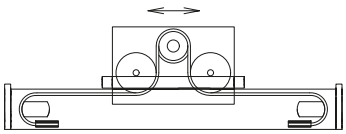
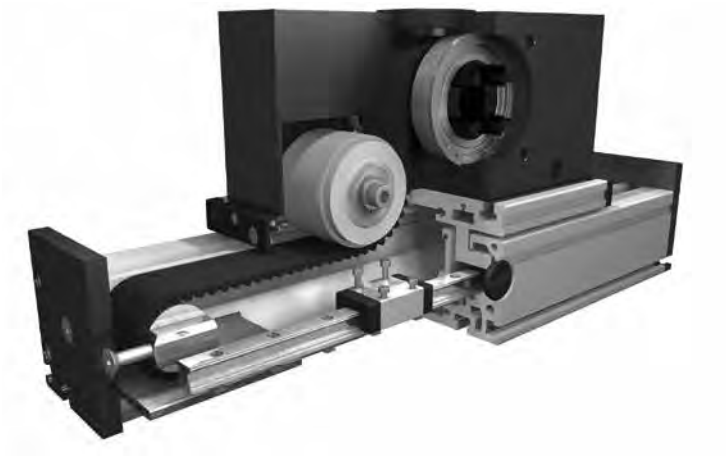
Linear system **DSSZ 120, 160, 200**

BELT DRIVE

- OMEGA SYSTEM
- HORIZONTAL INSTALLATION POSITION
- OFF-CENTER LOADS



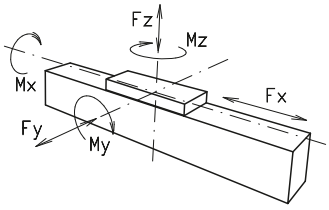


Function:
This linear unit consists of a rectangular aluminium profile with integrated rail guides. The carriage, which has runner blocks, is driven by a timing belt. Each standard pulley includes a coupling claw on one side and is equipped with maintenance-free ball bearings. Belt tension can be readjusted 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.

9.1

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)	1900	1800	4000	3800	5900	5750
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
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/s) max	5		5		5	
Tensile force						
permanent (N)	1900		4000		5900	
0,2 s (N)	2090		4300		6350	
Geometrical moments of inertia of aluminium profile						
I_x mm^4	5,61x10^5		2,13x10^6		48,07 x10^5	
I_y mm^4	34,19x10^5		12,33x10^6		259,99 x10^5	
Elastic modulus N/mm^2	70000		70000		70000	

For life-time calculation use our homepage.

** referred to life-time*

Driving torque:

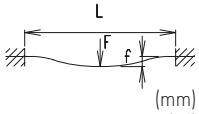
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

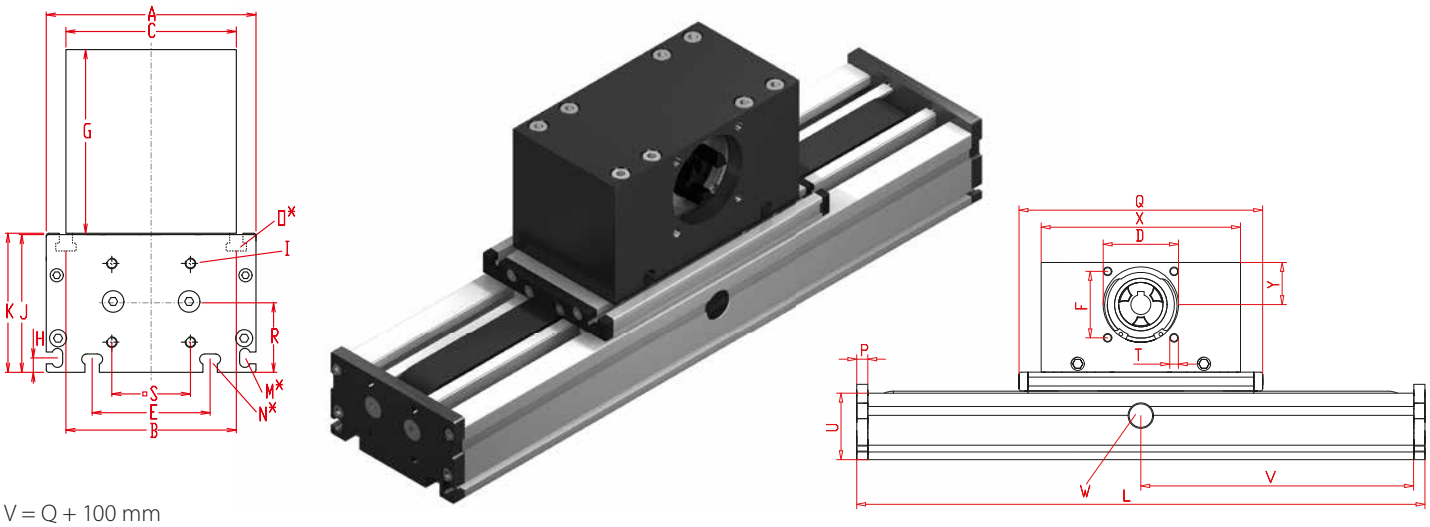
Deflection:

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



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

Linear system **DSSZ 120, 160, 200**



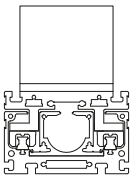
V = Q + 100 mm
W = servicing position
*For slide nuts refer to chapter 2.2 page 2

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

Size	Basic length L	A	B	C	D -0,05	E	F	G	H	J	K	I 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	143	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

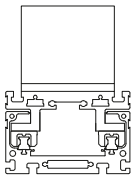
1 **Choice of guide body profile:** Stainless versions upon request.

(1)



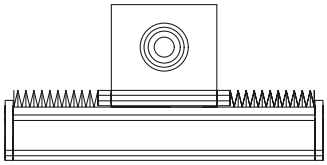
internal profile with cover bands

(2)



without internal profile and cover bands

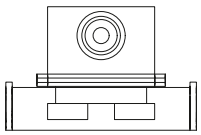
(3)



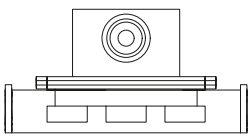
with bellows

0 **Choice of carriages:**

(0)



(1)

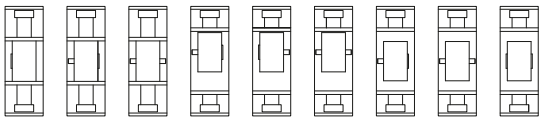


Size	Version 0		Version 1	
	Q	L	Q	L
120	200	230	200	230
160	290	330	290	330
200	340	380	340	380

0 **Drive version:**

0

0 1 2 3 4 5 6 7 8



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	1500
Pos.		1	2	3	4	5	6	7	

Basic length + stroke = total length

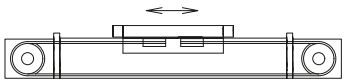
Sample ordering code:
DSSZ160, body profile with internal profile without cover bands, standard carriage, coupling claws on one side, 1170 mm stroke

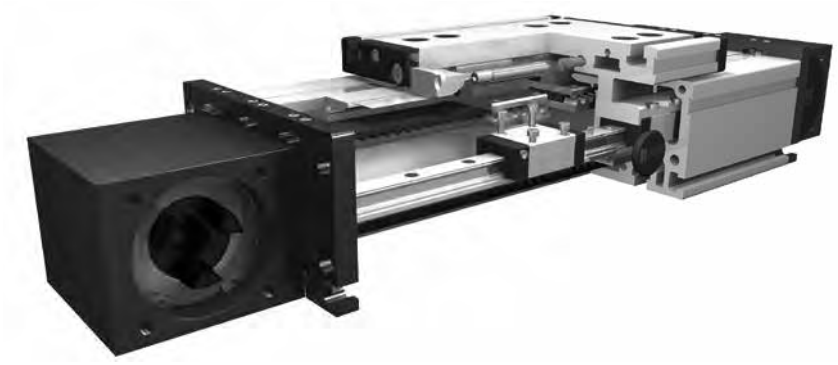
Linear system **DSZ 120, 160, 200**

BELT DRIVE

UNIVERSAL SYSTEM

LONG TRAVERSE PATH >6000 MM



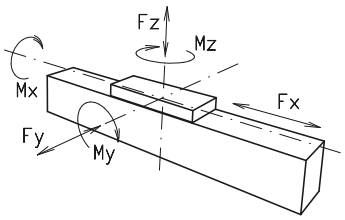


Function:
This unit consists of a rectangular aluminium profile with 2 integrated rail guidess. The carriage is moved by a belt drive. Each standard pulley has got one coupling claw on one side. Belt tension can be readjusted by a simple screw adjustment device in the carriage. This device can also be 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, it can also be supplied without cover bands. With this series, multi-part assembled units with long strokes can be realized.

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.

9.1

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)	894	800	1900	1800	4000	3800
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
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		4	
Speed						
(m/s) max	5		5		5	
Tensile force						
permanent (N)	900		1900		4000	
0,2 s (N)	1000		2090		4300	
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	

For life-time calculation use our homepage.

** referred to life-time*

Driving torque:

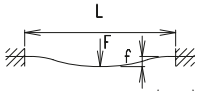
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

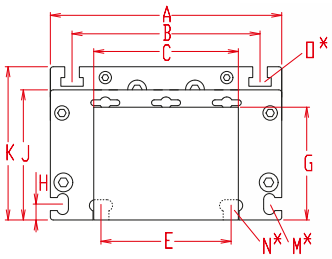
Deflection:

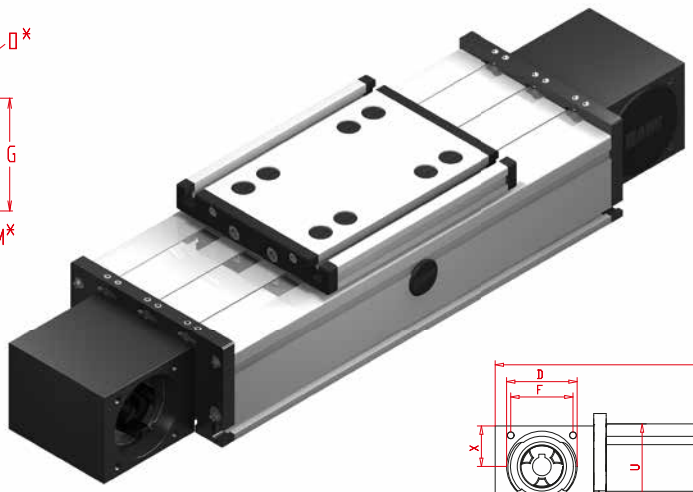
$$f = \frac{F * L^3}{E * I * 192}$$

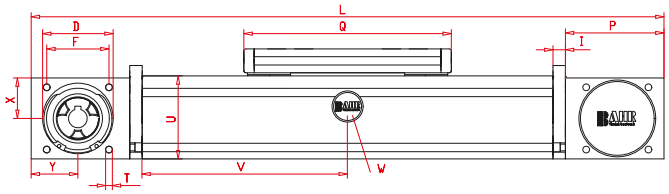


f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

Linear system **DSZ 120, 160, 200**







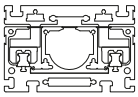
V = Q + 100 mm
W = servicing position

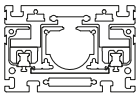
*For slide nuts refer to chapter 2.2 page 2

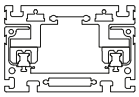
Increasing the carriage length will increase the basic length by the same amount.

Size	Basic length L	A	B	C	D -0,05	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

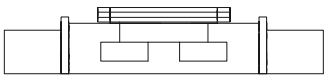
0 **Choice of guide body profile:** Stainless versions upon request.

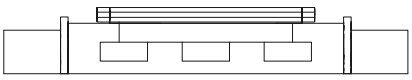
(0)

internal profile
with cover bands

(1)

internal profile
without cover bands

(2)

without internal profile
and cover bands

0 **Choice of carriages:**

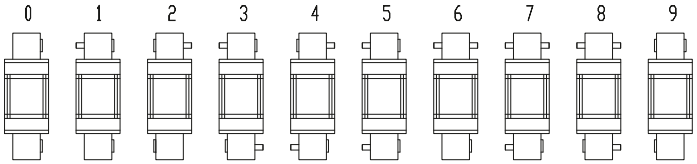
(0)


(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

0 **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 / Coupling:

Size	Shaft ø h6 x length	Key	Coupling
120 (5M25)	14 x 35	5x5x28	14
160 (8M30)	18 x 45	6x6x40	19
160 (8M50)	25 x 35	8x7x32	---- *
200 (8M50)	22 x 45	6x6x40	24
200 (8M70)	30 x 55	8x7x50	---- *

* Coupling claw not possible with belt widening.

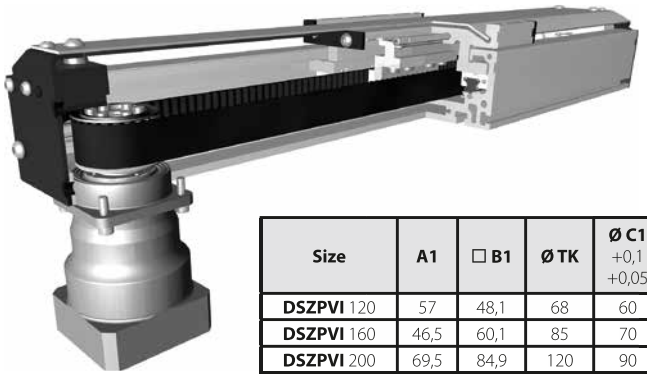
DSZ	160	1	0	0	0	0	7	1	1500
	Pos.	1	2	3	4	5	6	7	

Basic length + stroke = total length

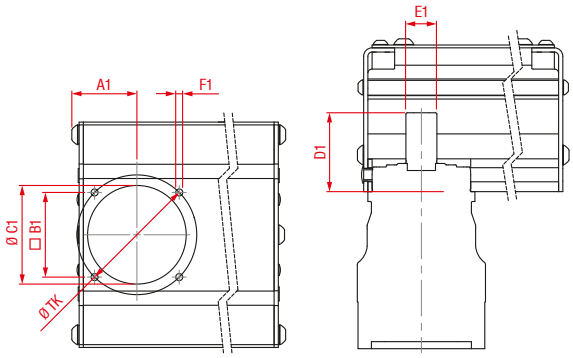
Sample ordering code:
DSZ160 with internal profile and cover bands, standard carriage, coupling claw on one side, 1060 mm stroke.

Linear system **DSZPVI 120, 160, 200**

BELT DRIVE



Size	A1	□ B1	Ø TK	Ø C1 +0,1 +0,05	D1	E1	F1
DSZPVI 120	57	48,1	68	60	48	16	M5
DSZPVI 160	46,5	60,1	85	70	56	22	M6
DSZPVI 200	69,5	84,9	120	90	88	32	M8

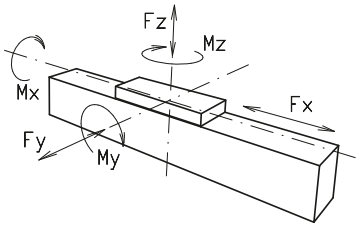


Function:
This unit consists of a rectangular aluminium profile with 2 integrated rail guides. The carriage is moved by a belt drive. On the drive side the pulley is beared on the shaft of a planetary gear. Belt tension can be readjusted by a simple screw adjustment at the opposite side of the drive. A special curved aluminium sheet is covering the carriage side. There is only a small gap between carriage and aluminium sheet. Because of its special design it is possible to drive the carriage over the pulley areas. This fact is making the unit very compact.

Fitting position: As required, max. length **DSZPVI** 120 / 1600mm, **DSZPVI** 160 / 1800mm, **DSZPVI** 200 / 2000mm
Carriage mounting: By tapped holes.
Unit mounting: T-slots
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.

9.1

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)	894	800	1900	1800	4000	3800
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
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	
Speed						
(m/s) max	5		5		5	
Tensile force						
permanent (N)	900		1900		4000	
0,2 s (N)	1000		2090		4300	
Geometrical moments of inertia of aluminium profile						
I_x mm⁴	5,61x10⁵		2,32 x 10⁵		48,07 x 10⁵	
I_y mm⁴	34,19x10⁵		123,36 x 10⁵		259,99 x 10⁵	
Elastic modulus N/mm²	70000		70000		70000	

For life-time calculation use our homepage.

** referred to life-time*

Driving torque:

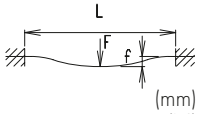
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

Deflection:

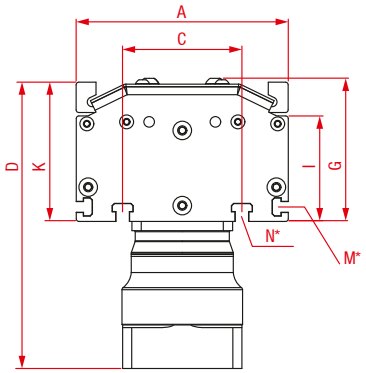
$$f = \frac{F * L^3}{E * I * 192}$$



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

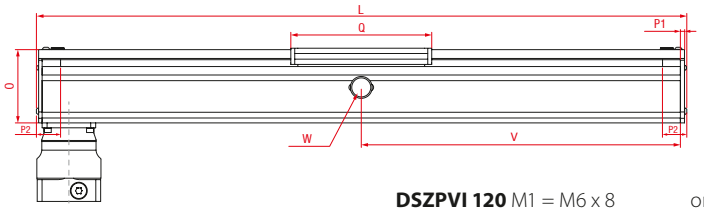
Linear system **DSZPVI 120, 160, 200**

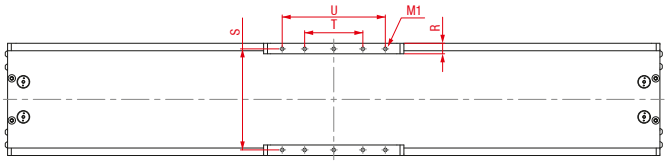
Dimensions (mm)



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

Optionally available with angular planetary gearbox





DSZPVI 120 M1 = M6 x 8 only 8 threaded holes in the carriage

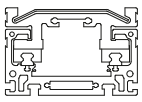
*For slide nuts refer to chapter 2.2 page 2 **DSZPVI 160** M1 = M8 x 12 **DSZPVI 200** M1 = M10 x 12 W = servicing position

Size	Basic length L	A	C	D	G	I	K	M for	N for	O	P1	P2	Q	R	S	T	U	Basic weight *without gearbox*	Weight per 100 mm
DSZPVI 120	225	120	78	169	82,5	60	79,5	M5	M6	78	6	35	152	11,5	106	40	120	3,45 kg	0,87 kg
DSZPVI 160	285	160	90	217,5	108,5	80	106	M6	M8	104	8,25	43,5	196	15	144	80	160	10,27 kg	1,55 kg
DSZPVI 200	350	200	140	251	132,5	100	129	M8	M10	128	10	45,5	248	17	180	100	200	18,20 kg	2,14 kg

9.1

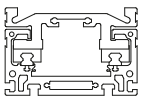
0 **Choice of guide body profile:** Stainless versions upon request.

(0)



with cover profile

(1)

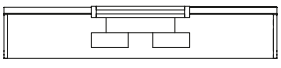


without cover profile

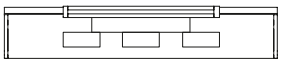
belt connection

0 **Choice of carriages:**

(0)



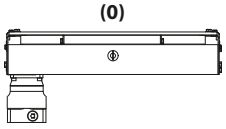
(1)



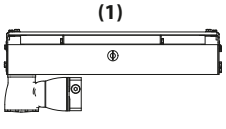
Size	Version 1	
	Q	L
120	>152	>225
160	>228	>330
200	>290	>430

0 **Drive version:**

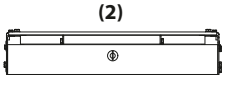
(0)



(1)



(2)



(0) planetary gearbox
(1) angular planetary gearbox
(2) without gearbox

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	**200**	8M50	224	28

Gearbox variants:

Gearbox		DSZPVI 120	DSZPVI 160	DSZPVI 200
Neugart	(0)	PLN 70	PLN 90	PLN 115
	(1)	WPLN 70	WPLN 90	WPLN 115
SEW	(0)	PSKC 221	PSKC 321	PSKC 521
Wittenstein	(0)	SP+060	SP+075	SP+100
	(1)	SK+060	SK+075	SK+100

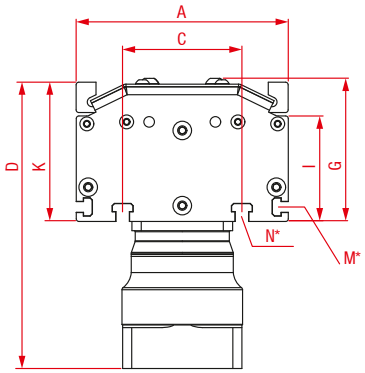
DSZPVI	160	1	0	0	0	0	7	1	1500
	Pos.	1	2	3	4	5	6	7	

Basic length + stroke = total length

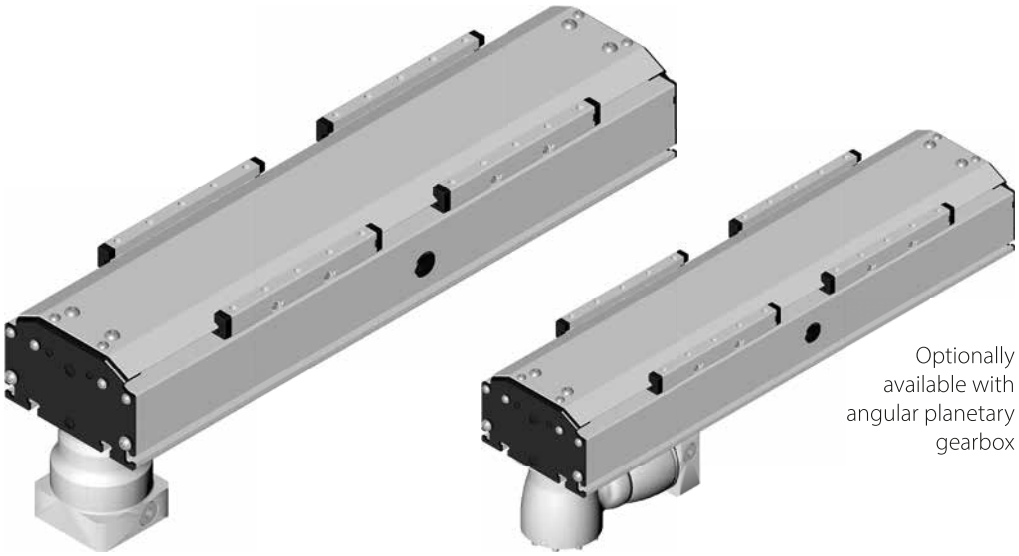
Sample ordering code:
DSZPVI 160 with cover profile, standard carriage, with planetary gearbox, 1202 mm stoke.

Linear system **DSZPVI 120, 160, 200**

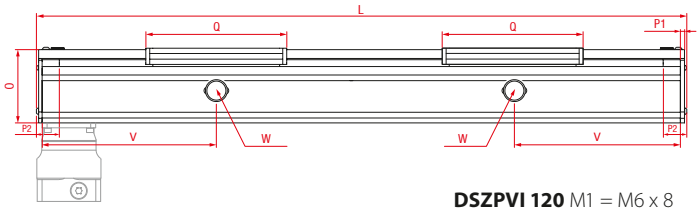
BELT DRIVE, WITH TWO DRIVEN CARRIAGES

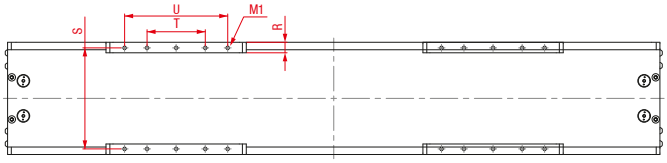


Increasing the carriage length will increase the basic length by the same amount.



Optionally available with angular planetary gearbox





*For slide nuts refer to chapter 2.2 page 2

DSZPVI 120 M1 = M6 x 8 only 8 threaded holes in the carriage
DSZPVI 160 M1 = M8 x 12 **DSZPVI 200** M1 = M10 x 12

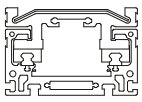
V = Q + 100
W = servicing position

Size	Basic length L	A	C	D	G	I	K	M for	N for	O	P1	P2	Q	R	S	T	U	Basic weight *without gearbox*	Weight per 100 mm
DSZPVI 120	380	120	78	169	82,5	60	79	M5	M6	78	2	35	152	11,5	106	40	120	4,3 kg	0,9 kg
DSZPVI 160	485	160	90	217,5	108,5	80	106	M6	M8	104	3	43,5	196	15	144	80	160	12,1 kg	2,3 kg
DSZPVI 200	600	200	140	251	132,5	100	129	M8	M10	128	3	45,5	248	17	180	100	200	22,1 kg	3,2 kg

9.1

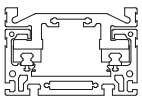
0 **Choice of guide body profile:** Stainless versions upon request.

