Single-stage: i= 3, 5, 7, 10 (i=10, torque is reduced by 10%)
Two-stage: i= 15, 21, 25, 30, 35, 49, 50, 70, 100

Circumferential backlash:

α < 10 angular minutes for single-stage gear box

α < 15 angular minutes for two-stage gear box

T15-	**1**	**11-**	**05**

Sample order code:
Type PSKCZ 221 i=5 α < 10 angular minutes

Motors and control units

Accessories

Path control

Path control CX1020-0123

Processor	Intel® Celeron® M ULV, 1-GHz clock frequency
Flash memory	64-MByte-Compact Flash card
Internal main memory	256 MByte DDR-RAM (expandable to 512 MByte, 1 GB)
Interfaces	2 x RJ 45 (internal Switch)
Diagnostic LED	1 x Power, 2 x LAN link/aktivity, 1 x TC, 1 x flash access
Extension slot	1 x Compact-Flash-Typ-I+II-module insert with eject mechanism
Clock	internal battery-backed clock for time and date
Operating System	Microsoft Windows CE.NET or XP Embedded
Control software	TwinCAT PLC Runtime , TwinCAT NC PTP Runtime oder TwinCAT NCI Runtime
System bus	16-Bit-ISA (PC104-Standard)
Power supply	via Systembus (through power supply module CX1100-000x)
Max. power loss	11 W (including the system interfaces CX1000-N0002)
Dimensions (W x H x D)	96 mm x 112 mm x 99 mm
protection class	IP 20

Code-No.: E74000

Stepping motor clamp KL2541

Number of digital outputs	1 Stepper motor, 2 Phases
Number of digital inputs	2 limit position, 4 for an encoder system
Supply Voltage	8 ... 50 V DC
Output current	2 x 3,5 A, 2 x 5 A peak current
Maximum step frequency	> 125000 steps/s
Step pattern	full step, half step,up to 64-fold micro stepping
Resolution per revolution	approx. 5,000 positions in typ. applications
Current controller frequency	approx. 25 kHz
Diagnostics LEDs for	error phase A and B, loss of step/stagnation, power, enable
Power supply	via the K-bus
Electrical isolation	500 Vrms (K-bus/signal voltage)
Curr. consump. for K-bus	typ. 100 mA
Bit width in the process image	Input/Output: 2 x 16 bit- + 1 x 8 bit control/status
Protec. class/installation position	IP 20/variable

Code-No.: E73010

CANopen Master-Connection of field bus CX1500-M510

Fieldbus	CANopen
Transmission rate	10, 20, 50, 100, 125, 250, 500, 800, 1000 kbaud
Bus connection	open-style-connector, 5-pin
Bus nodes	max. 127 slaves
Interface to the CPU	ISA plug and play, 2 kByte DPRAM
Max. power consumption	1,8 W
Features	CANopen – supported PD communication types: event driven, time-controlled, synchronous, polling; emergency message handling, guarding and heartbeat, boot-up according to DS302, Online Bus Load Monitor and Bus Trace, the error management for each user is freely configurable.
Dimensions (W x H x D)	38 mm x 100 mm x 91 mm
Weight approx.	190 g
Operating temperature	0 °C ... +55 °C
Storage temperature	-25 °C ... +85 °C
Protection class	IP 20

Code-No.: E73020

Point-to-point control CX1001-122

Processor	Pentium-MMX-kompatibel, 266 MHz clock frequency
Flash memory	64-MByte-Compact Flash card
Internal main memory	128 MByte RAM
Interfaces	1 x RJ 45 (Ethernet) and 1 x D-Sub-Plug, 9-polig (RS 232)
Diagnostic LED	1 x Power, 2 x LAN-Speed, 1 x LAN aktivity,1 x flash access
Extension slot	1 x Compact-Flash-Typ-II-module insert with eject mechanism
Clock	internal battery-backed clock for time and date
Operating System	Microsoft Windows CE
Control software	TwinCAT-NC-PTP-Runtime
System bus	16 Bit ISA (PC104 Standard)
Power supply	via Systembus (through power supply module CX1100-000x)
Dimensions (W x H x D)	57 mm x 100 mm x 91 mm
protection class	IP 20

Code-No.: E73000

Stepping motor clamp KL2541

Number of digital outputs	1 Stepper motor, 2 Phases
Number of digital inputs	2 limit position, 4 for an encoder system
Supply Voltage	8 ... 50 V DC
Output current	2 x 3,5 A, 2 x 5 A peak current
Maximum step frequency	> 125000 steps/s
Step pattern	full step, half step,up to 64-fold micro stepping
Resolution per revolution	approx. 5,000 positions in typ. applications
Current controller frequency	approx. 25 kHz
Diagnostics LEDs for	error phase A and B, loss of step/stagnation, power, enable
Power supply	via the K-bus
Electrical isolation	500 Vrms (K-bus/signal voltage)
Curr. consump. for K-bus	typ. 100 mA
Bit width in the process image	Input/Output: 2 x 16 bit- + 1 x 8 bit control/status
Protec. class/installation position	IP 20/variable

Code-No.: E73010

CANopen Master-Connection of field bus CX1500-M510

Fieldbus	CANopen
Transmission rate	10, 20, 50, 100, 125, 250, 500, 800, 1000 kbaud
Bus connection	open-style-connector, 5-pin
Bus nodes	max. 127 slaves
Interface to the CPU	ISA plug and play, 2 kByte DPRAM
Max. power consumption	1,8 W
Features	CANopen – supported PD communication types: event driven, time-controlled, synchronous, polling; emergency message handling, guarding and heartbeat, boot-up according to DS302, Online Bus Load Monitor and Bus Trace, the error management for each user is freely configurable.
Dimensions (W x H x D)	38 mm x 100 mm x 91 mm
Weight approx.	190 g
Operating temperature	0 °C ... +55 °C
Storage temperature	-25 °C ... +85 °C
Protection class	IP 20

Code-No.: E73020

Multi-axis drive with contouring control: isiModul2 and isiModul5

isiModul® – the compact solution

isiModul® by isiMotion is the ideal solution for all multi-axis systems. Drives and contouring control are integrated in one compact housing and therefore help you to save cabinet space and mounting time.

isiModul® controls all linear and rotating servo motors. A special advantage is the intelligent commutation of linear motors without moving. This makes it possible to commutate gantry systems or vertical axes without problems.

Features
- Contouring control with real-time OS
- jerk-free contours
- 2 CAN interfaces (can be used as CAN master or CAN slave)
- Profibus interface
- RS485 interface
- Ethernet interface for configuration or connection of smart cameras
- 2 encoder inputs (master/slave)
- Feedback systems: resolver, Hiperface®, EnDat 2.1
- safe restart lock
- UL/CSA
- RFI-emission: domestic environment, noise-immune: industry
- networking of several isiModuls via CAN

Code-No.		E56002-	E56005-
Rated Data	Unit.	**isiModul 2**	**isiModul 5**
Rated voltage (symmetrical to ground), max. 5000 rms symmetrical amplification (L1, L2, L3)	V_{AC}	3 x 115 $V_{-10\,\%}$ – 230 $V^{10\,\%}$ 40 – 65 Hz	3 x 230 $V_{-10\,\%}$ – 480 $V^{10\,\%}$ 45 – 65 Hz
Rated input power for S1-operation at 230 V/400 V	kVA	6	8 (230 V) – 14 (400 – 480 V)
Rated DC-link voltage	V_{DC}	150 – 360	290 – 680
Auxiliary voltage +24 V	V_{DC}	22 – 30	22 – 30
Power supply holding brake +24 V-BR	V_{DC}	25 – 27	25 – 27
Power of auxiliary voltage +24 V	W	24	35
Power of contouring module	W	15	15
Max. current of holding brake per axis	A_{DC}	1	2
Rated output current axis 1 (rms +/-3 %)	A_{eff}	5	10
Rated output current axis 2 (rms +/-3 %)	A_{eff}	5	10
Rated output current axis 3 (rms +/-3 %)	A_{eff}	5	10
Max. total continuous current of all axes (cooling unit)	A_{eff}	15	20
Peak output current axis 1 for max. 5 s (rms +/-3 %)	A_{eff}	10	20
Peak output current axis 2 für max. 5 s (rms +/-3 %)	A_{eff}	10	20
Peak output current axis 3 für max. 5 s (rms +/-3 %)	A_{eff}	10	20
Power stage losses (sum of average currents of the 3 axes multiplied by factor) without ballast losses	W/A_{eff}	5	10
Output frequency of power stages	kHz	8	8
Regen Circuit			
DC-link voltage	µF	940	700
Value of external regen resistor	Ω	33	25
Value of internal regen resistor	Ω	33	25
Rated power of internal regen resistor	W	66	200
Peak power of internal regen resistor for 1 s (max. 1 s/120 s)	kW	5,1	6,5 (bei 230 V) 21 (bei 400 V) 27 (bei 480 V)
Internal Fusing			
Auxiliary voltage 24 V (+24 V at BGND)	-	electronic fusing	
Holding brake supply 24 V_BR (+24 V_BR at BGND)	-	no fusing	electronic fusing
Regen resistor	-	electronic protection	
Mechanical Data			
Height with/without mating connectors	mm	249/249	472/378
Width	mm	160	158
Depth with/without mating connectors	mm	300/225	240/240
Weight	kg	3	9,9
Ambient Conditions			
Ambient temperature during operation	°C/°F	0 to 45°C (32 to 113°F) when observing rated data 45 to 55°C (113 to 131°F) with performance reduction of 2,5 %/K	
Rel. air humidity during operation	%	85 without condesation	
Abs. altitude of mounting	m above sea level	With rated operation up to 1000, 1000 to 2000 with performance reduction of 1,5 %/100 m	
Degree of air pollution	-	Level 2 according to EN 61800-5-1	
Type of protection	-	IP20	
Ventilation	-	forced cooling by internal ventilator	
Version:		**isiModul 2**	**isiModul 5**
One-axis drive (Control + 1 Drive)		**E56002-1**	**E56005-1**
Two-axis drive (Control + 2 Drives)		**E56002-2**	**E56005-2**
Three-axis drive (Control + 3 Drives)		**E56002-3**	**E56005-3**

isiMotion offers a range of cutting edge servo motors with extremely high power density and minimal cogging. These motors were originally developed for tooling machinery and meet all requirements for high dynamics. Together with multi-axis drive isiModul they form an unbeatable system for allmost all application tasks.

All motors of product range ISH are equipped with resolver or multiturn encoder by standard and provide PTC or KTC sensor resp. for temperature control. Feedback and power cables connect with M17 connectors.

Options:
- holding brake
- featherkey acc. to DIN 6885
- protection class IP67 with shaft seal ring
- UL design

Code-Nr. Code-No.				Motor	n_N	M_0	I_0	M_{DYN}	I_{max}	U_{ZK}	J_{mot}	J_{bmot}	Flange	M_{B1}
					(U/min)	(NM)	(A)	(NM)	(A)	(V_{DC})	(10^{-4} kgm²)		(mm)	(NM)
E56		21	0	ISH2-0025	4500	0,26	0,70	1,00	2,90	560	0,06	0,13	55x55	2,0
		22	0	ISH2-0050	4500	0,53	1,26	2,00	5,10	560	0,08	0,15	55x55	2,0
		23	1	ISH2-0070	4500	0,74	1,66	2,80	6,70	320	0,10	0,17	55x55	2,0
		23	0	ISH2-0070	4500	0,74	1,19	2,80	4,90	560	0,10	0,17	55x55	2,0
		24	1	ISH2-0090	4500	0,95	2,09	3,60	8,50	320	0,12	0,19	55x55	2,0
		24	0	ISH2-0090	4500	0,95	1,45	3,60	5,90	560	0,12	0,19	55x55	2,0
E56		31	1	ISH3-0080	4500	0,95	2,13	2,40	7,80	320	0,50	0,70	86x86	4,5
		31	0	ISH3-0080	4500	0,95	1,32	2,40	4,90	560	0,50	0,70	86x86	4,5
		32	1	ISH3-0160	4500	1,90	3,59	5,20	14,40	320	0,70	0,90	86x86	4,5
		32	0	ISH3-0160	4500	1,90	2,21	5,20	8,90	560	0,70	0,90	86x86	4,5
		33	1	ISH3-0270	3000	3,25	4,27	9,45	18,60	320	1,10	1,30	86x86	4,5
		33	0	ISH3-0270	4500	3,25	3,51	9,45	15,30	560	1,10	1,30	86x86	4,5
		34	1	ISH3-0350	3000	4,20	4,79	12,25	21,00	320	1,50	1,70	86x86	4,5
		34	0	ISH3-0350	4500	4,20	4,10	12,25	17,90	560	1,50	1,70	86x86	4,5
E56		41	0	ISH4-0370	3000	4,05	4,90	11,10	19,50	560	1,70	2,52	98x98	9,0
		42	0	ISH4-0570	3000	6,30	6,60	18,50	28,30	560	2,60	3,42	98x98	9,0
		43	0	ISH4-0780	3000	8,60	8,50	27,30	40,60	560	3,50	4,32	98x98	9,0
E56		51	0	ISH5-1050	3000	11,60	8,30	31,50	39,20	560	6,80	8,65	142x142	18,00
		52	0	ISH5-1350	3000	14,90	12,50	40,50	49,30	560	8,25	10,10	142x142	18,00
		53	0	ISH5-1700	3000	18,70	16,40	51,00	61,40	560	11,00	12,85	142x142	18,00
		54	0	ISH5-2500	3000	27,30	19,00	75,00	67,8	560	15,30	17,15	142x142	18,00

n_N	nominal revolutions	(U/min)
M_0	Stand still torque	Nm
I_0	Stand still current	A
M_{DYN}	Dynamic-torque	Nm
I_{max}	Max. current	A
U_{ZK}	Nominal bus voltage	V_{DC}
J_{mot}	Inertia of masses	10^{-4} kgm²
J_{bmot}	Inertia of masses with brakes	10^{-4} kgm²
Flange	Flange measured	mm²
M_{B1}	Stand still braking torque	Nm

0 **0** without brake
1 with brake

E56	0	23	1

Sample order code:
Motor ISH2-0070 with Resolver, without brake, 560 V_{DC} Version

isiMotion offers a range of cutting edge servo motors with extremely high power density and minimal cogging. These motors were originally developed for tooling machinery and meet all requirements for high dynamics. Together with multi-axis drive isiModul they form an unbeatable system for allmost all application tasks.

All motors of product range ISH are equipped with resolver or multiturn encoder by standard and provide PTC or KTC sensor resp. for temperature control. Feedback and power cables connect with M17 connectors.

Using servo motors with multiturn encoders will save you time and money for homing cycles. The feedback system has an absolute resolution of 4096 revolutions. The absolute position is provided immediately without homing.

Options:
- holding brake
- featherkey acc. to DIN 6885
- protection class IP67 with shaft seal ring
- UL design

Code-Nr. Code-No.				Motor	n_N	M_0	I_0	M_{DYN}	I_{max}	U_{ZK}	J_{mot}	J_{bmot}	Flange	M_{B1}
					(U/min)	(NM)	(A)	(NM)	(A)	(V_{DC})	(10^{-4} kgm²)		(mm)	(NM)
E57		21	0	ISH2-0025	4500	0,26	0,70	1,00	2,90	560	0,06	0,13	55x55	2,0
		22	0	ISH2-0050	4500	0,53	1,26	2,00	5,10	560	0,08	0,15	55x55	2,0
		23	1	ISH2-0070	4500	0,74	1,66	2,80	6,70	320	0,10	0,17	55x55	2,0
		23	0	ISH2-0070	4500	0,74	1,19	2,80	4,90	560	0,10	0,17	55x55	2,0
		24	1	ISH2-0090	4500	0,95	2,09	3,60	8,50	320	0,12	0,19	55x55	2,0
		24	0	ISH2-0090	4500	0,95	1,45	3,60	5,90	560	0,12	0,19	55x55	2,0
E57		31	1	ISH3-0080	4500	0,95	2,13	2,40	7,80	320	0,50	0,70	86x86	4,5
		31	0	ISH3-0080	4500	0,95	1,32	2,40	4,90	560	0,50	0,70	86x86	4,5
		32	1	ISH3-0160	4500	1,90	3,59	5,20	14,40	320	0,70	0,90	86x86	4,5
		32	0	ISH3-0160	4500	1,90	2,21	5,20	8,90	560	0,70	0,90	86x86	4,5
		33	1	ISH3-0270	3000	3,25	4,27	9,45	18,60	320	1,10	1,30	86x86	4,5
		33	0	ISH3-0270	4500	3,25	3,51	9,45	15,30	560	1,10	1,30	86x86	4,5
		34	1	ISH3-0350	3000	4,20	4,79	12,25	21,00	320	1,50	1,70	86x86	4,5
		34	0	ISH3-0350	4500	4,20	4,10	12,25	17,90	560	1,50	1,70	86x86	4,5
E57		41	0	ISH4-0370	3000	4,05	4,90	11,10	19,50	560	1,70	2,52	98x98	9,0
		42	0	ISH4-0570	3000	6,30	6,60	18,50	28,30	560	2,60	3,42	98x98	9,0
		43	0	ISH4-0780	3000	8,60	8,50	27,30	40,60	560	3,50	4,32	98x98	9,0
E57		51	0	ISH5-1050	3000	11,60	8,30	31,50	39,20	560	6,80	8,65	142x142	18,00
		52	0	ISH5-1350	3000	14,90	12,50	40,50	49,30	560	8,25	10,10	142x142	18,00
		53	0	ISH5-1700	3000	18,70	16,40	51,00	61,40	560	11,00	12,85	142x142	18,00
		54	0	ISH5-2500	3000	27,30	19,00	75,00	67,8	560	15,30	17,15	142x142	18,00

n_N	nominal revolutions	(U/min)
M_0	Stand still torque	Nm
I_0	Stand still current	A
M_{DYN}	Dynamic-torque	Nm
I_{max}	Max. current	A
U_{ZK}	Nominal bus voltage	V_{DC}
J_{mot}	Inertia of masses	10^{-4} kgm²
J_{bmot}	Inertia of masses with brakes	10^{-4} kgm²
Flange	Flange measured	mm²
M_{B1}	Stand still braking torque	Nm

0 without brake
1 with brake

E57	0	23	1

Sample order code:
Motor ISH2-0070 with Multiturn Encoder, without brake, 560 V_{DC} Version

By using high-energy magnetic material NdFeB (size 4x: SmCo) it is possible to design small diameter disc motors. For this reason and due to a carefully optimized technical construction of the rotor, the motors have a low moment of inertia.

The stability of the magnetic material and the design of the magnetic field in the face of demagnetisation allow maximum currents of up to 4 times the rated current.
This results in a high acceleration capacity of the low-inertia three-phase AC servo drives.
Through the excitation of the permanent magnets, no Joule's heat losses occur in the rotor.
With three-phase AC-servomotors, Joule's heat losses occur only in the stator, which can then be directly drawn off via the housing.
These favourable cooling conditions allow high-capacity windings.
Since all the Joule's heat losses are drawn off directly via the housing, the motors are designed at low cost with the enclosure type providing protection in accordance with IP 54 (optional: IP 65; size 4x: IP65 standard) and they are thus very resistant to liquids and dirt.

Code-No.		Motor	n_N	M_0	I_0	M_{DYN}	I_{max}	M_{OVR}	I_{OVR}	J_{mot}	J_{bmot}	M_{B1}	M_{B2}	W_{max1}	W_{max2}
				(NM)	(A)	(NM)	(A)	(NM)	(A)	(10^{-4} kgm²)		(NM)		(kJ)	
E55	53	CFM71S	3000	5	3.3	16.5	13.2	7.3	4.8	4.89	6.65	10	5	14	20
E55	54	CFM71M	3000	6.5	4.3	21.5	17.2	9.4	6.2	6.27	8.03	14	7	11	18
E55	55	CFM71L	3000	9.5	6.2	31.4	25	13.8	9	9.02	10.8	14	10	11	14
E55	56	CFM90S	3000	11	7.3	39.6	29	16	10.6	17.4	21.2	28	14	10	20
E55	57	CFM90M	3000	14.5	10.1	52.2	40	21	14.6	22.3	26.1	40	20	4.5	15
E55	58	CFM90L	3000	21	14.4	75.6	58	30.5	21	32.1	35.9	40	28	4.5	10
E55	59	CFM112S	3000	23.5	15	82.3	60	34	22	68.4	84	55	28	18	36
E55	60	CFM112M	3000	31	20.5	108.5	82	45	30	88.2	104	90	40	7	32
E55	61	CFM112L	3000	45	30	157.5	120	65	44	128	143	90	55	7	18
E55	62	CFM112H	3000	68	43	238.0	172	95	60	190	209	90	55	7	18
E55	53	CFM71S	4500	5	4.9	16.5	19.6	7.3	7.2	4.89	6.65	10	5	10	16
E55	54	CFM71M	4500	6.5	6.6	21.5	26	9.4	9.6	6.27	8.03	14	7	6	14
E55	55	CFM71L	4500	9.5	9.6	31.4	38	13.8	14	9.02	10.8	14	10	6	10
E55	56	CFM90S	4500	11	11.1	39.6	44	16	16.2	17.4	21.2	28	14	5	15
E55	57	CFM90M	4500	14.5	14.7	52.2	59	21	21.5	22.3	26.1	40	20	3	9
E55	58	CFM90L	4500	21	21.6	75.6	86	30.5	31.5	32.1	35.9	40	28	3	5
E55	59	CFM112S	4500	23.5	22.5	82.3	90	34	32.5	68.4	84	55	25	11	22
E55	60	CFM112M	4500	31	30	108.5	120	45	44	88.2	104	90	40	4	18
E55	61	CFM112L	4500	45	46	157.5	184	65	67	128	143	90	55	4	11
E55	62	CFM112H	4500	68	66	238.0	264	95	92	190	209	90	55	4	11

M_0	Stand still torque	Nm	n_N	nominal revolutions (1/min)
I_0	Stand still current	A	M_{B1}	Standard brake torque
M_{DYN}	Dynamic-torque	Nm	M_{B2}	Reduced brake torque
I_{max}	Max. current	A	W_{max1}	Max. possible brake moment
M_{OVR}	Max. torque with external cooling	Nm		for standard brake moment
I_{OVR}	Max. current with external cooling	A		during a maintenance interval
J_{mot}	Inertia of masses	10^{-4} kgm²	W_{max2}	Max. possible brake moment
J_{bmot}	Inertia of masses with brakes	10^{-4} kgm²		for reduced brake moment
				during a maintenance interval

0 without brake
1 with brake

3 Motor turns 3.000 U/Min.
4 Motor turns 4.500 U/Min.

E55	0	53	3

Sample order code:
Motor CFM71S, 1,00 Nm for 400 V AC, without brake, Motor turns 3.000 U/Min.

Servomotors of the CPM Series complete the range of servomotors of SEW-EURODRIVE in the lower torque range: 0.5 Nm to 7.1 Nm are available in three CMP motor sizes.CMP servomotors offer a bearing servicelife up to 25,000 hoursand an appropriately high overhung load capacity that can make them to workhorses when they are operated at rated speed of 3,000 up to 6,000 min^{-1}. Theier innovative design with the latest in winding and magnet technology offers a motor system with high dynamics, low operating noise and the best control characteristics at the smallest space. The cast statorprotects the motoragainst vibrations and humidity.

Code-No.			Motor	n_N	M_0	I_0	M_{DYN}	I_{max}	M_{OVR}	I_{OVR}	J_{mot}	J_{bmot}	M_{B1}	M_{B2}	L_1	R_1	U_{p0} cold
					(NM)	(A)	(NM)	(A)	(NM)	(A)	(kgcm²)		(NM)		(mH)	Ω	(V)
E55		63	CMP40S	3000	0.5	1.2	1.9	6.1			0.1	0.13	0.95		23	11.94	27.5
E55		64	CMP40M	3000	0.8	0.95	3.8	6.0			0.15	0.18	0.95		45.5	19.92	56
E55		65	CMP50S	3000	1.3	0.96	5.2	5.1	1.7	1.25	0.42	0.48	3.1	4.3	71	22.49	86
E55		66	CMP50M	3000	2.4	1.68	10.3	9.6	3.5	2.45	0.67	0.73	4.3	3.1	38.5	9.98	90
E55		67	CMP50L	3000	3.3	2.2	15.4	13.6	4.8	3.2	0.92	0.99	4.3	3.1	30.5	7.41	98
E55		68	CMP63S	3000	2.9	2.15	11.1	12.9	4	3	1.15	1.49	7	9.3	36.5	6.79	90
E55		69	CMP63M	3000	5.3	3.6	21.4	21.6	7.5	5.1	1.92	2.26	9.3	7	22	3.57	100
E55		70	CMP63L	3000	7.1	4.95	30.4	29.7	10.3	7.2	2.69	3.03	9.3	7	14.2	2.07	100
E55		63	CMP40S	4500	0.5	1.2	1.9	6.1			0.1	0.13	0.85		23	11.94	27.5
E55		64	CMP40M	4500	0.8	0.95	3.8	6.0			0.15	0.18	0.95		45.5	19.92	56
E55		65	CMP50S	4500	1.3	1.32	5.2	7.0	1.7	1.7	0.42	0.48	3.1	4.3	37	11.6	62
E55		66	CMP50M	4500	2.4	2.3	10.3	13.1	3.5	3.35	0.67	0.73	4.3	3.1	20.5	5.29	66
E55		67	CMP50L	4500	3.3	3.15	15.4	19.5	4.8	4.6	0.92	0.99	4.3	3.1	14.6	3.56	68
E55		68	CMP63S	4500	2.9	3.05	11.1	18.3	4	4.2	1.15	1.49	7	9.3	18.3	3.34	64
E55		69	CMP63M	4500	5.3	5.4	21.4	32.4	7.5	7.6	1.92	2.26	9.3	7	9.8	1.49	67
E55		70	CMP63L	4500	7.1	6.9	30.4	41.4	10.3	10	2.69	3.03	9.3	7	7.2	1.07	71

M_0	Stand still torque	Nm	n_N	nominal revolutions (1/min)
I_0	Stand still current	A	M_{B1}	Standard brake torque
M_{max}	Max. torque	Nm	M_{B2}	Reduced brake torque
I_{max}	Max. current	A	L_1	Inductance of the coil
M_{OVR}	Max. torque with external cooling	Nm	R_1	Ohm's resistance of the coil
I_{OVR}	Max. current with external cooling	A	U_{p0} cold	Magnet wheel tension at 1000 min^{-1}
J_{mot}	Inertia of masses	kgcm²		
J_{bmot}	Inertia of masses with brakes	kgcm²		

0 without brake
1 with brake

3 Motor turns 3.000 U/Min.
4 Motor turns 4.500 U/Min.

E55	0	63	3

Sample order code:
Motor CMP40S, 1,00 Nm for 400 V AC, without brake, Motor turns 3.000 U/Min.