(0)



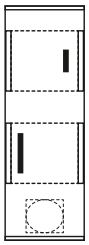
with cover profile

(1)



without cover profile

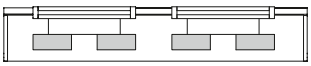
Baugröße	Ausführung 1	
	Q	L
120	>152	>380
160	>228	>549
200	>290	>684



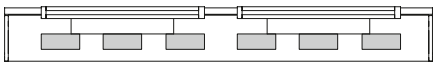
belt connection

0 **Choice of carriages:**

(0)

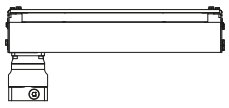


(1)

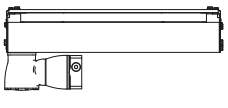


0 **Drive version:**

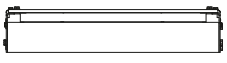
(0)



(1)



(2)



(0) planetary gearbox
(1) angular planetary gearbox
(2) without gearbox

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	**200**	8M50	224	28

Gearbox variants:

Gearbox		DSZPVI 120	DSZPVI 160	DSZPVI 200
Neugart	(0)	PLN 70	PLN 90	PLN 115
	(1)	WPLN 70	WPLN 90	WPLN 115
SEW	(0)	PSKC 221	PSKC 321	PSKC 521
Wittenstein	(0)	SP+060	SP+075	SP+100
	(1)	SK+060	SK+075	SK+100

DSZPVI	160	1	0	0	0	0	7	1	1500
	Pos.	1	2	3	4	5	6	7	

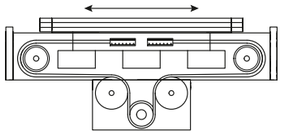
Basic length + stroke = total length

Sample ordering code:
DSZPVI 160, right - left version, with cover profile, standard carriage, with planetary gearbox, 1015 mm stoke

Linear system **DSZS 120, 160, 200**

BELT DRIVE

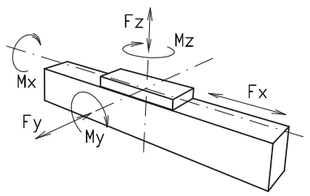
- INDEPENDENT INSTALLATION POSITION
- OMEGA SYSTEM
- LIFTING SYSTEM



Function:
This unit consists of a rectangular aluminium profile with 2 integrated rail guidess. The carriage is moved by a belt drive. An innovation is that the toothed belt is diverted within a drive block positioned centrically. The result is an enormous compactness with regard to the overall system length. The toothed drive pulley has a coupling claw in the standard version. 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 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	160		200	
permitted dyn. Forces*	5000 km	10000 km	5000 km	10000 km
F_x (N)	1900	1800	4000	3800
F_y (N)	5570	3900	15600	11080
F_z (N)	7050	5020	20600	14600
M_x (Nm)	358	255	1285	915
M_y (Nm)	369	262	1375	980
M_z (Nm)	364	258	1345	960
All forces and torques related to the following: existing values $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$ table values				
No-load torque				
Nm without cover bands	1,5		2,0	
Nm with cover bands	2,1		4	
Speed				
(m/s) max	5		5	
Tensile force				
permanent (N)	1900		4000	
0,2 s (N)	2090		4300	
Geometrical moments of inertia of aluminium profile				
I_x mm^4	21,32x10^5		4,81 x10^6	
I_y mm^4	123,36x10^5		26,0 x10^6	
Elastic modulus N/mm^2	70000		70000	

For life-time calculation use our homepage.

** referred to life-time*

Driving torque:

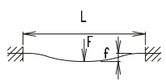
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

Deflection:

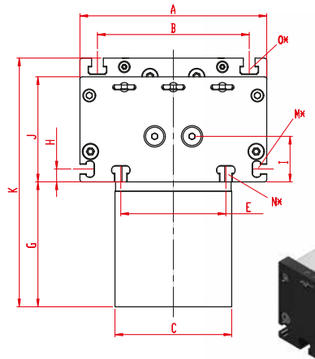
$$f = \frac{F * L^3}{E * I * 192}$$

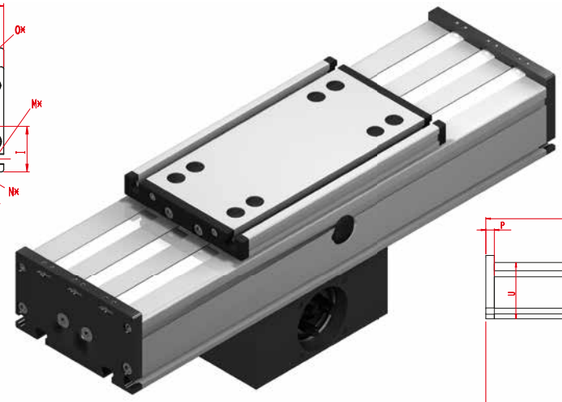


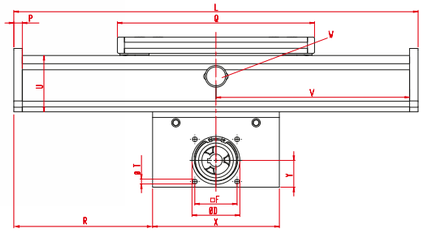
f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

Linear system **DSZS 120, 160, 200**

Dimensions (mm)







V = Q + 100 mm
W = servicing position

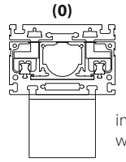
*For slide nuts refer to chapter 2.2 page 2

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

Size	Basic length	A	B	C	D -0,05	E	F	G	H	I	J	K	M for	N for	O for	P	Q	R	T	U	X	Y	Basic weight	Weight per 100 mm
DSZS 120	230	120	96	80	47	78	42	84,5	10	28,7	68	167	M5	M6	M6	10	156	50	M6	60	130	30	6,2 kg	0,9 kg
DSZS 160	310	160	130	100	68	90	60	107	11	39	90	213	M6	M8	M8	12	280	65	M8	80	180	39	23,0 kg	1,9 kg
DSZS 200	380	200	160	130	90	140	80	146	15	48,5	110	275	M8	M10	M10	15	340	60	M10	100	270	60	33,0 kg	2,4 kg

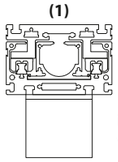
0 **Choice of guide body profile:** Stainless versions upon request.

(0)



internal profile
with cover bands

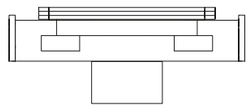
(1)



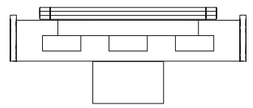
internal profile
without cover bands

0 **Choice of carriages:**

(0)

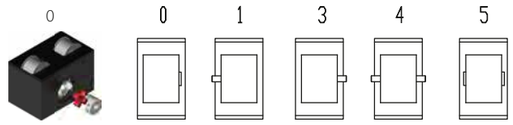


(1)



Size	Version 0		Version 1	
	Q	L	Q	L
120	156	230	156	230
160	280	310	280	310
200	340	380	380	420

0 **Drive version:**



5 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**	5M 25	130	26
0	**7**	**160**	8M 30	192	24
0	**9**	**200**	8M 50	256	32

Shaft dimensions / Coupling claw:

Size	Shaft ø h6 x length	Key	Coupling
120	14 x 35	5x5x28	14
160	18 x 45	6x6x40	19
200	22 x 45	6x6x40	24

DSZS	160	1	0	0	0	0	7	1	1500
	Pos.	1	2	3	4	5	6	7	

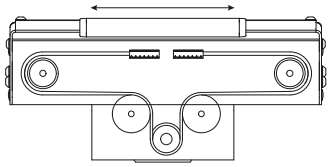
Basic length + stroke = total length

Sample ordering code:
DSZS160 with internal profile and cover bands, standard carriage, coupling claw on one side, 1190 mm stroke.

Linear system **DSZS 120 P, 160 P, 200 P**

BELT DRIVE

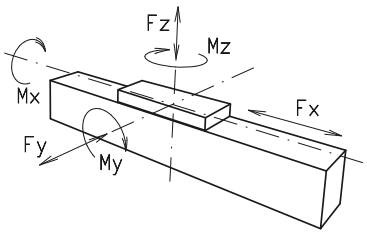
- INDEPENDENT INSTALLATION POSITION
- OMEGA SYSTEM
- LIFTING SYSTEM
- COVER PROFILE



Function:
The guide body consists of a rectangular aluminium profile with two integrated rail guides. The carriage, which is running on four runner blocks, is driven by a revolving timing belt. The novelty is that the timing belt is diverted into a drive block positioned centrically. This results in an extraordinary compactness with regard to the overall length of the system. The driving toothed pulley is provided with a coupling claw as a standard. The belt tension can be easily readjusted via a tensioning device within the bearing block. The openings in the guide body are closed by an aluminium profile, leaving only small slits open on the sides. The cover profile can be adjusted according to the mounting position.
The advantages compared to the DSZS positioning system are: The number of components prone to wear such as cover bands and sliding blocks is reduced and the fact that there is no friction makes it possible to use smaller motors. In addition, the cover profile, which is fixed with only a few screws, improves the serviceability and maintainability.

Fitting position: As required. Max. length DSZS 120P / 1600mm, DSZS 160P / 1800mm, DSZS 200P / 2000mm
Carriage mounting: By tapped holes.
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	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
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	
Speed						
(m/s) max	5		5		5	
Geometrical moments of inertia of aluminium profile						
I_x mm^4	5,61 x 10^5		21,32 x 10^5		48,07 x 10^5	
I_y mm^4	34,19 x 10^5		123,36 x 10^5		259,99 x 10^5	
Elastic modulus N/mm^2	70.000		70.000		70.000	

For life-time calculation use our homepage.

** referred to life-time*

Driving torque:

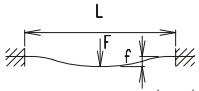
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

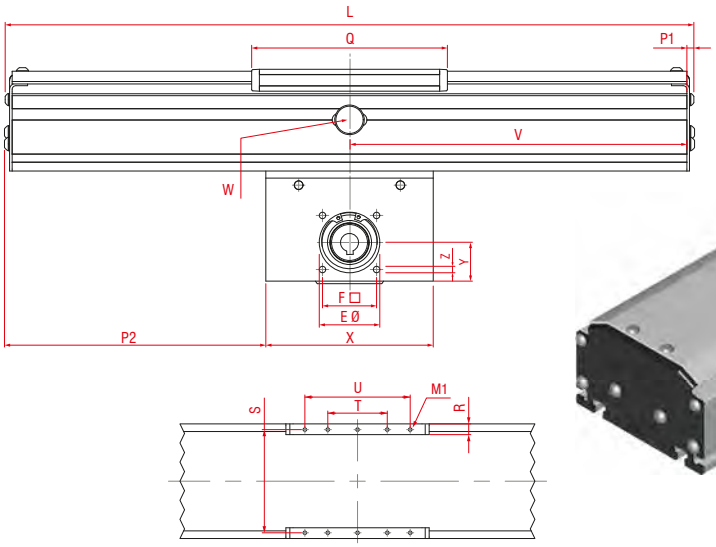
Deflection:

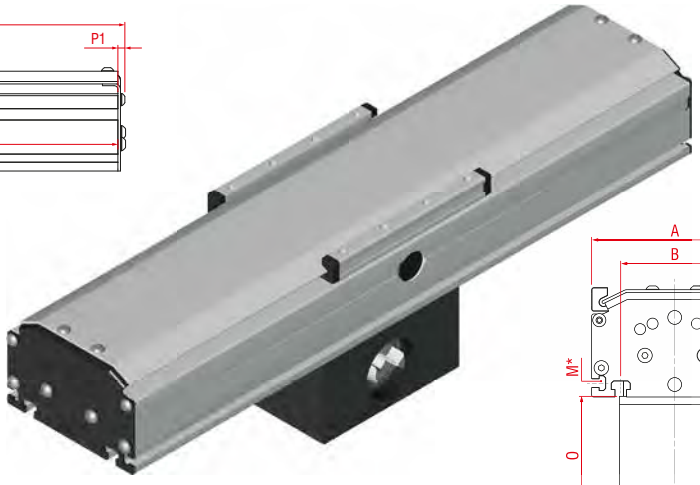
$$f = \frac{F * L^3}{E * I * 192}$$

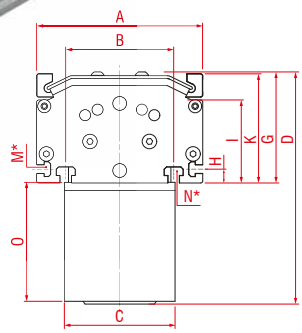


f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

Linear system **DSZS 120 P, 160 P, 200 P**







*For slide nuts refer to chapter 2.2 page 2

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

Size	A	B	C	D	E Ø	F □	G	H	I	K	M for	N for	O	P1	P2	R	S	T	U	X	Y	Z	Basic weight	Weight per 100 mm
DSZS 120 **P**	120	78	80	169	47	42	80,5	10	60	79	M5	M6	85,5	6	32	11,5	106	40	120	130	30	M6	5,4 kg	0,87 kg
DSZS 160 **P**	160	90	100	219	68	60	108,5	11	80	106	M6	M8	107	8,25	51,5	15	144	80	160	180	38	M8	13,7 kg	1,55 kg
DSZS 200 **P**	200	140	130	281	90	80	132,5	15	100	129	M8	M10	146	10	33,5	17	180	100	200	270	60	M10	28,7 kg	2,14 kg

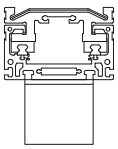
0 **Choice of guide body profile:** Stainless versions upon request.

V = Q + 100 mm W = servicing position

DS 120 M1 = M6 x 8
only 8 threaded holes in the carriage

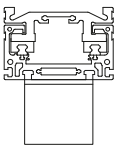
DS 160 M1 = M8 x 12 **DS 200** M1 = M10 x 12

(0)



with cover profile

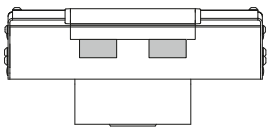
(1)



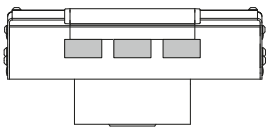
without cover profile

0 **Choice of carriages:**

(0)



(1)

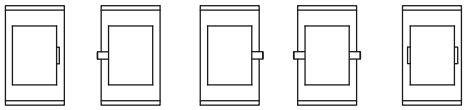


Size	Version 0		Version 1	
	Q	L	Q	L
120	152	192	152	192
160	196	283	228	315
200	248	338	296	386

0 **Drive version:**

0

0 1 3 4 5



5 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**	5M 25	130	26
0	7	**160**	8M 30	192	24
0	9	**200**	8M 50	256	32

Shaft dimensions / Coupling claw:

Size	Shaft ø h6 x length	Key	Coupling
120	14 x 35	5 x 5 x 28	14
160	18 x 45	6 x 6 x 40	19
200	22 x 45	6 x 6 x 40	24

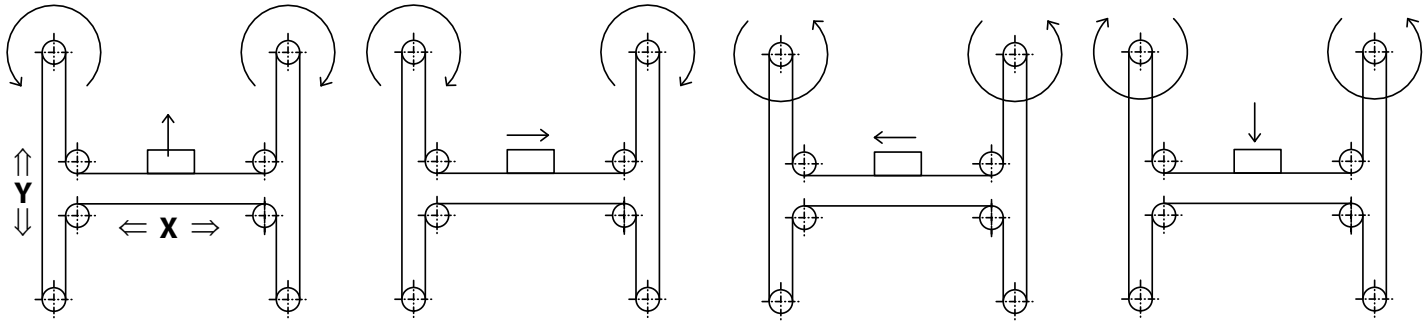
DSZS	120 P	1	0	0	0	0	4	1	1500
	Pos.	1	2	3	4	5	6	7	

Basic length + stroke = total length

Sample ordering code:
DSZS120 P with cover profile, standard carriage, coupling claw on one side, 1308 mm stroke.

Linear system **DSZU 120, 160, 200**

SURFACE PORTAL - STABLE DESIGN - RAIL GUIDE

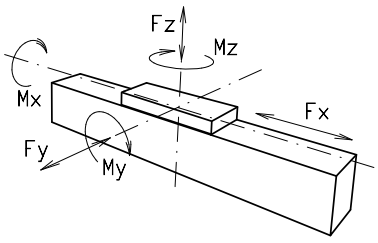


Function:
Surface portal with an integrated rail guide, which consists of two Y-axes and one X-axis. Due to the stable rectangular profile, high torques and loads can be absorbed; in addition, very high stability and low deflection are ensured for long axis systems. The drive is provided by a revolving belt, which remains connected by various deflection points. The adjustment is made by two motors. The coordinate is diagonal to the deflection points of the X-axis. Advantage: Only small weights are moved and thus high accelerations are achieved. Very compact design. Can be easily positioned and used with our matching mounting sets in the accessories section.

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

9.1

Forces/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	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
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 without cover bands	1,2		1,5		2	
Speed						
(m/s) max	5		5		5	
Tensile force						
permanent (N)	900		1900		4000	
0,2 s (N)	1000		2090		4300	
Geometrical moments of inertia of aluminium profile						
I_x mm^4	5,61x10^5		21,32x10^5		48,07x10^5	
I_y mm^4	34,19x10^5		123,36x10^5		259,99x10^5	
E-Modulus N/mm^2	70000		70000		70000	

For life-time calculation use our homepage.

** referred to life-time*

Driving torque:

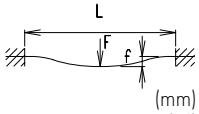
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

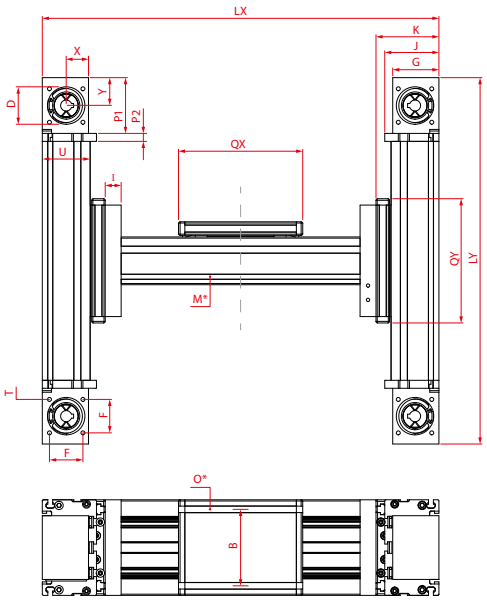
Deflection:

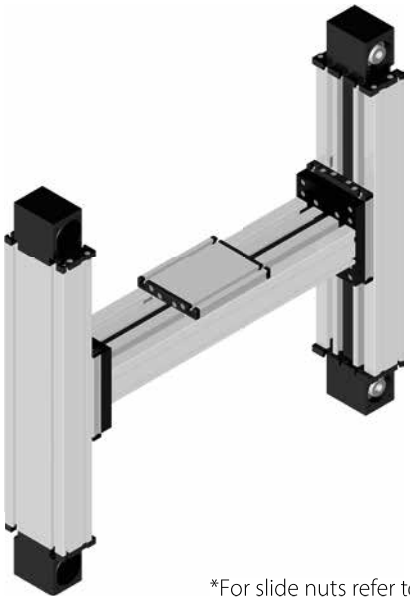
$$f = \frac{F * L^3}{E * I * 192}$$



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

Linear system **DSZU 120, 160, 200**



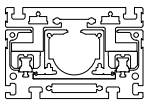


*For slide nuts refer to chapter 2.2 page 2

Size	Basic length		A	B	C	D - 0,05	E	F	G	I	J	K	M for	N for	O for	P1	P2	Qx	Qy	T	U	X	Y	Basic weight	Weight per 100 mm
	Lx	Ly																							
DSZU 120	354	316	120	96	80	47	78	42	58	20	68	79	M5	M6	M6	70	10	156	156	M6	60	28	35	14,42 kg	0,85 kg
DSZU 160	462	414	160	130	100	68	90	60	78	25	90	106	M6	M8	M8	95	12	200	200	M8	80	39	45	34,23 kg	1,69 kg
DSZU 200	648	540	200	160	130	90	140	80	97	50	110	129	M8	M10	M10	110	15	270	290	M10	100	49	50	74,11 kg	2,33 kg

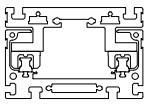
0 **Choice of guide body profile:** Stainless versions upon request.

(1)



internal profile
without cover bands

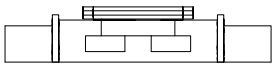
(2)



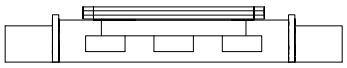
without internal profile
and cover bands

0 **Choice of carriages:**

(0)



(1)

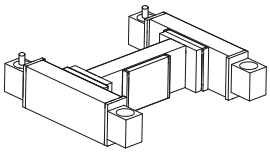


Size	Version 0				Version 1			
	Qx	Lx	Qy	Ly	Qx	Lx	Qy	Ly
120	156	354	156	316	156	354	156	316
160	200	462	200	414	230	492	230	444
200	270	648	290	540	310	668	310	560

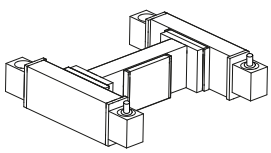
0 **Drive version:**

(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	4	**120**	5M25	130	26
0	7	**160**	8M30	176	22
0	9	**200**	8M50	224	28

Shaft dimensions / Coupling claw:

Size	Shaft ø h6 x length	Key	Coupling
120 (5M25)	14 x 35	5x5x28	14
160 (8M30)	18 x 45	6x6x40	19
200 (8M50)	22 x 45	6x6x40	24

DLZU	120	7	0	0	0	0	4	1	1500

X-Axis Basic length + stroke = total length

Y-Axes Basic length + stroke = total length

DLZU	120	8	0	0	0	0	4	1	700
Pos.	1	2	3	4	5	6	7		

For combination kits and connecting elements refer to chapter 2.2

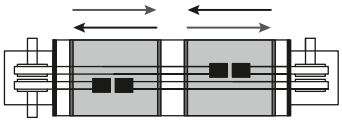
Sample ordering code:
DLZU 120, with standard body profile, standard carriage, coupling claw on one side, stroke X = 1074 / Y = 370 mm

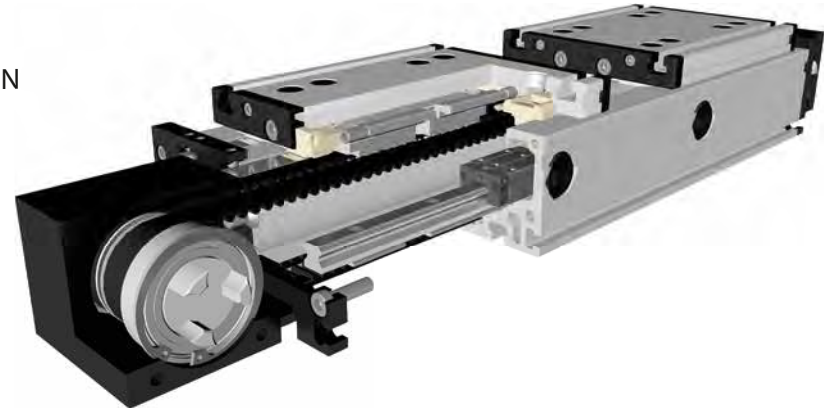
Linear system **DSZZ 160, 200**

BELT DRIVE - WITH TWO SEPARATELY DRIVEN CARRIAGES

INDEPENDENT CARRIAGES

HORIZONTAL INSTALLATION POSITION



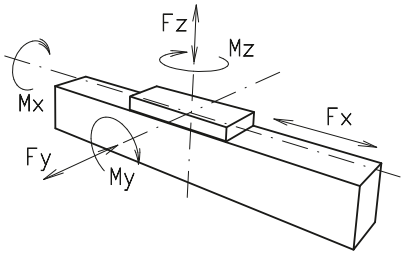


Function:
This unit consists of a rectangular aluminium profile with 2 integrated rail guides. The carriage is moved by a belt drive. Each carriage can be moved separately by its own drive. This unit has twin pulleys, which run on separate bearings, and two independent, parallel drive belts, one for each carriage. The openings of the guide body are sealed with 3 stainless steel cover bands to protect the guide from splash water and dust.

Fitting position: As required. Max. length 4.000 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.

9.1

Forces and torques



Size	160		200	
permitted dyn. Forces*	5000 km	10000 km	5000 km	10000 km
F_x (N)	1210	1100	1900	1800
F_y (N)	5570	3900	15600	11080
F_z (N)	7050	5020	20600	14600
M_x (Nm)	358	255	1285	915
M_y (Nm)	369	262	1375	980
M_z (Nm)	364	258	1345	960
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 ohne Abdeckband	1,5		2,0	
Nm mit Abdeckband	2,1		4	
Speed				
(m/s) max	5		5	
Tensile force				
permanent (N)	1210		1900	
0,2 s (N)	1331		2090	
Geometrical moments of inertia of aluminium profile				
I_x mm^4	21,32x10^5		48,07 x10^5	
I_y mm^4	123,36x10^5		259,99 x10^5	
Elastic modulus N/mm^2	70000		70000	

For life-time calculation use our homepage.

** referred to life-time*

Driving torque:

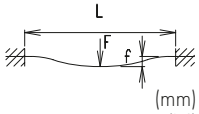
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

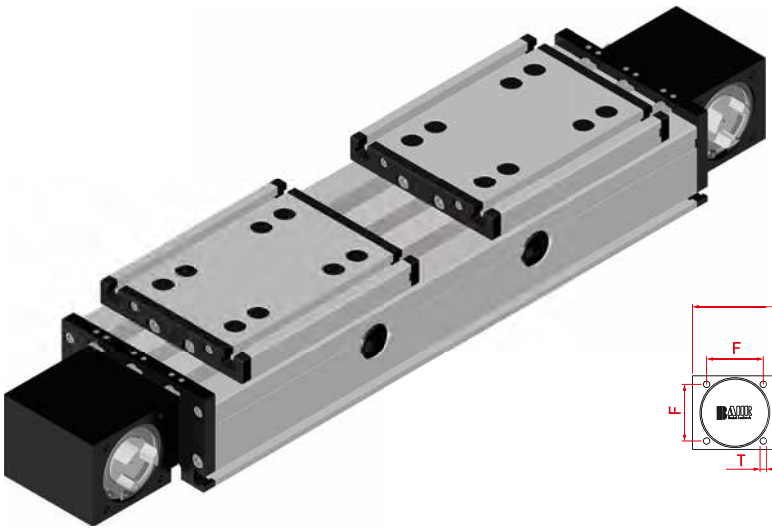
Deflection:

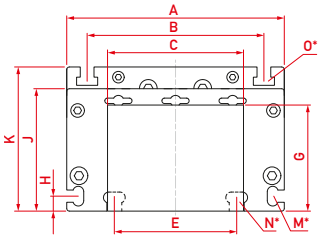
$$f = \frac{F * L^3}{E * I * 192}$$

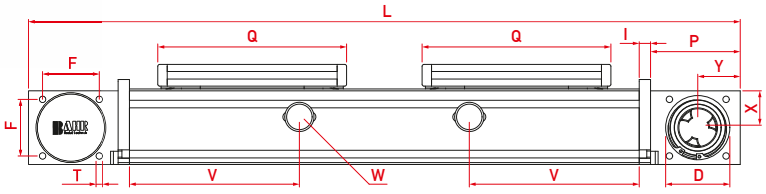


f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

Linear system **DSZZ 160, 200**







V = Q + 100 mm W = servicing position

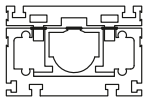
*For slide nuts refer to chapter 2.2 page 2

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

Size	Basic length L	A	B	C	D	E	F	G	H	I	J	K	M for	N for	O for	P	Q	T	X	Y	Basic weight	Weight per 100 mm
DSZZ 160	625	160	130	121	68	90	60	78	11	12	90	106	M6	M8	M8	95	200	M8	39	45	20,5 kg	1,95 kg
DSZZ 200	800	200	160	150	90	140	80	97	15	15	110	129	M8	M10	M10	110	270	M10	49	50	34,5 kg	2,90 kg

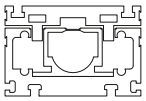
0 **Choice of guide body profile:** Stainless versions upon request.

(0)



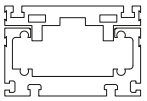
internal profile with cover bands

(1)



internal profile without cover bands

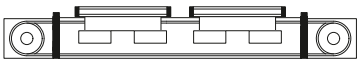
(2)



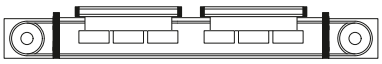
without internal profile and cover bands

0 **Choice of carriages:**

(0)

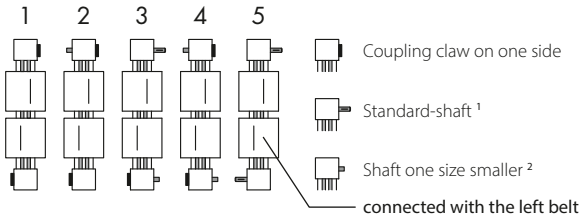


(1)



Size	Version 0		Version 1	
	Q	L	Q	L
160	200	625	230	685
200	270	800	310	880

0 **Drive version:**



Belt table:

Code No.		Size	Belt	mm/rev.	Number of teeth
0	6	**160**	8M 20	176	22
0	7	**200**	8M 30	224	28

Shaft dimensions / Coupling:

Size	Shaft ø h6 x length	Key	Coupling
DSZZ 160 ¹	Ø 18 x 45	6x6x35	19
DSZZ 160 ²	Ø 14 x 35	5x5xx28	19
DSZZ 200 ¹	Ø 22 x 45	6x6x40	24
DSZZ 200 ²	Ø 18 x 45	6x6x40	24

DSZZ	200	4	0	0	2	0	7	1	1500
	Pos.	1	2	3	4	5	6	7	

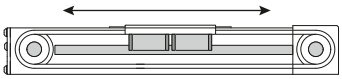
Basic length + stroke = total length

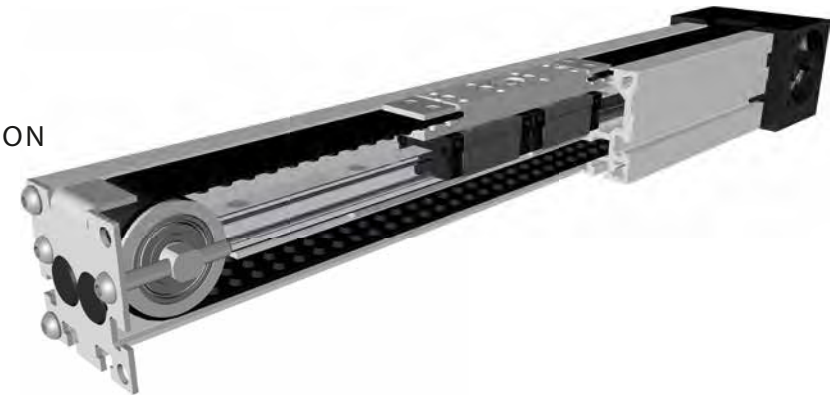
Sample ordering code:
DSZZ 200 with internal profile and cover bands, carriage version 0, drive version 2, 700 mm stroke.

Linear system **LSN 60, 80**

NUBBED BELT DRIVE

- LOW OPERATING VOLUME
- INDEPENDENT INSTALLATION POSITION
- NUBBED BELT
- LOW-VIBRATION RUN
- FOR 3D PRINTING APPLICATIONS

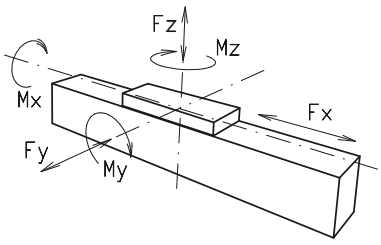




Function:
The guide body consists of an aluminium square profile with an integrated rail guide. The carriage is moved by a revolving interior nobbed belt. The advantage of this system: The belt is guided within the profile, so that the system is independent of the mounting position. The nobbed belt is self-tracking and has a very low operating noise level thanks to its nobs being offset by 45°. Furthermore, it is almost vibration-free in the transition sections. At the front face there is a timing belt deflection unit containing a toothed pulley with two coupling claws in the standard version. On the opposite side there is a bearing piece plate containing a tensioning device for the timing belt.

Mounting position: Variable, max. one-piece-length: 6.000 mm.
Carriage connection: By threaded holes.
Fixation: By T-slots and mounting sets. The linear axis can be combined with any T-slot profile.
Timing belt: N10 with reinforcing steel mesh, no backlash when changing direction, repeatability ± 0.1 mm.
Carriage support: In the standard version the carriage is positioned on two runner blocks which can be readjusted and maintained at each central servicing position. Two grease nipples at the carriage enable relubrication of the positioning system.

Forces and torques



Size	60		80	
permitted dyn. Forces*	5000 km	10000 km	5000 km	10000 km
F_x (N)	1170	1040	1900	1800
F_y (N)	1410	990	3570	2550
F_z (N)	3520	2500	8500	6050
M_x (Nm)	33	23	107	75
M_y (Nm)	104	73	310	222
M_z (Nm)	100	70	296	210
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		1,0	
Speed				
(m/s) max	5		5	
Geometrical moments of inertia of aluminium profile				
I_x mm^4	4,37x10^5		14,6x10^5	
I_y mm^4	5,78x10^5		17,1x10^5	
E-Modul N N/mm^2	70000		70000	

For life-time calculation use our homepage.

** referred to life-time*

Driving torque:

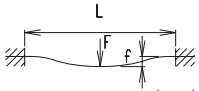
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

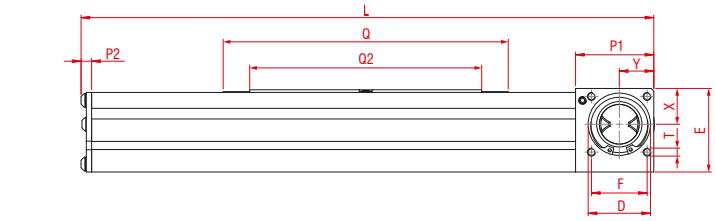
Deflection:

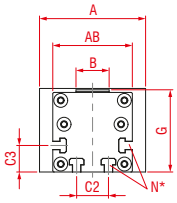
$$f = \frac{F * L^3}{E * I * 192}$$

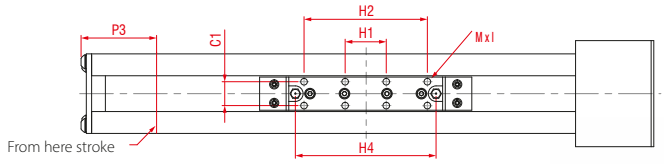


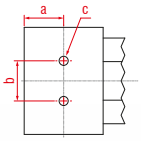
f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

Linear system **LSN 60, 80**

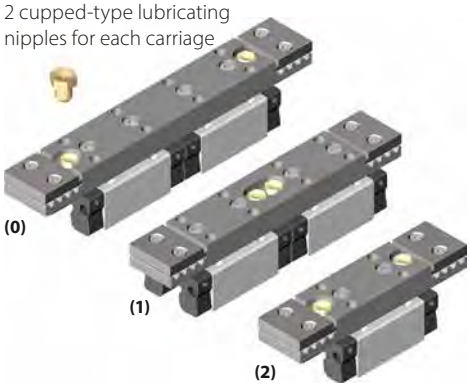




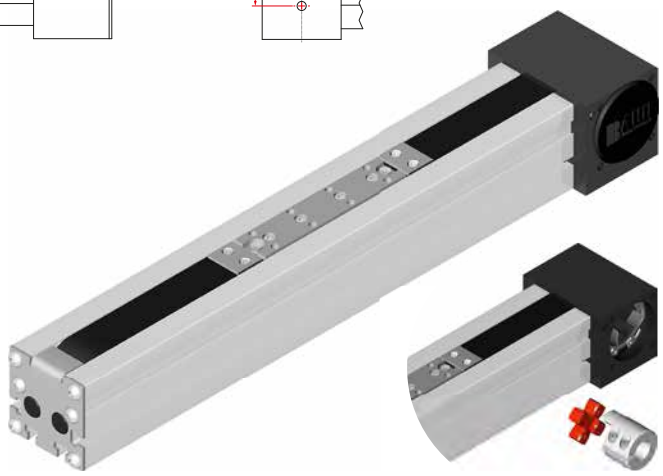




2 cupped-type lubricating nipples for each carriage



Hose connections available on request.



*For slide nuts refer to chapter 2.2 page 2

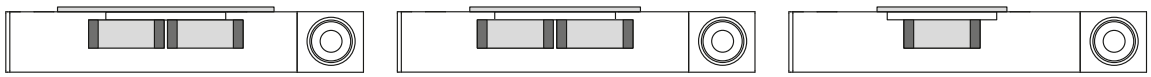
Size ❒	A	AB ❒	B	C1	C2	C3	D -0,05	E	F ❒	G	Mxl	N for	P1	P2	P3	T	X	Y	a	b	c	Weight per 100 mm
LSN 60	80	60	25	18	24	20	47	63	42	62,5	M6x10	M5	59	6	55	M6	27	26	29,5	30	M8	0,53 kg
LSN 80	100	80	25	18	30	22	68	93	60	83	M6x12	M6	90	8	73	M8	45	40	47,5	40	M10	0,87 kg

0 **Choice of guide body profile:**
(0) Standard **(1)** corrosion-protected screws

Carriage		L	Q	Q2	H1	H2	H4	Basic weight system
LS 60	Version (0)	274	160	116	31	93	106	3,06 kg
	Version (1)	254	140	96	32	84	10	2,62 kg
	Version (2)	214	100	56	31	--	48	2,07 kg
LS 80	Version (0)	382	219	149	40	120	133	7,69 kg
	Version (1)	367	204	134	40	120	12,5	7,41 kg
	Version (2)	310	147	77	40	--	60,5	6,39 kg

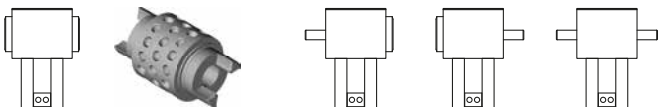
0 **Choice of carriages:**

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



0 **Drive version:**

0 1 2 6



Belt table:

Code No.		Size	Belt	mm/rev.	Number of teeth
0	8	**60**	Nubbed belt N10	130	13
0	8	**80**	Nubbed belt N10	176	18

Shaft dimensions / Coupling claw:

Size	Shaft Ø h6 x length	Feather key	Coupling
60	14 x 35	5x5x28	14
80	18 x 45	6x6x40	19

LSN	60	1	0	0	0	0	8	1	1500
Pos.		1	2	3	4	5	6	7	

Basic length + stroke = total length

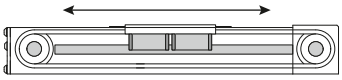
Sample ordering code:
LSN60, standard body profile, standard carriage , nubbed belt, double-sided coupling claw, 1226 mm stroke

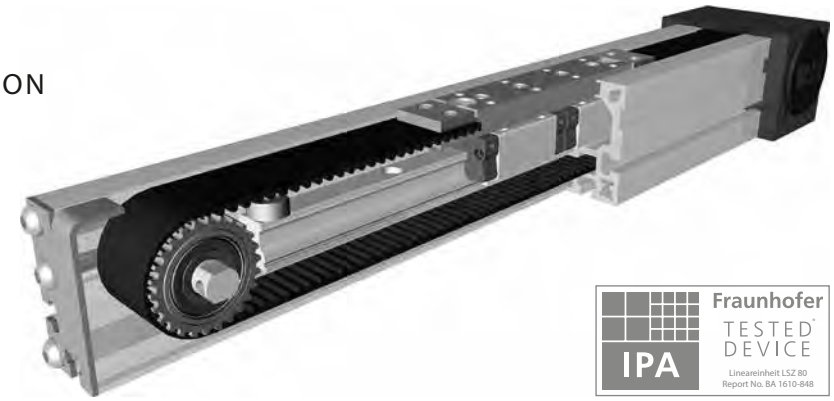
12.1

Linear system **LSZ 60, 80, 100**

BELT DRIVE

- INDEPENDENT INSTALLATION POSITION
- LONG TRAVERSE PATH > 6000 MM
- HIGH TORQUE ABSORPTION



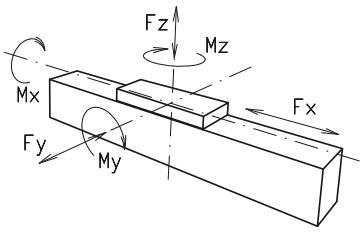


Fraunhofer IPA TESTED DEVICE
Lineareinheit LSZ 80
Report No. BA 1610-848

Function:
The guide body consists of an aluminium square profile with an integrated rail guide. The carriage is moved by means of a revolving interior timing belt. At the front face there is a timing belt deflection unit with integrated coupling claws integrated on two sides. The opposite front face is provided with a plate containing a tensioning device for the timing belt. With this series, multi-part assembled units with long strokes can be realized.

Mounting position: Variable, max. one-piece-length: 6.000 mm.
Carriage connection: By threaded holes.
Fixation: By T-slots and mounting sets. The linear axis can be combined with any T-slot profile.
Timing belt: HTD with reinforcing steel mesh, no backlash when changing direction, repeatability ± 0.1 mm.
Carriage support: In the standard version the carriage is positioned on two runner blocks which can be readjusted and maintained at each central servicing position. Two grease nipples at the carriage enable relubrication of the positioning system.

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)	1073	960	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
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		1,0		1,8	
Speed						
(m/s) max	5		5		5	
Geometrical moments of inertia of aluminium profile						
I_x mm^4	4,37x10^5		14,6x10^5		35,51x10^5	
I_y mm^4	5,78x10^5		17,1x10^5		46,41x10^5	
Elastic modulus N/mm^2	70000		70000		70000	

For life-time calculation use our homepage.

** referred to life-time*

12.1

Driving torque:

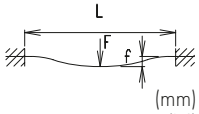
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

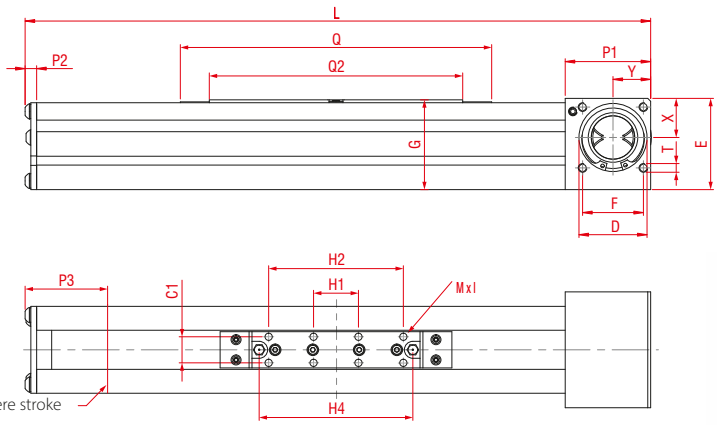
Deflection:

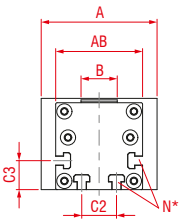
$$f = \frac{F * L^3}{E * I * 192}$$

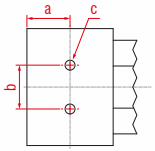


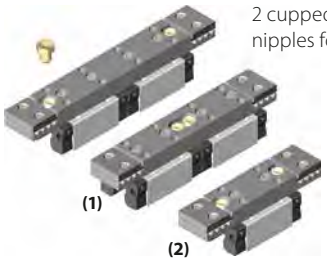
f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

Linear system **LSZ 60, 80, 100**









2 cupped-type lubricating nipples for each carriage

Hose connections available on request.

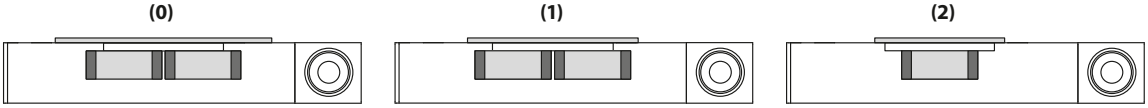
*For slide nuts refer to chapter 2.2 page 2

Size ❐	A	AB ❐	B	C1	C2	C3	D -0,05	E	F ❐	G	Mxl	N for	P1	P2	P3	T	X	Y	a	b	c	Weight per 100 mm
LSZ 60	80	60	25	18	24	20	47	63	42	62,5	M6x10	M5	59	6	55	M6	27	26	29,5	30	M8	0,53 kg
LSZ 80	100	80	25	18	30	22	68	93	60	83	M6x12	M6	90	8	73	M8	45	40	47,5	40	M10	0,87 kg
LSZ 100	130	100	42	30	40	30	90	110	80	103	M8x12	M8	110	11	109	M10	49,4	50	55	50	M12	1,35 kg

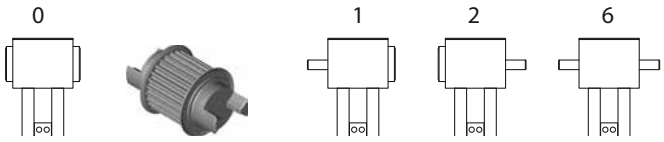
0 **Choice of guide body profile:**
(0) Standard **(1)** corrosion-protected screws
(4) expanded corrosion-protected version
(depending on the availability of components)

Carriage		L	Q	Q2	H1	H2	H4	Basic weight System
LS 60	Version (0)	274	160	116	31	93	106	3,06 kg
	Version (1)	254	140	96	32	84	10	2,62 kg
	Version (2)	214	100	56	31	--	48	2,07 kg
LS 80	Version (0)	382	219	149	40	120	133	7,69 kg
	Version (1)	367	204	134	40	120	12,5	7,41 kg
	Version (2)	310	147	77	40	--	60,5	6,39 kg
LS 100	Version (0)	470	251	180	33	99	172	12,43 kg
	Version (1)	455	235	164	83	149	18	12,20 kg
	Version (2)	370	151	80	66	---	69	10,43 kg

0 **Choice of carriages:**



0 **Drive version:**



Belt table:

Code No.		Size	Belt	mm/rev.	Number of teeth
0	3	**60**	5M 30	130	26
0	4	**80**	8M 30	176	22
0	7	**100**	8M 50	224	28

Shaft dimensions / Coupling claw:

Size	Shaft Ø h6 x length	Feather key	Coupling
60	14 x 35	5x5x28	14
80	18 x 45	6x6x40	19
100	22 x 45	6x6x40	24

LSZ	60	1	0	0	0	0	3	1	1500
	Pos.	1	2	3	4	5	6	7	

Basic length + stroke = total length

Sample ordering code:
LSZ60, standard body profile, standard carriage , double-sided coupling claw, 1226 mm stroke

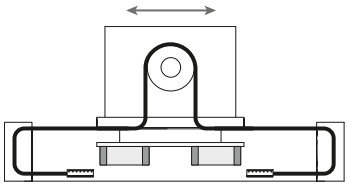
12.1

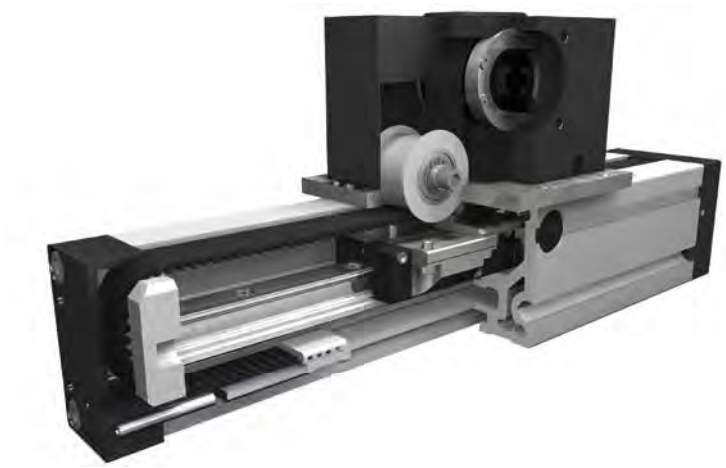
Linear system **QSSZ 60, 80**

BELT DRIVE

Ω OMEGA SYSTEM

CLEAN ROOM



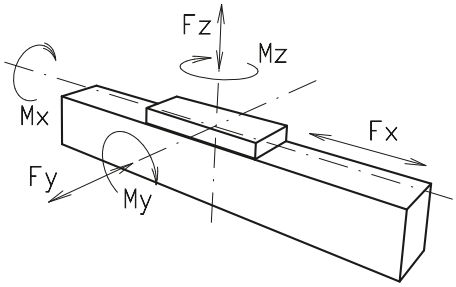


Function:
This linear unit consists of a square aluminium profile with integrated rail guidance. The carriage, which has runner blocks, is driven by a timing belt. Each standard pulley includes a coupling claw on one side and is equipped with maintenance-free ball bearings. Belt tension can be readjusted 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.