MOVIDRIVE® MDX61B is the new generation of drive inverters from SEW.
The new MOVIDRIVE® drive inverters of the B series convince with more basic functions, extended lower speed range, increased overload capacity and modular unit design.

As a result, AC drives with the latest digital inverter technology can now be used without restrictions in the power range from 0.55 to 132 kW .
The integrated control functions and the possibility of expanding the system with technology and communication options is leading to drive systems that are designed for particularly high levels of efficiency in terms of their broad range of applications, project planning, startup and operation.

The Userpanel on the picture above is a option for the servo drive inverters, it belongs not standardly to the product!

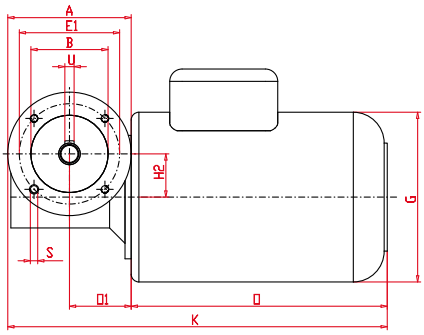
Movidrive MDX61B Standard version		**E55200**	**E55201**	**E55202**	**E55203**	**E55204**
Movidrive MDX61B Application version *)		**E55300**	**E55301**	**E55302**	**E55303**	**E55304**
Size		**0S**	**0M**	**1**	**2**	
Input						
Supply voltage	V_{mains}	3 x AC 380 V -10% ... 3 x AC 500 V +10%				
Mains frequencey	f_{mains}	50 Hz ... 60Hz ±5%				
Rated supply current[1] I_{mains} (at V_{mains}= 3 x AC 400 V)	**100%** **125%**	AC 2.2 A AC 2.7 A	AC 3.6 A AC 4.5 A	AC 6.3 A AC 7.9 A	AC 11.3 A AC 14.1 A	AC 21.6 A AC 27.0 A
Output						
Apparent output power[2] (at V_{mains}= 3 x AC 380 V ... 500V)	P_{rated}	1.6 kVA	2.8 kVA	4.9 kVA	8.7 kVA	16.8 kVA
Rated output current (at V_{mains}= 3 x AC 400 V)	I_N	AC 2.4 A	AC 4 A	AC 7 A	AC 12.5 A	AC 24 A
Current limitation (Motor and regenerative)	I_{max}	200% i_N, duration depending on capacity utilization		150% i_N, duration depending on capacity utilization		
Internal current limitation		I_{max} = 0...150% adjustable		I_{max} = 0...150% adjustable		
Minimum permitted braking resistor value (4Q-operating)	R_{BWmin}	68 Ohm			47 Ohm	22 Ohm
Output voltage	V_{out}	Max. V_{mains}				
PWM-frequency	f_{PWM}	Adjustable: 4/8/12/16 kHz				
Speed range / resolution	$n_a/\triangle n_a$	-6000 ... 0... +6000 min^{-1} / 0.2 min^{-1} across the entrire range				
General						
Power loss at S_N[2]	P_{Vmax}	48 W	74 W	130 W	220 W	400 W
Cooling air consumption		3 m^3/h	9 m^3/h		80 m^3/h	
Mass		2.0 kg	2.8 kg	3.5 kg	6.6 kg	
Dimensions	**WxHxD**	45 x 317 x 260	95 x 317 x 260 mm		105 x 335 x 294 mm	
Constant load Recomm. motor power	P_{Mot}	0.75 kW	1.5 kW	3.0 kW	5.5 kW	11 kW
Variable torque load or constant load without overload Recomm. motor power	P_{Mot}	1.1 kW	2.2 kW	4.0 kW	7.5 kW	15 kW
VFC operating mode (f_{PWM}= 4kHz) Continuous output current = 125% I_N (at U_{mains}= 3 x AC 400 V)	I_D	AC 3 A	AC 5 A	AC 8.8 A	AC 15.6 A	AC 30 A
CFC/Servo operating mode (f_{PWM}= 8kHz) Continuous output current = 100% I_N	I_D	AC 2.4 A	AC 4 A	AC 7 A	AC 12.5 A	AC 24 A

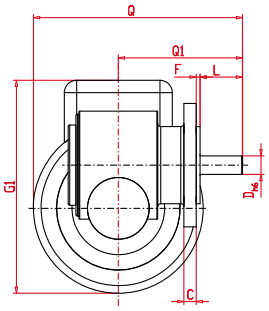
Code-No.	**Type**
E 55401	Profibus DFP21B Field bus interface
E 55410	USB11A Interface converter

*) Additional functions to standard (pre-parametized)
1) The rated mains currents and output currents must be 20% below the rated data at V_{mains} = 3 x AC 500 V
2) The performance data apply to f_{PWM} = 4 kHz (factory setting in VFC operating modes)

Accessories

AC worm gear motor





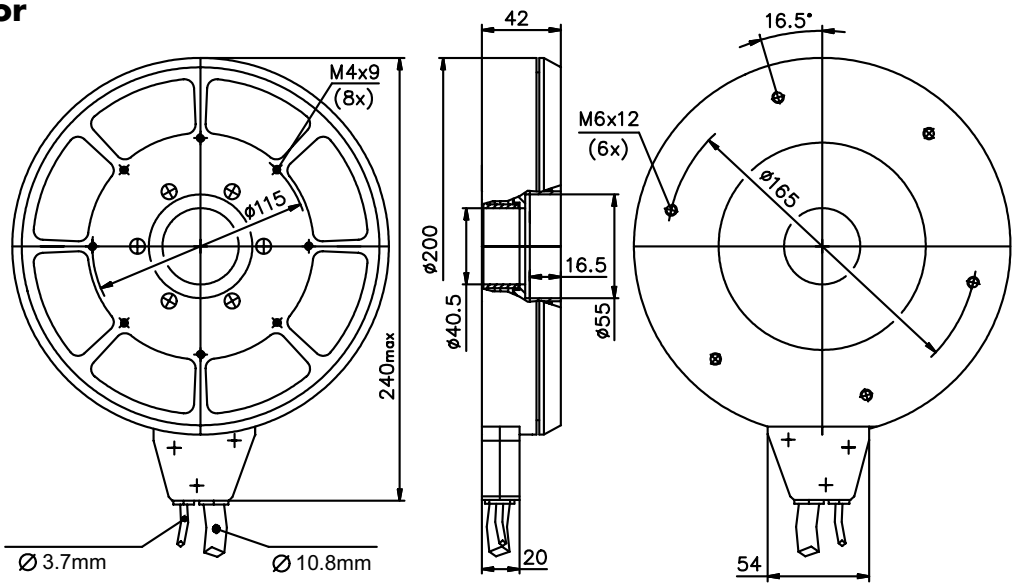
Protection class IP 54, 220/380 V, 50 Hz, from 90 to1100 W.
Available with electronic disc brake.
Speed 1400 rpm or 2800 rpm.
Reduction gearing options: 5:1, 7:1, 15:1, or 20:1.
Further options on request.

Code-No.	Power	A	B	C	D	E1	F	G	G1	H2	K	L	O	O1	Q	Q1	S	U
E 50001	90 W	140	95	8	18	115	3	112	158	9,6	319	40	168	81	166	116	10,5	6
E 50002	120 W	120	80	8	19	100	3	125	171	40	297	35	187	60	171	102	7	6
E 50003	180 W	120	80	8	19	100	3	125	171	40	297	35	187	60	171	102	7	6
E 50004	250 W	120	80	8	19	100	3	140	184	40	317	60	207	60	184	102	7	6
E 50005	370 W	120	80	8	19	100	3	140	184	40	317	60	207	60	184	102	7	6
E 50006	550 W	160	110	12	30	130	3,5	158	204	65	428	60	233	115	204	154	9	8
E 50007	750 W	160	110	12	30	130	3,5	158	204	65	428	60	233	115	204	154	9	8
E 50008	1100 W	160	110	12	30	130	3,5	178	228	65	469	60	274	115	228	154	9	8
E 50100	motor brake	l = lengthening (O)																

Product pictures

Servomotor and controller

Rotary synchronous motor RSMR-T-24-145x25



Code-No.	Type
E52500	RSMR-T-24-145x25-GS
E52501	RSMR-T-24-145x25-GT

FEATURES:

- Iron-core three-phase rotary synchronous motor with rare-earth magnets for high force density.
- Direct drive (no gear, no backlash), low profile (height 42 mm) with hollow shaft (Ø40 mm).
- Built-in precision ball bearing, sine optical encoder, thermistors for overheating protection.
- High precision, repeatability and resolution, low cogging, smooth movement.
- High motor stiffness and large bandwidth by position regulator with encoder feedback.

APPLICATIONS:

Semiconductor manufacturing, pick and place machines, indexing tables.

CONSTRUCTION:

Motor consist of a fixed lamination stack with windings (stator) and rotated steel ring with glued permanent magnets (rotor). Windings are encapsulated in thermally conductive epoxy. The smoothness of movement is achieved by sinusoidal commutation of motor phases currents.

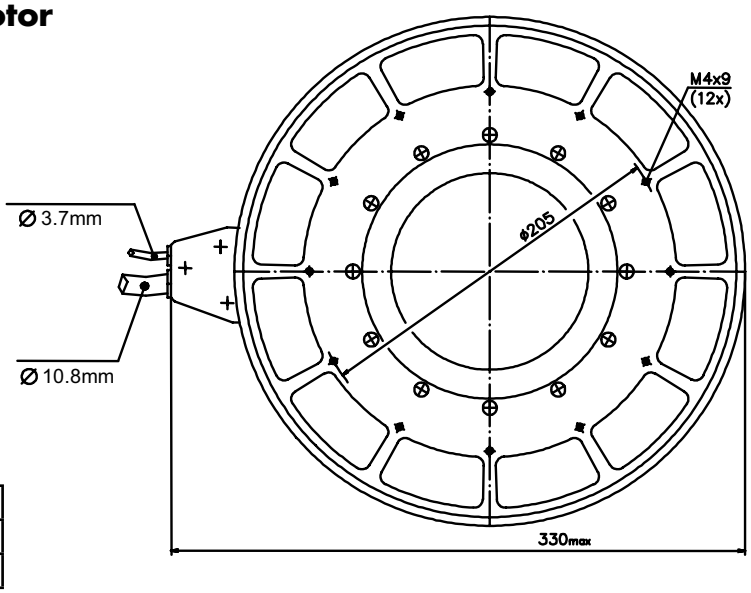
SPECIFICATION OF RSMR-T-24-145x25-		GS	GT
Number of poles pairs 2P		17	17
Peak torque Mp (coil at 20°C)	Nm	45	45
Continuous torque Ma (coil at 120°C)	Nm	17	17
Bearing friction torque Mb	Nm	0.2	0.2
Cogging (detent) torque Mc	Nm	0,4	0,4
Peak current at Mp	Arms	14,0	24,2
Continuous current at Ma	Arms	5,1	8,7
Inductance L	mH	15.2	5.1
Resistance R	Ohm	2.9	0.96
Maximum velocity Np at 150 VDC and Mp	Rpm	214	412
Maximum velocity Na at 150 VDC and Ma	Rpm	393	701
Maximum velocity Nb at 150 VDC and Mb	Rpm	514	887
Maximum bearing velocity	Rpm	2000	2000
Rotor moment inertia	$Kg \cdot m^2$	0.01	0.01
Motor weight	Kg	7	7
Maximal user payload	Kg	25	25
Axial / radial runout	micron	20	20
Number of encoder lines		2048	2048
Position accuracy	arc.sec.	30	30
Repeatability	arc.sec.	2	2
Resolution	arc.sec.	0,5	0,5

E52500

Sample order code:
RSMR-T24-145x25 GS

Accessories

Rotary synchronous motor RSMR-T-24-237x25



Code-No.	Type
E52502	RSMR-T-24-237x25-GS
E52503	RSMR-T-24-237x25-GT

FEATURES:

- Iron-core three-phase rotary synchronous motor with rare-earth magnets for high force density.
- Direct drive (no gear, no backlash), low profile (height 42 mm) with hollow shaft (Ø112 mm).
- Built-in precision ball bearing, sine optical encoder, thermistors for overheating protection.
- High precision, repeatability and resolution, low cogging, smooth movement.
- High motor stiffness and large bandwidth by position regulator with encoder feedback.

APPLICATIONS:

Semiconductor manufacturing, pick and place machines, indexing tables.

CONSTRUCTION:

Motor consist of a fixed lamination stack with windings (stator) and rotated steel ring with glued permanent magnets (rotor). Windings are encapsulated in thermally conductive epoxy. The smoothness of movement is achieved by sinusoidal commutation of motor phases currents.

SPECIFICATION OF RSMR-T24-237x25-		GS	GT
Number of poles pairs 2P		31	31
Peak torque Mp (coil at 20°C)	Nm	111	111
Continuous torque Ma (coil at 120°C)	Nm	42	42
Bearing friction torque Mb	Nm	0,3	0,3
Cogging (detent) torque Mc	Nm	0,8	0,8
Peak current at Mp	Arms	14,0	24,2
Continuous current at Ma	Arms	5,1	8,7
Inductance L	mH	22,9	7,6
Resistance R	Ohm	4,3	1,4
Maximum velocity Np at 310 VDC and Mp	Rpm	180	330
Maximum velocity Na at 310 VDC and Ma	Rpm	325	565
Maximum velocity Nb at 310 VDC and Mb	Rpm	428	734
Maximum bearing velocity	Rpm	923	923
Rotor moment inertia	$Kg \cdot m^2$	0,07	0,07
Motor weight	Kg	10	10
Maximal user payload	Kg	65	65
Axial / radial runout	Micron	20	20
Number of encoder lines		5400	5400
Position accuracy	arc.sec.	30	30
Repeatability	arc.sec.	2	2
Resolution	arc.sec.	0,2	0,2

E52502

Sample order code:
RSMR-T24-237x25 GS

Accessories

Electronic display MA502

This display serves to interpret information from the incremental MS500 magnetic sensor for distance and angle measurement. The display parameters are comprehensive and individually programmable. Optionally equipped with serial interface and integrated power unit.

Features:
- High-contrast LCD, dot matrix
- Integrated translation module for length and angle
- Measurement
- Incremental/reset function
- Input for reference switch
- Programmable last value memory
- Direct input of reference/offset value

Magnetic sensor MS500

The information of the magnetic strip is sensed contactlessly. A connection cable permanently attached to the sensor transmits the information to the translation module or magnetic display.

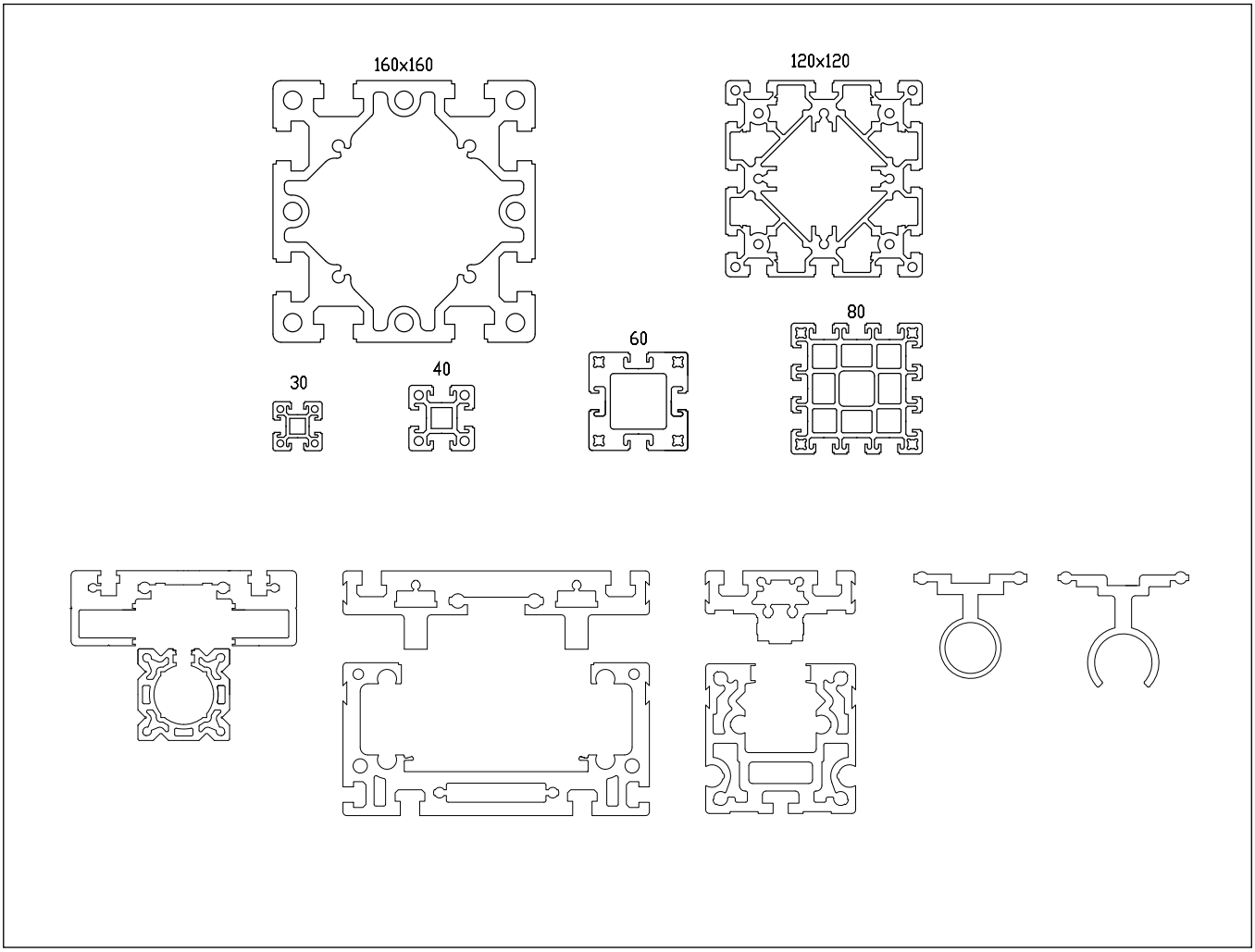
Features:
- Small, compact design of sensor and connector
- Robust housing
- Insensitive to dust, shavings, humidity
- Magnetic strip MB500

	Electronic display MA502	**Magnetic sensor MS500**
Power supply	24 V DC ± 20%; 230 V AC; 115 V AC	Mini-DIN 7-pole
Display range	12-digit LCD Dotmatrix	-
Output signal	-	-
Output circuit	-	PP (Push-Pull) TTL (RS422)
Velocity	max. 5 m/s	< 10 m/s
Distance sensor/tape	-	0,1 -2,0 mm
System of protection	for complete system: IP 40 flush-type: IP 60	IP 67
Resolution	0,01 / 0,1 / 1 / 10 mm	0,05 mm optional: 0,25 mm (quadruplex evalution) 0,025 mm
Repeating accuracy	± 1 Digit	-
Accuracy	± (0,05+0,01 x L)mm [L in m]	see following elektronic
Code-No.	**E 77070**	**E 77076**

Magnetic strip MB500

The magnetic tape consists of a strip polarised at defined intervals, which is firmly connected with a carrier tape. In addition, a magnetically conducting cover strip made of stainless steel is included in the scope of delivery.
· Simple mounting by a double-sided Scotch tape
· High resistance against external influences

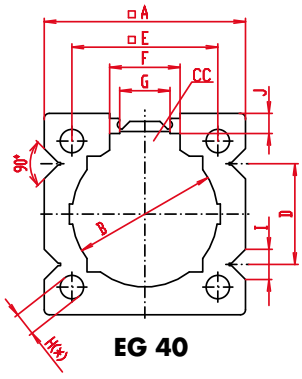
Code-No.
E 77077....



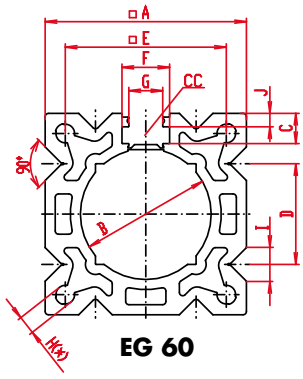
System profiles

System profiles

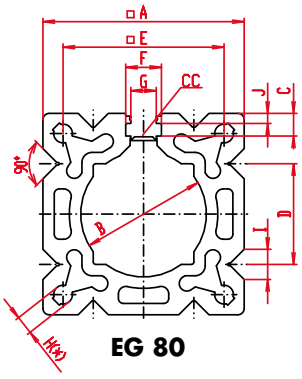
Guide body profile EG 40, 60, 80



EG 40



EG 60



EG 80

Material Al Mg Si 0,5 F25 E6 EV1
(*) = tapped threads
CC = refer to chapter 2.2 page 2-3

Code-No. Length in mm

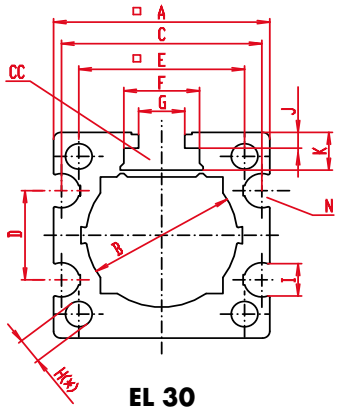
40063	2000

Ordering sample:
Guide body profile EG 40, 2.000 mm long.

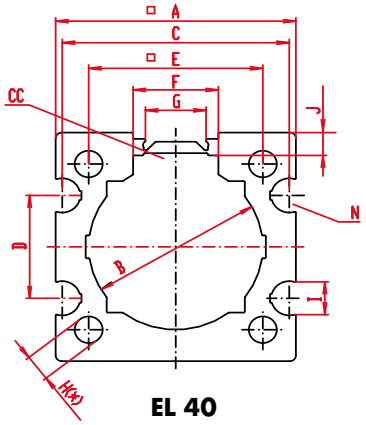
Code-No.	Type	□ A	B	C	D	□ E	F	G	H	*	I	J	m [kg/m]	I [mm4]	W [mm3]	$L_{max.}$
40063	**40**	40	29	-	20	29	14,2	10,1	4,7	M5	6	4	2,05	140.985	6.240	6.000
40053	**60**	60	39	9	30	48	14,2	10,1	5,6	M6	10	4	3,87	564.791	18.043	6.000
40073	**80**	80	50	9	40	64	14,2	10,1	7,5	M8	12	4	7,48	1.913.969	46.563	6.000

Guide body profile EL 30, 40, 60(S), 80(S), 100, 125

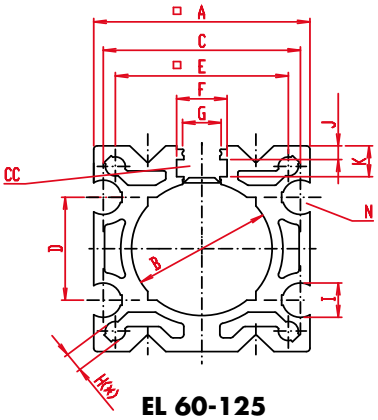
Material Al Mg Si 0,5 F25 E6 EV1
(*) = tapped threads
CC = refer to chapter 2.2 page 2-3



EL 30



EL 40



EL 60-125

Code-No. Length in mm

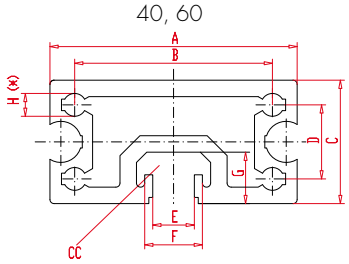
40090	2000

Ordering sample: Body profile EL 30, 2.000 mm long.

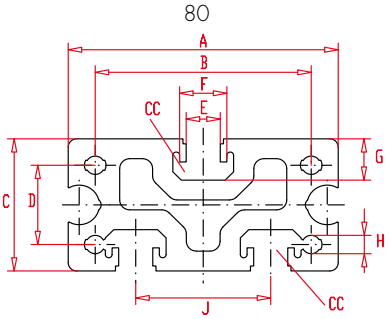
Code-No.	Type	□ A	B	C	D	□ E	F	G	H	*	I	J	K	N	m [kg/m]	I [mm4]	W [mm3]	$L_{max.}$
40090	**30**	30	21	27,8	13	23	10,5	6,4	3,7	M 4	5	2,3	5,5	M 3	1,08	42.464	2.636	3.000
40060	**40**	40	29	37,8	18	29	14,2	10,1	4,7	M 5	6	4	-	M 5	1,92	132.178	6.069	6.000
40050	**60(S)**	60	39	54,8	30	48	14,2	10,1	5,6	M 6	10	4	9	M 6	3,81	572.639	18.277	6.000
40070	**80(S)**	80	50	73,5	40	64	14	10	7,5	M 8	12	4	9	M 8	7,46	1.915.359	45.548	6.000
40080	**100**	100	60	92	50	80	26	17	9,4	M10	16	6,7	14,9	M 8	11,10	4.443.769	84.467	6.000
40100	**125**	125	80	117	60	100	26	17	11,3	M12	20	6,7	14,9	M10	15,92	$1,015x10^7$	175.593	6.000

Guide body profile E 40, 60, 80

40, 60



80



Material Al Mg Si 0,5 F25 E6 EV1
(*) = tapped threads
CC = refer to chapter 2.2 page 2-3

Code-No. Length in mm

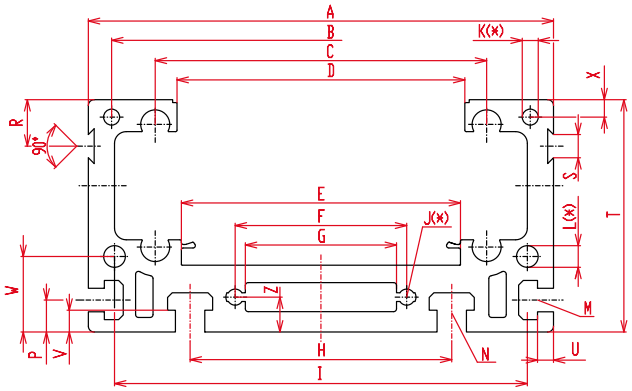
40320	1000

Sample ordering code:
Guide body profile E 60, 1.000 mm long.

Code-No.	Type	A	B	C	D	E	F	G	H	*	J	m [kg/m]	I [mm⁴]	L_{max}
40310	**40**	40	29	22	11	10,1	14	12,5	4,7	M 5	-	1,40	371	6.000
40320	**60**	60	48	30	18	10,1	14	12,5	5,6	M 6	-	2,16	154.487	6.000
40077	**80**	80	64	40	24	10,1	14	12,5	5,6	M 6	40	4,83	280.532	6.000

Guide body profile DL 120, 160, 200

Material Al Mg Si 0,5 F25 E6 EV1
(*) = tapped threads
N + M = refer to chapter 2.2 page 2-3



Code-No. Length in mm

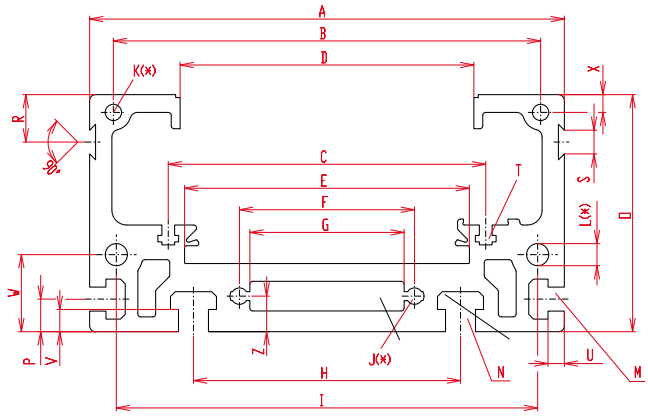
41101	2000

Sample ordering code: Guide body profile DL 160, 2.000 mm long

Code-No.	Type	A	B	C	D	E	F	G	H	I	J	K	L	M for	N for	P	R	S	T	U	V	W	X	Z	m [kg/m]	I [mm⁴]	W [mm³]	$L_{max.}$
41110	**120**	120	109	86	76	72	48	42	78	106	5,6	4,7	5,6	M5	M6	10	16	8	60	5,5	5,5	21	4,5	8,5	5,61	669.493	17.185	6.000
41101	**160**	160	144	114	99	96	59	52	90	142	5,6	5,6	7,5	M6	M8	11	16	8	80	5,5	7,5	26	6	12	10,34	2.228.225	42.597	6.000
41250	**200**	200	128	137	119	111	91	80	140	162	9,4	7,5	9,4	M8	M10	15	12	8	100	7,5	9,4	28	9	13	19,55	6.387.482	94.929	6.000

Guide body profile DS 120, 160, 200

Material Al Mg Si 0,5 F25 E6 EV1
(*) = tapped threads
N + M + T = refer to chapter 2.2 page 2-3



Type	I [mm4]	W [mm3]
120	561.046	13.863
160	2.132.874	40.751
200	2.234.346	58.956

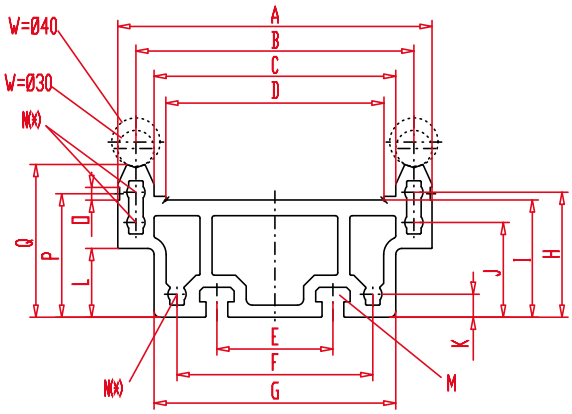
Code-No. Length in mm

41106	2000

Sample ordering code: Guide body profile DS 160, 2.000 mm long

Code-No.	Type	A	B	C	D	E	F	G	H	I	J	K	L	M für	N für	O	P	R	S	T für	U	V	W	X	Z	kg/m	$L_{max.}$
41115	**120**	120	109	81,5	76	72	48	42	78	106	5,5	4,65	5,5	M5	M6	60	10	16	8	M3	5,5	5,5	21	4,5	8,5	5,06	6.000
41106	**160**	160	144	107	99	96	59	52	90	142	5,5	5,5	7,5	M6	M8	80	11	16	8	M4	5,5	7,5	26	6	12	10,52	6.000
41255	**200**	200	178	133	119	111	91	80	140	162	9,4	7,5	9,4	M8	M10	100	15	12	8	M6	7,5	10	28	9	13	19,55	6.000

Guide body profile ALL 203, 204



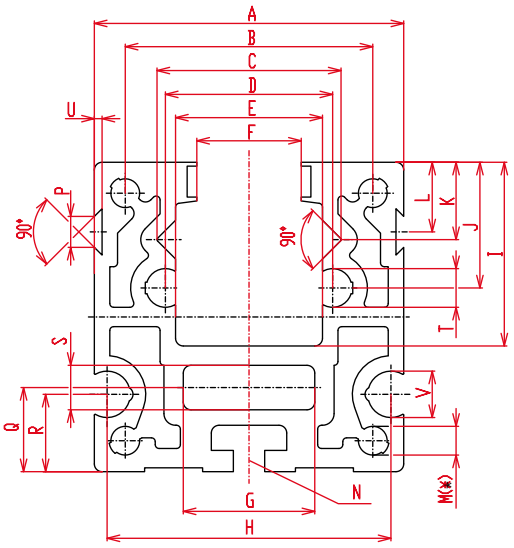
Code-No. Length in mm

43000	2000

Sample ordering code: Guide body profile ALL 20x, 2.000 mm long

Code-No.	Type	A	B	C	D	E	F	G	H	I	J	K	L	M for	N	O	P	Q	W	kg/m	I [mm⁴]	W [mm³]	L_{max}
43000	**ALL**	260	230	200	180,5	96	162	200	103,43	97	78,4	19	56,9	M16	M16	10,5	102,15	126,4	30/40	28,0	14.260.860	209.878	7.600

Guide body profile QL 60, 80, 100



Material Al Mg Si 0,5 F25 6E EV1
(*) = tapped threads
N = refer to chapter 2.2 page 2-3

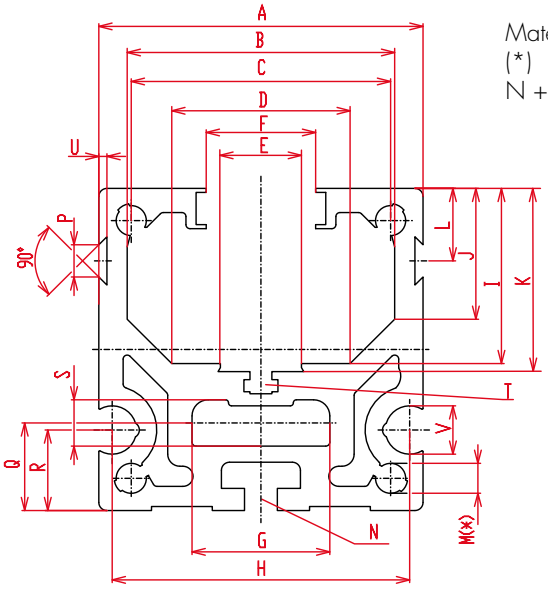
Code-No.	Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N for	O	P	Q	R	S	T	U	V	m [kg/m]	I [mm⁴]	W [mm³]	$L_{max.}$
41210	**60**	60	48	36,9	28,5	25,5	22	32	54,7	36	24	16	24	5,6	M5	M5	8	15,7	15	7,5	6	2	10	3,29	430.063	13.039	6.000
41200	**80**	80	64	47,6	43,3	38	27	34	73,4	47,5	32,5	20	18	7,5	M6	M6	8	21,8	20	11,5	10	2	12	7,05	1.658.518	38.127	6.000
41260	**100**	100	80	60	55,3	50	46	54	92	58,5	39	24	21	9,4	M10	M10	8	28	25	13	10	2	16	10,08	3.489.779	41.627	6.000

Code-No. Length in mm

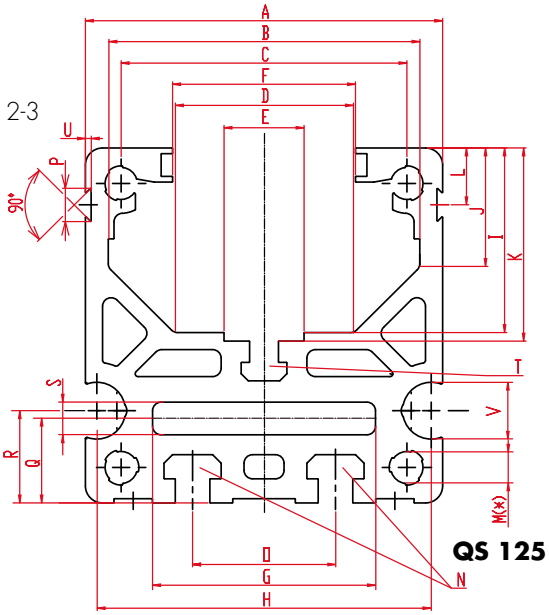
41200	2000

Sample ordering code: Guide body profile QL 80, 2.000 mm long.

Guide body profile QS 60, 80, 100, QS 125



Material Al Mg Si 0,5 F25 6E EV1
(*) = tapped threads
N + T = refer to chapter 2.2 page 2-3



QS 125

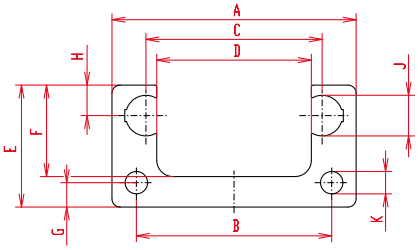
Code-No.	Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N for	O	P	Q	R	S	T	U	V	m [kg/m]	I [mm⁴]	W [mm³]	$L_{max.}$
41214	**60**	60	49	48	27	15	22	27	56	33	22	35	16	5,5	M5	-	8	15	15	9,5	M4	2	10	3,76	437.969	12.251	6.000
41206	**80**	80	66	64	44	20	27	34	73,4	43,5	32,5	45,5	18	7,5	M6	-	8	20	20	11,5	M5	2	12	6,82	1.427.891	30.308	6.000
41262	**100**	100	80	80	52	23	44	54	92	52,5	38,5	54,5	21	9,4	M10	-	8	29	25	17	M6	2	16	10,55	3.186.639	53.735	6.000
41272	**125**	125	109	100	63	28	64	78	117	65	42	68	20	11,3	M10	50	8	29,8	32,5	11,5	M8	2	20	16,08	7.492.013	98.333	6.000

Code-No. Length in mm

41214	2000

Sample ordering code: Guide body profile QS 60, 2.000 mm long.

Guide body profile UL 40, 60, 80



Material Al Mg Si 0,5 F25 6E EV1
(*) = tapped threads
N = refer to chapter 2.2 page 2-3

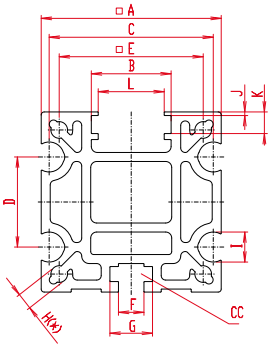
Code-No. Length in mm

41340	2000

Sample ordering code: Guide body profile UL 40, 2.000 mm long.

Code-No.	Type	A	B	C	D	E	F	G	H	J	∅ K	m [kg/m]	Ix [mm⁴]	Iy [mm⁴]	Wx [mm³]	Wy [mm³]	$L_{max.}$
41340	**40**	40	29	28,5	25,5	22	15,25	5,5	5	6	4,65	1,14	15.895	85.574	1.103	4.279	6.000
41360	**60**	60	48	43,3	38	30	22,5	6	7,5	10	5,5	2,08	56.053	362.776	2.811	12.093	6.000
41380	**80**	80	59	55,3	50,4	40	28,5	10,5	9	10	7,45	4,20	203.279	1.215.816	7.879	30.395	6.000

Guide body profile ML 60, 80, 100



Material Al Mg Si 0,5 F25 6E EV1
(*) = tapped threads
CC = refer to chapter 2.2 page 2-3

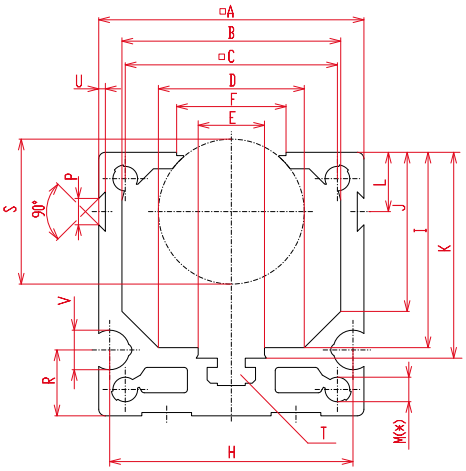
Code-No. Length in mm

40058	2000

Sample ordering code: Guide body profile ML 60, 2.000 mm long.

Code-No.	Type	□ A	B	C	D	□ E	F	G	H	I	J	K	L	m [kg/m]	Ix [mm⁴]	Iy [mm⁴]	Wx [mm³]	Wy [mm³]	$L_{max.}$
40058	**60**	60	26,6	54,7	30	48	8,5	14,2	5,55	10	1,2	7,2	22	3,53	483.425	502.399	15.313	16.777	6.000
41230	**80(S)**	80	32	73,4	40	64	10,1	14,2	7,45	12	1,0	9,0	27	7,23	1.749.353	1.802.191	42.002	45.055	6.000
41235	**100**	100	52	92	50	80	12,0	19	9,4	16	1,0	9,0	44	11,0	3.940.786	4.348.857	74.753	86.977	6.000

Guide body profile QST/K 60, 80, 100



Material Al Mg Si 0,5 F25 6E EV1
(*) = tapped threads
N + T = refer to chapter 2.2 page 2-3

Code-No.	Type	□ A	B	□ C	D	E	F	H	I	J	K	L	M	P	R	S	T for	V	m [kg/m]	Ix [mm⁴]	Iy [mm⁴]	Wx [mm³]	Wy [mm³]	$L_{max.}$
41217	**60**	60	49,5	48	36	15	25	54,7	47,3	36	49,3	16	5,6	8	15	34	M4	10	2,77	420.662	488.512	11.551	16.284	6.000
41208	**80**	80	66	64	44	20	33	73,4	59,3	48,3	62,5	18	7,5	8	20	44	M5	12	5,47	1.400.650	1.664.943	28.442	41.623	6.000
41268	**100**	100	80	80	53	23	40	92	79,5	60	81,5	21	9,4	8	25	58	M6	16	8,47	3.279.577	4.186.220	53.607	83.724	6.000

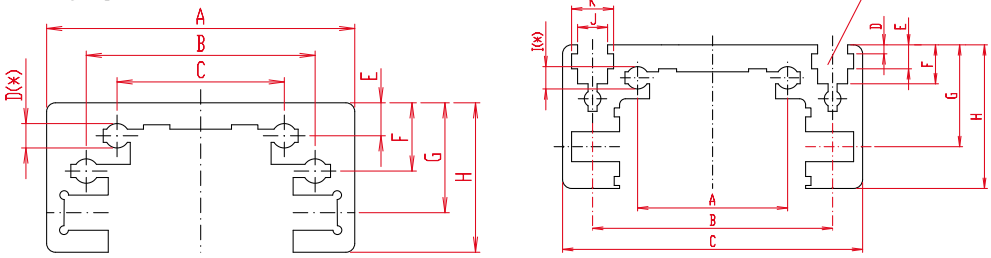
Code-No. Length in mm

41208	2000

Sample ordering code: Guide body profile QST/K 80, 2.000 mm long.

System profiles

Carriage profile EG 40, 60



Material Al Mg Si 0,5 F25 E6 EV1
(*) = tapped threads
00 = refer to chapter 2.2 page 2-3

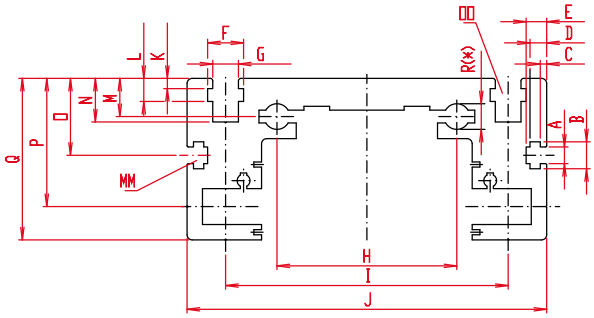
Code-No.	Type	A	B	C	D	E	F	G	H	I	*	J	K	m [kg/m]	I [mm⁴]	W [mm³]	$L_{max.}$
40064	**40**	70	52	38	-	7,5	15,5	25	34	5,6	M6	-	-	2,64	103.977	4.767	3.000
40054	**60**	50	80	100	3	8	13	34	48	7,5	M8	10,1	14,2	4,68	374.930	12.846	3.000

Code-No. Length in mm

40064	2000

Ordering sample: Carriage profile EG 40, 2.000 mm long.

Carriage profile EG 80



Material Al Mg Si 0,5 F25 E6 EV1
(*) = tapped threads
00 + MM = refer to chapter 2.2 page 2-3

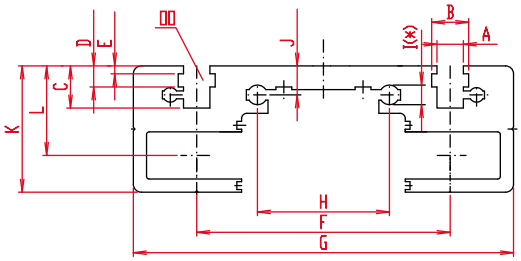
Code-No.	Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	*	m [kg/m]	I [mm⁴]	W [mm³]	$L_{max.}$
40074	**80**	6,5	10,5	2,5	6,5	8	14,2	10,1	70	110	140	4	9	15	17	30	50	63	9,4	M10	9,44	1.142.725	28.847	3.000

Code-No. Length in mm

40074	2000

Ordering sample: Carriage profile EG 80, 2.000 mm long.

Carriage profile EL 30, 40, 60, 60S, ML 60, 60S



Material Al Mg Si 0,5 F25 E6 EV1
(*) = tapped threads
DD = refer to chapter 2.2 page 2-3

Code-No.	Type	A	B	C	D	E	F	G	H	I	*	J	K	L	m [kg/m]	I [mm⁴]	W [mm³]	$L_{max.}$
40091	**30**	6,2	10,2	6	4,7	1,5	56	70	29	3,7	M 4	5,2	25,5	19,4	1,78	30.681	1.834	3.000
40061	**40**	10,1	14,2	13	8	3	66	100	38	5,6	M 6	7,5	34,5	26,3	3,49	130.426	6.122	3.000
40051	**60**	10,1	14,2	16	8	3	96	144	50	7,5	M 8	11	48	34	7,61	573.694	18.922	3.000
40056	**60S**	10,1	15,5	13,5	18	7,5	108	170	50	7,5	M 8	15	52	38	8,51	732.261	21.675	3.000

Code-No. Length in mm

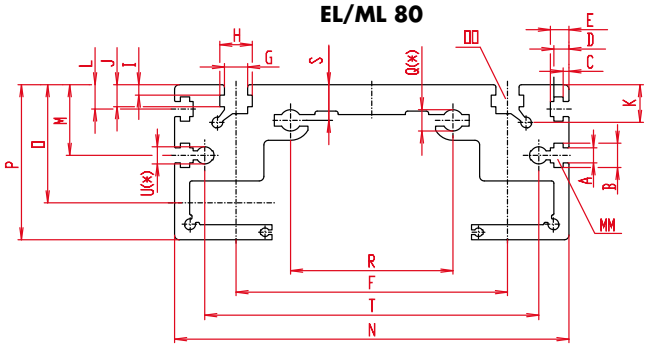
40061	2000

Ordering sample: Carriage profile EL 60, 2.000 mm long.

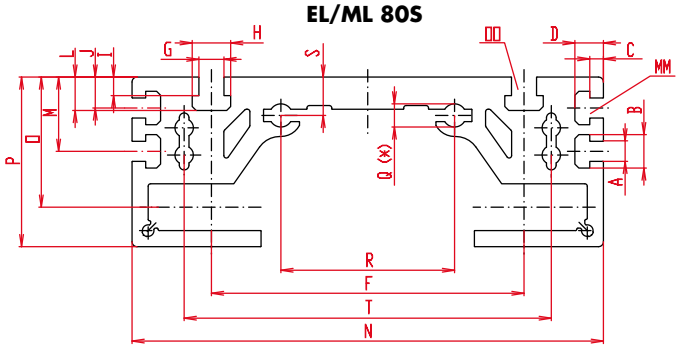
Carriage profile EL/ML 80, 80S

Material Al Mg Si 0,5 F25 E6 EV1
(*) = tapped threads
00 + MM = refer to chapter 2.2 page 2-3

EL/ML 80



EL/ML 80S



Code-No.	Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	m [kg/m]	I [mm⁴]	W [mm³]	$L_{max.}$
40071	**80**	6,5	10,5	2,5	6,5	8	117	10,1	14	4,5	9,5	12,5	10,5	30,5	170	51	67	9,4	70	15,5	144	7,5	12,47	1.827.170	44.600	3.000
40069	**80S**	8,1	13,5	5,5	11,5	-	126	10,1	15,5	7,5	12,5	-	13,5	30	190	52,5	68,5	9,4	70	15,5	148	-	13,95	2.193.885	51.128	3.000

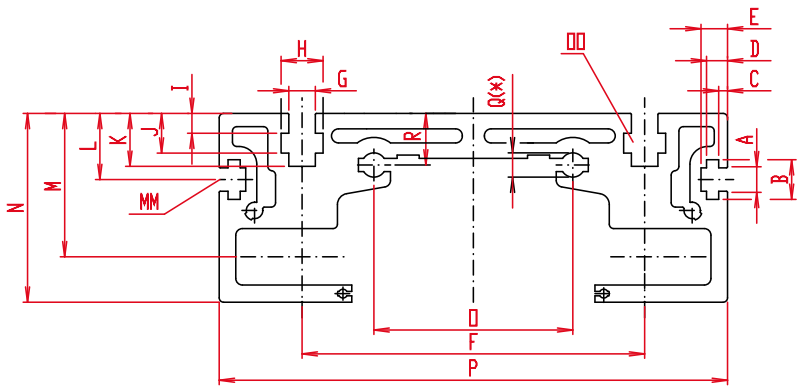
Code-No. Length in mm

40071	2000

Ordering sample: Carriage profile EL 80, 2.000 mm long.

Carriage profile EL 100, 125, ML 100

Material Al Mg Si 0,5 F25 E6 EV1
(*) = tapped threads
00 + MM = refer to chapter 2.2 page 2-3



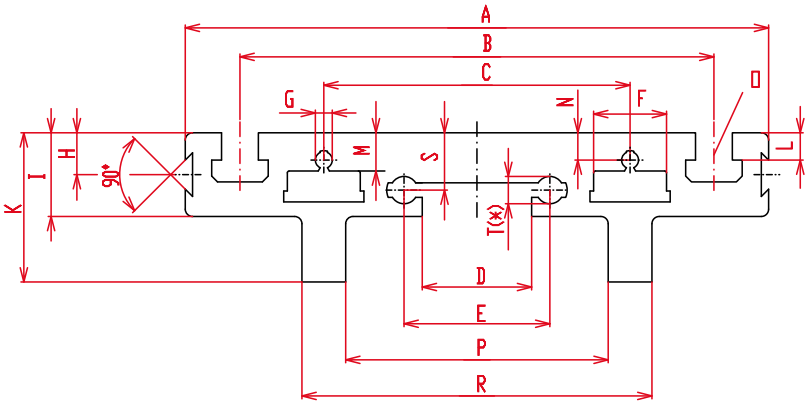
Code-No.	Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	*	R	m [kg/m]	I [mm⁴]	W [mm³]	$L_{max.}$
40081	**100**	10,3	17,2	4	9,5	12	155	12,2	19,2	9	18	24	30	65	85,5	90	230	11,3	M12	23,4	19,73	4.578.433	88.689	2.000
40101	**125**	12,2	19	9	17	17	200	14,4	23	10	18,5	26,5	30,4	79	102	110	295	11,3	M12	28	28,05	$1,061 \times 10^8$	149.289	2.000

Code-No. Length in mm

40081	2000

Ordering sample: Carriage profile EL 100, 2.000 mm long.