7.1

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/s) max	3		3	
Tensile force				
permanent (N)	Lifetime calculation see the internet			
Geometrical moments of inertia of aluminium profile				
I_x mm⁴	4,3x10⁵		14,3x10⁵	
I_y mm⁴	5,8x10⁵		18,7x10⁵	
Elastic modulus N/mm²	70000		70000	

For life-time calculation use our homepage.

** referred to life-time*

Driving torque:

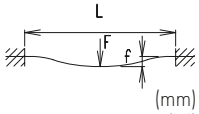
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

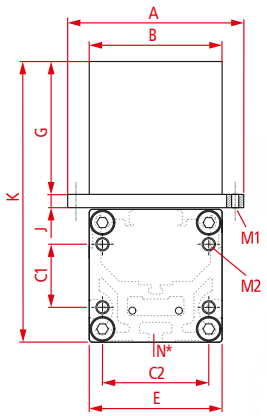
F = force (N)
P = pulley action perimeter (mm)
Si = safety factor 1,2 … 2
M_n = no-load torque (Nm)
n = rpm pulley (min^{-1})
M_a = driving torque (Nm)
P_a = motor power (KW)

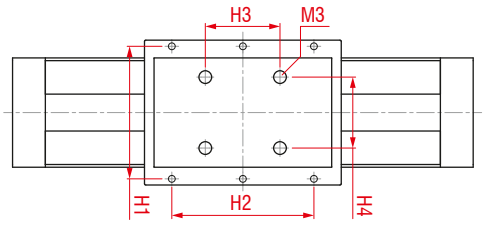
Deflection:

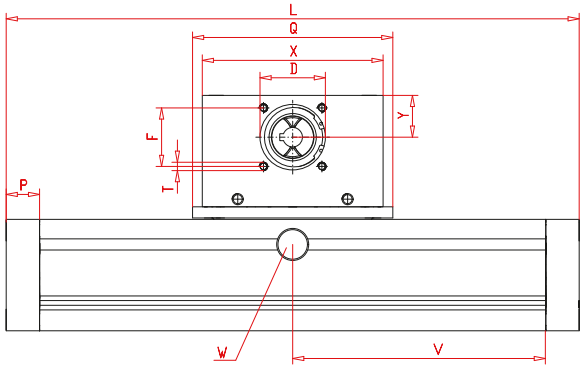
$$f = \frac{F * L^3}{E * I * 192}$$



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







V = Q + 100 mm
W = servicing position

*For slide nuts refer to chapter 2.2 page 2

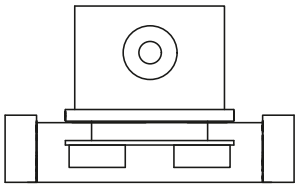
Size ❐	Basic length L	A	B	C1	C2	D -0,05	E	F	G	J	K	N for	P	Q	T	X	Y	Basic weight	Weight per 100 mm
QSSZ 60	168	60	60	28	48	37	60	32	65	7,50	134,5	M 5	20	124	M 5	110	20	3,30 kg	0,47 kg
QSSZ 80	200	106	80	38	62	47	80	42	80	8	169	M 6	24	144	M 6	130	30	5,90 kg	1,02 kg

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

Size	H1	H2	H3	H4	M1	M2	M3
QSSZ 60	---	---	60	45	---	M6	M8
QSSZ 80	97	104	---	---	M6	M8	---

0 **Choice of carriages:**

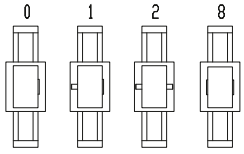
(0)



0 **Drive version:**

0

0 1 2 8



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 / Coupling claw:

Code No.		Size	Belt	Pulley		Coupling
				mm/rev.	Number of teeth	
0	**3**	**60**	5M15	100	20	9
0	**7**	**80**	5M25	130	26	14

QSSZ	80	1	0	0	0	0	7	1	1500
	Pos.	1	2	3	4	5	6	7	

Basic length + stroke = total length

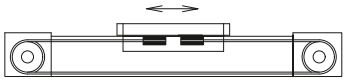
For additional accessories refer to chapter 2.2

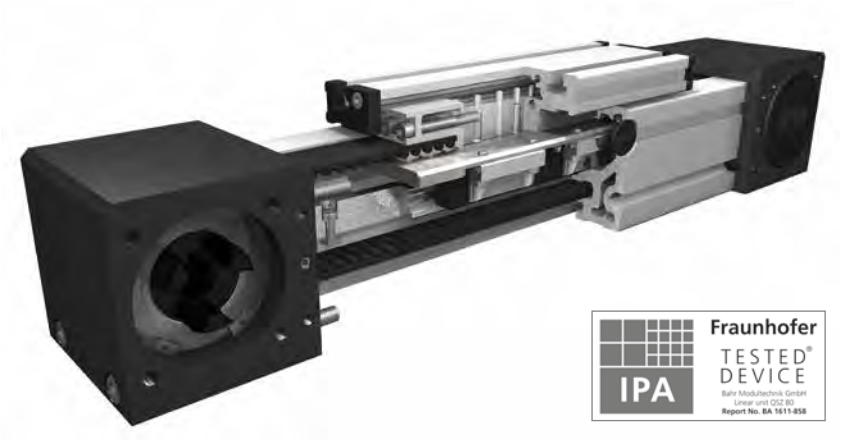
Sample ordering code:
QSSZ80, standard body profile, standard carriage, coupling claw on one side, 1300 mm stroke

Linear system **QSZ 60, 80, 100, 125**

BELT DRIVE

- HIGH LOAD CAPACITY
- LONG TRAVERSE PATH >6000 MM
- CLEAN ROOM





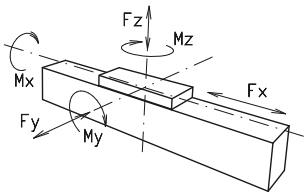
Fraunhofer IPA TESTED® DEVICE

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. This linear unit is suitable for application in clean rooms of clean-room classification 1.000 (corresponding to US Fed. Standard 209 E). With this series, multi-part assembled units with long strokes can be realized.

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.

7.1

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
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/s) max	5		5		5		5	
Tensile force								
permanent (N)	900		1900		4000		5900	
0,2 s (N)	1000		2090		4300		6350	
Geometrical moments of inertia of aluminium profile								
I_x mm^4	$4,3x10^5$		$14,3x10^5$		$31,8x10^5$		$74,9x10^5$	
I_y mm^4	$5,8x10^5$		$18,7x10^5$		$46,5x10^5$		$106,5x10^5$	
Elastic modulus N/mm^2	70000		70000		70000		70000	

For life-time calculation use our homepage.

** referred to lifetime*

Driving torque:

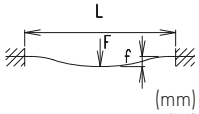
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

Deflection:

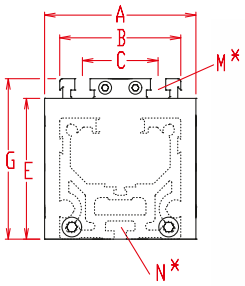
$$f = \frac{F * L^3}{E * I * 192}$$

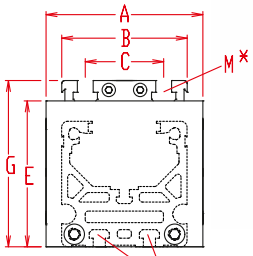


f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

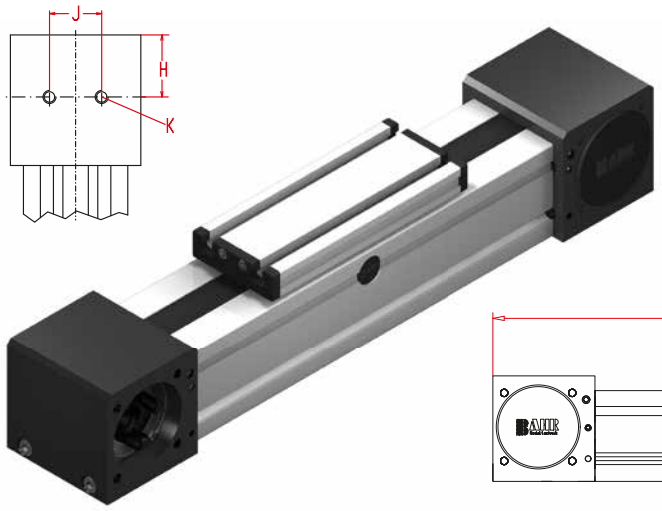
Linear system **QSZ 60, 80, 100, 125**

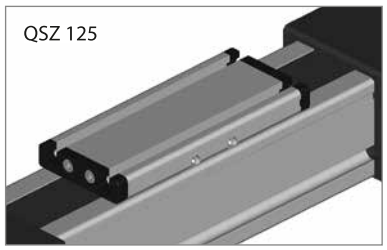
Dimensions (mm)

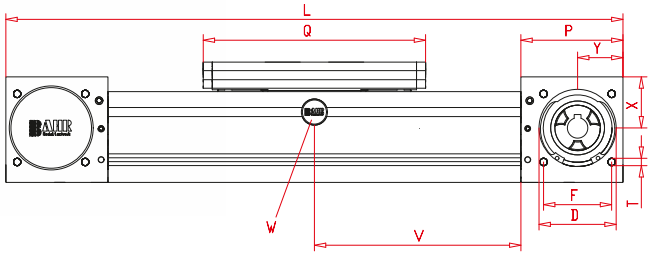




QSZ 125







*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 -0,05	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

V = Q + 100 mm
W = servicing position

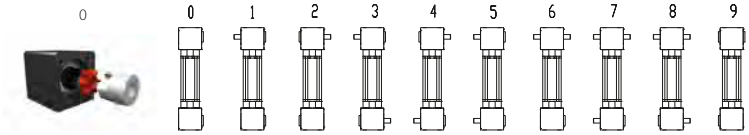
0 **Choice of guide body profile:**
(0) Standard **(1)** corrosion-protected screws
(4) expanded corrosion-protected version (depending on the availability of components)

0 **Choice of carriages:**

(0) **(1)** **(2)** **(3)** **(4)**

Size	Version 0		Version 1		Version 2		Version 3		Version 4	
	Q	L	Q	L	Q	L	Q	L	Q	L
60	177	300	152	280	242	370	302	430		
80	232	430	196	390	312	510	390	585		
100	268	510	260	500	362	610	448	690	628	860
125	300	570	260	530	365	635	467	740		

0 **Drive version:**



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 / Coupling claw:

Code No.		Size	Belt	Pulley		Coupling
				mm/rev.	Number of teeth	
0	**3**	**60**	5M25	130	26	14
0	**4**	**80**	8M30	176	22	19
0	**7**	**100**	8M50	224	28	24
0	**9**	**125**	8M70	288	36	28

QSZ	80	1	0	0	0	0	4	1	1500
	Pos.	1	2	3	4	5	6	7	

— Basic length + stroke = total length

For additional accessories refer to chapter 2.2

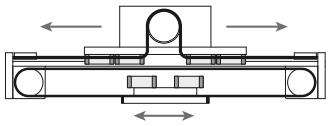
Sample ordering code:
QSZ80 with standard body profile, standard carriage, coupling claw on one side, 1070 mm stroke

Linear system **QSZT 80, 100**

BELT DRIVE

HORIZONTAL TELESCOPIC SYSTEM

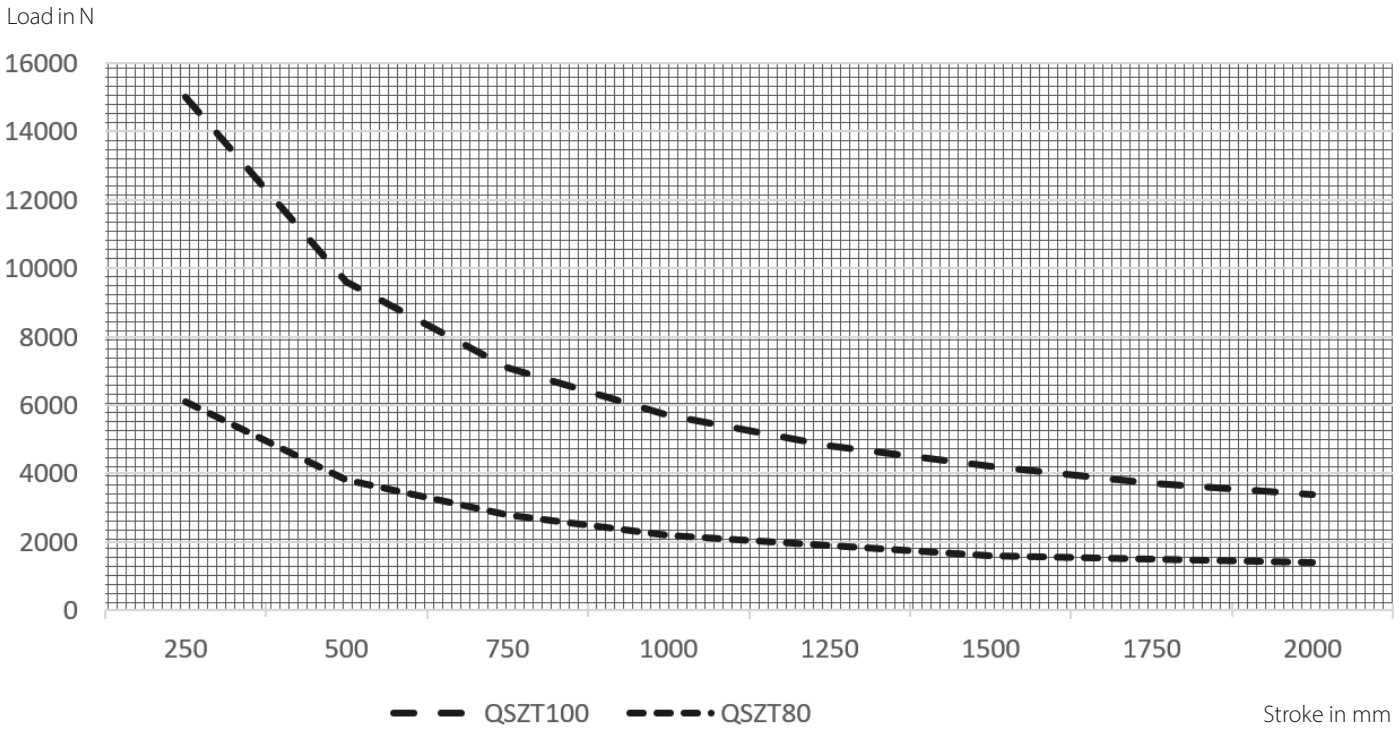
HIGH RIGIDITY



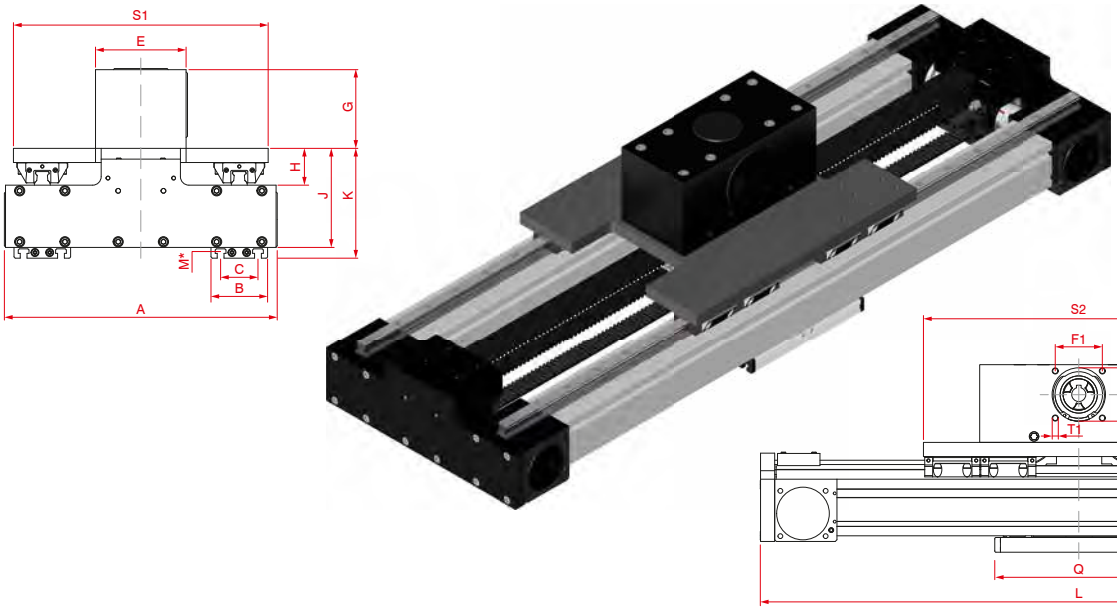
Function:
Linear unit consisting of two parallel QSZ axes. The carriage, which is connected to the runner blocks, is moved by means of a toothed belt. The belt tension can be easily readjusted via a tensioning device within the carriage. This device also helps to adjust the symmetry of the carriages. The system is driven by a central toothed belt with Omega deflection, and the special connection of the toothed belts results in a telescopic movement. The toothed pulley is equipped with maintenance-free ball bearings. The belt tension can be easily readjusted via a tensioning device on the bottom side. This linear system is designed for high loads.

7.1

Fitting position:	Preferably horizontal, Max. length 3.000 mm without joints.
Carriage mounting:	By T-slots.
Unit mounting:	By mounting sets.
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 voer runner blocks which can be adjusted and serviced at a central servicing position. For longer carriages the number of runner blocks can be increased.



Linear system **QSZT 80, 100**



V = Q + 100 mm W = servicing position

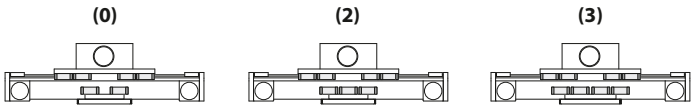
*For slide nuts refer to chapter 2.2 page 2

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

Size	Basic length L	A	B	C	D1	D2	E	F1	F2	G	H	I	J	K	M for	P	Q	S1	S2	T1	T2	Basic weight	Weight per 100 mm
QSZT 80	500	388	80	50	90	68	130	80	60	130	54,5	20	147,5	160,5	M8	90	262	364	450	M10	M8	56 kg	2,4 kg
QSZT 100	600	478	100	66	110	90	160	100	80	139	65	25	175	194	M10	110	298	450	550	M10	M10	96 kg	4,1 kg

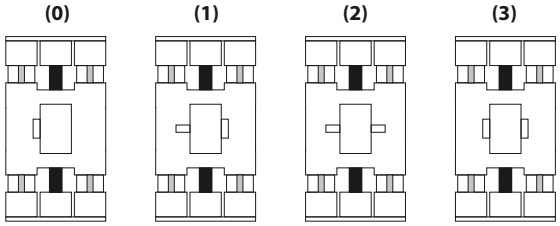
0 **Choice of guide body profile:**
(0) Standard **(1)** corrosion-protected screws
(4) expanded corrosion-protected version (depending on the availability of components)

0 **Choice of carriages:**



Size	Version 2		Version 3	
	Q	L	Q	L
80	356	580	504	730
100	392	700	508	790

0 **Drive version:**



Size	Shaft ø h6 x length	Key
80	22 x 45	6x6x40
100	30 x 55	8x7x40

Version 3 is the same as 0,
but with double sided coupling claw.

Belt table / Coupling claw:

Code No.		Size	Belt	Pulley		Coupling
				mm/rev.	Number of teeth	
0	4	**80**	8M 30/50	256	32	24
0	7	**100**	8M 50/70	304	38	28

QSZT	80	4	0	0	2	0	7	1	1500
Pos.		1	2	3	4	5	6	7	

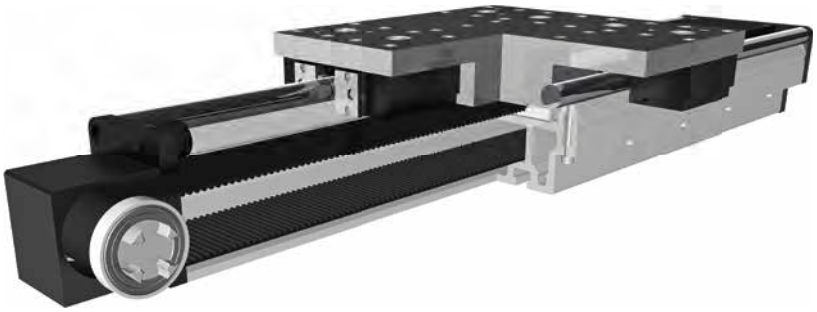
Basic length + stroke = total length

Sample ordering code:
QSZT 80 with standard body profile, carriage version 0, drive version 1, 1000 mm stroke

Linear system **ALLZ 203, 204**

BELT DRIVE

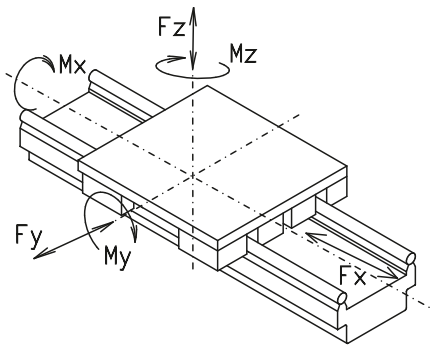
- ROLLER GUIDE
- HEAVY LOAD
- HIGH LOAD CAPACITY



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 5.000 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/s) max	8		8	
Geometrical moments of inertia of aluminium profile				
I_x mm^4	2,26 x 10^7		2,98 x 10^7	
I_y mm^4	8,75 x 10^7		10,22 x 10^7	
Elastic modulus N/mm^2	70000		70000	

For life-time calculation of rollers use our homepage.

Driving torque:

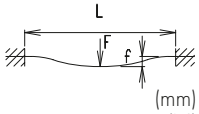
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

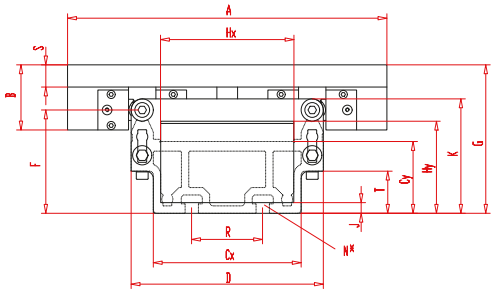
Deflection:

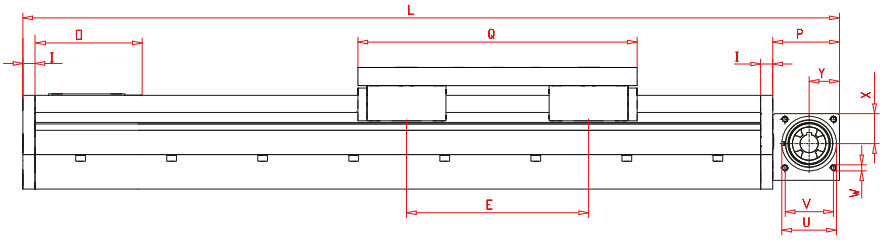
$$f = \frac{F * L^3}{E * I * 192}$$

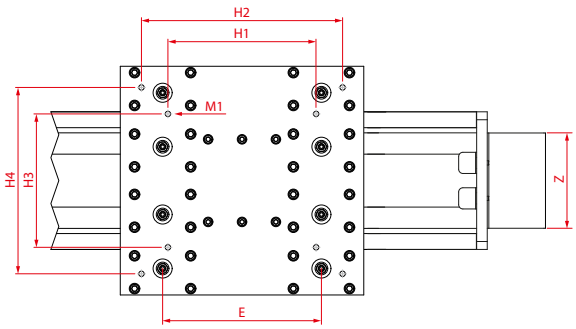


f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

Linear system **ALLZ 203, 204**







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

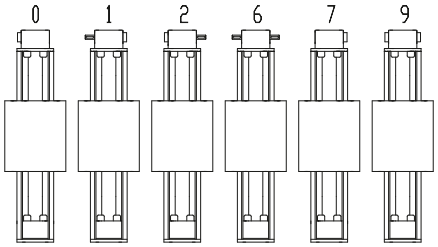
Size	Basic length L	A	B	Cx	Cy	D	F	G	Hx	Hy	I	J	K	N for	O	P	R	S	T	U -0,05	V	W	X	Y	Z	Basic weight	Weight per 100 mm
ALLZ 203	798	432	88	200	97	260	139,6	200,5	180,5	124,5	20	14,5	154,5	M16	182	110	96	30	57	90	80	10	49,5	50	180	90 kg	4,0 kg
ALLZ 204	822	460	80	200	97	270	139,6	199	180,5	124,5	20	14,5	165	M16	182	110	96	30	57	90	80	10	49,5	50	180	92 kg	4,9 kg

Carriage	E	Q	H1	H2	H3	H4	M1
ALLZ 203	300	460	280	380	252	352	M12
ALLZ 204	355	490	---	---	---	---	M12

3 **Guide rod size:**
(3) Ø=30 **(4)** Ø=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

Shaft dimensions / Coupling claw:

Size	Shaft ø h6 x length	Key	Coupling
203	30 x 55	8x7x50	24
204	30 x 55	8x7x50	24

ALLZ 20	**3**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**2000**
Pos.		1	2	3	4	5	6	7	

Basic length + stroke = total length

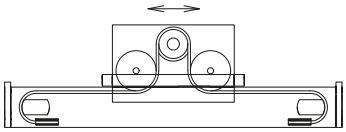
Sample ordering code:
ALLZ203, guide rods 30 mm, standard body profile, coupling claw on both side, toothed belt 8M100, 1208 mm stroke.

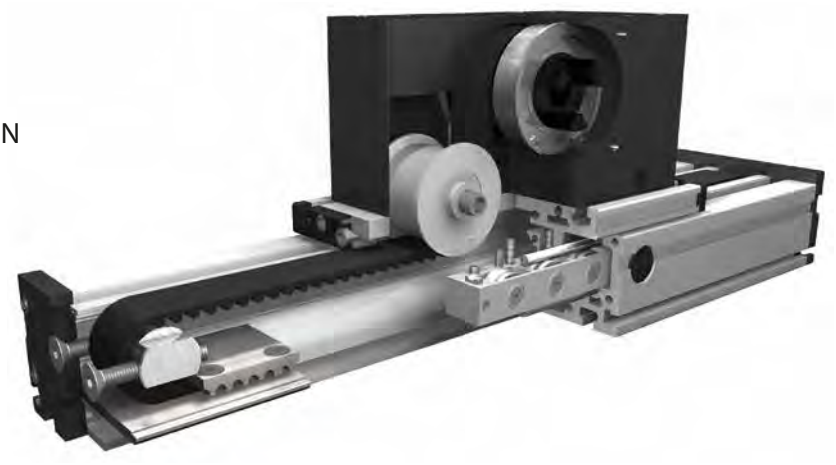
14.1

Linear system **DLSZ 120, 160, 200**

BELT DRIVE

- OMEGA SYSTEM
- HORIZONTAL INSTALLATION POSITION
- OFF-CENTER LOADS

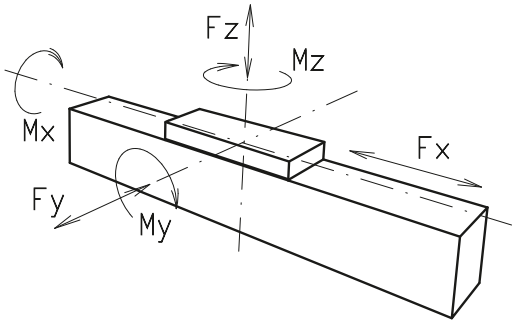




Function:
This linear unit consists of a rectangular aluminium profile with integrated, hardened steel guide rods. The carriage, which has linear ball bearings that can be adjusted free of play, is driven along the guide rods by a timing belt. Each standard pulley includes a coupling claw on one side 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. Compared to conventional toothed belt drives, the drive connection is offset by 90 °.

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/s) max	4		6		8	
Tensile force						
permanent (N)	1900		4000		5900	
0,2 s (N)	2090		4300		6350	
Geometrical moments of inertia of aluminium profile						
I_x mm^4	6,6x10^5		2,22x10^6		6,38x10^6	
I_y mm^4	38,6x10^5		12,20x10^6		33,5x10^6	
Elastic modulus N/mm^2	70000		70000		70000	

For life-time calculation of rollers use our homepage.

Driving torque:

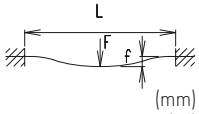
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

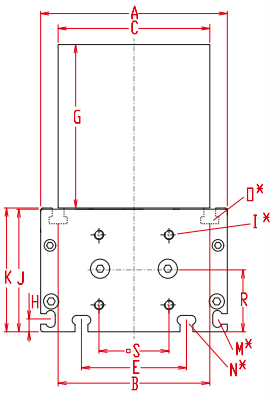
Deflection:

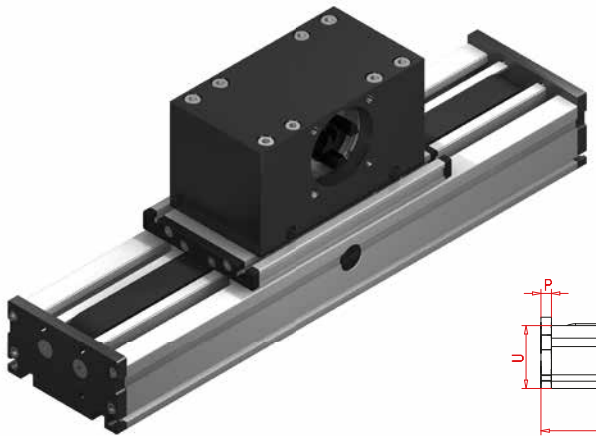
$$f = \frac{F * L^3}{E * I * 192}$$

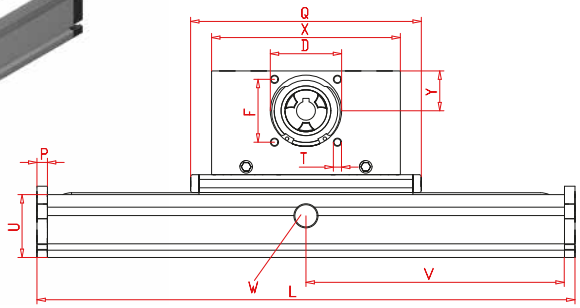


f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

Linear system **DLSZ 120, 160, 200**







V = Q + 100 mm
W = servicing position

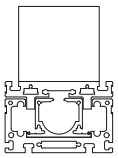
*For slide nuts refer to chapter 2.2 page 2

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

Size	Basic length L	A	B	C	D -0,05	E	F	G	H	J	K	I for	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

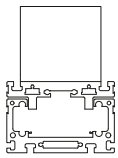
1 **Choice of guide body profile:** Stainless versions upon request.

(1)



internal profile
with cover bands

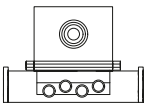
(2)



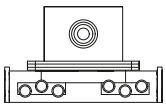
without internal profile
and cover bands

0 **Choice of carriages:**

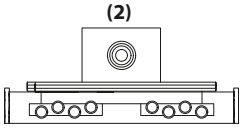
(0)



(1)



(2)

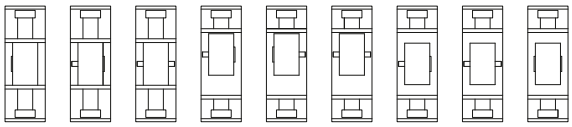


Size	Version 0		Version 1		Version 2	
	Q	L	Q	L	Q	L
120	200	230	>280	>310	>360	>390
160	290	330	>390	>430	>490	>530
200	340	380	>480	>520	>610	>650

0 **Drive version:**

0

0 1 2 3 4 5 6 7 8



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 / Coupling claw:

Size	Shaft ø h6 x length	Key	Coupling
120	18 x 45	6x6x40	19
160	22 x 45	6x6x40	24
200	30 x 55	8x7x50	28

DLSZ	120	1	1	0	0	0	7	2	1500
Pos.		1	2	3	4	5	6	7	

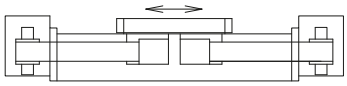
Basic length + stroke = total length

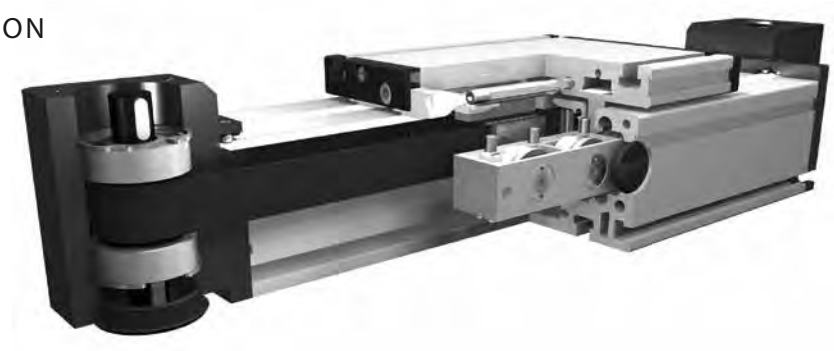
Sample ordering code:
DLSZ120, body profile with internal profile without cover bands, standard carriage, coupling claws on one side, 1270 mm stroke

Linear system **DLVZ 120, 160**

INTERNAL BELT DRIVE

- INDEPENDENT INSTALLATION POSITION
- SPECIAL DRIVE VERSION
- SPACE SAVING



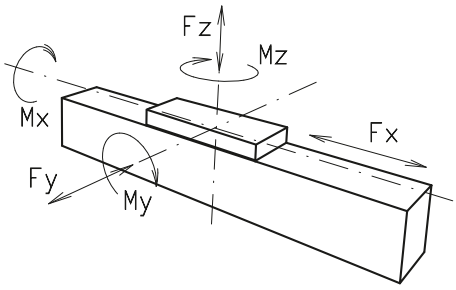


Function:
This unit consists of a rectangular aluminium profile with 2 integrated roller guides. The carriage is moved by a belt drive. Belt tension can be readjusted by a simple screw adjustment device in the carriage. This device can also be used for symmetrical adjustment of two or more linear units 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, it can also be supplied 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.

8.1

Forces and torques



Size	DLVZ 120		DLVZ 160	
Forces/Torques	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/s) max	3		4	
Tensile force				
permanent (N)	900		1000	
0,2 s (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 homepage.

Driving torque:

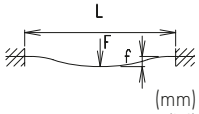
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

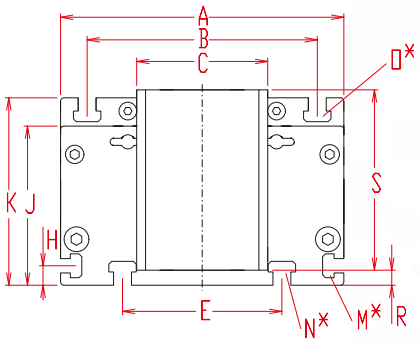
Deflection:

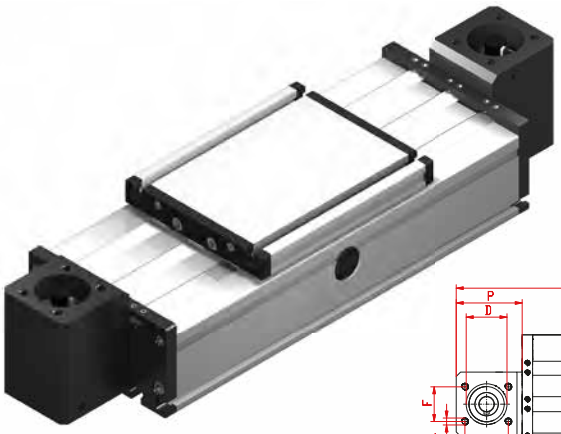
$$f = \frac{F * L^3}{E * I * 192}$$

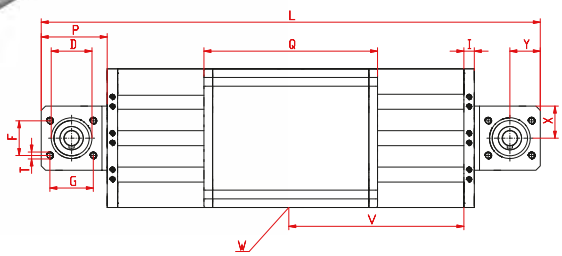


f = deflection	(mm)
F = load	(N)
L = free length	(mm)
E = elastic modulus 70000	(N/mm^2)
I = second moment of area	(mm^4)

Linear system **DLVZ 120, 160**



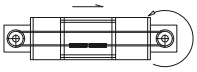
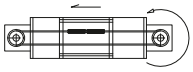




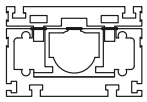
V = Q + 100 mm
W = servicing position
*For slide nuts refer to chapter 2.2 page 2

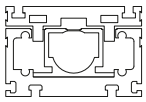
Increasing the carriage length will increase the basic length by the same amount.

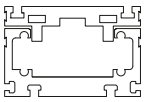
Size	Basic length L	A	B	C	D -0,05	E	F	G	H	I	J	K	M for	N for	O for	P	Q	R	S	T	U	X	Y	Basic weight	Weight per 100 mm
DLVZ 120	300	120	96	56	37	78	30	36	10	10	68	79	M5	M6	M6	56	156	2,5	82	M6	60	28	24	4,62 kg	0,82 kg
DLVZ 160	410	160	130	74	47	90	40	50	11	12	90	106	M6	M8	M8	76	200	8,5	102	M 8	80	37	35	11,23 kg	1,76 kg

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

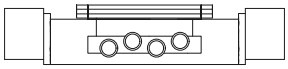
0 **Choice of guide body profile:** Stainless versions upon request.

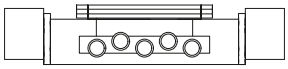
(0)

internal profile with cover bands

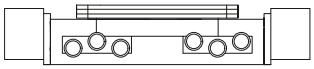
(1)

internal profile without cover bands

(2)

without internal profile and cover bands

0 **Choice of carriages:**

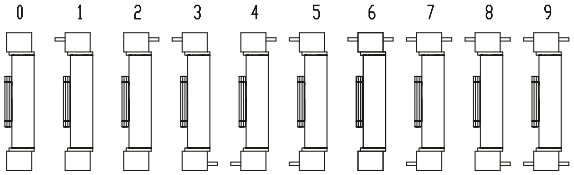
(0) 

(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

0 **Drive version:**



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

Shaft dimensions:

Size	Shaft ø h6 x length	Key
120	14 x 35	5x5x28
160	18 x 45	6x6x40

DLVZ	160	1	0	0	0	0	4	1	1500
	Pos.	1	2	3	4	5	6	7	

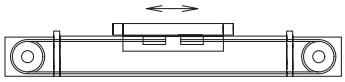
Basic length + stroke = total length

Sample ordering code:
DLVZ 160 with belt connection right, internal profile with cover bands, standard carriage and 4 flush mounted shafts, 1090 mm stroke

Linear system **DLZ 120, 160, 200**

BELT DRIVE

- CLEAN ROOM
- UNIVERSAL SYSTEM
- LONG TRAVERSE PATH >6000 MM



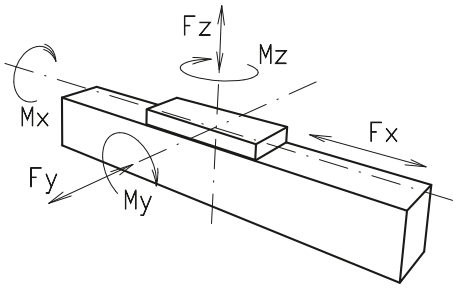
COLANDIS
the clean air company

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, it can also be supplied without cover bands. With this series, multi-part assembled units with long strokes can be realized.

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.

8.1

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		4	
Speed						
(m/s) max	4		6		8	
Tensile force						
permanent (N)	900		1900		4000	
0,2 s (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 homepage.

Driving torque:

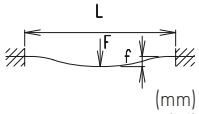
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

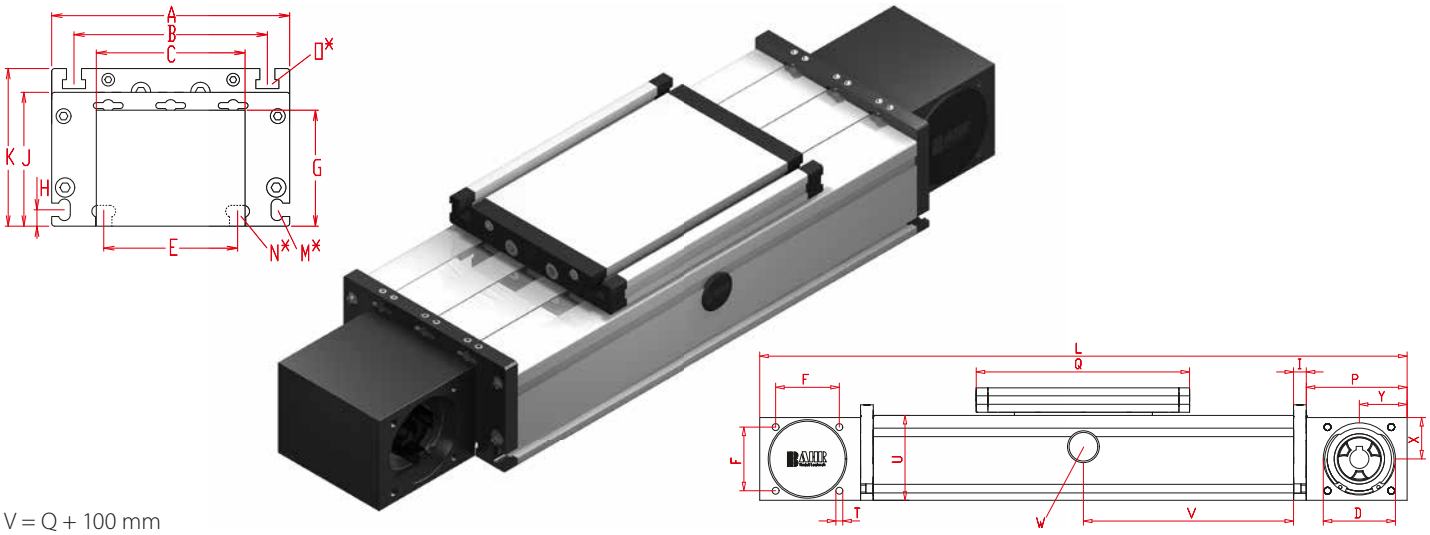
Deflection:

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



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

Linear system **DLZ 120, 160, 200**



V = Q + 100 mm
W = servicing position

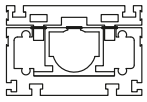
*For slide nuts refer to chapter 2.2 page 2

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

Size	Basic length L	A	B	C	D -0,05	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

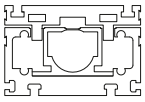
0 **Choice of guide body profile:** Stainless versions upon request.

(0)



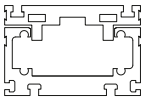
internal profile with cover bands

(1)



internal profile without cover bands

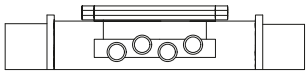
(2)



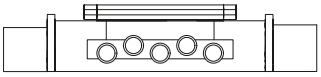
without internal profile and cover bands

0 **Choice of carriage:**

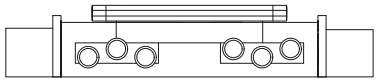
(0)



(2)



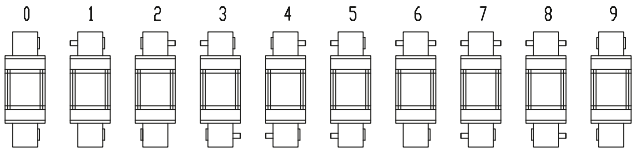
(3)



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

0 **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 / Coupling claw:

Size	Shaft ø h6 x length	Key	Coupling
120 (5M25)	14 x 35	5x5x28	14
160 (8M30)	18 x 45	6x6x40	19
160 (8M50)	25 x 35	8x7x32	----- *
200 (8M50)	22 x 45	6x6x40	24
200 (8M70)	30 x 55	8x7x50	----- *

DLZ	160	1	0	0	0	0	7	1	1500
	Pos.	1	2	3	4	5	6	7	

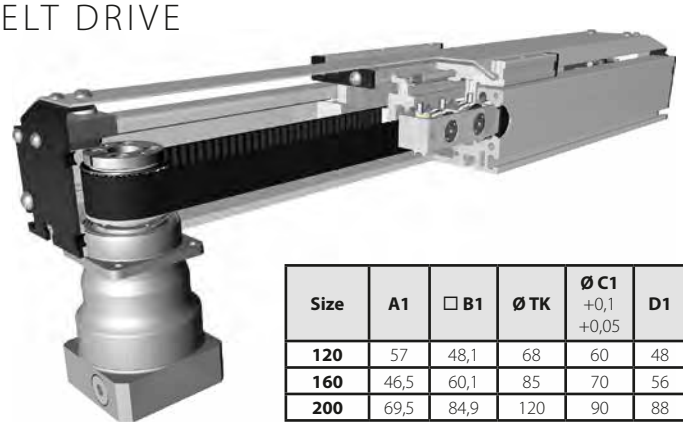
Basic length + stroke = total length

* Coupling claw not possible with belt widening.

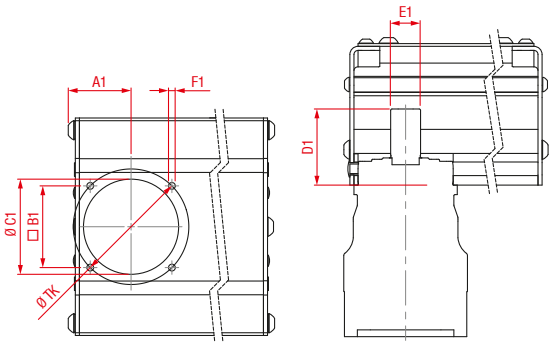
Sample ordering code:
DLZ160 with internal profile and cover bands, standard carriage, coupling claw on one side,1060 mm stroke.

Linear system **DLZPVI 120, 160, 200**

BELT DRIVE



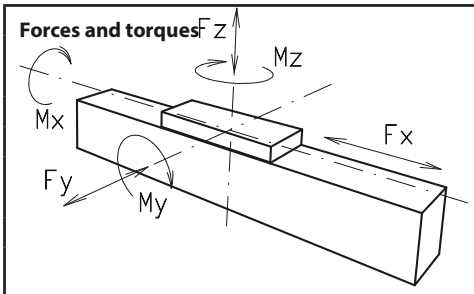
Size	A1	□ B1	Ø TK	Ø C1 +0,1 +0,05	D1	E1	F1
120	57	48,1	68	60	48	16	M5
160	46,5	60,1	85	70	56	22	M6
200	69,5	84,9	120	90	88	32	M8



Function:
This unit consists of a rectangular aluminium profile with 2 integrated roller guides. The carriage is moved by a belt drive. On the drive side the pulley is beared on the shaft of a planetary gear. Belt tension can be readjusted by a simple screw adjustment at the opposite side of the drive. A special curved aluminium sheet is covering the carriage side. There is only a small gap between carriage and aluminium sheet. Because of its special design it is possible to drive the carriage over the pulley areas. This fact is making the unit very compact. The cover profile can be adjusted according to the mounting position.

Fitting position: As required, max. length **DLZPVI 120** / 1600mm, **DLZPVI 160** / 1800mm, **DLZPVI 200** / 2000mm
Carriage mounting: By tapped holes.
Unit mounting: T-slots
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	
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	1,2		1,5		1,8	
Speed						
(m/s) max	4		6		8	
Tensile force						
permanent (N)	900		1900		4000	
0,2 s (N)	1000		2090		4300	
Geometrical moments of inertia of aluminium profile						
I_x mm^4	6,6 x 10^5		22,2 x 10^5		57,2 x 10^5	
I_y mm^4	38,6 x 10^5		122,0 x 10^5		310 x 10^5	
Elastic modulus N/mm^2	70000		70000		70000	

For life-time calculation of rollers use our homepage.