Carriage profile DL 120, 160, 200



Material Al Mg Si 0,5 F25 E6 EV1
(*) = tapped threads
○ = refer to chapter 2.2 page 2-3

Code-No.	Type	A	B	C	D	E	F	G	H	I	K	L	M	N	O für	P	R	S	T	m [kg/m]	I [mm⁴]	W [mm³]	$L_{max.}$
41111	**120**	120	96	64	22,5	30	14,8	5,5	8,5	17	29	5,5	6,1	9,4	M6	55	73	11	5,6	4,15	82.278	4.342	3.000
41104	**160**	160	130	84	30	40	20	4,7	11,5	23	41	7,5	7,5	10,5	M8	72	96	15,8	7,5	7,99	304.666	11.212	3.000
41251	**200**	200	160	101	36	46	25	7,5	8,5	26	47,5	8,5	8,5	11,5	M10	87,5	114,5	16	9,4	10,99	544.944	17.317	3.000

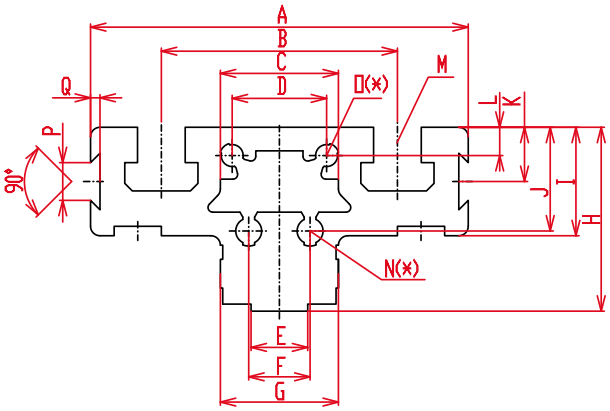
Code-No. Length in mm

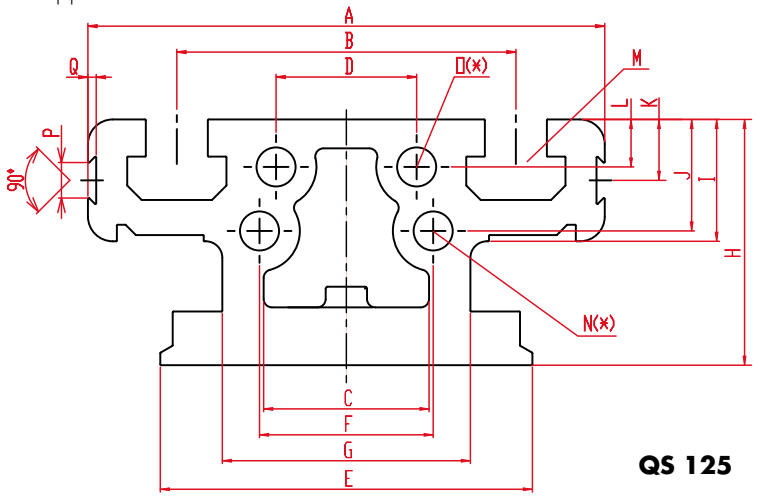
41104	2000

Sample ordering code: Carriage profile DL 160, 2.000 mm long.

Carriage profile QL / QS 60, 80, 100, QS 125

Material Al Mg Si 0,5 F25 E6 EV1
M = refer to chapter 2.2 page 2-3
(*) = tapped threads





QS 125

Code-No.	Type	A	B	C	D	E	F	G	H	I	J	K	L	M for	N	O	P	Q	m [kg/m]	I [mm⁴]	W [mm³]	$L_{max.}$
41211	**60**	60	36	16,5	10	8	10	19	28	17	16	8,56	6	M6	4,7	4,7	8	2	2,05	45.621	2.867	3.000
41201	**80**	80	50	25	20	12	13	25	39	23	22	11,5	6	M8	5,5	4,7	8	2	3,85	159.866	7.170	3.000
41261	**100**	100	66	39	26	14	26	39	41	26	22	13	10	M10	7,5	7,5	8	2	5,49	265.957	11.806	3.000
41271	**125**	125	82	40	34	90	42	60	59,5	29,5	27	14,75	11,5	M12	9,5	9,5	8,57	2	10,025	1.341.038	44.317	6.000

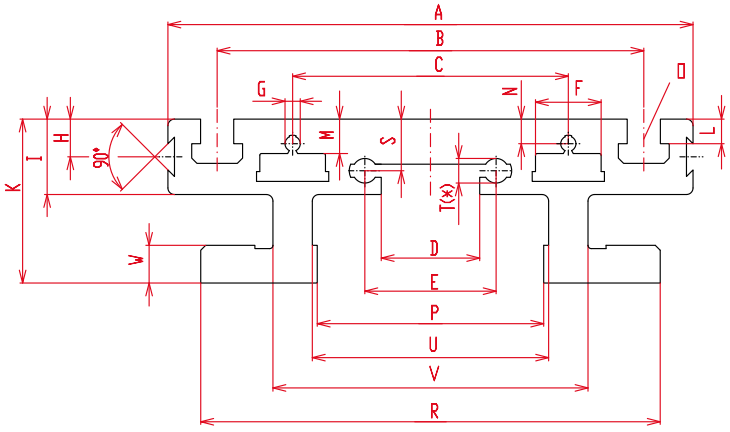
Code-No. Length in mm

41201	2000

Sample ordering for: Carriage profile QL 80, 2000 long

Carriage profile DS 120, 160, 200

Material Al Mg Si 0,5 F25 E6 EV1
(*) = tapped threads
○ = refer to chapter 2.2 page 2-3



Type	Ix [mm4]	Iy [mm4]	Wx [mm3]	Wy [mm3]
120	323.369	2.572.394	13.885	42.873
160	890.177	8.981.338	29.686	112.267
200	2.328.783	22.253.783	64.324	222.538

Code-No. Length in mm

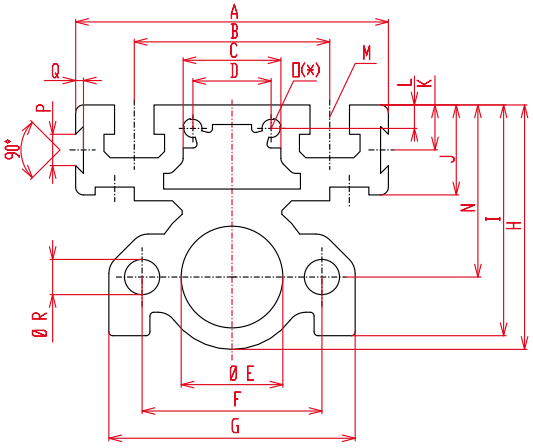
41107	2000

Sample ordering code: Carriage profile DL 160, 2.000 mm long.

Code-No.	Type	A	B	C	D	E	F	G	H	I	K	L	M	N	O für	P	R	S	T	U	V	W	m [kg/m]	$L_{max.}$
41116	**120**	120	96	64	22,5	30	14,8	5,6	8,5	17	39,5	5,5	9,3	6,1	M 6	51	108	11	5,6	55	73	8,5	5,6	3.000
41107	**160**	160	130	84	30	40	20	4,7	11,5	23	41	7,5	7,5	10,5	M 8	69	140	15,8	7,5	72	96	11,5	10,0	3.000
41256	**200**	200	160	101	36	46	25	7,5	13	26	62,7	8,5	7	8,5	M10	-	185	16	9,4	88,5	114,5	15,2	15,1	3.000

Carriage profile QST/K 60, 80, 100

Material Al Mg Si 0,5 F25 E6 EV1
(*) = tapped threads
M = refer to chapter 2.2 page 2-3



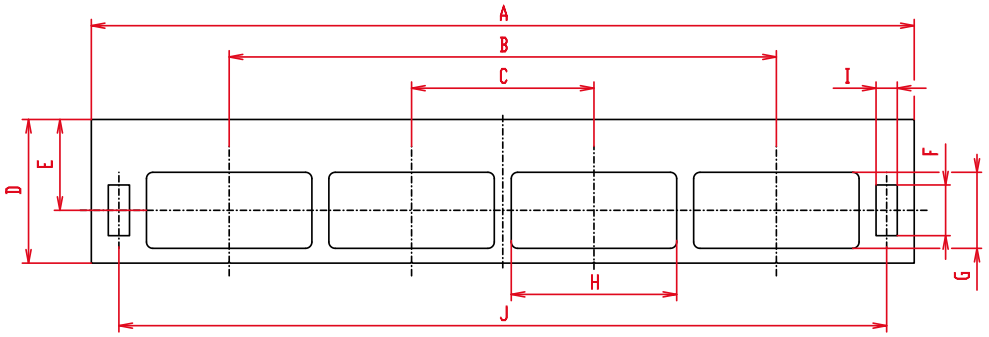
Code-No. Length in mm

41207	2000

Sample ordering for: Carriage profile QS 80, 2000 long

Code-No.	Type	A	B	C	D	Ø E	F	G	H	I	J	K	L	M for	N	O	P	Q	Ø R	m [kg/m]	Ix [mm⁴]	Iy [mm⁴]	Wx [mm³]	Wy [mm³]	$L_{max.}$
41216	**60**	60	36	16,5	10	20	36	47	49	45,7	17	8,5	6	M6	34	4,7	8	2	6,5	3,34	275.807	302.516	10.587	10.084	3.000
41207	**80**	80	50	35	20	26	46	63	62,5	59	23	11,5	6	M8	44	4,7	8	2	9	5,47	1.400.650	1.664.943	28.442	41.624	3.000
41267	**100**	100	66	43	26	37	60	76	81	76,5	26	13	10	M10	54	7,5	8	2	10,5	8,53	2.159.263	2.506.325	49.951	50.126	3.000

Rollerpack profile DL / QL / UL



Code-No.	Type	A	B	C	D	E	F	G	H	I	J	m [kg/m]	Ix [mm⁴]	Iy [mm⁴]	Wx [mm³]	Wy [mm³]	$L_{max.}$
40340	**DL120/QL60/UL40**	146	93	31	26	17	9	13	28	4,5	133,5	6,1	151.694	4.528.611	670.695	62.035	3.000
40330	**DL160/QL80/UL60**	194	129	43	34	21,5	12	18	39	5	181	10,2	670.695	13.234.520	22.513	136.439	3.000
41253	**DL200/QL100/UL80**	260	177	59	45,5	28,5	12	22	53	5	245	18,23	1.505.075	42.178.112	58.128	324.447	3.000

Code-No. Length in mm

40340	2000

Sample ordering for: Rollerpack profile DL 120, 2000 long

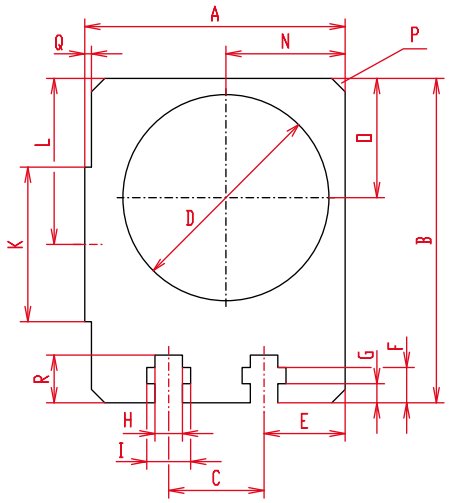
System profiles

Deflection- and bearing-block profile

Dimensions (mm)

Deflection profile ELZ 40, 60(S), 80(S), 100, 125

Material Al Mg Si 0,5 F25
M = refer to chapter 2.2 page 2-3



Code-No. Length in mm

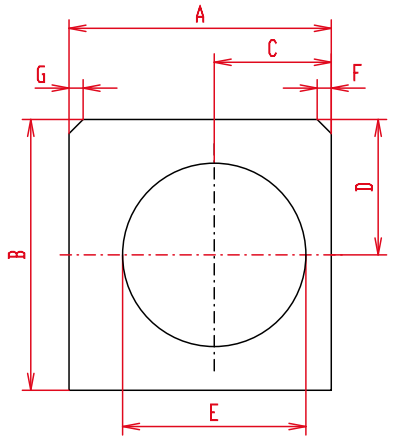
40066	2000

Sample ordering for: Deflection profile ELZ 40, 2000 long

Code-No.	Type	A	B	C	D	E	F	G	H	I	K	L	N	O	P	Q	R	m [kg/m]	I [mm⁴]	W [mm³]	$L_{max.}$
40097	**30**	38	45	16	26	10	6,4	3,6	5,6	8,1	24	23	16	16	1,5	1	7,4	2,85	197.982	8.252	6000
40066	**40**	50,5	58,5	24	35	12,5	11	5	8	13	30	29	20,5	20,5	2	1	-	4,468	521.906	16.157	6000
41061	**60(S)**	60,5	82,5	30	46	15	13,5	7,5	10,1	18	40	41	26	27	3	1	-	7,937	1.759.465	34.207	6000
40076	**80(S)**	94,5	112,5	45	66	24,5	14,5	7,8	10,1	16	51	61	40	41	3,5	2	-	16,933	5.538.470	110.830	6000
40086	**100**	115,5	137,5	64	88	25	16,5	9,3	12	19	61	72	52	52	4	3	-	23,045	11.872.090	197.137	6000
41021	**125**	136,5	170	50	108	40	18,5	10	14,4	23	81	87	62,5	62,5	7	3,5	25	32,978	24.733.260	346.510	3000

Deflection profile ML / Q 60, 80, 100

Material Al Mg Si 0,5 F25
M = refer to chapter 2.2 page 2-3



Code-No. Length in mm

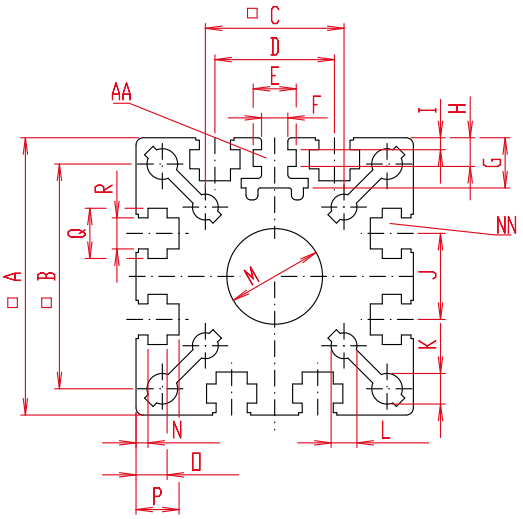
41213	2000

Sample ordering for: Deflection profile ML 60, 2000 long

Code-No.	Type	A	B	C	D	E	F	G	m [kg/m]	I [mm⁴]	W [mm³]	$L_{max.}$
41213	**60**	62	66	27,5	28,5	44	3x45°	-	6,942	1.097.179	36.162	6000
41205	**80**	93	96	41,5	48	65	5x45°	5x45°	15,078	5.376.080	112.493	6000
41265	**100**	113	113	51,5	50,9	87	6x45°	6x45°	18,328	10.389.310	202.481	6000

Bearing-block profile EL 30, 40, 60(S), 80(S), 100

Material Al Mg Si 0,5 F25
AA + NN = refer to chapter 2.2 page 2-3



Code-No. Length in mm

40095	2000

Sample ordering for: Bearing-block profile EL 30, 2000 long

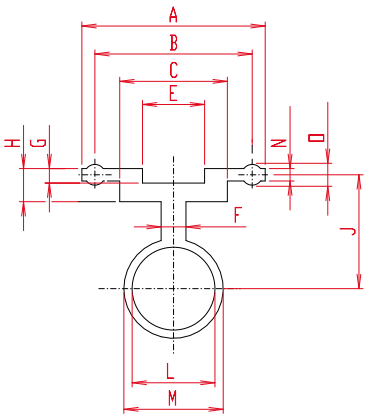
Code-No.	Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	m [kg/m]	I [mm⁴]	W [mm³]	$L_{max.}$
40095	**30**	42	35,0	23	-	10,2	6,2	6,5	5,2	2	13	4,2	4,2	16	2	5,2	6	10,2	6,2	2,87	164.341	7.557	3.000
40065	**40**	59	47,0	29	25	9	5,5	11	6,5	3	18	6,4	5,3	19,8	3	7	9,5	10,5	6,5	5,5	547.637	18.200	3.000
40055	**60(S)**	82	68,6	48	30	9	5,5	13,3	7,5	4	30	8,4	6,4	29,7	3	9	12	14	8,5	12,71	2.717.601	63.433	3.000
40075	**80(S)**	103	-	-	40	9	5,5	12,7	7	3,5	40	8,4	-	29,7	4	10	11,5	18	10,5	22,87	7.465.445	143.347	3.000
40085	**100**	131	112	-	50	13,1	8,1	17	7,7	3,7	50	10,5	-	45	8	16	18	19,5	12	34,49	18.320.000	275.673	3.000
40105	**125**	167	-	-	60	16,5	10,2	23	23	8,5	60	-	-	60	11	22	24	25	14	66,91	52.193.580	645.704	3.000

System profiles

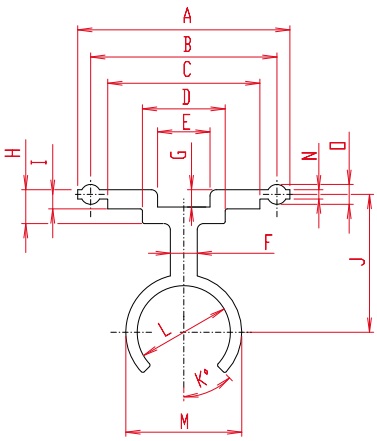
Lead-nut profile EL / EG 30, 40, 60(S), 80(S), 100, 125

Material Al Mg Si 0,5 F25

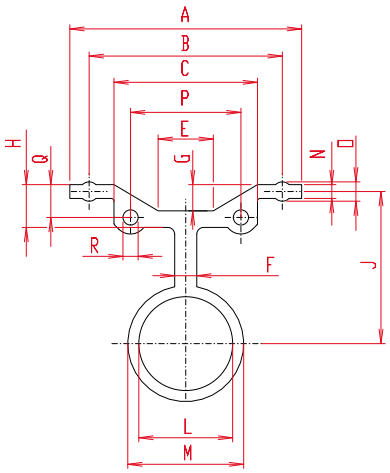
Size 40



Size 30, 100



Size 60,80(S), 125



Code-No. Length in mm

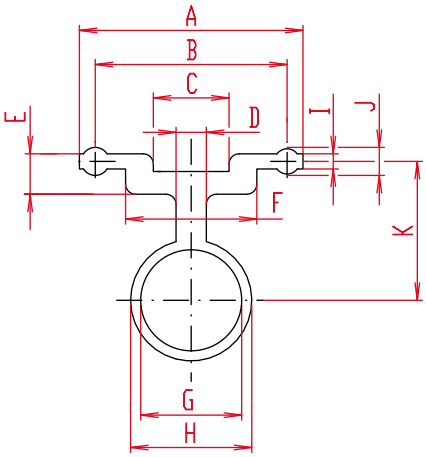
40092	2000

Sample ordering for: Lead-nut profile EL/EG 30, 2000 long

Code-No.	Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q [kg/m]	R [ø]	I [mm⁴]	W [mm³]	$L_{max.}$
40092	**30**	33,0	29	-	19	9	5	2,1	5,6	-	20,8	30°	11,5	14	1,6	2,5	-	-	-	10.991	56.718	3.000
40062	**40**	44,0	38	26	-	15	6	3,6	8	-	27,5	-	20	24	3	4,5	-	-	-	63.269	2.310	3.000
40052	**60(S)**	58,6	50	40	-	15	8	4,5	9	-	38,0	-	28	34	4	6,5	30	6,5	5,5	246.017	6.603	3.000
40072	**80(S)**	83,7	70	52	-	20	8	9,5	15,5	-	55,1	-	34	42	5	7	40	11,9	5,5	764.172	15.494	3.000
40082	**100**	102,5	90	73,5	40	25	13	8,4	16,25	9,25	66,5	45°	45	56	4,5	9,6	-	-	-	1.311.636	22.138	3.000
40102	**125**	122,0	110	96	72	38	14	8,0	18	10	80	-	49,6	65	5	9	-	-	-	2.056.434	33.626	3.000

Lead-nut profile DL / DS 120, 160, 200

Material Al Mg Si 0,5 F25



Code-No.	Type	A	B	C	D	E	F	G	H	I	J	K	m [kg/m]	I [mm⁴]	W [mm³]	$L_{max.}$
41113	**120**	36	30	15	9	7,3	22	28	34	3	4,5	29	1,38	20.319	183	3.000
41105	**160**	48	40	19	12	9,3	29	29	39	4	6,5	37,3	2,49	320.882	9.723	3.000
41254	**200**	54	46	23,3	14	12,3	34	45	56	4,5	7	47	3,91	368.185	13.149	3.000

Code-No. Length in mm

41113	2000

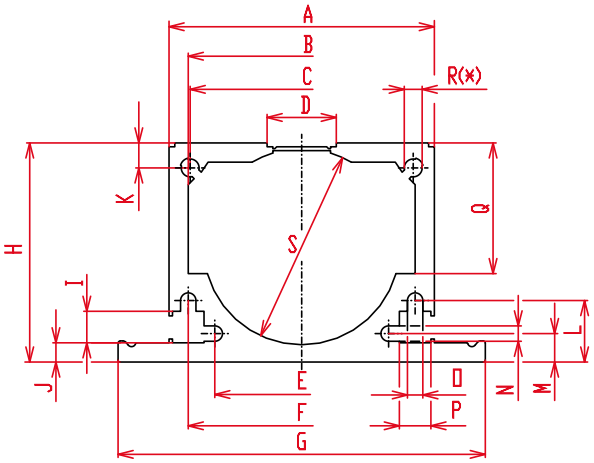
Sample ordering for: Lead-nut profile DL 120, 2000 long

System profiles

Internal profile DL / DS 120, 160, 200

Material Al Mg Si 0,5 F25 E6 EV1

(*) = tapped threads



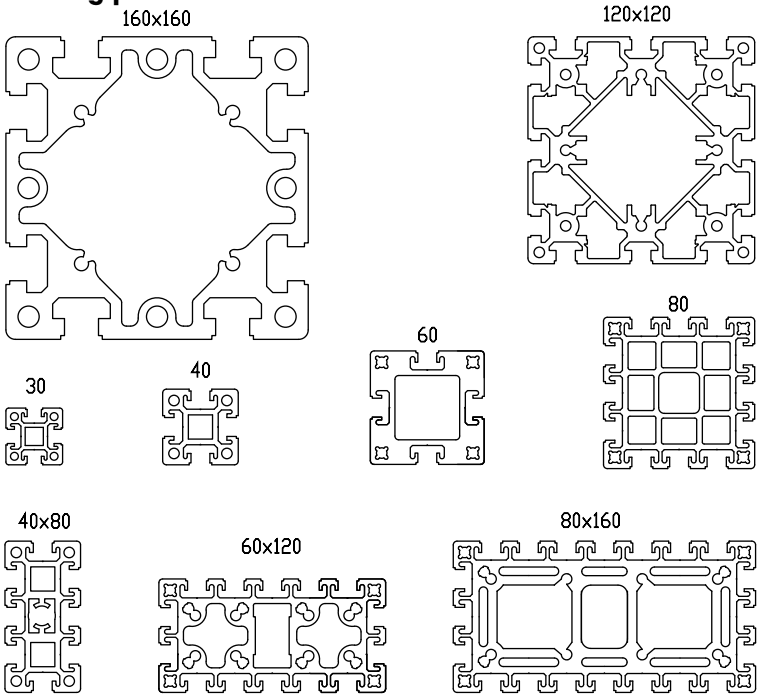
Code-No.	Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	m [kg/m]	I [mm⁴]	W [mm³]	$L_{max.}$
41112	**120**	52	48	44	14	32,2	44	71,5	43	8,2	2,3	4	13,3	4,7	4	4	8,2	24,7	4,7	39	1,52	140.731	5.260	6.000
41103	**160**	69	59	58	18	45,2	59	95,5	57	8,3	5	6,5	16	7,4	4	4	8,3	34	4,7	51	3,73	580.441	16.868	6.000
41252	**200**	83	78	-	23	55,2	69	110,5	74	8,2	5	-	16	6,5	4	4	8,2	34	-	60	3,48	617.989	12.771	6.000

Code-No. Length in mm

41103	2000

Sample ordering code: Internal profile DL 160, 2.000 mm long.

Mounting profiles



Profiles for assembling complete machine frames.
Frames and assemblies to customer's specification, made from profiles, can be supplied on request.

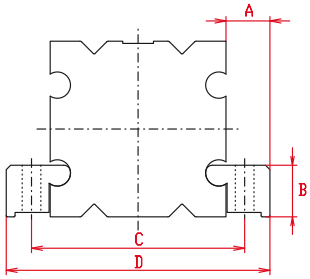
Code-No.	Type	Mass [kg/m]
05030	**30**	0,917
05040	**40**	1,780
05060	**60**	3,880
05048	**40 x 80**	3,340
05080	**80**	5,817
05061	**60 x 120**	7,500
05062	**120 x 120**	11,500
05081	**80 x 160**	12,096
05082	**160 x 160**	21,955

Code-No. Length in mm

05030	2000

Sample ordering code: Mounting profile Type 30, 2.000 mm long.