Driving torque:

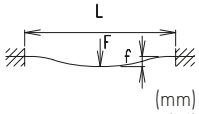
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

Deflection:

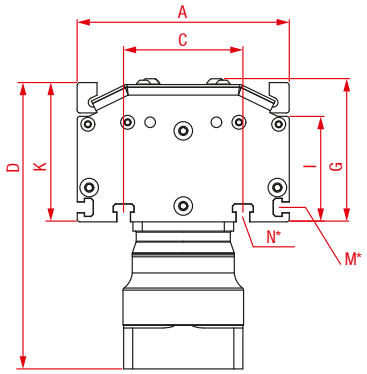
$$f = \frac{F * L^3}{E * I * 192}$$



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

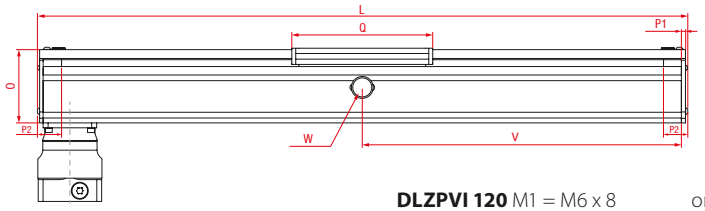
Linear system **DLZPVI 120, 160, 200**

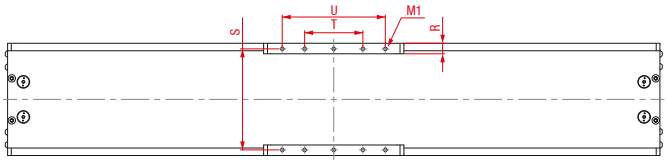
Dimensions (mm)



Optionally available with angular planetary gearbox

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





*slide nuts

DLZPVI 120 M1 = M6 x 8 only 8 threaded holes in the carriage

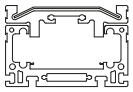
DLZPVI 160 M1 = M8 x 12 **DLZPVI 200** M1 = M10 x 12

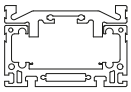
V = Q + 100

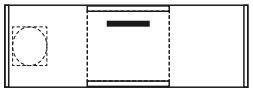
W = servicing position

Size	Basic length L	A	C	D	G	I	K	M for	N for	O	P1	P2	Q	R	S	T	U	Basic weight *without gearbox*	Weight per 100 mm
DLZPVI 120	225	120	78	169	82,5	60	79	M5	M6	78	6	35	152	11,5	106	40	120	3,74 kg	0,65 kg
DLZPVI 160	285	160	90	217,5	108,5	80	106	M6	M8	104	8,25	43,5	196	15	144	80	160	10,42 kg	1,26 kg
DLZPVI 200	350	200	140	251	132,5	100	129	M8	M10	128	10	45,5	256	17	180	100	200	17,44 kg	2,18 kg

0 **Choice of guide body profile:** Stainless versions upon request.

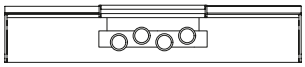
(0)  with cover profile

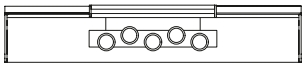
(1)  without cover profile

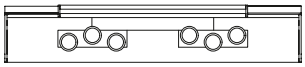


belt connection

0 **Choice of carriages:**

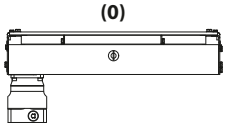
(0) 

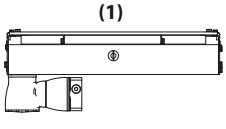
(2) 

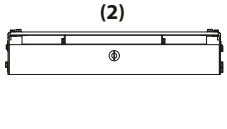
(3) 

Size	Version 2		Version 3	
	Q	L	Q	L
120	192	265	232	305
160	246	335	296	385
200	320	420	400	500

0 **Drive version:**

(0) 

(1) 

(2) 

(0) planetary gearbox
(1) angular planetary gearbox
(2) without gearbox

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	**200**	8M50	224	28

Gearbox variants:

Gearbox		DLZPVI 120	DLZPVI 160	DLZPVI 200
Neugart	(0)	PLN 70	PLN 90	PLN 115
	(1)	WPLN 70	WPLN 90	WPLN 115
SEW	(0)	PSKC 221	PSKC 321	PSKC 521
Wittenstein	(0)	SP+060	SP+075	SP+100
	(1)	SK+060	SK+075	SK+100

DLZPVI	160	1	0	0	0	0	7	1	1500
Pos.		1	2	3	4	5	6	7	

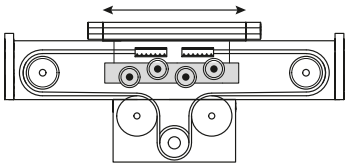
Basic length + stroke = total length

Sample ordering code:
DLZPVI 160 with cover profile, standard carriage, with planetary gearbox, 1202 mm stoke.

Linear system **DLZS 120, 160, 200**

BELT DRIVE

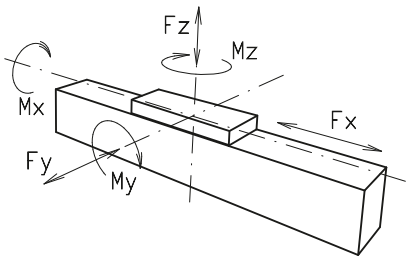
- OMEGA SYSTEM
- VERTICAL INSTALLATION POSITION
- LIFTING SYSTEM



Function:
This unit consists of a rectangular aluminium profile with 2 integrated roller guides. The carriage is moved by a belt drive. An innovation is that the toothed belt is diverted within a drive block positioned centrically. The result is an enormous compactness with regard to the overall system length. The toothed drive pulley has a coupling claw in the standard version. 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. Use: compact and space-saving system with variable position of the drive block.

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		4	
Speed						
(m/s) max	4		6		8	
Tensile force						
permanent (N)	900		1900		4000	
0,2 s (N)	1000		2090		4300	
Geometrical moments of inertia of aluminium profile						
I_x mm⁴	6,6x10⁵		22,2x10⁵		63,8x10⁵	
I_y mm⁴	38,6x10⁵		122,0x10⁵		335x10⁵	
Elastic modulus N/mm²	70000		70000		70000	

For life-time calculation of rollers use our homepage.

Driving torque:

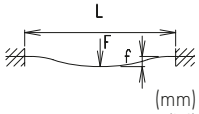
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

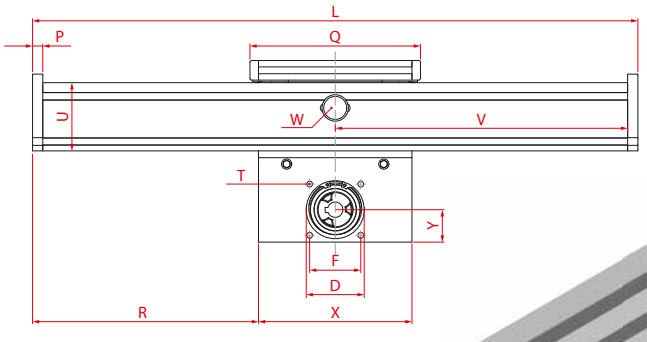
Deflection:

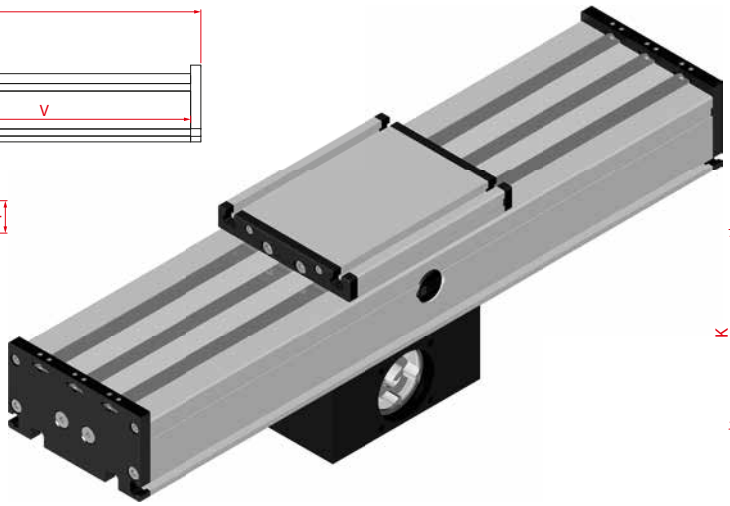
$$f = \frac{F * L^3}{E * I * 192}$$

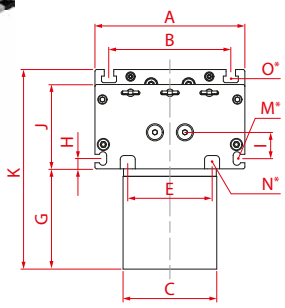


f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

Linear system **DLZS 120, 160, 200**







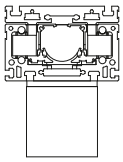
V = Q + 100 mm W = servicing position

*For slide nuts refer to chapter 2.2 page 2

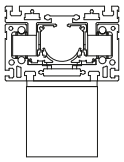
Increasing the carriage length will increase the basic length by the same amount.

Size	Basic length L	A	B	C	D -0,05	E	F	G	H	I	J	K	M for	N for	O for	P	Q	R	T	U	X	Y	Basic weight	Weight per 100 mm
DLZS 120	210	120	96	80	47	78	42	84,5	10	18,7	68	163	M5	M6	M6	10	156	40	M6	60	130	30	6,1 kg	0,85 kg
DLZS 160	300	160	130	100	66	90	60	107	11	39	90	213	M6	M8	M8	12	200	25	M8	80	180	38	14,9 kg	1,5 kg
DLZS 200	380	200	160	130	90	140	80	146	15	48,5	110	275	M8	M10	M10	15	270	55	M10	100	270	60	30,8 kg	2,1 kg

0 **Choice of guide body profile:** Stainless versions upon request.



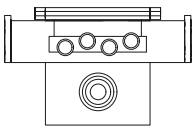
(0)
internal profile
with cover bands



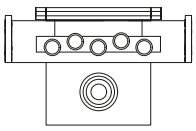
(1)
internal profile
without cover bands

0 **Choice of carriage:**

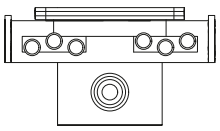
(0)



(2)



(3)

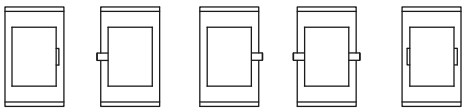


Size	Version 0		Version 2		Version 3	
	Q	L	Q	L	Q	L
120	156	210	196	216	236	256
160	200	300	250	300	>300	>330
200	270	380	330	380	>410	>470

0 **Drive version:**

0

0 1 3 4 5



5 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**	5M 25	130	26
0	7	**160**	8M 30	192	24
0	9	**200**	8M 50	256	32

Shaft dimensions / Coupling claw:

Size	Shaft ø h6 x length	Key	Coupling
120	14 x 35	5x5x28	14
160	18 x 45	6x6x40	19
200	22 x 45	6x6x40	24

DLZS	160	1	0	0	0	0	7	1	1500
	Pos.	1	2	3	4	5	6	7	

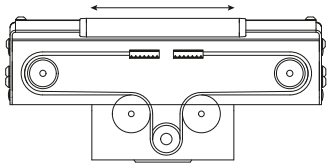
Basic length + stroke = total length

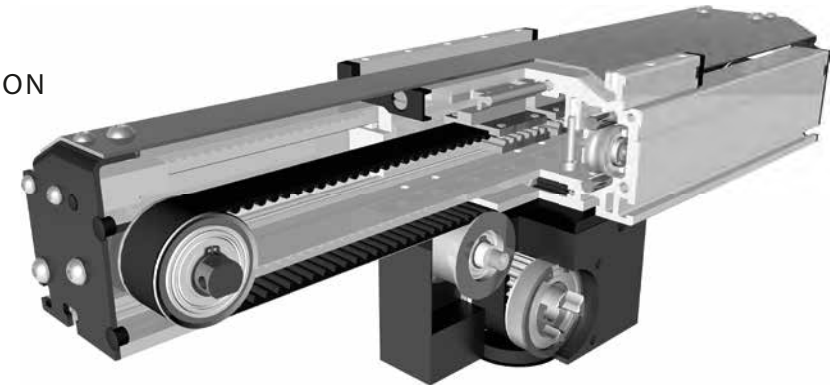
Sample ordering code:
DLZS160 with internal profile and cover bands, standard carriage, coupling claw on one side, 1200 mm stroke.

Linear system **DLZS 120 P, 160 P, 200 P**

BELT DRIVE

- INDEPENDENT INSTALLATION POSITION
- OMEGA SYSTEM
- LIFTING SYSTEM
- COVER PROFILE

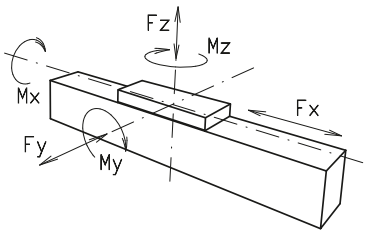




Function:
The guide body consists of a rectangular aluminium profile two integrated roller guides. The carriage is moved by a belt drive. The novelty is that the timing belt is diverted into a drive block positioned centrically. This results in an extraordinary compactness with regard to the overall length of the system. The driving toothed pulley is provided with a coupling claw as a standard. The belt tension can be easily readjusted via a tensioning device within the bearing block. The openings in the guide body are closed by an aluminium profile, leaving only small slits open on the sides. The cover profile can be adjusted according to the mounting position.
The advantages compared to the DLZS positioning system are: The number of components prone to wear such as cover bands and sliding blocks is reduced and the fact that there is no friction makes it possible to use smaller motors. In addition, the cover profile, which is fixed with only a few screws, improves the serviceability and maintainability.

Fitting position: As required. Max. length DLZS 120P / 1600mm, DLZS 160P / 1800mm, DLZS 200P / 2000mm
Carriage mounting: By tapped holes.
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 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: Vorhandener Wert / Tabellenwert $\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$						
No-load torque						
Nm	1,2		1,5		1,8	
Speed						
(m/s) max	4		6		8	
Geometrical moments of inertia of aluminium profile						
I_x mm^4	6,6 x 10^5		22,2 x 10^5		57,2 x 10^5	
I_y mm^4	38,6 x 10^5		122 x 10^5		310 x 10^5	
Elastic modulus N/mm^2	70.000		70.000		70.000	

For life-time calculation of rollers use our homepage.

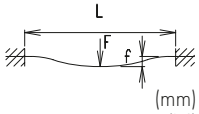
Driving torque:

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

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

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

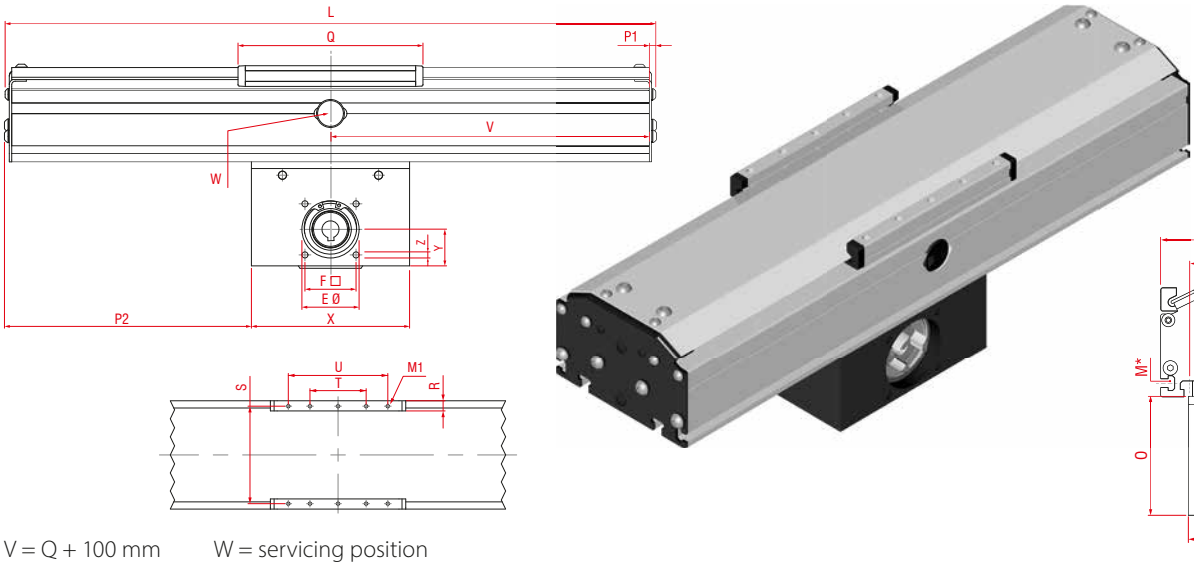
Deflection:



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

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

Linear system **DLZS 120 P, 160 P, 200 P**



V = Q + 100 mm W = servicing position

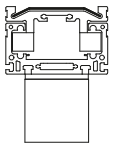
*For slide nuts refer to chapter 2.2 page 2

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

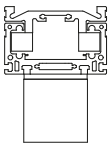
Size	A	B	C	D	E Ø	F □	G	H	I	K	M for	N for	O	P1	P2	R	S	T	U	X	Y	Z	Basic weight	Weight per 100 mm
DLZS 120 **P**	120	78	80	169	47	42	80,5	10	60	79	M5	M6	85,5	6	32	11,5	106	40	120	130	30	M6	5,5 kg	0,77 kg
DLZS 160 **P**	160	90	100	219	68	60	108,5	11	80	106	M6	M8	107	8,2	51,2	15	144	80	160	180	38	M8	14,1 kg	1,5 kg
DLZS 200 **P**	200	140	130	281	90	80	132,5	15	100	129	M8	M10	146	10	37,5	17	180	100	200	270	60	M10	30,2 kg	2,1 kg

0 **Choice of guide body profile:** Stainless versions upon request.

(0) with cover profile



(1) without cover profile

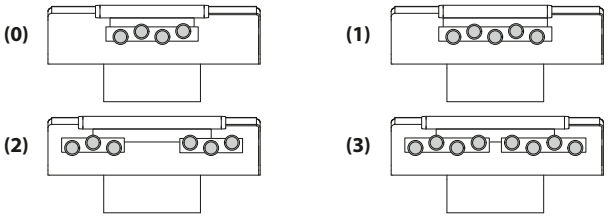


DL 120 M1 = M6 x 8
only 8 threaded holes in the carriage

DL 160 M1 = M8 x 12 **DL 200** M1 = M10 x 12

0 **Choice of carriages:**

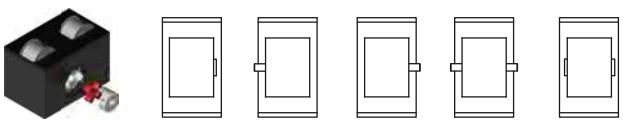
(0) (1) (2) (3)



Size	Version 0		Version 1	
	Q	L	Q	L
120	152	192	192	232
160	196	282	246	332
200	256	345	320	409
	Version 2		**Version 3**	
120	232	272	---	---
160	296	382	396	482
200	396	485	521	610

0 **Drive version:**

0 0 1 3 4 5



5 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**	5M 25	130	26
0	7	**160**	8M 30	192	24
0	9	**200**	8M 50	256	32

Shaft dimensions / Coupling claw:

Size	Shaft ø h6 x length	Key	Coupling
120	14 x 35	5 x 5 x 28	14
160	18 x 45	6 x 6 x 40	19
200	22 x 45	6 x 6 x 40	24

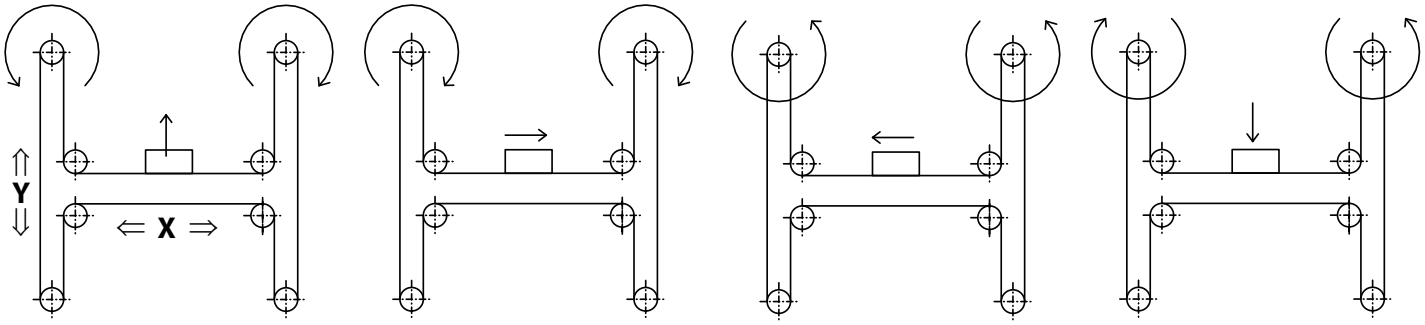
DLZS	120 P	1	0	0	0	0	4	1	1500
	Pos.	1	2	3	4	5	6	7	

Basic length + stroke = total length

Sample ordering code:
with cover profile, standard carriage, coupling claw on one side, 1308 mm stroke.

Linear system **DLZU 120, 160, 200**

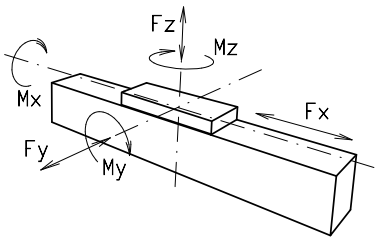
SURFACE PORTAL - STABLE DESIGN - ROLLER GUIDE



Function:
Surface portal, consisting of two Y-axes and one X-axis. Due to the stable rectangular profile, high torques and loads can be absorbed; in addition, very high stability and low deflection are ensured for long axis systems. The drive is provided by a revolving belt, which remains connected by various deflection points. The adjustment is made by two motors. The coordinate is diagonal to the deflection points of the X-axis. Advantage: Only small weights are moved and thus high accelerations are achieved. Very compact design. Can be easily positioned and used with our matching mounting kits in the accessories section.

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

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 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 without cover band	1,2	1,5	1,8
Speed			
(m/s) max	4	6	8
Tensile force			
permanent (N)	900	1900	4000
0,2 s (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	122x10^5	335x10^5
E-Modulus N/mm^2	70000	70000	70000

For life-time calculation of rollers use our homepage.

Driving torque:

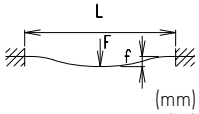
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

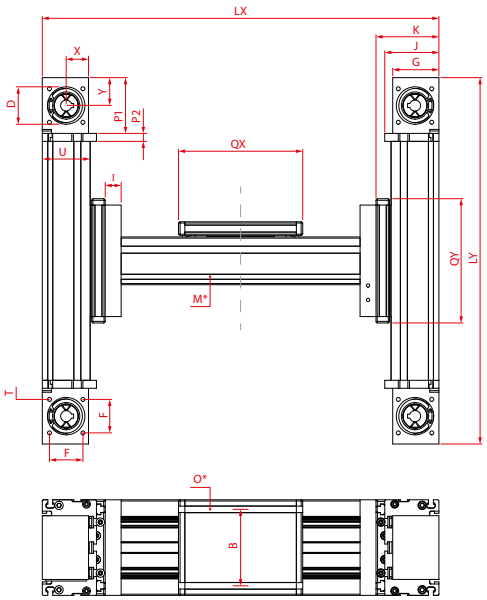
Deflection:

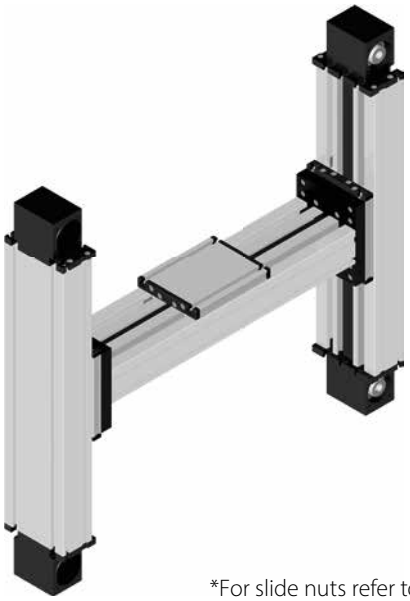
$$f = \frac{F * L^3}{E * I * 192}$$



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

Linear system **DLZU 120, 160, 200**



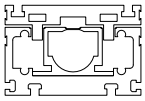


*For slide nuts refer to chapter 2.2 page 2

Size	Basic length		A	B	C	D - 0,05	E	F	G	I	J	K	M for	N for	O for	P1	P2	Qx	Qy	T	U	X	Y	Basic weight	Weight per 100 mm
	Lx	Ly																							
DLZU 120	354	316	120	96	80	47	78	42	58	20	68	79	M5	M6	M6	70	10	156	156	M6	60	28	35	14,42 kg	0,85 kg
DLZU 160	462	414	160	130	100	68	90	60	78	25	90	106	M6	M8	M8	95	12	200	200	M8	80	39	45	34,23 kg	1,69 kg
DLZU 200	648	540	200	160	130	90	140	80	97	50	110	129	M8	M10	M10	110	15	270	290	M10	100	49	50	74,11 kg	2,33 kg

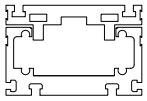
0 **Choice of guide body profile:** Stainless versions upon request.