Mounting profiles

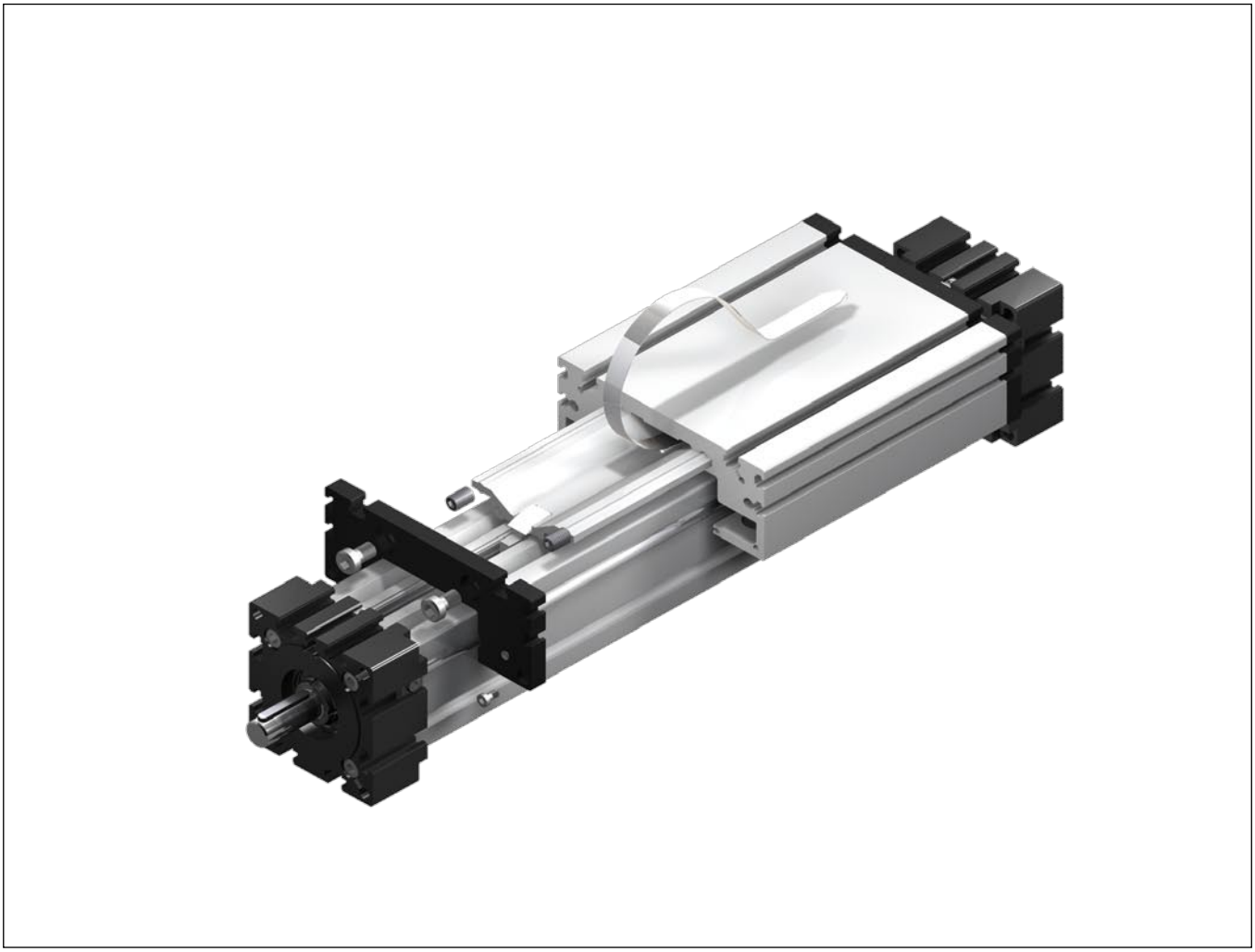


Code-Nr.	Type	A	B	C	D	m [kg/m]	$L_{max.}$
40098	**30**	12	10	41	54	0,302	3.000
40068	**40**	16	13	54	72	0,53	3.000
40059	**60**	18	18	77	96	0,93	3.000
40079	**80**	20	23,5	97	120	1,37	3.000
40088	**100**	22	30,5	120	144	2,07	3.000
40108	**125**	27,5	40	149	180	3,39	3.000

Code-No. Length in mm

40059	2000

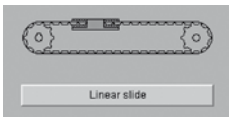
Sample ordering code: Mounting profile Type 60, 2.000 mm long.

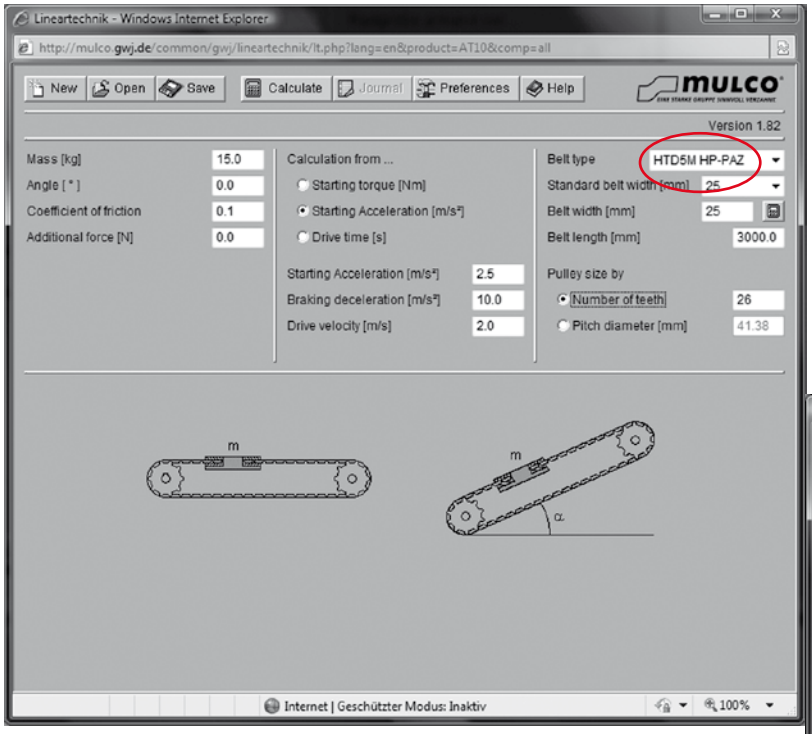


Specifications
Service manuals

Specifications

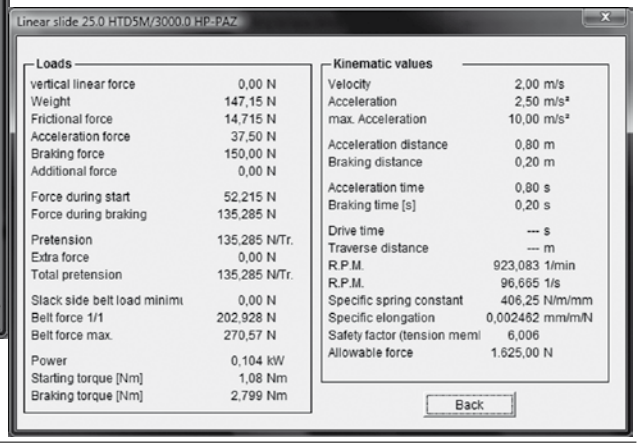
Calculation of max. acceleration (horizontal)



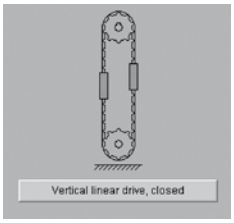


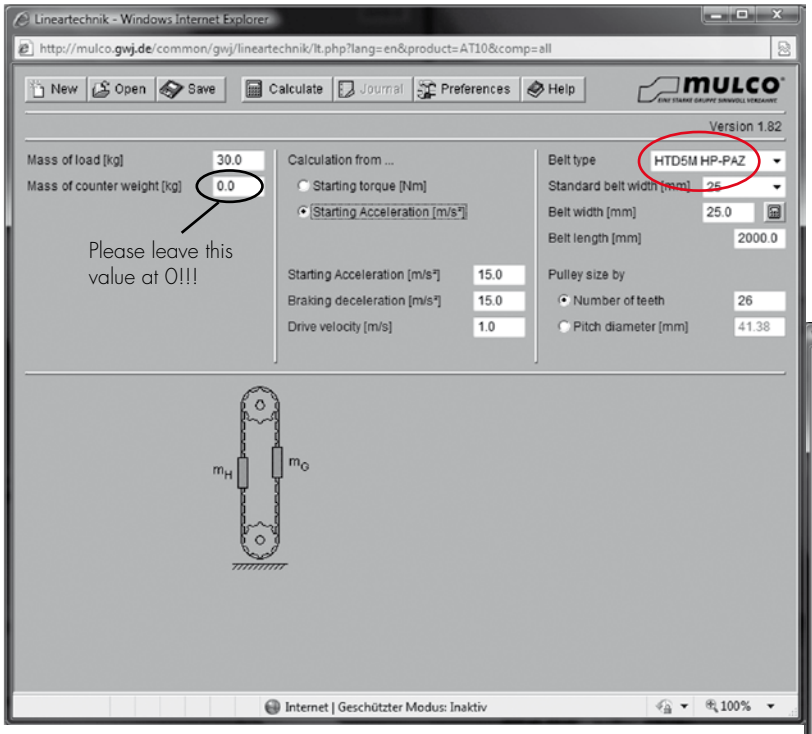
To calculate your horizontal load and kinematic data, please use the timing belt calculation of Mulco. You can find these at:
http://mulco.gwj.de/en/index.htm
After a free registration you get to the shown on the left side.
When selecting the type of belt, please ensure that you have chosen a HTD belt xx HP-PAZ (see left ellipse).

After entering your parameters can be obtained from a click on „calculate" the result window (see below) with your values.



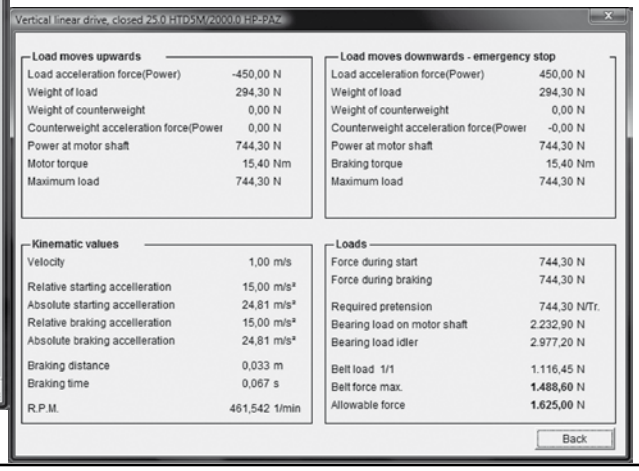
Calculation of max. acceleration (vertical)





To calculate your vertical load and kinematic data, please use the timing belt calculation of Mulco.

The course of the calculation is the same as described above.
On the selection page where you can choose the type of load, select the option „Vertical linear drive, closed".
The difference is that this is taken into account the acceleration due to gravity of 9.81 m/s².



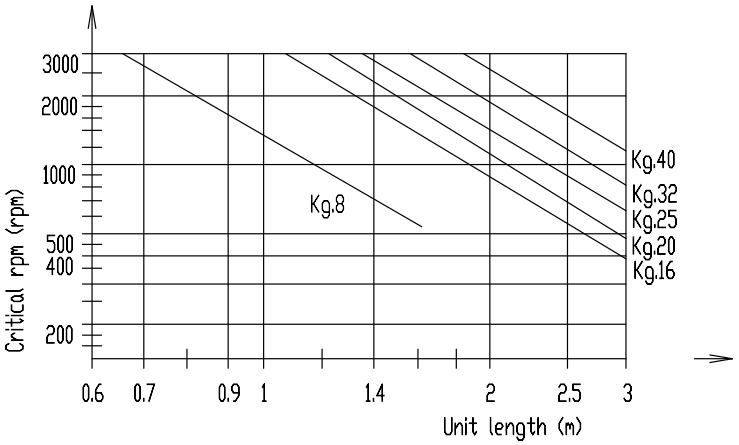
Specifications

Weights

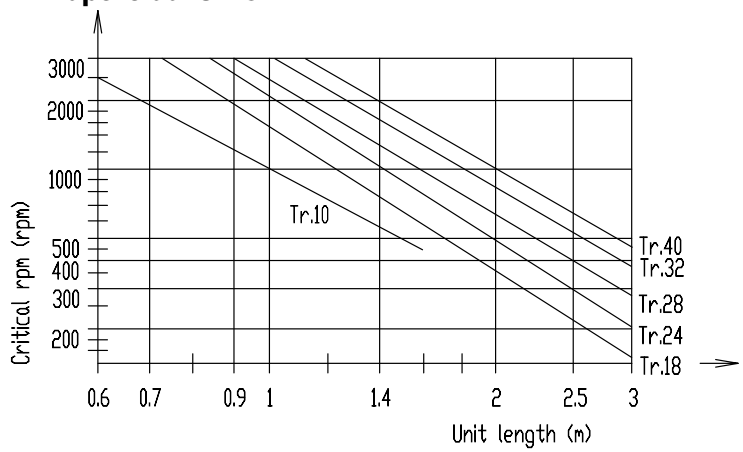
Sizes	Guide body profile	Internal profile	guide rod	Belt	per pulley	Toothed rack	Standard carriage	Carriage profile	Coupling
30	1,08 kg/m	-	0,15 kg/m	0,037 kg/m	0,06 kg	-	0,176 kg	1,78 kg/m	0,007 kg
40	1,92 kg/m	-	0,22 kg/m	0,074 kg/m	0,14 kg	0,70 kg/m	0,520 kg	3,42 kg/m	0,010 kg
60	3,86 kg/m	-	0,61 kg/m	0,123 kg/m	0,39 kg	0,81 kg/m	1,565 kg	7,66 kg/m	0,040 kg
60S	3,86 kg/m	-	0,61 kg/m	0,123 kg/m	0,39 kg	0,81 kg/m	2,420 kg	8,60 kg/m	0,040 kg
80	7,41 kg/m	-	0,88 kg/m	0,256 kg/m	1,04 kg	1,13 kg/m	2,644 kg	12,96 kg/m	0,085 kg
80S	7,41 kg/m	-	0,88 kg/m	0,256 kg/m	1,04 kg	1,13 kg/m	3,520 kg	13,80 kg/m	0,085 kg
100	11,1 kg/m	-	1,58 kg/m	0,355 kg/m	0,81 kg	2,75 kg/m	6,550 kg	19,40 kg/m	0,200 kg
125	15,91 kg/m	-	2,45 kg/m	0,480 kg/m	1,54 kg	-	12,100 kg	26,63 kg/m	0,395 kg
DL 120	5,50 kg/m	1,52 kg/m	0,22 kg/m	0,123 kg/m	0,39 kg	-	1,100 kg	4,19 kg/m	0,040 kg
DL 160	10,33 kg/m	2,66 kg/m	0,61 kg/m	0,256 kg/m	0,90 kg	-	3,280 kg	7,99 kg/m	0,085 kg
DL 200	16,08 kg/m	3,48 kg/m	0,61 kg/m	0,355 kg/m	0,688 kg	-	4,950 kg	11,05 kg/m	0,200 kg
DS 120	5,06 kg/m	1,52 kg/m	0,65 kg/m	0,123 kg/m	0,39 kg	-	0,920 kg	5,57 kg/m	
DS 160	10,52 kg/m	2,66 kg/m	2,21 kg/m	0,256 kg/m	0,86 kg	-	2,250 kg	10,01 kg/m	0,085 kg
DS 200	14,16 kg/m	3,48 kg/m	3,21 kg/m	0,355 kg/m	1,83 kg	-		15,01 kg/m	
QL 60	3,29 kg/m	-	0,22 kg/m	0,123 kg/m	0,39 kg	-	0,456 kg	2,05 kg/m	0,040 kg
QL 80	7,05 kg/m	-	0,61 kg/m	0,256 kg/m	0,90 kg	-	1,229 kg	3,85 kg/m	0,085 kg
QL 100	10,48 kg/m	-	0,61 kg/m	0,355 kg/m	1,83 kg	-	2,920 kg	5,49 kg/m	0,200 kg
QS 60	3,74 kg/m	-	1,45 kg/m	0,123 kg/m	0,39 kg	-	0,860 kg	2,05 kg/m	0,040 kg
QS 80	6,82 kg/m	-	2,21 kg/m	0,256 kg/m	0,90 kg	-	2,339 kg	3,85 kg/m	0,085 kg
QS 100	10,56 kg/m	-	3,21 kg/m	0,355 kg/m	1,83 kg	-	4,320 kg	5,49 kg/m	0,200 kg
QS 125	16,08 kg/m	-	4,47 kg/m	0,480 kg/m	0,60 kg	-	5,544 kg	10,03 kg/m	0,395 kg
ALL	27,45 kg/m	-							
QST/K 60	2,77 kg/m		1,45 kg/m					3,39 kg/m	
QST/K 80	5,47 kg/m		2,21 kg/m					5,88 kg/m	
QST/K 100	8,48 kg/m		3,21 kg/m					9,54 kg/m	

Diagram for maximum rpm of spindle units

ballscrew units

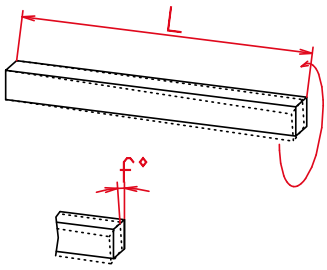


trapezoidal units



$n_{max.}$ = table value x 0,8

Calculation of torsional twist



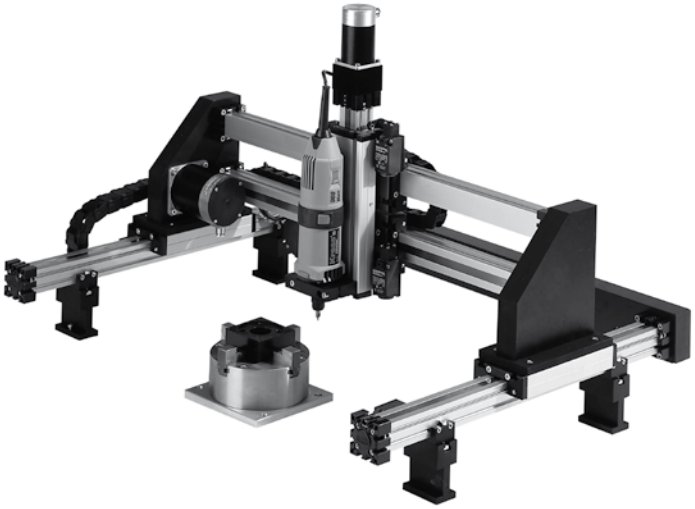
$$f° = L \times M_{t\,max.} \times I_p \qquad \left[\frac{° \times Nm \times m}{Nm \times m}\right]$$

f°= max. twisting angle	(°)
L = unit length	(m)
$M_{t\,max}$= max. torque	(Nm)
I_p= see table	(°/Nm²)

Aluminium profiles
Stiffness F25 (250 N/mm²)
Thickness of anodizing coat 20 to 30 µm

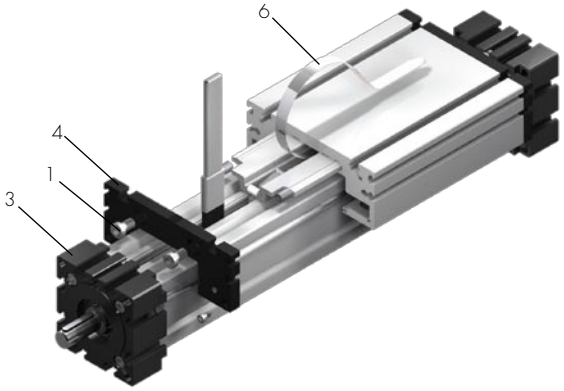
Size	I_p Faktor	Size	I_p Faktor	Size	I_p Faktor
EL 30	0,49000 °/Nm x m	DL 120	0,03282 °/Nm x m	QL 60	0,02995 °/Nm x m
EL 40	0,18000 °/Nm x m	DL 160	0,01286 °/Nm x m	QL 80	0,01257 °/Nm x m
EG 40	0,14000 °/Nm x m	DL 200	0,00787 °/Nm x m	QL 100	0,00705 °/Nm x m
EL 60	0,05765 °/Nm x m	DS 160	0,01336 °/Nm x m	QS 60	0,03797 °/Nm x m
EG 60	0,04387 °/Nm x m			QS 80	0,01563 °/Nm x m
EL 80	0,01463 °/Nm x m			QS 100	0,00644 °/Nm x m
EG 80	0,01511 °/Nm x m				
EL 100	0,00492 °/Nm x m				
EL 125	0,00616 °/Nm x m				

Applications in use



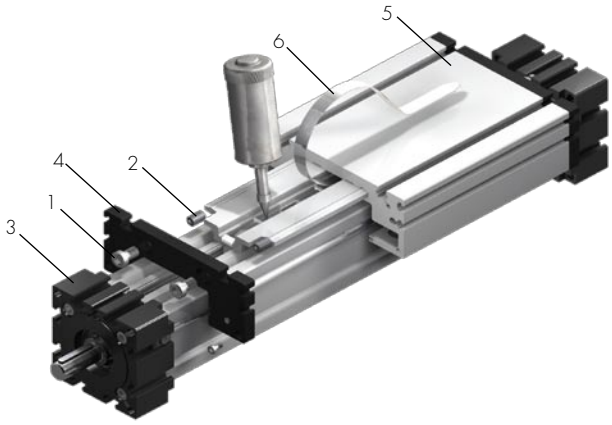
Service manual for EL units

Trapezoidal spindle, sizes EG / EL 30, 40



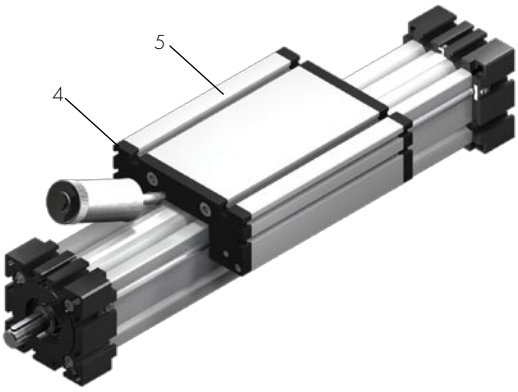
- Drive the carriage to one side
- Unscrew the cylindric screws (1) and push the wiper end plate (4) to the side.
- To reach spindle, unscrew set screw (3)
- Lift the coverband (6)
- Now grease spindle with a slim brush.

Ballscrew spindle, sizes EG / EL 30, 40



- Unscrew the cylindric screws (1) and push the wiper end plate (4) to the side.
- Unbend screws (2), push slide (5) to other side
- Unscrew the grub screws (3) and lift the coverband (6).
- Grease can be filled now with grease gun. For mass of greasing look at table below.

Spindle, sizes EG 60, 80 / EL 60, 80, 100, 125

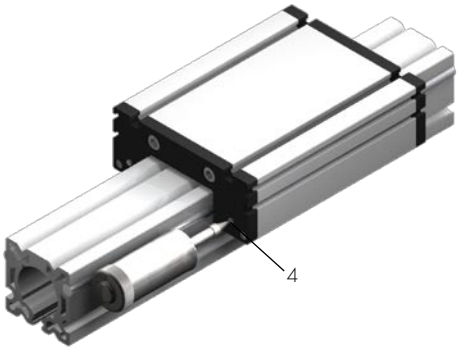


Look at wiper end plate (4) of carriage (5) for greaser nipple.
The ballscrew nut can be filled with grease gun.
For mass of greasing look at table below.

Spindle greasing every 500-1000 working hours.

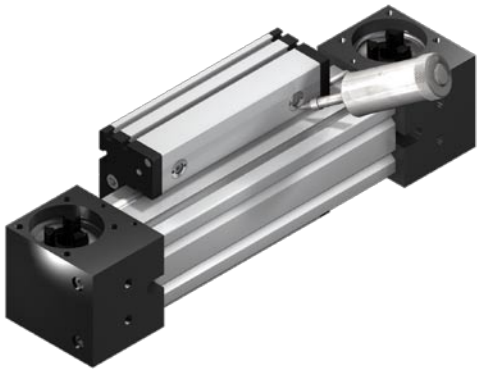
Type	Gewinde/Pitch	Nachfettung/Regreasing	Type	Gewinde/Pitch	Nachfettung/Regreasing
30	Kg 08 x 2,5	0,01 g	**660**	Kg 20 x 05	3,00 g
40	Kg 16 x 05	1,33 g	**80**	Kg 25 x 25	3,00 g
40	Kg 16 x 10	0,84 g	**80/100**	Kg 32 x 05	3,00 g
60	Kg 25 x 05	2,00 g	**80/100**	Kg 32 x 10	4,00 g
60	Kg 25 x 10	3,00 g	**100**	Kg 32 x 32	4,00 g
60	Kg 20 x 20	3,00 g	**125**	Kg 40 x 10	4,00 g

Guiding rods EL



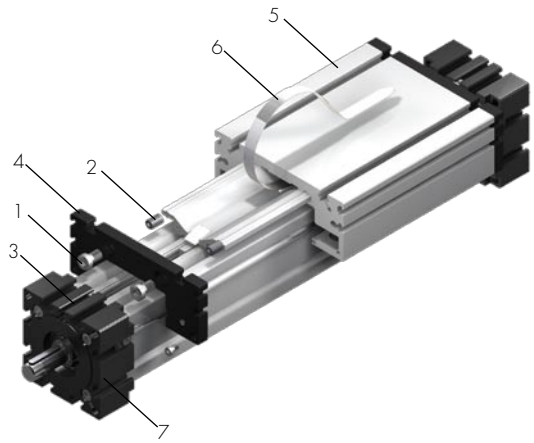
Rods will be greased by the strippers of carriage. There are 2 oil nipples in each wiper end plate (4), where the tanks for the strippers can be filled with an oil gun. Viscosity of oil: 200 mm²/s, T= 40° C. Interval of greasing depends on environmental conditions, min. once a month. Minimum stroke must be same than length of slide.