(1)



internal profile
without cover bands

(2)

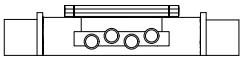


without internal profile
and cover bands

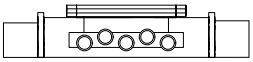
Size	Version 0				Version 2			
	Qx	Lx	Qy	Ly	Qx	Lx	Qy	Ly
120	156	354	156	316	196	394	196	356
160	200	462	200	414	250	512	250	464
200	270	648	290	540	320	688	330	580
	Version 3				**Version 4**			
	Qx	**Lx**	**Qy**	**Ly**	**Qx**	**Lx**	**Qy**	**Ly**
120	236	434	236	396	300	498	300	460
160	300	562	300	514	--	--	--	--
200	410	768	410	660	--	--	--	--

0 **Choice of carriages:**

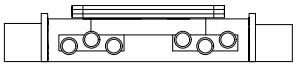
(0)



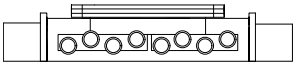
(2)



(3)



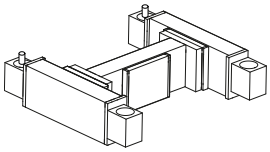
(4)



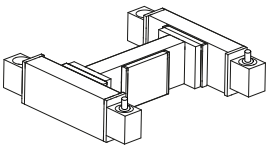
0 **Drive version:**

(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 Nr.		Size	Belt	mm/rev.	Number of teeth
0	**4**	120	5M25	130	26
0	**7**	160	8M30	176	22
0	**9**	200	8M50	224	28

Shaft dimensions / Coupling claw:

Size	Shaft ø h6 x length	Key	Coupling
120 (5M25)	14 x 35	5x5x28	14
160 (8M30)	18 x 45	6x6x40	19
200 (8M50)	22 x 45	6x6x40	24

DLZU	120	7	0	0	0	0	4	1	1500

X-Axis Basic length + stroke = total length

Y-Axes Basic length + stroke = total length

DLZU	120	8	0	0	0	0	4	1	700
Pos.		1	2	3	4	5	6	7	

For combination kits and connecting elements refer to chapter 2.2

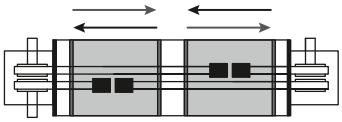
Sample ordering code:
DLZU 120, with standard body profile, standard carriage, coupling claw on one side, stroke X = 1074 / Y = 370 mm

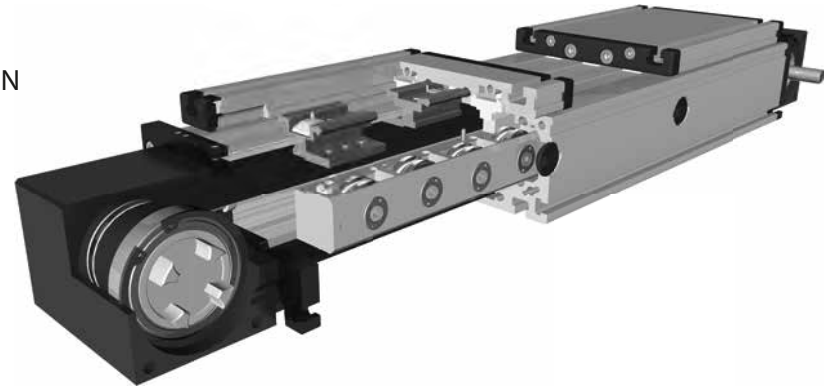
Linear system **DLZZ 160, 200**

BELT DRIVE WITH TWO SEPARATELY DRIVEN CARRIAGES

INDEPENDENT CARRIAGES

HORIZONTAL INSTALLATION POSITION



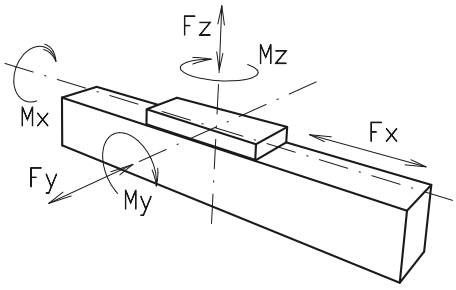


Function:
This unit consists of a rectangular aluminium profile with 2 integrated roller guides. The carriage is moved by a belt drive. Each carriage can be moved separately by its own drive. This unit has twin pulleys, which run on separate bearings, and two independent, parallel drive belts, one for each carriage. The openings of the guide body are sealed with 3 stainless steel cover bands to protect the guide from splash water and dust.

Fitting position: As required. Max. length 4.000 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.

8.1

Forces and torques



Size	160		200	
Forces/Torques	static	dynamic.	static	dynamic.
F_x (N)	1210	1100	1900	1800
F_y (N)	3000	2000	4400	3100
F_z (N)	3500	2800	4900	4400
M_x (Nm)	400	320	600	510
M_y (Nm)	360	300	560	480
M_z (Nm)	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	1,5		1,8	
Nm with cover bands	2,1		4	
Speed				
(m/s) max	6		8	
Tensile force				
permanent (N)	1210		1400	
0,2 s (N)	1331		2090	
Geometrical moments of inertia of aluminium profile				
I_x mm^4	22,2x10^5		63,8x10^5	
I_y mm^4	122,0x10^5		335x10^5	
Elastic modulus N/mm^2	70000		70000	

For life-time calculation of rollers use our homepage.

Driving torque:

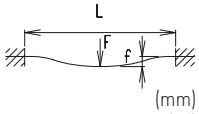
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

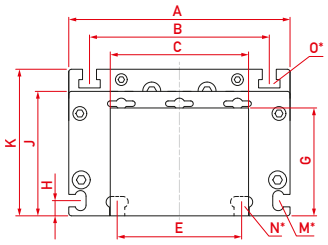
Deflection:

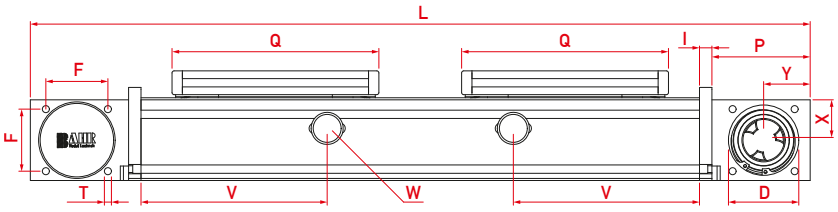
$$f = \frac{F * L^3}{E * I * 192}$$



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

Linear system **DLZZ 160, 200**





V = Q + 100 mm W = servicing position

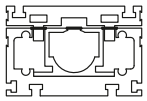
*For slide nuts refer to chapter 2.2 page 2

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

Size	Basic length L	A	B	C	D	E	F	G	H	I	J	K	M for	N for	O for	P	Q	T	X	Y	Basic weight	Weight per 100 mm
DLZZ 160	615	160	130	121	68	90	60	78	11	12	90	106	M6	M8	M8	95	200	M8	39	45	16,0 kg	1,69 kg
DLZZ 200	790	200	160	150	90	140	80	97	15	15	110	129	M8	M10	M10	110	270	M10	49	50	28,50 kg	2,33 kg

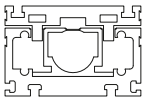
0 **Choice of guide body profile:** Stainless versions upon request.

(0)



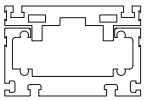
internal profile with cover bands

(1)



internal profile without cover bands

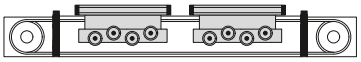
(2)



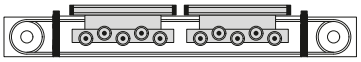
without internal profile and cover bands

0 **Choice of carriage:**

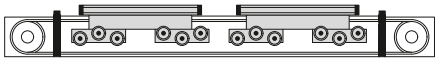
(0)



(2)

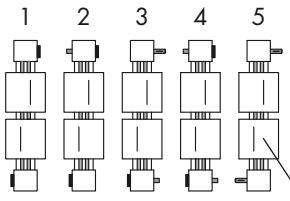


(3)



Size	Version 0		Version 2		Version 3	
	Q	L	Q	L	Q	L
160	200	615	250	715	300	830
200	270	790	330	910	410	1070

0 **Drive version:**



Coupling claw on one side

Standard-shaft [1]

Shaft one size smaller [2]

Connected with the left belt

Belt table:

Code No.		Size	Belt	mm/rev.	Number of teeth
0	6	**160**	8M 20	176	22
0	7	**200**	8M 30	224	28

Shaft dimensions / Coupling claw:

Size	Shaft ø h6 x length	Key	Coupling
DLZZ 160 [1]	Ø 18 x 45	6x6x35	19
DLZZ 160 [2]	Ø 14 x 35	5x5xx28	19
DLZZ 200 [1]	Ø 22 x 45	6x6x40	24
DLZZ 200 [2]	Ø 18 x 45	6x6x40	24

DLZZ	200	4	0	0	2	0	7	1	1500
	Pos.	1	2	3	4	5	6	7	

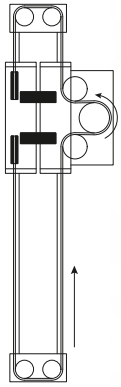
Basic length + stroke = total length

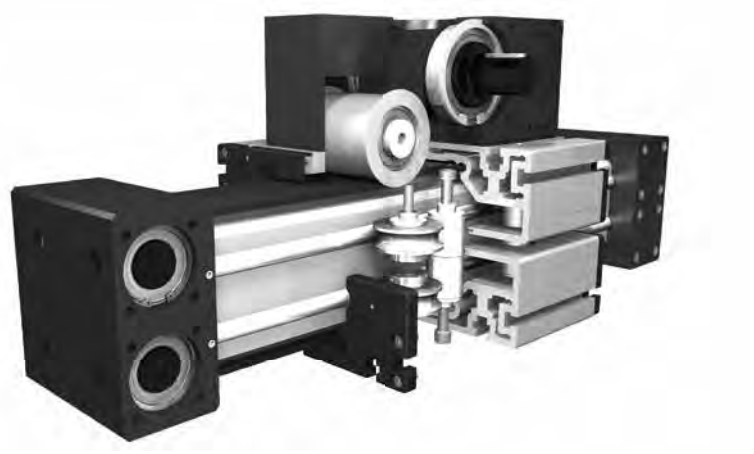
Sample ordering code:
DLZZ 200 with internal profile and cover bands, carriage version 0, drive version 2, 710 mm stroke.

Linear system **ELFZ 60S, 80S, 100, 125**

BELT DRIVE

PULLEY PRINCIPLE
VERTICAL INSTALLATION POSITION

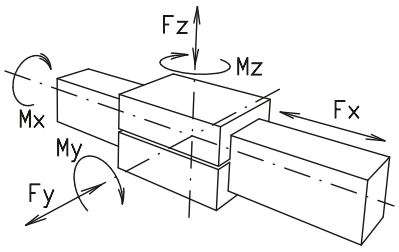




Function:
This special lifting unit consists of an aluminium square profile with hardened steel guide rods. The carriages, which have internal linear ball bearings that can be adjusted free of play, are driven along the guide rods by a timing belt. The rotating timing belt pulleys have maintenance-free 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/s) 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 homepage.

Driving torque:

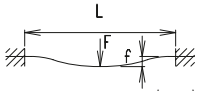
$$M_a = \frac{F * P * S_i}{2000 * \pi * 2} + M_n$$

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

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

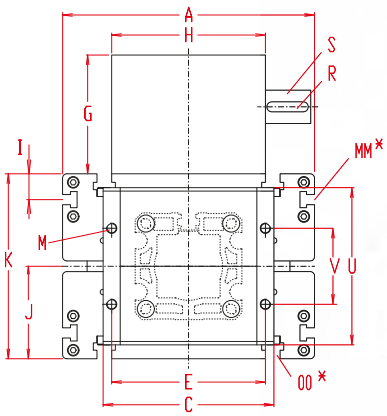
Deflection:

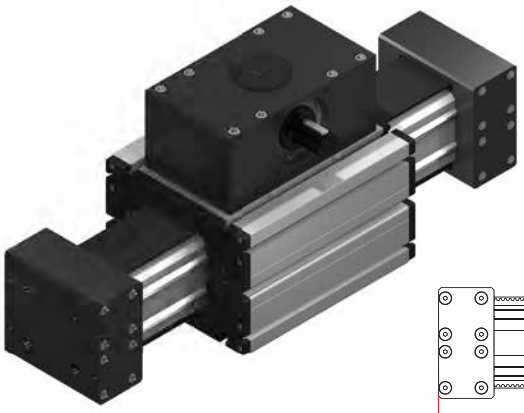
$$f = \frac{F * L^3}{E * I * 192}$$

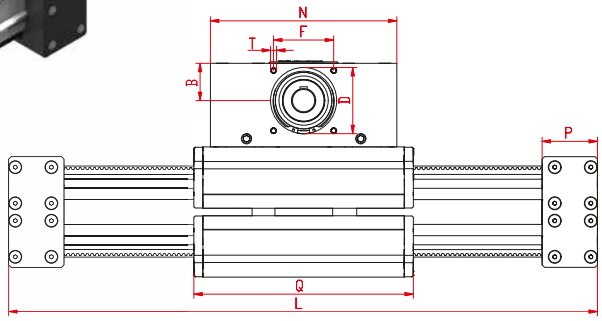


f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

Linear system **ELFZ 60S, 80S, 100, 125**







Functional principle on page 3.1 | 40

*For slide nuts refer to chapter 2.2 page 2

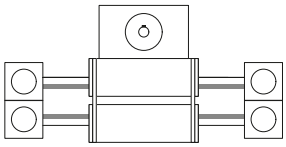
Increasing the carriage length will increase the basic length by the same amount.

Size ❒	Basic length L	A	B	C	D - 0,05	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	154	90	135	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	215	M10	M12	310	M12	92	365	12x8x50	40x55	M10	186	89	87,5 kg	2,70 kg

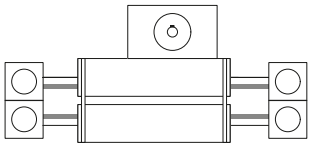
0 **Choice of guide body profile:**
(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

0 **Choice of carriages:**

(0)

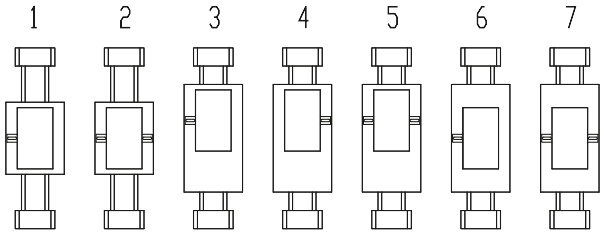


(1)



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

1 **Drive version:**



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

ELFZ	125	0	0	0	1	0	9	1	1500
	Pos.	1	2	3	4	5	6	7	

Basic length + stroke = total length

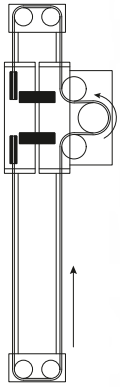
For combination kits and connecting elements refer to chapter 2.2

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

Linear system **ELFZ Ex 60S, 80S, 100, 125**

BELT DRIVE - EX GUIDE

- PULLEY PRINCIPLE
- VERTICAL INSTALLATION POSITION
- EX-GUIDE



ATEX 2014/34/EU
Ex II 2G Ex h IIB T4 Gb
Ex II 3D Ex h IIIB T125 °C Dc

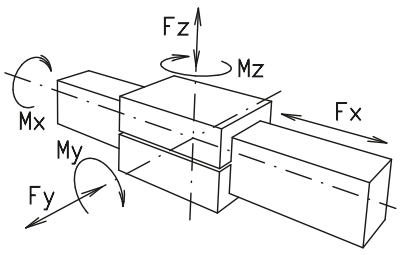
Function:
Special lifting system with roll guides outside of profile. System is driven by one rotating timing belt with one drive. The function corresponds to a simple pulley block. The positioning system is suitable for use according to the intended purpose in potentially explosive areas (see ATEX 95 marking). An operating manual is included in the scope of delivery. The system is certified for the following areas:

ATEX 2014/34/EU **II 2G Ex h IIB T4 Gb:**
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 2014/34/EU **II 3D Ex h IIIB T125 °C Dc:**
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/s) 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 homepage.

Driving torque:

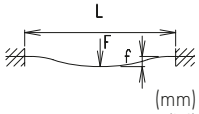
$$M_a = \frac{F * P * S_i}{2000 * \pi * 2} + M_n$$

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

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

Deflection:

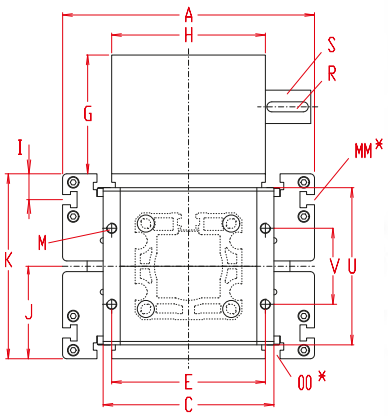
$$f = \frac{F * L^3}{E * I * 192}$$

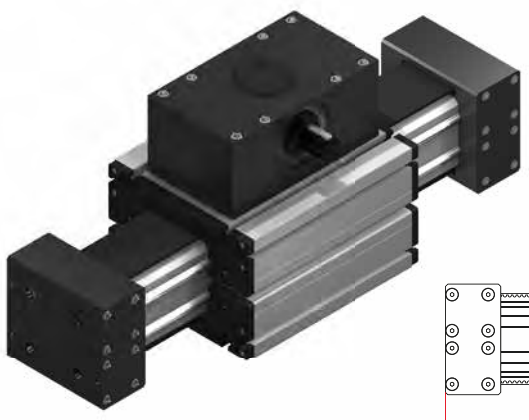


f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

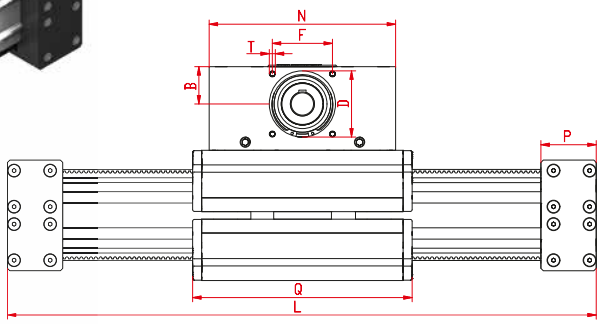
Linear system **ELFZ** ⟨Ex⟩ **60S, 80S, 100, 125**

Dimensions (mm)





ATEX 2014/34/EU
⟨Ex⟩ **II 2G Ex h IIB T4 Gb**
⟨Ex⟩ **II 3D Ex h IIIB T125 °C Dc**



*For slide nuts refer to chapter 2.2 page 2

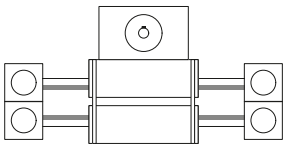
Increasing the carriage length will increase the basic length by the same amount.

Size ❒	Basic length L	A	B	C	D - 0,05	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	154	90	135	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	215	M10	M12	310	M12	92	365	12x8x50	40x55	M10	186	89	87,5 kg	2,70 kg

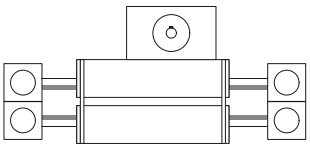
0 **Choice of guide body profile:**
(0) Standard **(2)** corrosion-protected guide rods and screws

0 **Choice of carriages:**

(0)

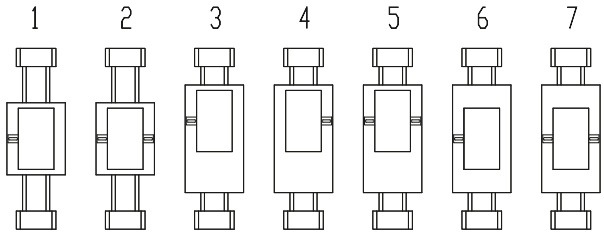


(1)



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

1 **Drive version:**



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

ELFZEX	125	0	0	0	1	0	9	1	1500
Pos.		1	2	3	4	5	6	7	

Basic length + stroke = total length

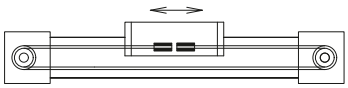
For combination kits and connecting elements refer to chapter 2.2

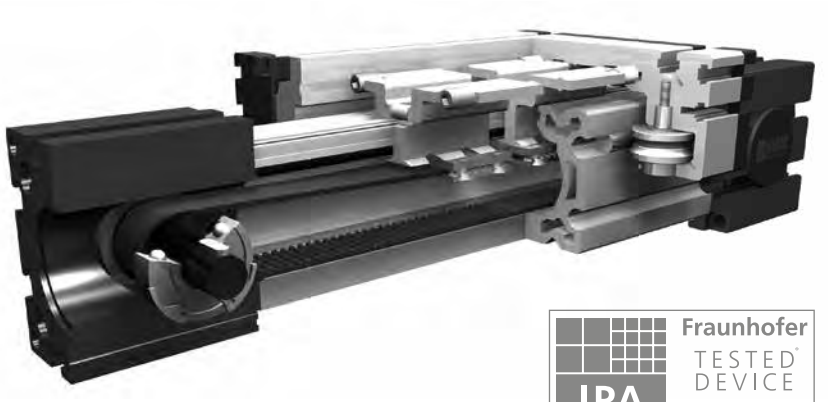
Sample ordering code:
ELFZ 125 with standard body profile, standard carriage, shaft Pos. 1, 910 mm stroke

Linear system **ELHZ 60, 60S, 80, 80S, 100, 125**

INTERNAL BELT DRIVE

- CLEAN ROOM
- TOOTHED BELT HORIZONTAL
- HIGH DYNAMICS



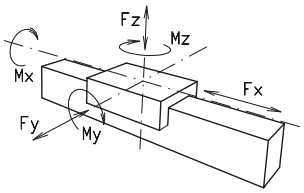


Fraunhofer IPA TESTED DEVICE
Lineareinheit ELHZ 60
Report No. BA 9807-151

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.
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/s) max	3	4	4	4	5	6
Tensile force						
permanent (N)	700	700	1000	1000	3100	5000
0,2 s (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 homepage.

Driving torque:

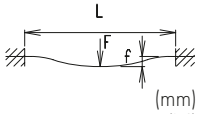
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

Deflection:

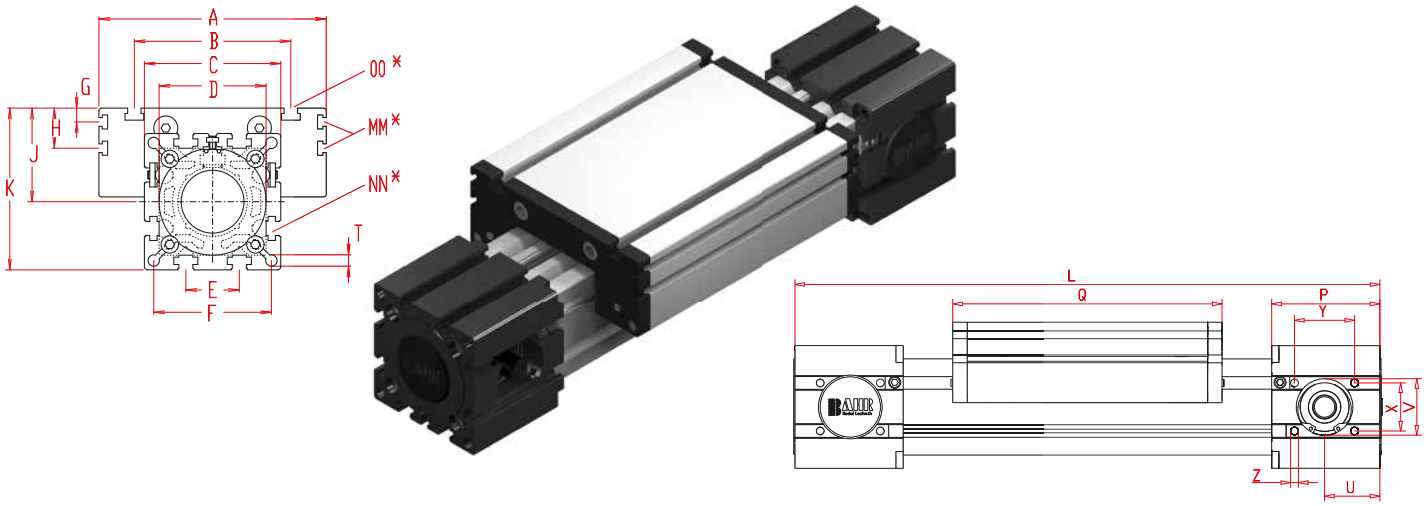
$$f = \frac{F * L^3}{E * I * 192}$$



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

Linear system **ELHZ 60, 60S, 80, 80S, 100, 125**

Dimensions (mm)



*For slide nuts refer to chapter 2.2 page 2

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

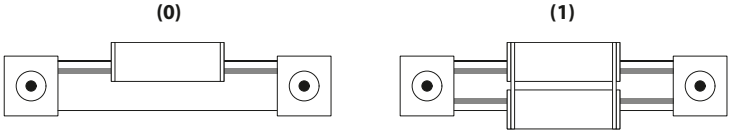
Size ❒	Basic length L	A	B	C	D ± 0,05	E	F	G	H	J	K	MM for	NN for	OO for	P	Q	T	U	V - 0,05	W¹	X	Y	Z	Basic weight	Weight per 100 mm
ELHZ 60	290	144	96	82	62x1	30	69	--	-	49	90	-	M 8	M 8	59	168	8,5	23	37	14	30	36	M 6	4,8 kg	0,62 kg
ELHZ 60S	315	170	108	82	62x1	30	69	--	-	53	94	-	M 8	M 8	59	194	8,5	23	37	14	30	36	M 6	5,8 kg	0,62 kg
ELHZ 80	375	170	117	102	80x1	40	88	10,5	30,5	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	130	365	13,0	58	90	35	60	85	M10	37,0 kg	2,10 kg

W¹ = standard shaft

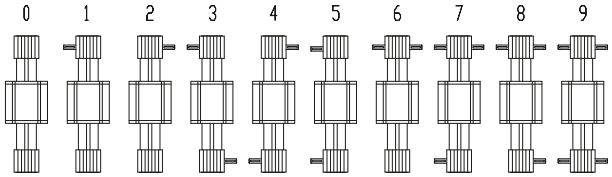
0 **Choice of guide body profile:**
(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

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

0 **Choice of carriages:**



0 **Drive version:**



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)**	5M 25	80	16
0	**4**	**80 (S)**	5M 25	110	22
0	**9**	**100**	8M 48	144	18
0	**9**	**125**	8M 50	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

ELHZ	60	0	0	0	0	0	4	1	1500
	Pos.	1	2	3	4	5	6	7	

Basic length + stroke = total length

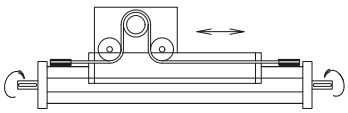
For combination kits and connecting elements refer to chapter 2.2

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

Linear system **ELSD 40, 60, 60S, 80, 80S, 100**

BELT DRIVE WITH ROTARY SHAFT

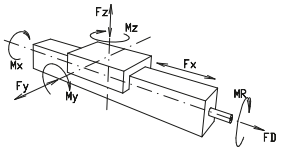
- OMEGA SYSTEM
- VERTICAL INSTALLATION POSITION
- GRIPPER ADAPTATION
- ROTATIONAL MOVEMENT



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)	0,2		0,4		0,5		0,6		0,7		0,8	
Speed												
(m/s) max	4		5		7		6		8		8	
Tensile force												
permanent (N)	390		900		900		1900		1900		4000	
0,2 s (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 homepage.