Rollers size EL 100, 125



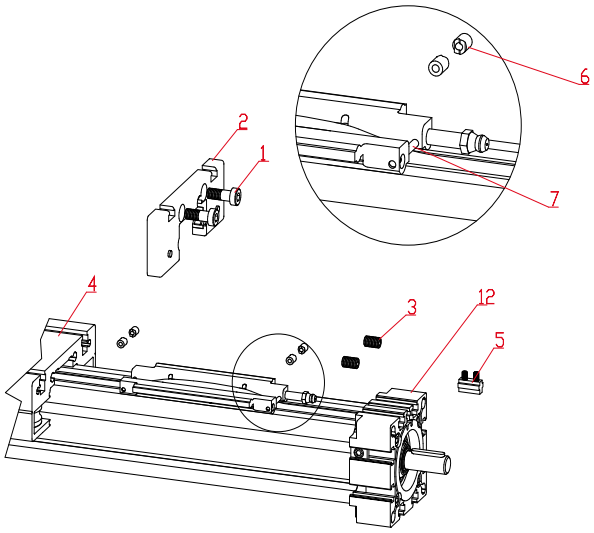
Rollers should be greased each 1.000 working hours or each 6 months with a grease gun. For greaser nipple look at the eccentric at carriage bottom. Use roller grease.
Unit sizes 30 - 80S have got lifetime greased rollers.

Changing cover band EL 100, 125



- Unscrew cylindric screws (1), push plastic wiper endplate (4) to one bearing-block (7),
- Unbend grub screws (2), push carriage (5) to other side
- Unscrew screws (3) and pull out the coverband (6), size 100/125 units have an additional cover-band leader (9),which is the guide for the cover-band.
- Mount the new coverband, fix the screws (3) at one side, tense the band with a pointed pliers and fix the screws (3),
- Fix the carriage by the grub screws (2) and mount the wiper end plate (4).

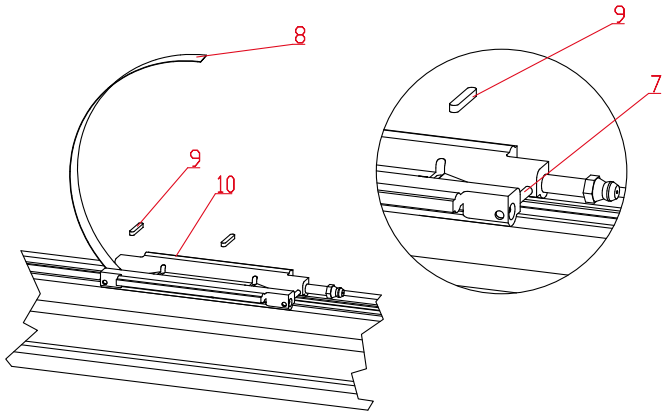
Changing cover-band and plastic guide roller against new slider system ELT / ELK 60, 80



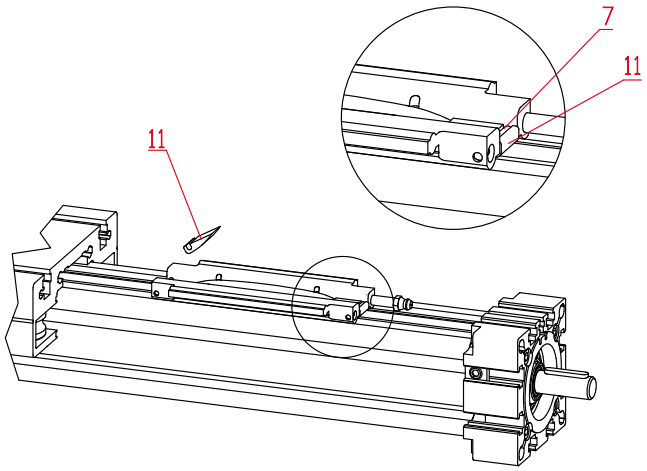
- Unscrew cylindric screws (1) and dismount cover cap (2) on one side of the carriage (4).
- Unscrew grub screws (3) on one side of the carriage (4).
- Destroy the plastic guide roller (6) with a cutting nipper.
- Be careful, don't destroy the hardened straight pin (7)

!!!Attention!!!! Plastic guide roller can crack!!!!

- Be sure that no fragments fall into the guiding-profile.

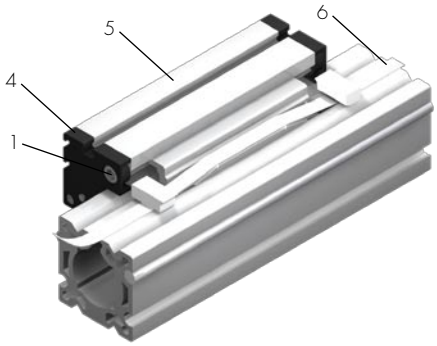


- Pull out cover-band (8) out of the leading-nut receiver (10).
- Dismount the plastic keys (9).
- Mount and push in the cover-band (8) again like before (under the hardened straight pins (7).



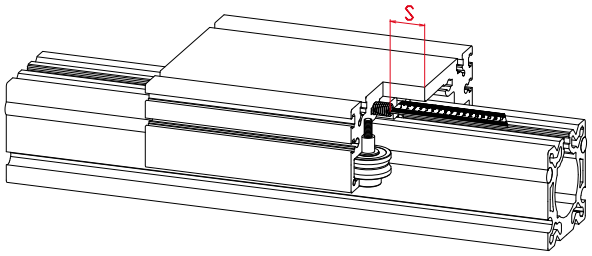
- Hook the plastic slider (11) under the straight pin (7) with the flat side to the middle of the carriage.
- Fix the cover-band (8) on one side with the grub screw clamping (5) at the bearing block (12).
- Tension the cover-band (8) from the opposite side of the unit and fix it with the grub screw clamping, too.

Changing cover band size EL / EG 30, 40



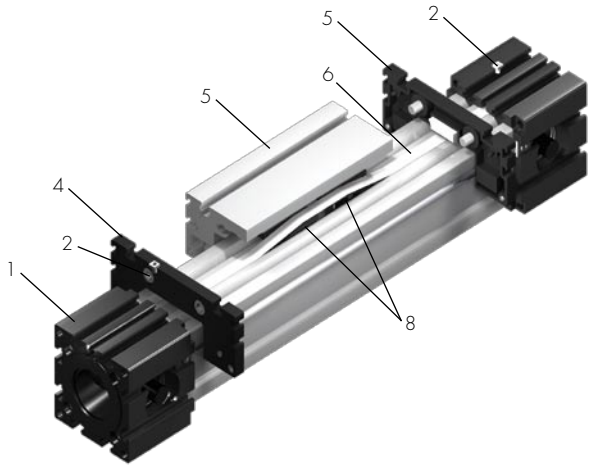
- Unscrew cylindric screws (1), push plastic wiper endplate (4) to the side,
- Unscrew screws (3) and pull out the coverband (6),
- Mount the new coverband, fix the screws (3) at one side, tense the band with a pointed pliers and fix the screws (3),
- Mount the wiper end plate (4).

Changing cover band ELVZ / ELHZ 100, 125



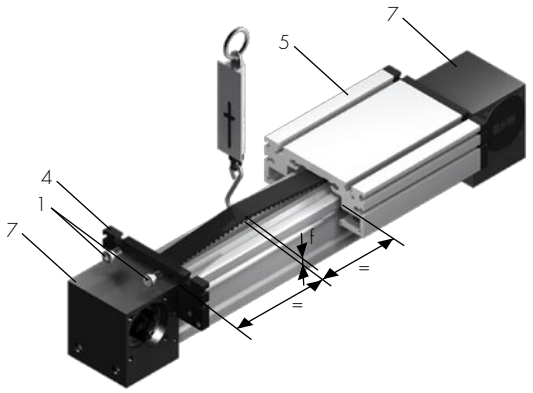
Same mounting as ELT/ELK. Important: Measure the distance "s" between the corner of carriage and the head of the grub screw for belt-tension!

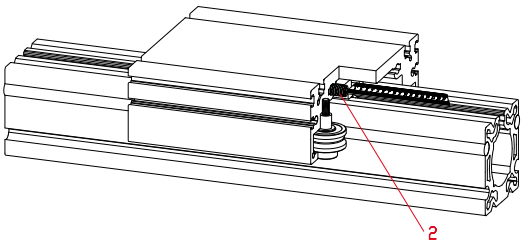
Changing cover band ELHZ / ELVZ 60, 80



- Unscrew cylindric screws (1) on both sides of carriage (5)
- Push the wiper end plates (4) to the side,
- Unscrew the grub screwes (2) and pull out the old coverband (6),
- Push the new coverband under both sliding block (8) in the carriage (5) and wiper end plates (4) into the bearing block (1)
- Fix the grub screw (3) on one side,
- Tense the coverband with a pointed pliers and fix the screws (3) on the opposite side.

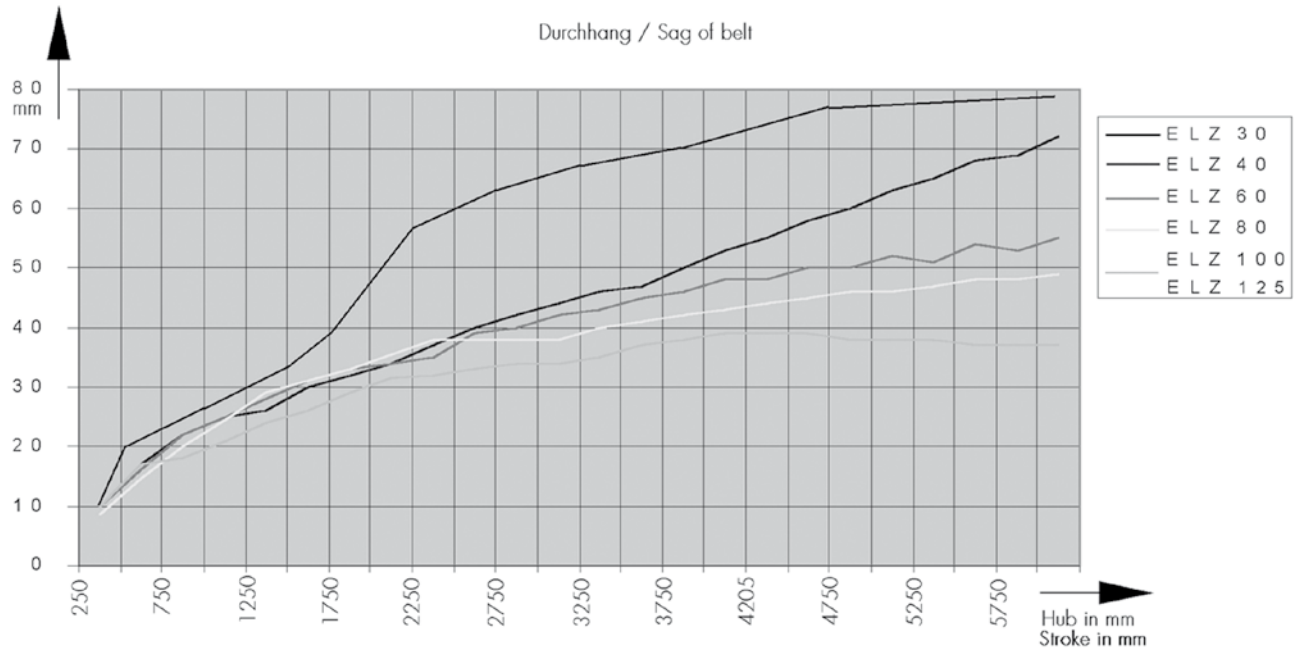
Belt tension ELZ



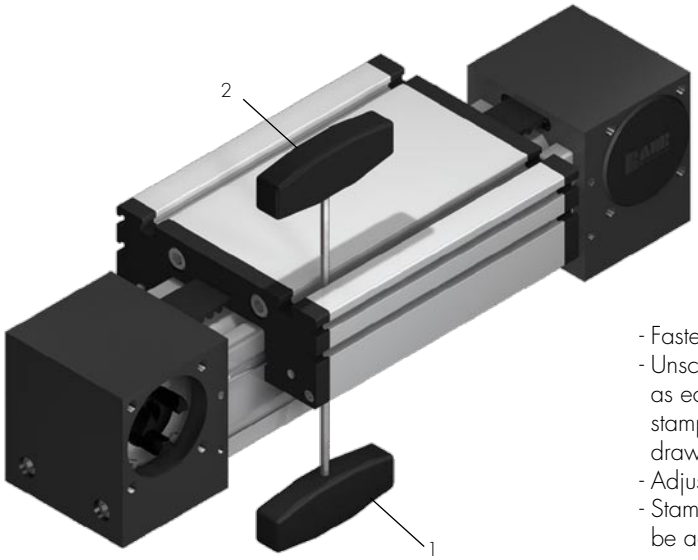


- Push the carriage (5) close to one bearing-block (7).
- Unscrew grub screws (2) of the wiper endplate (4) and push it to the other bearing-block (7).
- Pull the spring balance with force of table and measure the sag (f) of the belt. Compare the measured value with the table.
- Tense or release the belt by the grub screws (2).
- Both grub screws (2) must have the same distance between the corner of the carriage (5) and the head of the grub screw (2).
- The grub screws (2) have to be secured by bonding.
- Measure the distance (s) with a metal rule.
- Mount the wiper endplate (4).

Baugröße / Size	Kraft / Force
30	20 N
40	20 N
60	30 N
80	50 N
100	50 N
125	50 N

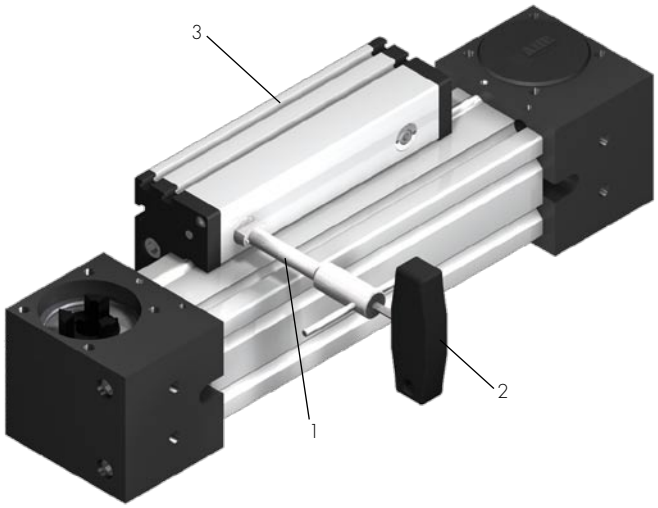


Adjusting the rollers, sizes EL 40, 60

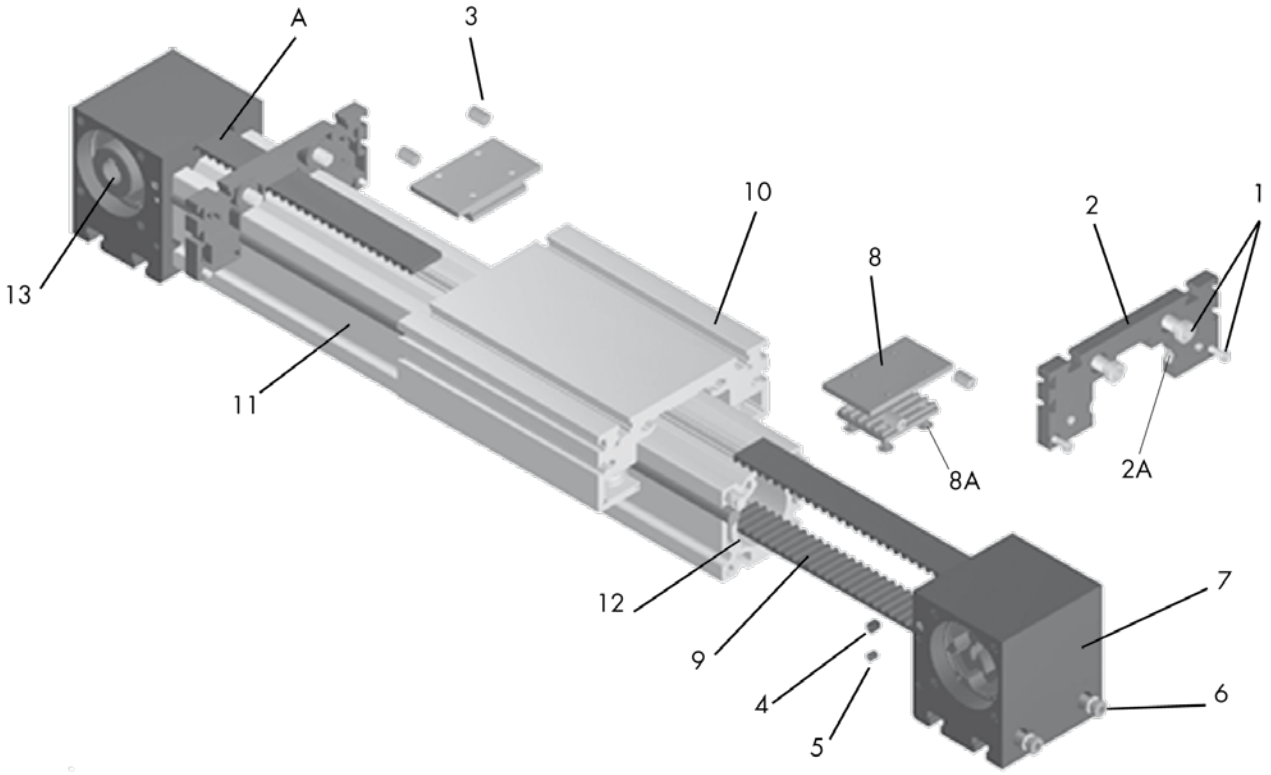


- Fasten eccentric bolt with screw key (1)
- Unscrew screw with hexagon socket screw key (2) as far as eccentric bolt can be turned, upper surface is stamped, broken line of stamp (3) must coincide with drawing groove of slide
- Adjust at other side without initial tension
- Stamps must be in same position and eccentric bolt must be adjusted into right direction.

Adjusting the rollers, sizes EL 30, 80, 100, 125



Belt exchange ELZ



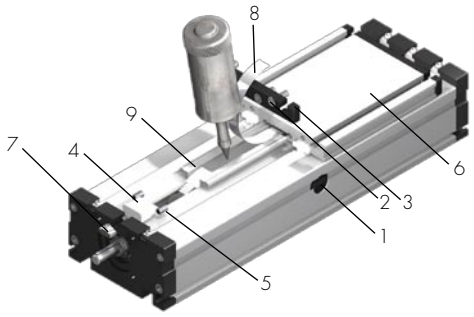
- Unscrew cylindric screws (1) and dismount wiper end plates (2) on both sides of the carriage
(take care, that the felt wipers (2A) don`t drop out !)
- the belt adjusters are fixed by grub screws (3) in the carriage (10); to reach the right belt tension measure the distance between the edge of the carriage and the head of the grub screws
(Notice: the distance must be the same on both sides in axial direction)
- unsrew the grub screws (3) and dismount the belt adjusters (8-8A)
- unscrew the grub screws (4+5) and the cylindric screws (6) and separate the bearing-block (7) from the unit
- pull out the toothed belt (9) in most cases it is not necessary to separate both bearing blocks for inserting the new belt

The reconstruction of the unit takes place in opposite order

- shorten the new belt to the length of the old one
- insert the toothed belt with the toothed side to the profile (11) into the not dismounted pulley block (A) ; rotate the toothed pulley (13)until the toothed belt (9) appears at the end of the profile (12) and pull the belt through the dismounted pulley block (7)
- mount the pulley block (7) on the profile (12) and tighten the grub screws (4+5) and the cylindric screws (6)
- mount the belt adjusters (8-8A) on the ends of the toothed belt and *secure the countersunk screws by bonding !!!*
- insert the belt adjusters into the carriage (10) and *secure the grub screws (3) by bonding !!!*
- tension the belt as per description above and finally mount the wiper end plates (2) on the carriage
(Notice: the easiest way for mounting the wiper end plates is to secure the wipers with a rubberband while mounting)

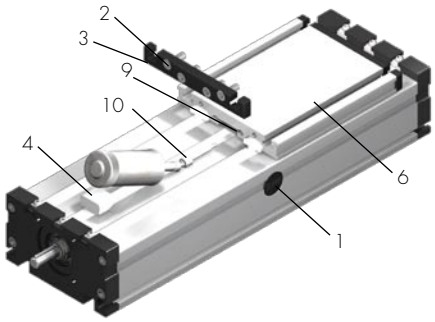
Service manual for D and Q units

Leading-nut, size DLK/DLT / DSK/DST 120, 200



- Drive the carriage to the service position (1).
- Remove the fillister head screws (2) and dismount cover cap (3).
- Remove the middle slider (4).
- Insert the regreasing adapter (10) into the lubrication hole of the leading-nut receptacle (9).
- Regrease now with grease gun. For the quantity of grease see table below.

Leading-nut, size DLT/DLK / DST/DSK 160

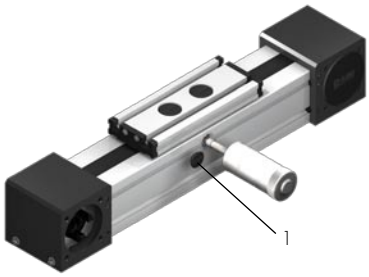


- Drive the carriage to the service position (1).
- Remove the fillister head screws (2) and dismount cover cap (3).
- Remove the middle slider (4) and unscrew set screws (5).
- Push carriage (6) to the side.
- Release the set screw (7) and remove it using the sliding nut.
- Pull out and lift the cover band (8), now the lubrication hole is visible in the leading-nut receptacle (9).
- Regrease with grease gun. For the quantity of grease see table below.

Spindle greasing every 500 - 1000 working hours.

Type	Gewinde/ Pitch	Nachfettung/ Regreasing	Type	Gewinde/ Pitch	Nachfettung/ Regreasing
120	KG 16 x 05	1,33 g	**120/160**	KG 25 x 25	3,00 g
120	KG 16 x 10	0,84 g	**200**	KG 32 x 05	3,00 g
120	KG 16 x 16	1,00 g	**200**	KG 32 x 10	4,00 g
120/160	KG 20 x 20	3,00 g	**200**	KG 32 x 20	4,00 g
120/160	KG 25 x 05	2,00 g	**200**	KG 32 x 32	4,00 g
120/160	KG 25 x 10	3,00 g			

Leading-nut QS 60, 80, 100



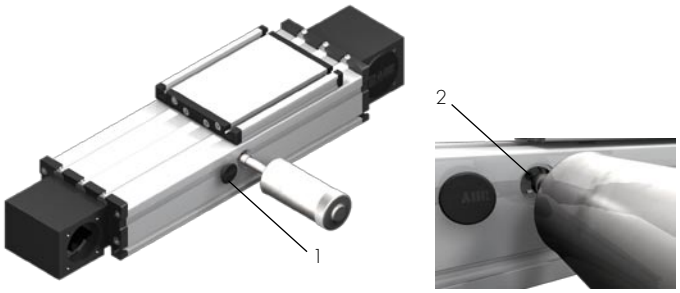
Leading-nut QS 60, 80, 100 have to be regreased with high quality bearing grease.

- Dismount cover cap (1)
- Drive the carriage through the service position until you can see the first greasing nipple (2) in the grease hole.
- Re-grease felt now with an grease gun.
- Move the carriage to the second greasing nipple and re-grease here as well.

We recommended bearing grease based on DIN 51825. The required regreasing intervals depend on environmental conditions, the standard recommendation is once per 1.000 km.

Type	Gewinde/ Pitch	Nachfettung/ Regreasing	Type	Gewinde/ Pitch	Nachfettung/ Regreasing
60	KG 16 x 05	1,33 g	**100**	KG 32 x 05	3,00 g
60	KG 16 x 10	0,84 g	**100**	KG 32 x 10	4,00 g
60	KG 16 x 16	1,00 g	**100**	KG 32 x 32	4,00 g
80	KG 20 x 20	3,00 g			
80	KG 25 x 05	2,00 g			
80	KG 25 x 10	3,00 g			

Guiding rods DL 120, 160, 200 / QL 60, 80, 100

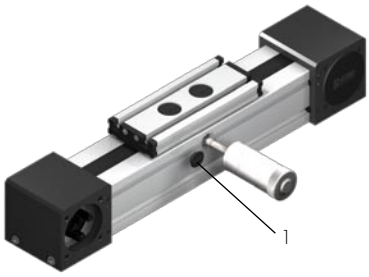


Lubrication is effected by an oiled felt insert. The felt can be re-oiled through lubrication nipples attached laterally to the ends of the roller packs.

- Dismount cover cap (1)
- Drive the carriage through the service position until you can see the first lubricating nipple (2) in the lubrication hole.
- Re-oiled felt now with an oil gun.
- Move the carriage to the second lubricating nipple and re-oiled here as well.

Oils with a viscosity of approx. 200 mm²/s at T=40°C are recommended. The required regreasing intervals depend on environmental conditions, the standard recommendation is once per month. To ensure a sufficient lubrication, the minimum stroke must equal the carriage length, so that sufficient greasing is achieved also in the final positions.

Runner blocks DS 120, 160, 200 / QS 60, 80, 100



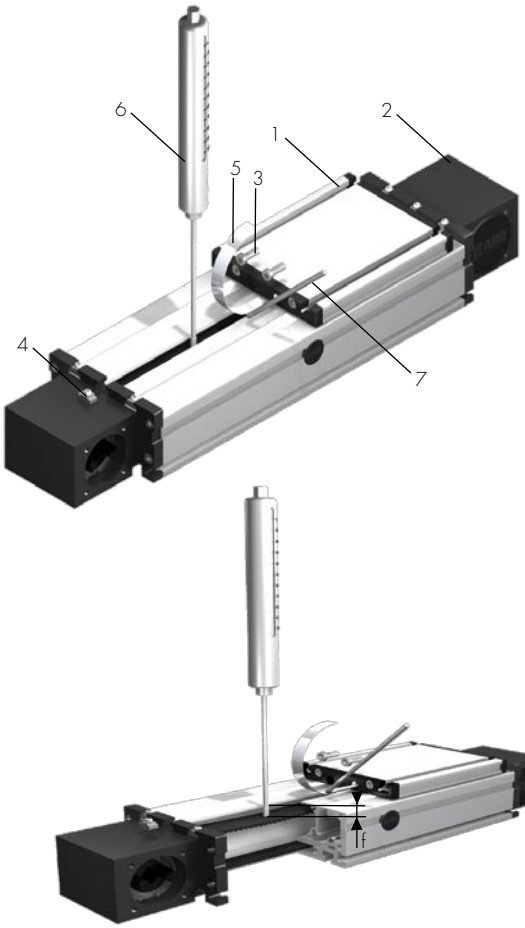
Runner blocks DS 120, 160, 200; QS 60, 80, 100 have to be regreased with high quality bearing grease.

- Dismount cover cap (1)
- Drive the carriage through the service position until you can see the first greasing nipple (2) in the lubrication hole.
- Re-greasing with grease gun.
- Move the carriage to the second greasing nipple and re-grease here as well.

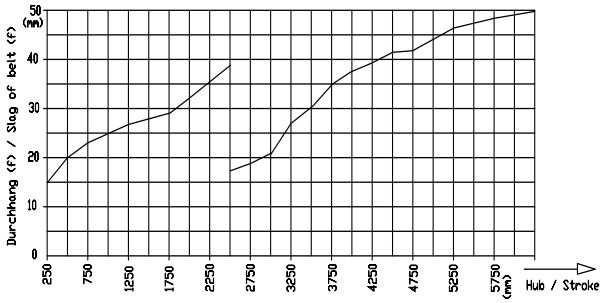
We recommended bearing grease based on DIN 51825. The required regreasing intervals depend on environmental conditions, the standard recommendation is once per 1.000 km.

5.2

Belt tension adjustment DLZ / DSZ 120, 160, 200

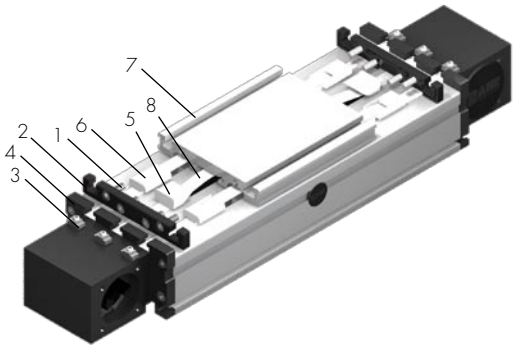


- Push the carriage (1) close to one bearing block (2).
- Remove fillister head screws (3).
- Unscrew set screws (4) for middle cover band (5) at the opposite bearing block.
- Pull cover band out of bearing block and turn it to the side.
- Use springe balance (6) to exert the applicable amount of force (see table) on the center of the belt and measure the sag (f).
- Compare the measured value with the diagram below, and tense or release belt as required by tightening or unscrewing the set screws (7).
- The set screws (7) must be bonded in place with screw locking device.
- Both screws (7) must be screwed in to exactly the same level. Check with sliding caliper.



Baugröße / Size	Hub / Stroke (mm)	Kraft / Force (N)
120	< 2500 2500 - 6000	20 10
160	< 2500 2500 - 6000	20 10
200	< 2500 2500 - 6000	40 20

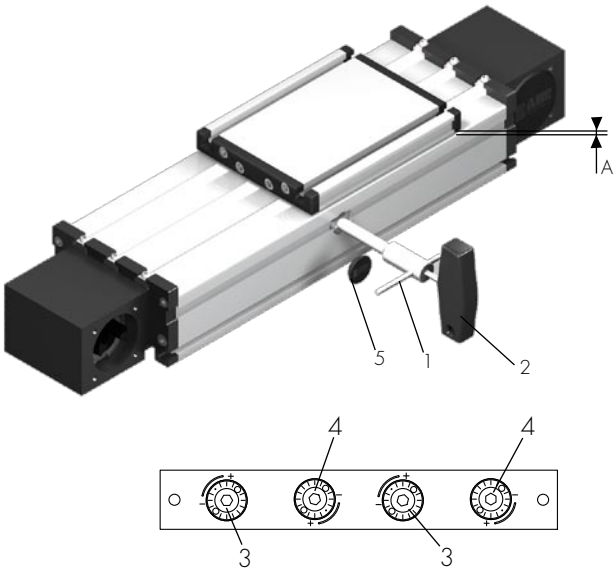
Changing cover band DLZ / DSZ 120, 160, 200



- Drive the carriage to servicing position
- Remove fillister head screws (1) and wiper end plate (2)
- Size 160 and 200: Unscrew set screws (3) at both bearing-block plates (4) and pull the cover band out of the bearing block
- Size 120: Unscrew set screws and remove them with T-nut
- Remove sliders (5) and (6) from both sides of the carriage (7)
- Pull the cover bands (8) out of the carriage
- Insert the new cover bands into the carriage (7)
- Thread the lateral sliders (6) onto the cover band and insert it into the carriage with middle slider (5)
- Size 160 and 200: Tighten cover bands on one side of the bearing block with set screws (3), tense cover band (8) at the other bearing block using pliers and tighten with set screws (3)
- Size 120: Insert T-nut together with set screw into the bearing block and tighten cover band with set screw.

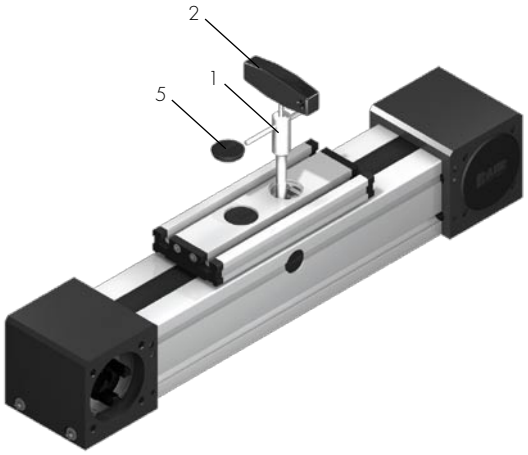
5.2

Adjusting the rollers size DL 120, 160, 200



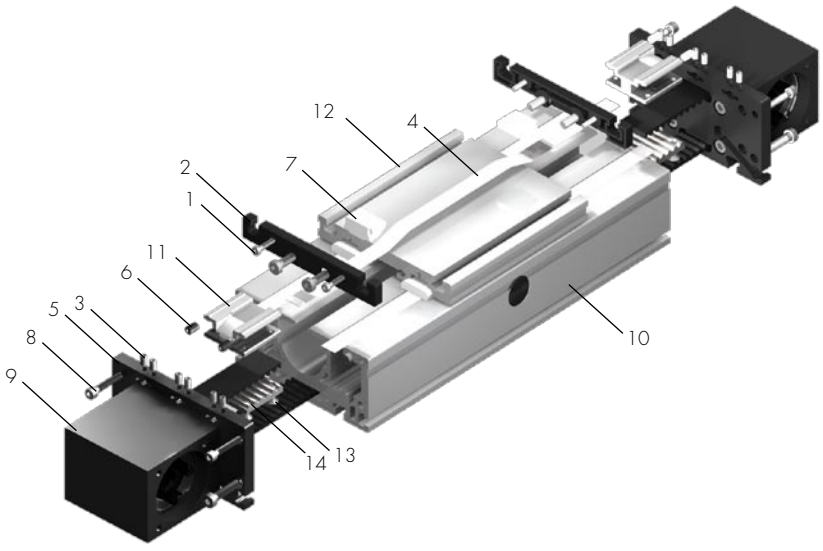
- Dismount cover cap (5) from servicing hole
- Fasten eccentric bolt with screw key (1)
- Release screws with hexagon socket screw key (2) until the eccentric bolt can be turned.
- Adjust the gap dimension (A) between carriage and guide body profile by turning the eccentric bolts (3). Turning towards + will increase the gap dimension.
  (DL120 approx. 1.8 mm, DL160 approx. 2.8 mm, DL200 approx. 3.0 mm).
- Turn the eccentric bolts (4) to adjust the carriage free of play by the touch (without initial tension)
- Ensure that the eccentric bolts are adjusted to the right.

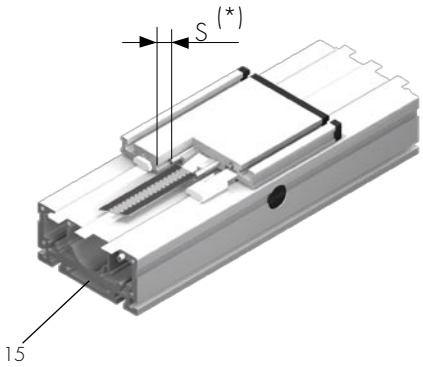
Adjusting the rollers size QL 60, 80, 100



- Dismount cover cap (5) from servicing hole
- Fasten eccentric bolt with screw key (1)
- Release screws with hexagon socket screw key (2) until the eccentric bolt can be turned.
- Turn the eccentric bolts to adjust the carriage free of play (without initial tension)
- Ensure that the eccentric bolts are adjusted to the right.

Belt exchange DL / DS





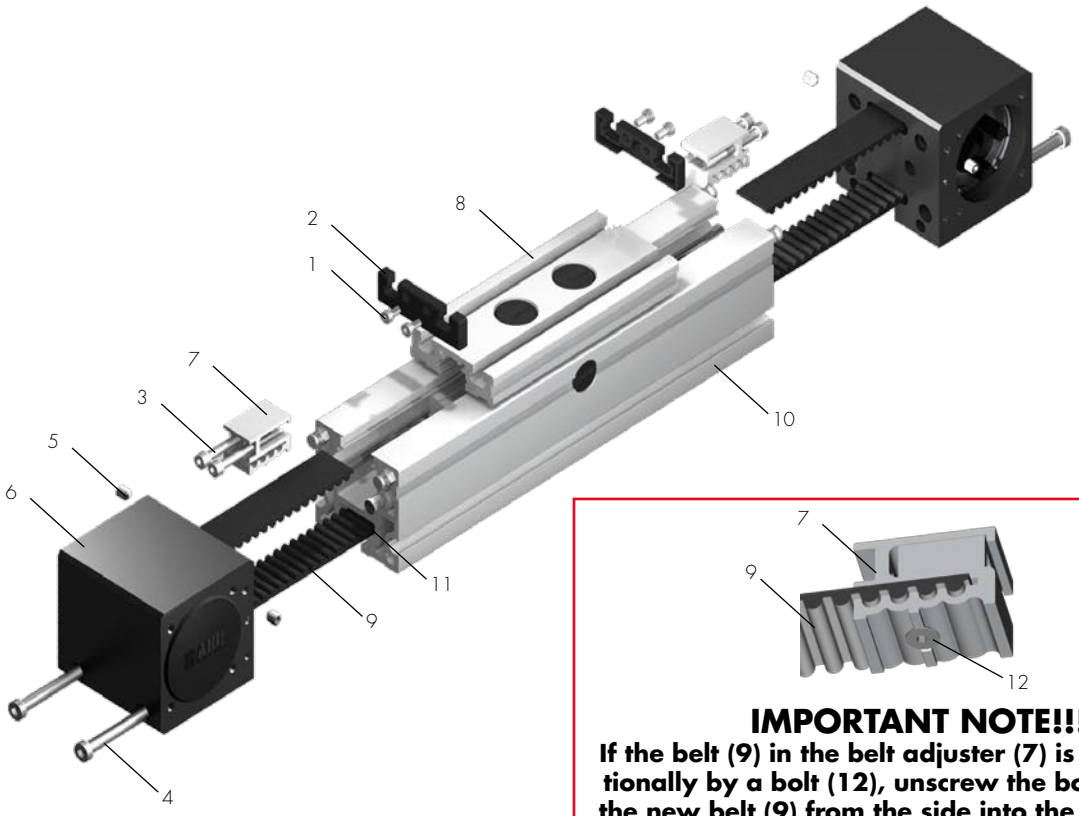
Changing belt of DL / DS 120, 160, 200

- Unscrew cylindric screws (1) and dismount cover caps (2) on both sides of the carriage.
- Unscrew grub screws (3) on both sides of the unit and pull out the only the middle cover band (4) of the bearing-block plate (5).
- Measure the reach of grub screws „S" (look at drawing) and make note of this value.
- Unscrew grub crews (6) on both sides of the carriage.
- Pull only the middle sliding blocks (7) out of the carriage.
- Unscrew cylindric screws (8) at the bearing-block plates (5) and dismount them completely with the bearing-blocks (9) at both ends of the unit.
- Pull out the belt-adjusters (11) completely with the belt out of the carriage (12) and the guiding-profile (10).
- Unscrew the countersunk head screws (13) and dismount the belt-adjuster (11,14).

Reconstruction of the unit in opposed order

- Shorten the new belt to the length of the old one.
- Push the belt with teeth side up to the carriage (10) into the slot of the guiding-profile (15) and push it with the ends through each bearing-block (8,9).
- Mount the belt-adjusters (11,14) by the countersunk head screws (13) and lock them again with glue.
- Push them again together with the belt into the guiding-profile (10) and then into the carriage (12).
- Mount the bearing-block plates (8) again together with the bearing-blocks (9) at the ends of the unit.
- Mount both belt-adjusters (11,14) with consideration of the reach of the grub-screws „S" and lock the grub screws (6) with glue.
- Pull the middle cover-band (4) through the carriage.
- Pull in the middle sliding blocks (7) into slot of the carriage.
- Mount the grub screws (3) on one side of the unit and tension the 3 cover-bands from the other side and fix them too by the grub-screws (3).

Belt exchange QL / QS



IMPORTANT NOTE!!!

If the belt (9) in the belt adjuster (7) is locked additionally by a bolt (12), unscrew the bolt first. Push the new belt (9) from the side into the belt adjuster (7) and drill a hole, which should be a little bit larger than the bolt diameter, into the new belt.
Now put a little bit locking glue onto the bolt and fix it again.

Changing belt of QL/QS 60,80,100

- Unscrew cylindric screws (1) and dismount cover caps (2) on both sides of the carriage.
- Unscrew cylindric screws (3) on both sides of the carriage (8).
- Unscrew cylindric screws (4) and the grub screws (5) at the bearing-block (6) and dismount them completely at both ends of the unit.
- Pull out the belt-adjusters (7) completely with the belt out of the carriage (12) and the guiding-profile (10).
- Press the belt sideways out of both belt-adjusters (7).
- Pull the belt completely out of the bearing-blocks (6).

Reconstruction of the unit in opposed order

- Shorten the new belt to the length of the old one.
- Push the belt with teeth side up to the carriage (8) into the slot of the guiding-profile (11) and push it with the ends through each bearing-block (6).
- Press the belt again into the belt-adjusters (7).
- Push them again together with the belt into the guiding-profile (10) and then into the carriage (8).
- Mount the bearing-blocks (6) again.
- Mount both belt-adjusters (7) and lock the cylindric screws (6) with glue.
  You have to tension the belt with dosed force and test the soft running of the pulleys by turning them.
- Mount the cover caps (2) again.

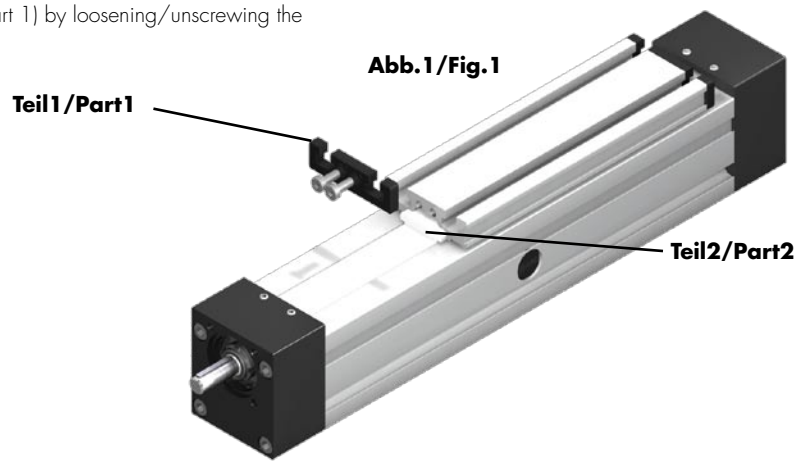
Retrofitting of QST/K 60 and 80.

Our linear axes are constantly tested in fatigue tests in order to detect any weak points. These tests showed that in case of a loss of tension in the cover band, the stainless steel band on the lower side of the carriage will drag in the edge area. This can result in abrasion of black particles. Since we absolutely wanted to eliminate this visual weak point, we created a retrofitting kit which can be very easily installed.

The weakness is remedied by a teflon strip that is inserted between the lower side of the carriage and the upper side of the stainless steel sheet. The retrofitting can be realised very easily and quickly.

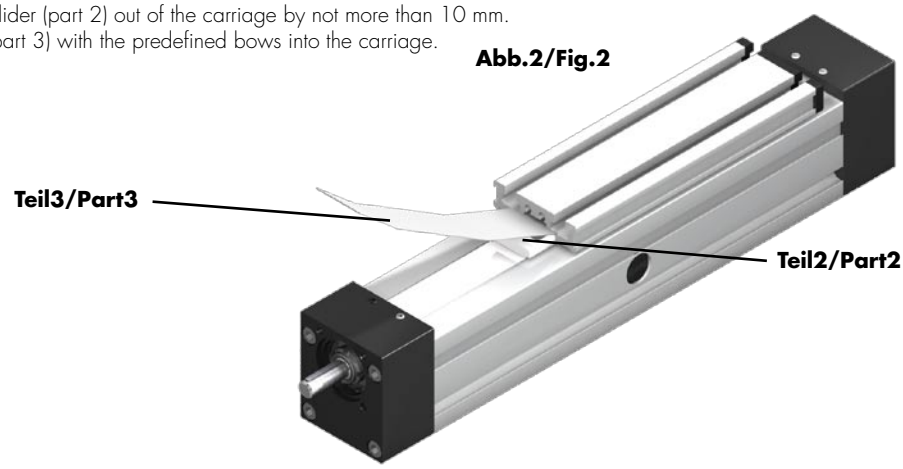
Remove one carriage end plate (part 1) by loosening/unscrewing the two cylinder head screws.

Abb.1/Fig.1



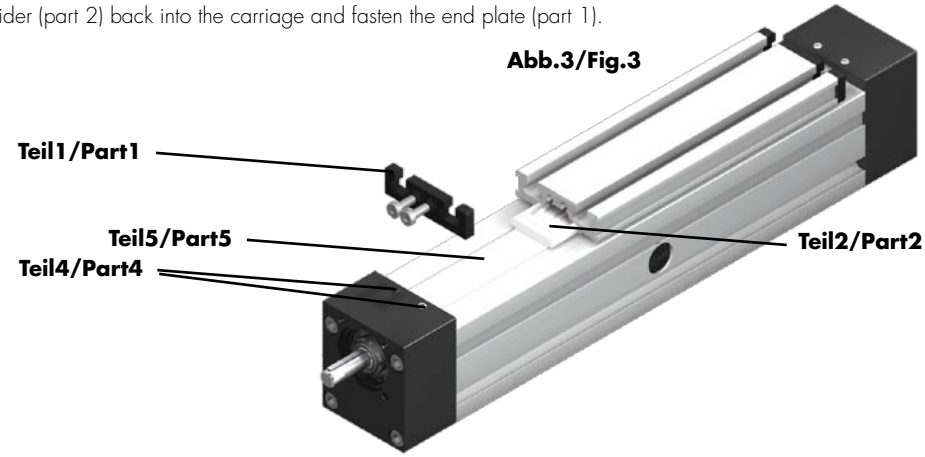
Pull the white plastic slider (part 2) out of the carriage by not more than 10 mm.
Insert the teflon strip (part 3) with the predefined bows into the carriage.

Abb.2/Fig.2



Press the plastic slider (part 2) back into the carriage and fasten the end plate (part 1).

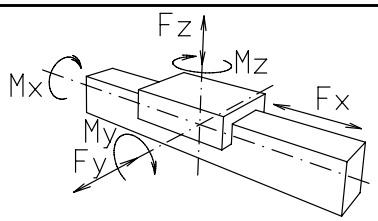
Abb.3/Fig.3



If the cover band should lose its tension for any reason whatsoever, you should increase the tension following the procedure described below.

Remove one carriage end plate on one side (see above, part 1); it is not important which side you choose. Then pull the white plastic slider (part 2) out of the carriage by not more than 10 mm. Loosen the setscrews (part 4) in the bearing block on the same side, slip the cover band using your fingers into the direction of the bearing block (part 5 in the direction of the arrow). Hold it with your fingers in tensioned position until the setscrews are fastened (part 4) and re-fasten the setscrews to the bearing block. Then push the plastic slider (part 2) back into the carriage and fasten the end plate (part 1).

Anfrage 1-Achssystem/Inquiry 1-direction system



Firma/Company		Name	
Tel/Fax		Zykluszeit/Cycle time	s
Hub/Stroke	mm m kg	**Motore, Steuerung/Motors, Controllers**	
Genauigkeit/Repeatability	mm	Angebot/Offer	ja ☐ yes nein ☐ no
Geschwindigkeit/Velocity	m/s	Schrittmotor/Steppingmotor	☐
Beschleunigung/Acceleration	m/s^2	Servo	☐
Horizontal	☐	Drehstrom/AC	☐
Vertikal	☐	Gleichstrom/DC	☐

	Kräfte/Force	Momente/Torques
X	N	Nm
Y	N	Nm
Z	N	Nm

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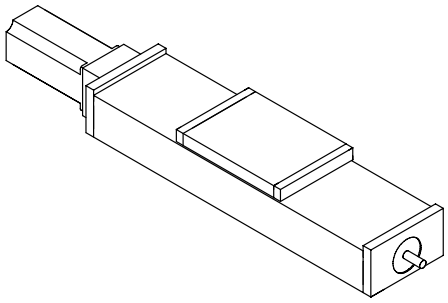

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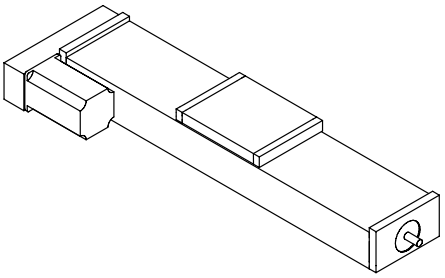

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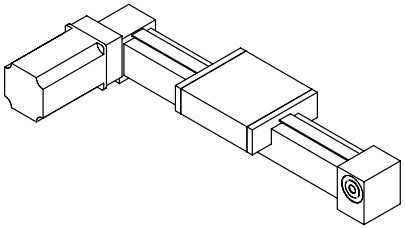

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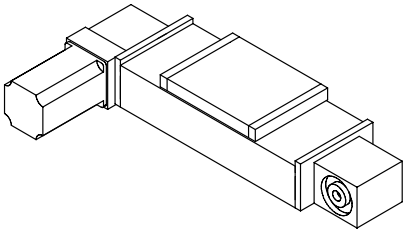

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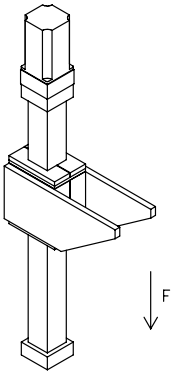

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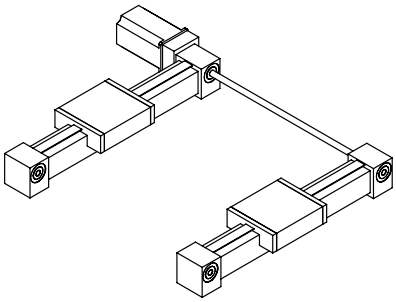

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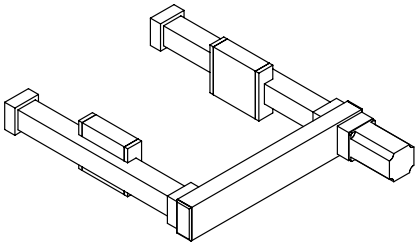

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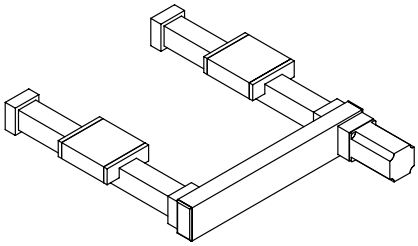

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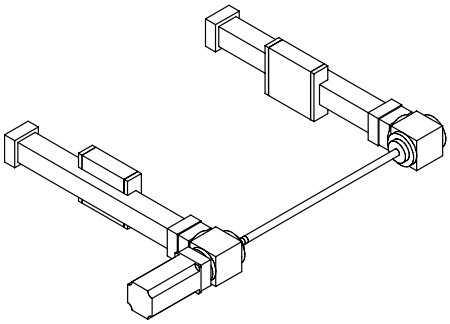

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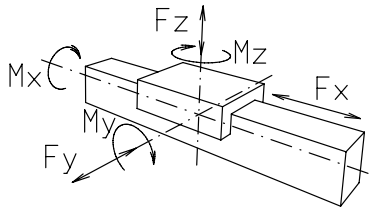

Firma/Company				Name			
Tel/Fax				Zykluszeit/Cycle time		s	
Masse/Mass			kg	**Motore, Steuerung/Motors, Controllers**			
	Hub/Stroke(mm)	a(m/s²)	v(m/s)	Angebot/Offer ja ☐ yes nein ☐ no			
X				Schrittmotor/Steppingmotor ☐		Kräfte/Force	Momente/Torques
Y				Servo ☐	X	N	Nm
Z				Drehstrom/AC ☐	Y	N	Nm
Drehachse/Rotation axis			1/min	Gleichstrom/DC ☐	Z	N	Nm

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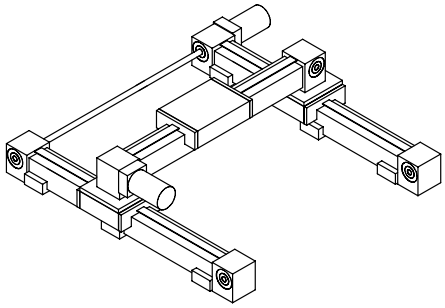

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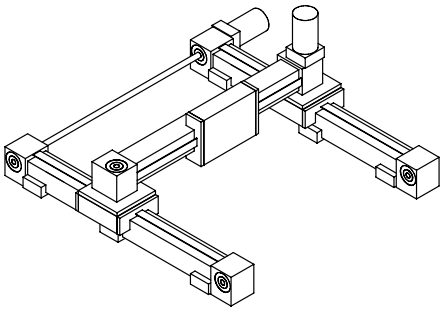

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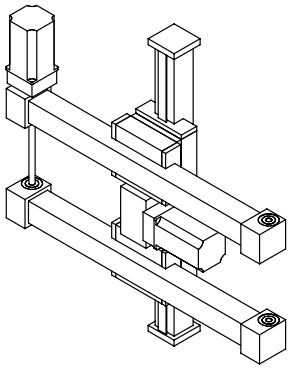

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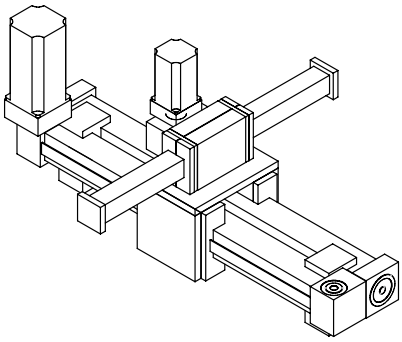

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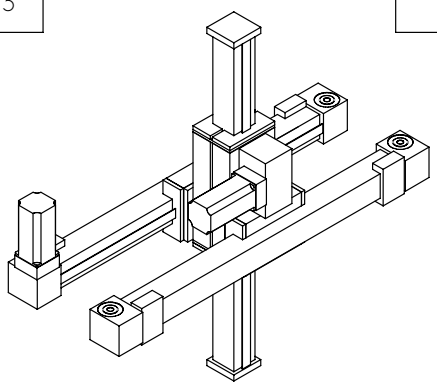

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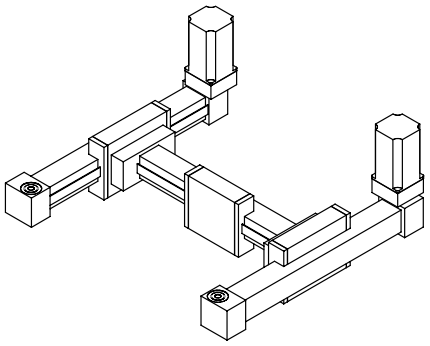

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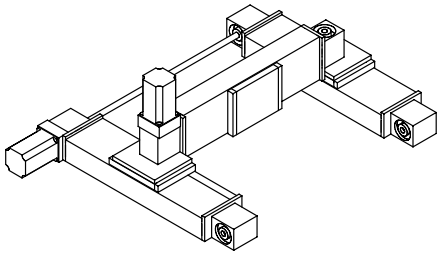

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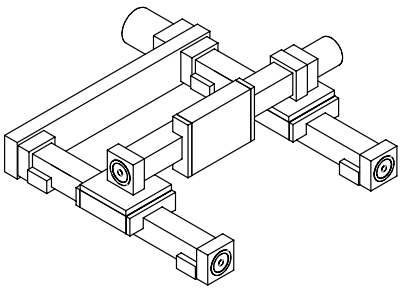

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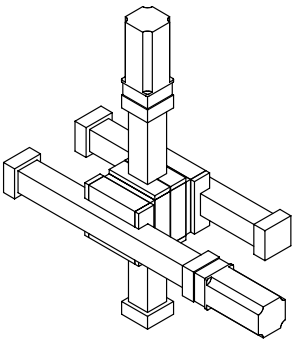
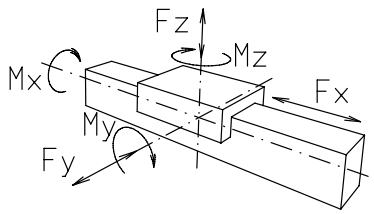
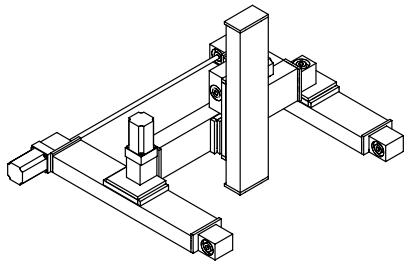


Anfrage 3-Achssystem/Inquiry 3-direction system



Firma/Company				Name			
Tel/Fax				Zykluszeit/Cycle time		s	
Masse/Mass			kg	**Motore, Steuerung/Motors, Controllers**			
	Hub/Stroke(mm)	a(m/s²)	v(m/s)	Angebot/Offer ja ☐ yes nein ☐ no			
X				Schrittmotor/Steppingmotor ☐		Kräfte/Force	Momente/Torques
Y				Servo ☐	X	N	Nm
Z				Drehstrom/AC ☐	Y	N	Nm
Drehachse/Rotation axis			1/min	Gleichstrom/DC ☐	Z	N	Nm

1 ☐



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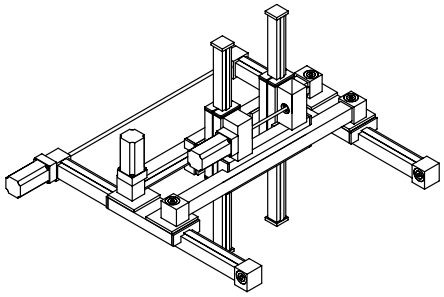

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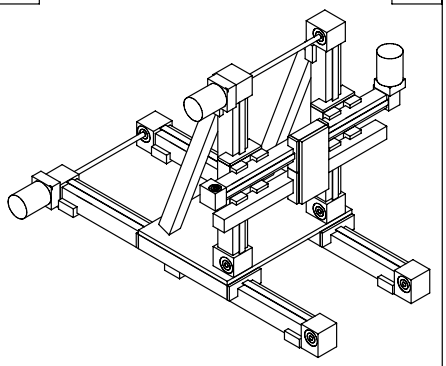

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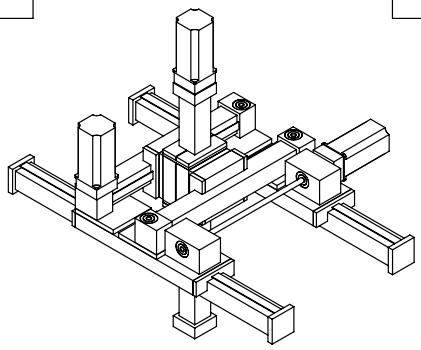

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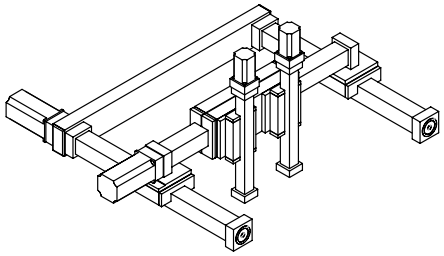

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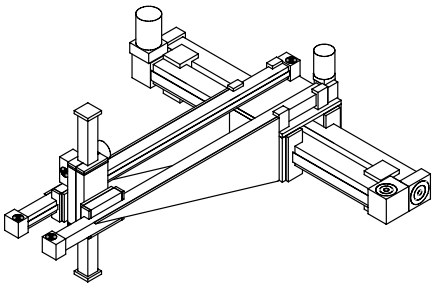

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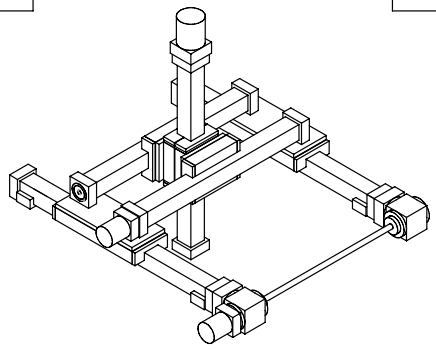

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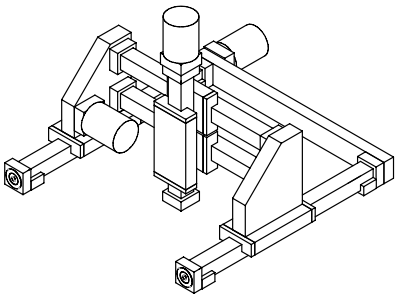

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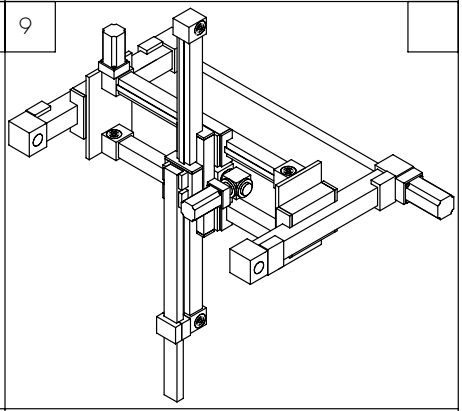

Note

Terms and Conditions of Sale and Payment

§ 1 Scope of the General Terms and Conditions

(1) The Supplier's deliveries, services and offers are made solely on the basis of these General Terms and Conditions. Thus, these General Terms and Conditions shall also apply to all future business relations, even if not explicitly agreed upon again. At the latest, these General Terms and Conditions shall be considered accepted upon acceptance of the goods or services. Any counter confirmations made by the Customer with reference to its own terms and conditions are hereby rejected.

(2) All agreements made between the Supplier and the Customer for the purpose of the fulfilment of this contract must be in writing.

§ 2 Offer and Conclusion of Contract

(1) Offers made by the Supplier are non-binding and subject to change. Any declarations of acceptance and all orders require the Supplier's confirmation in writing or by fax to be legally binding. The contract is deemed to be concluded upon the Supplier's sending a written declaration (acknowledgement of order), which shall be the decisive document determining the scope of its obligations. The delivery substitutes a written acknowledgement of order.

(2) The performance parameters specified in our catalogues and offers, such as illustrations, drawings etc., shall be considered as approximate only. Drawings, illustrations, dimensions, weights or other performance data are only binding if they have been explicitly agreed on in writing. The Supplier reserves, without restriction, all rights of ownership and copyright to any quotations, drawings and other documents (hereinafter collectively referred to as the "Documents"). These Documents may not be made accessible to any third parties without the Supplier's prior consent; should the order not be placed with the Supplier, such documents are to be returned to the Supplier immediately on request.

(3) The Supplier's sales staff is not authorised to make any verbal collateral agreements or to give any verbal assurances that go beyond the content of the written contract.

(4) The Customer is liable for the accuracy, correctness and completeness of the order documents and order information provided by it; this includes in particular drawings as well as technical specifications and samples. Any verbal information, also with regard to modifications or amendments to the documents and data already submitted, must be confirmed in writing. If an order is neither confirmed in writing nor executed by the Supplier within one month of its receipt, or in particular cases (e.g. in case of custom-made products) within three months of receipt – in which case the Customer is bound by its order during such period – the Customer shall be entitled to revoke its order without having the right to claim damages from the Supplier.

§ 3 Prices

(1) Unless stated otherwise, the Supplier is bound by the prices given in its quotations for a period of 30 days from their date of issue. Otherwise the prices mentioned in the Supplier's acknowledgement of order shall apply, which do not include the applicable legal value added tax, nor any cost of installation, start-up and assembly. Additional deliveries and services will be invoiced separately.

(2) Unless otherwise agreed, the prices are FOB Luhden warehouse, excluding packaging, freight, postage and insurance cost. The type of packaging shall be chosen by the Supplier at its discretion. The packaging shall be invoiced to the Customer at cost price and will not be taken back by the Supplier.

§ 4 Time of Delivery and Performance / Acceptance

(1) Delivery dates or periods, which may be agreed upon in a binding or non-binding manner, must be specified in writing. Our delivery period begins with the date of our acknowledgement of order, provided that at this time all of the documents required from the Customer, the necessary permits, releases, clarifications and approvals of plans have been submitted and the agreed payment terms and other obligations have been fulfilled and, in addition, any and all technical issues that were still open when the contract was signed have been mutually agreed upon. If these prerequisites are not met in time, the delivery period will be prolonged accordingly.

(2) The Supplier is not liable for delays in delivery and performance, even if binding dates and times have been agreed upon, in cases of force majeure or in case of circumstances which substantially and not only temporarily impede the delivery or make it impossible - this includes in particular strike, lock-out, government orders, malfunction or breakdown of important production facilities/machines, delays in the supply of essential raw materials and utilities, delays in transport, etc.; this applies also when these circumstances affect our suppliers or their sub-suppliers. In such cases, the Supplier shall be entitled to delay the supply and/or performance for the duration of the hindrance plus an appropriate start-up time or to withdraw totally or in part from that part of the contract which is not yet fulfilled.

(3) If the hindrance lasts for longer than 3 months, the Customer shall be entitled, after granting a reasonable extension of time, to withdraw from that part of the contract which is not yet fulfilled. Should the delivery time be extended or should the Supplier be released from its obligations, the Customer shall have no right to claim compensation for damages. The Supplier may only invoke the aforementioned circumstances, if the Customer is informed accordingly without delay.

(4) In as far as the Supplier is responsible for the non-compliance with bindingly promised deadlines and dates, or in as far as the Supplier is in default, the Customer shall be entitled to compensation for delayed performance at the amount of 1/2% of the invoice value for each complete week of the delayed performance, but limited in total to a maximum of 5% of the invoice value of all deliveries and services affected by the delay. Any claims beyond this are excluded, unless the delayed performance is based on at least gross negligence by the Supplier.

(5) The Supplier is at all times entitled to make partial deliveries or to render partial services, unless such partial deliveries or partial services are not of interest to the Customer.

(6) If a formal acceptance procedure of the delivered materials is desired, the conditions of such procedure must be established at the latest upon conclusion of the contract. The acceptance procedure must be carried out at the Supplier's premises immediately after it has declared its readiness for acceptance. The cost of the acceptance procedure shall be borne by the Customer. Partial deliveries are permissible.

In all other cases, the delivery object is deemed to be accepted when it is taken into operation in accordance with its intended use, however at the latest 3 weeks after delivery to the Customer.

(7) If the Customer is in default of acceptance, the Supplier shall be entitled to claim compensation for any damages it has incurred; upon default of acceptance, the risk of accidental deterioration or accidental loss passes to the Buyer.

§ 5 Transfer of Risk

The risk is transferred to the Customer as soon as the consignment has been handed over to the person responsible for the transport or has left the Supplier's warehouse for the purpose of dispatch, irrespective of who bears the freight costs. If the delivery is delayed upon the Customer's request, the risk shall pass to the Customer when the notice is given that the goods are ready for delivery. Any storage costs incurred after the transfer of risk shall be borne by the Customer. At the Customer's request and expense, the Supplier shall insure shipments against the usual transport risks.

§ 6 Customer's Rights in Case of Defects

(1) The products are delivered free of defects in design, manufacturing and materials; the period for assertion of claims for defects is one year from the transfer of risk. The shortening of the limitation period according to sentence 1 does not apply in case of intent or gross negligence, nor in case of injury to life, body or health, in case of fraudulent intent or in case of the Supplier's assuming a guarantee. In such cases, the legal limitation period shall apply.

Terms and Conditions of Sale and Payment

(2) Should the Supplier's operating or maintenance instructions not be observed, or should the products be modified, parts exchanged or consumables used which do not comply with the original specifications, then any claims for defects of the products shall become void, if the Customer cannot refute a relevant substantiated statement claiming that one of these circumstances has caused the defect. The same applies if the deficiencies are due to poor installation, wrong assembly, poor maintenance, defective or negligent treatment or storage, defective repairs not executed by the Supplier, modifications made without our written consent, excessive load, unsuitable conditions of use and inappropriate operating materials or to any chemical, electro-chemical or electrical influences for which we are not responsible as well as weather or other natural influences.

(3) Any claims made by the Customer relating to defects require the Customer to have duly fulfilled its obligations according to section 377 of the German Commercial Code (HGB) in terms of examining the goods and lodging a complaint, otherwise any claims shall be insubstantial: The Customer shall notify the Supplier's customer service manager of any defects in writing immediately, at the latest within one week of receipt of the delivery. In case of defects which cannot be detected within this period despite careful inspection, the Supplier shall be informed in writing immediately after they have been discovered.

(4) If the Customer has notified the Supplier of a defect, the Supplier shall demand, at its choice and expense, that either:

a) the defective part or unit be sent to the Supplier for repair and subsequent return; or

b) the Customer shall keep the defective part or unit ready and the Supplier shall send a service technician to carry out the repair on the Buyer's premises.

Should the Customer request that rectification work be carried out at a certain location, the Supplier may do so; in this case, any exchanged parts shall not be invoiced, however, working time and travelling expenses shall have to be paid according to the Supplier's standard rates.

(5) If the rectification should fail after an appropriate period, the Customer can, at its choice, either demand a price reduction or withdraw from the contract.

(6) Liability for normal wear is excluded.

(7) Only the immediate Customer is entitled to claims due to defects against the Supplier and such claims are not transferable.

(8) In case of parts used for completion, refurbishment or modification sent by the Customer to the Supplier, the latter will assume no liability for their behaviour during processing; should the materials become damaged during processing, the Supplier shall be indemnified for the processing costs incurred up to that point, unless the damage is due to an intentional or grossly negligent breach of duty by the Supplier or its vicarious agent or a breach of duty that is of material importance to the object of the contract. This limitation of liability does not apply to personal injury or death.

§ 7 Replacement Parts

For a period of five years following delivery of a machine, the Supplier shall deliver replacement parts for that machine at the current prices.

§ 8 Retention of Title

(1) Until settlement of all accounts receivable to which the Supplier should be entitled from the Customer now or in future arising from any legal grounds (including all balance claims from current account), the following securities shall be granted to the Supplier, which it will release on request at its choice insofar as their value exceeds the accounts receivable lastingly by more than 10%.

(2) The goods remain the property of the Supplier. Processings or modifications of the goods are always made for the Supplier as manufacturer, but without any obligation for it. Should the Supplier's (co-)ownership expire as a result of combination of items, it is agreed upon already now that the Customer's (co-)ownership of this combined item is transferred to the Supplier in a pro rata manner (with regard to the invoice value). The Customer shall store the Supplier's (co-)property free of charge. Goods for which the Supplier is entitled to (co-) ownership will hereinafter be referred to as 'goods under reservation'.

(3) The Customer is entitled to process and sell the goods under reservation in proper business dealings, provided that it is not in default of payment. Pledging or assignment as security is inadmissible. Any other accounts receivable (including all balance claims from current account) arising from resale or any other legal ground (insurance, unlawful act) regarding the goods under reservation are already now assigned in full by the Customer to the Supplier as security. The Supplier authorises the Customer irrevocably to collect the accounts receivable transferred to the Supplier for the Supplier's account in its own name. This collection authorisation can only be revoked if the Customer does not duly meet its payment obligations.

(4) Should any third parties have access of any kind to the goods under reservation, especially by orders of attachment, the Customer shall draw attention to the fact that the goods are the Supplier's property and shall inform the Supplier immediately, so that the Supplier can enforce its rights of ownership. In as far as the third party is unable to reimburse the Supplier for judicial or out-of-court costs arising in this context, the Customer shall be liable for such costs.

(5) In the event of conduct in violation of the contract on the part of the Customer – in particular default of payment – the Supplier shall be entitled to withdraw from the contract and to demand the return of the goods under reservation.

(6) Up to the complete payment of the goods under reservation, the Customer is obliged to keep the Supplier informed about the location of the goods under reservation at any time.

§ 9 Payment

(1) Unless agreed otherwise, the Supplier's invoices are payable 30 days after invoicing without deductions.
The Supplier is entitled, despite provisions made by the Customer stipulating otherwise, at first to credit payments made by the Customer against its older debts and shall inform the Customer of the type of transaction made. In the case that expenses have been incurred or interest accrued, the Supplier is entitled to credit the payment at first against the expenses, then the interest and finally against the main service.

(2) A payment is deemed to have been made only when the Supplier has the amount at its disposal. In case of cheques the payment is deemed as having been made when the cheque is cashed.

(3) Should the Customer be in default of payment, the Supplier shall be entitled to demand interest at a rate of 8 percentage points above the base rate as lump-sum compensation from the relevant time onwards. A lower rate is to be applied if the Customer can provide evidence of a lower burden; the Supplier may provide evidence of a higher damage.

(4) Should the Supplier learn of any circumstances that call the Customer's credit standing into question, in particular in case that a cheque is not cashed or payments are suspended, or should the Supplier learn of any other circumstances which call the Customer's credit standing into question, the Supplier shall be entitled to deem the total remaining debt as due, even if it has accepted cheques. In this case the Supplier is also entitled to demand payments in advance or securities.

(5) The Customer is only entitled to set-off, retention or reduction, even in case that complaints have been made or compensating claims pleaded, when the compensating claims have been determined to be final and beyond dispute. The Customer is, however, also entitled to retention due to compensation claims arising from the same contractual relationship.

§ 10 Design Changes

The Supplier reserves the right to make design changes at any time; however, it is not obliged to include such changes also in products already delivered.

Terms and Conditions of Sale and Payment

§ 11 Patents

In case of custom-made products, the examination and the liability with respect to any third party's property rights is exclusively the responsibility of the Customer. The Customer shall be responsible towards the Supplier in full scope that any third party's property rights will not be infringed hereby and shall hold the Supplier harmless from any possible claims for damages made by third parties due to such an infringement.

(2) The Supplier, in turn, shall indemnify the Customer and its customers with regard to claims arising from violation of copyrights, trademarks or patents, unless the design of a delivery item originates from the Customer. As far as the amount of the indemnification is concerned, the Supplier's obligation to indemnify is limited to the expected damage.
An additional prerequisite for the indemnification is that the conducting of legal proceedings is to be left to the Supplier and that the stated violation of rights is to be assigned exclusively to the design of the Supplier's delivery items without combination or usage together with other products.

(3) The Supplier has the choice to release itself from the obligations taken on in paragraph 1 by either

a) procuring the required licences with regard to the alleged violated patents

or

b) putting an altered delivery item or parts thereof at the Customer's disposal, which in case of exchange with the violating delivery item or part thereof will eliminate the accusation of violation with regard to the delivery item.

§ 12 Secrecy

The Supplier's technical documents, drawings, service and operating manuals as well as any and all information received from the Supplier during the contract negotiations regarding the function and the structure of the goods are subject to secrecy. The Customer agrees to prevent unauthorized persons from getting access to the corresponding information.

(2) Unless expressly otherwise agreed in writing, the information submitted to the Supplier in connection with the orders are deemed as non-confidential.

§ 13 Liability

(1) Claims for damages are excluded regardless of the type of violation, including unlawful acts, insofar as they are not due to intention or gross negligence.

(2) As far as the violation of material contractual obligations is concerned, the Supplier is liable for any negligence, however only up to the amount of the foreseeable damage. Claims for lost profit, saved expenditure, claims for damages by third parties as well as claims for other indirect and consequential damages cannot be made unless an essential quality feature guaranteed by the Supplier has the express purpose of protecting the Customer from such damage.

(3) The liability limitations and exclusions in paragraphs 1 and 2 are not applicable to claims which are due to deceitful conduct on the part of the Supplier, nor in case of a liability for guaranteed quality features, nor to claims according to the product liability law, nor to injuries to life, body or health.

(4) Insofar as the liability of the Supplier is excluded or limited, this shall also apply to the Supplier's clerical staff, employees, representatives and vicarious agents.

§ 14 Final Provisions

(1) A transfer of the contractual rights and obligations to third parties by the Customer is not permitted unless the Supplier has given its written consent.

(2) These General Terms and Conditions and the complete legal relationship between Supplier and Customer are subject to the laws of the Federal Republic of Germany. The provisions of the UN Convention on Contracts for the International Sale of Goods shall not apply.

(2) Minden shall be the exclusive place of jurisdiction for any disputes arising directly or indirectly out of the contractual relationship if the Customer is a trader, a legal person under public law or a special fund under public law. The Supplier shall also have the right to institute legal proceedings at the Customer's place of business.

(3) In accordance with section 33 of the German Data Protection Law (BDSG) it is hereby pointed out that the Customer's data will be stored by the Supplier. These data will be processed in accordance with both the Federal Data Protection Law (BDSG) and the Teleservices Data Protection Law.

(4) Should one of the provisions of these General Terms and Conditions or a provision of any other agreement be or become ineffective, this will not affect the validity of any other provisions or agreements.

(Extract from the Federal Data Protection Law) in accordance with section 26 of the Federal Data Protection Law (BDSG) we hereby inform you that our bookkeeping is computerised and that in this context we will also store the data regarding your company in our computers. These data became known to us only from our mutual business relationship and their storage is therefore permissible according to section 23 of the BDSG.

Version of April 2004