Driving torque:

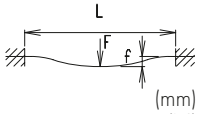
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

Deflection:

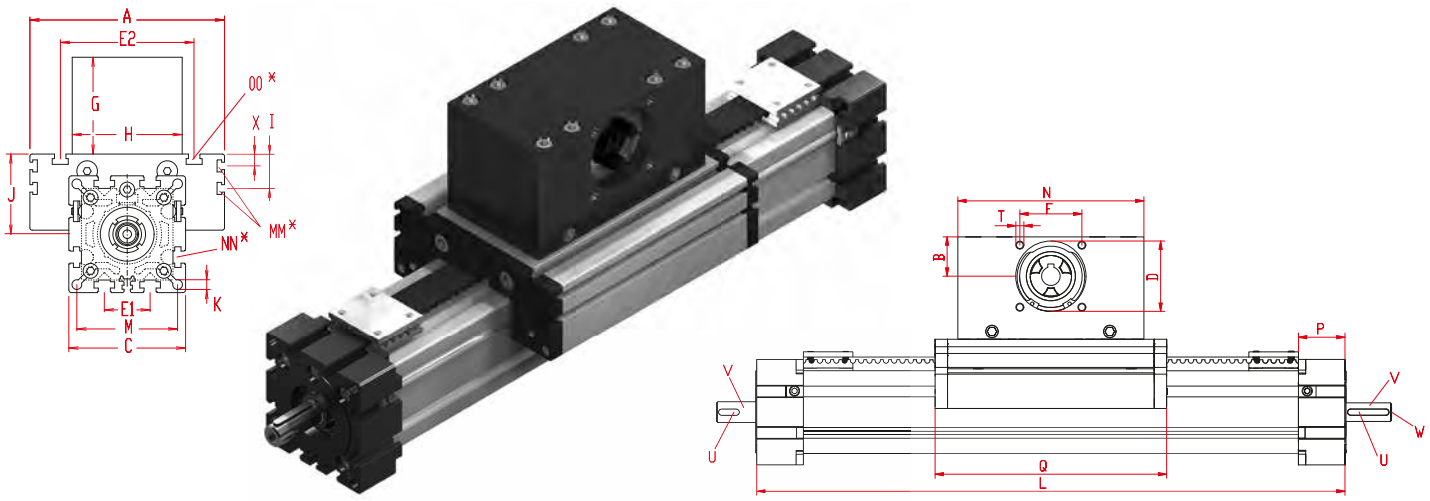
$$f = \frac{F * L^3}{E * I * 192}$$



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

Linear system **ELSD 40, 60, 60S, 80, 80S, 100**

Dimensions (mm)



*For slide nuts refer to chapter 2.2 page 2

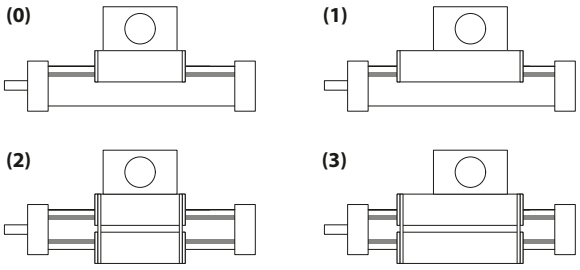
Increasing the carriage length will increase the basic length by the same amount.

Size ❒	Basic length L	A	B	C	D -0,05	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	142	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	38	102	68	40	117	60	99	100	30,5	70	8,5	88	M 6	180	M 10	M 10	45	214	M 8	10,5	12,5 kg	1,30 kg
ELSD 80S	415	190	38	102	68	40	126	60	99	100	30	71	8,5	88	M 6	180	M 10	M 8	45	214	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

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)

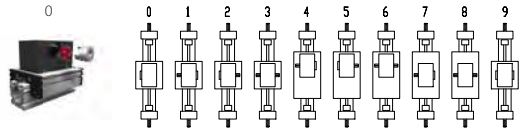
Shaft (drive end)			Shaft (load end)		
Size ❒	Shaft ø h6 x length (V)	Key (U)	Shaft ø h6 x length (V)	Key (U)	Thread (W)
40	10 x 20	3x3x10	12 x 20	4x4x10	M 6 x 12
60 (S)	14 x 25	5x5x20	17 x 25	5x5x20	M 8 x 20
80 (S)	18 x 30	6x6x20	20 x 30	6x6x20	M 10 x 20
100	22 x 35	6x6x30	25 x 35	8x7x30	M 12 x 25

0 **Choice of carriages:**



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

0 **Drive version:**



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).

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	**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 / Coupling claw:

Size	Shaft ø h6 x length	Key	Coupling
40	10 x 27	3x3x25	9
60 (S)	14 x 35	5x5x28	14
80 (S)	18 x 45	6x6x40	19
100	22 x 45	6x6x40	24

ELSD	60	0	0	0	0	0	4	1	1500
Pos.		1	2	3	4	5	6	7	

Basic length + stroke = total length

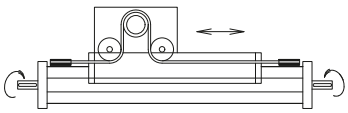
For combination kits and connecting elements refer to chapter 2.2

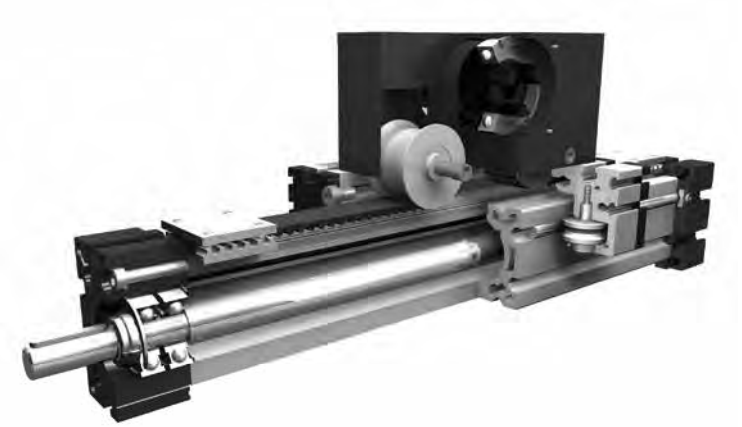
Sample ordering code:
ELSD 60 with standard body profile, standard carriage and coupling claw on one side, 1180 mm stroke

Linear system **ELSD 40, 60, 60S, 80, 80S, 100**

BELT DRIVE WITH WIDENED BELT AND ROTARY SHAFT

- OMEGA SYSTEM
- BELT WIDENING
- GRIPPER ADAPTATION
- ROTATIONAL MOVEMENT

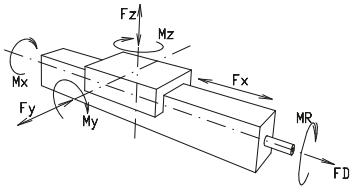




Function:
Same as ELSZ, but with an additional rotary shaft, fitted within the aluminium body. One end can be driven by any suitable motor, and the other end is provided with a shaft with feather key and an axial tapped hole for fitting grippers or other components.

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)	0,2		0,4		0,5		0,6		0,7		0,8	
Speed												
(m/s) max	4		5		7		6		8		8	
Tensile force												
permanent (N)	900		1900		1900		4000		4000		5900	
0,2 s (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 homepage.

Driving torque:

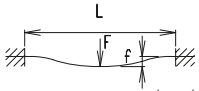
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

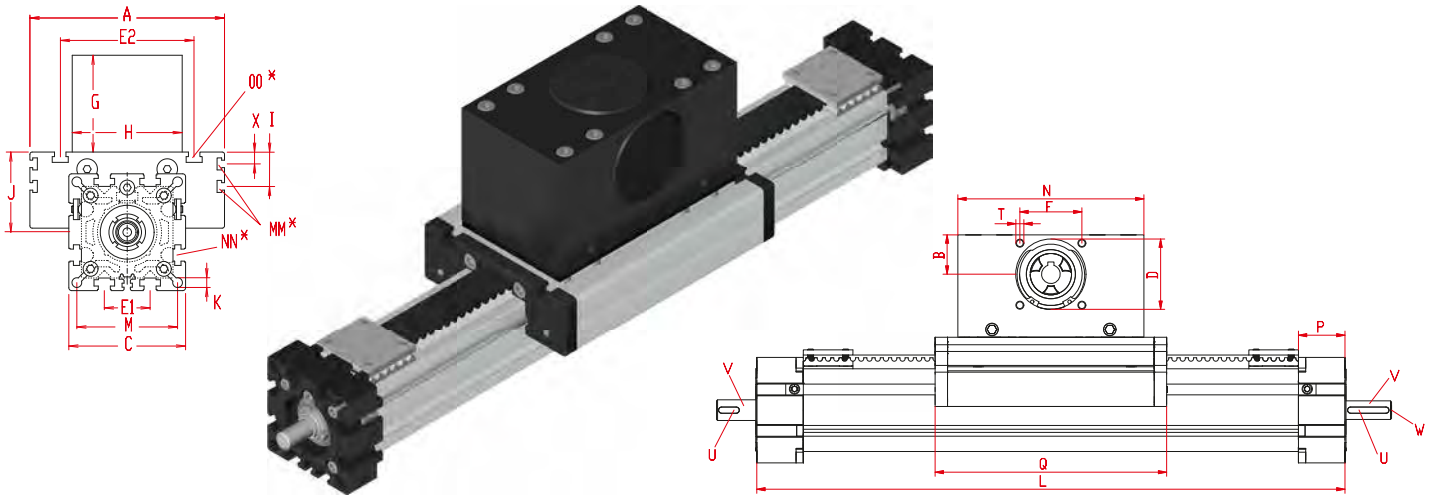
F = force (N)
P = pulley action perimeter (mm)
Si = safety factor 1,2 … 2
M_n = no-load torque (Nm)
n = rpm pulley (min^{-1})
M_a = driving torque (Nm)
P_a = motor power (KW)

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)



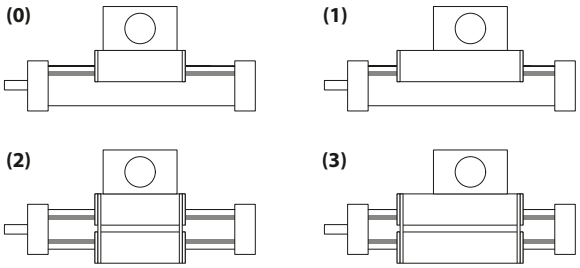
*For slide-nuts refer to chapter 2.2 page 2

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

Size ❒	Basic length L	A	B	C	D - 0,05	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	38	82	68	30	96	60	104	100	-	49	8,5	69	-	180	M 8	M 8	35	214	M 8	-	6,5 kg	0,87 kg
ELSD 60S	395	170	38	82	68	30	108	60	102	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	30,5	70	8,5	88	M 6	270	M 10	M 10	45	304	M 10	10,5	13,7 kg	1,30 kg
ELSD 80S	510	190	60	102	90	40	126	80	138,4	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

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)

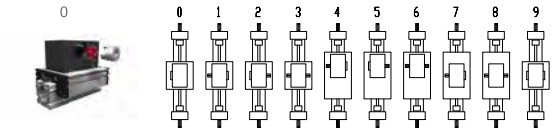
0 **Choice of carriages:**



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

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

0 **Drive version:**



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 / Coupling claw:

Size	Shaft ø h6 x length	Key	Coupling
40	14 x 35	5x5x28	14
60 (S)	18 x 45	6x6x40	19
80 (S)	22 x 45	6x6x40	24
100	30 x 55	8x7x40	28

ELSD	60	0	0	0	0	0	7	1	1500
	Pos.	1	2	3	4	5	6	7	

Basic length + stroke = total length

For combination kits and connecting elements refer to chapter 2.2

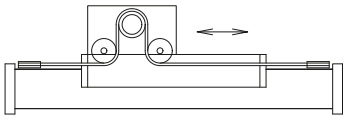
Sample ordering code:
ELSD 60 with standard body profile, standard carriage and coupling claw on one side, 1146 mm stroke

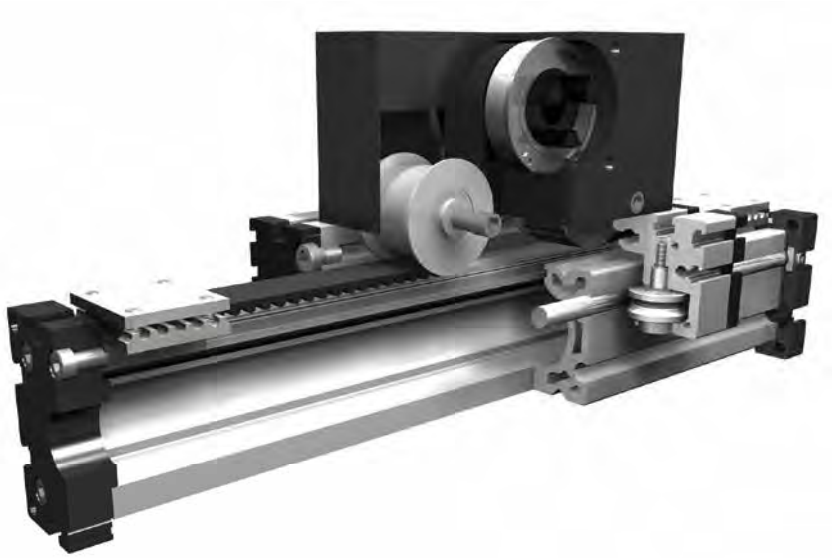
Linear system **ELSZ 30, 40, 60, 60S, 80, 80S, 100, 125**

WITH STANDARD BELT

Ω OMEGA SYSTEM

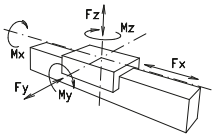
VERTICAL INSTALLATION POSITION





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 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)	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		0,7		0,9		0,9		1,1		1,2		1,5		1,8	
Speed																
(m/s) max	2		4		5		7		6		8		8		10	
Tensile force																
permanent (N)	200		390		900		900		1900		1900		4000		5900	
0,2 s (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 homepage.

Driving torque:

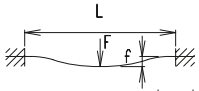
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

Deflection:

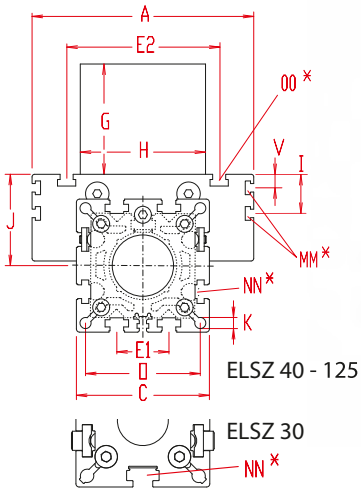
$$f = \frac{F * L^3}{E * I * 192}$$

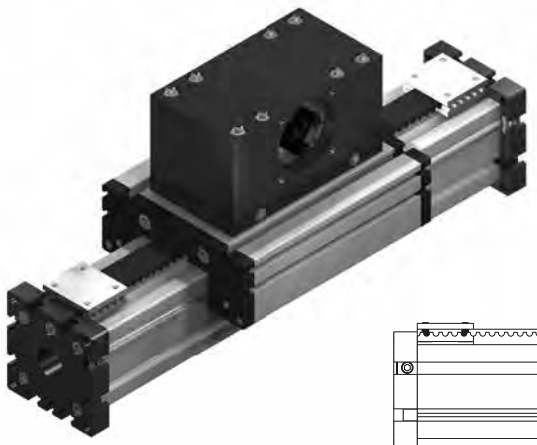


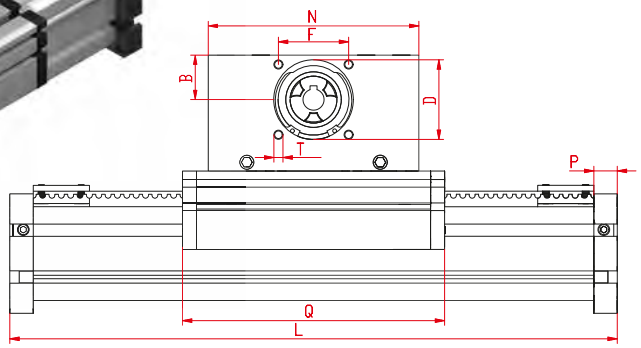
f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

Linear system **ELSZ 30, 40, 60, 60S, 80, 80S, 100, 125**

Dimensions (mm)







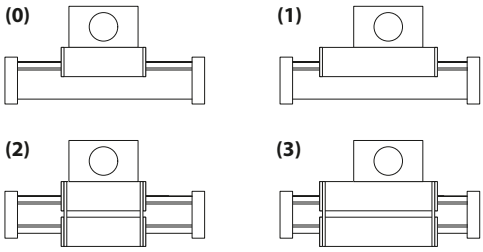
*For slide nuts refer to chapter 2.2 page 2

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

Size ❒	Basic length L	A	B	C	D -0,05	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	182	70	16	42	28	-	56	25	45	42	-	26	4,2	-	90	M 6	35	M 6	12	108	M 4	-	1,33 kg	0,16 kg
ELSZ 40	230	100	20	58	37	25	66	32	65	60	-	35	6,5	-	110	M 6	47	M 6	12	142	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	38	102	68	40	117	60	99	100	30,5	70	8,5	M 6	180	M 10	88	M 10	20	214	M 8	10,5	11,0 kg	1,00 kg
ELSZ 80S	365	190	38	102	68	40	126	60	99	100	30	71	8,5	M 6	180	M 8	88	M 8	20	214	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	M10	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	M10	M10	310	M 12	140	M 12	30	365	M 10	-	54,5 kg	1,94 kg

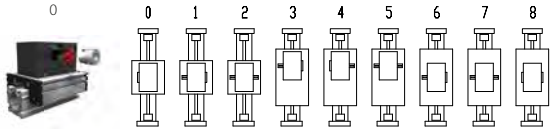
0 **Choice of guide body profile:**
(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

0 **Choice of carriages:**



Size	Version 1		Version 2		Version 3	
	Q	L	Q	L	Q	L
30	175	245	124	194	197	267
40	237	325	158	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	234	395	419	565
100	535	760	326	551	551	776
125	640	870	389	619	664	894

0 **Drive version:**



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	**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 / Coupling claw:

Size	Shaft ø h6 x length	Key	Coupling
30	6 x 15	2x2x12	7
40	10 x 27	3x3x25	9
60 (S)	14 x 35	5x5x28	14
80 (S)	18 x 45	6x6x40	19
100	22 x 45	6x6x40	24
125	30 x 55	8x7x50	28

ELSZ	60	0	0	0	0	0	4	1	1500
Pos.		1	2	3	4	5	6	7	

Basic length + stroke = total length

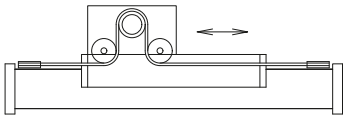
For combination kits and connecting elements refer to chapter 2.2

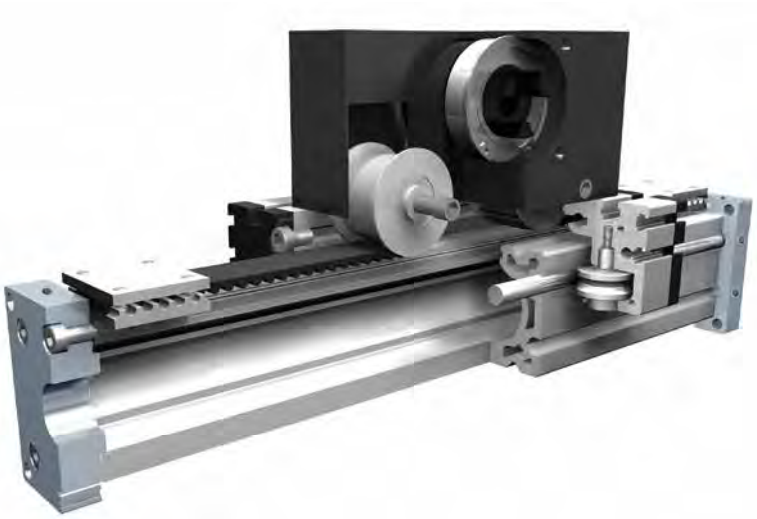
Sample ordering code:
ELSZ 60 with standard body profile, standard carriage and coupling claw on one side, 1220 mm stroke.

Linear system **ELSZ 30, 40, 60, 60S, 80, 80S, 100, 125**

WITH WIDENED BELT DRIVE

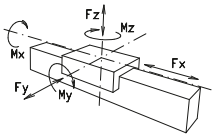
- OMEGA SYSTEM
- VERTICAL INSTALLATION POSITION
- BELT WIDENING
- HIGHER FORCE FIXTURE





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/s) max	2		4		5		7		8		8		8		8	
Tensile force																
permanent (N)	390		894		1 900		1900		4000		4000		5900		7900	
0,2 s (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 homepage.

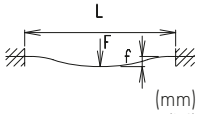
Driving torque:

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

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

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

Deflection:

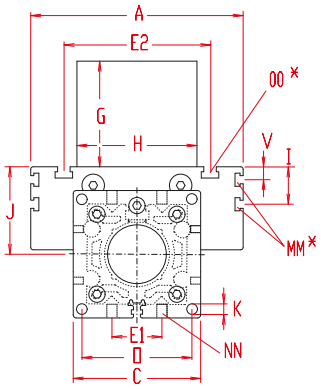


$$f = \frac{F * L^3}{E * I * 192}$$

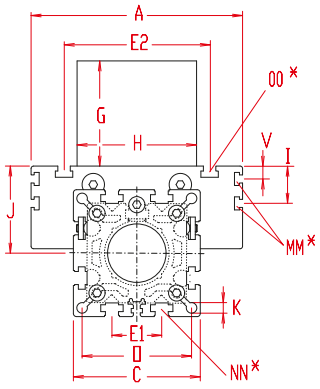
f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

Linear system **ELSZ 30, 40, 60, 60S, 80, 80S, 100, 125**

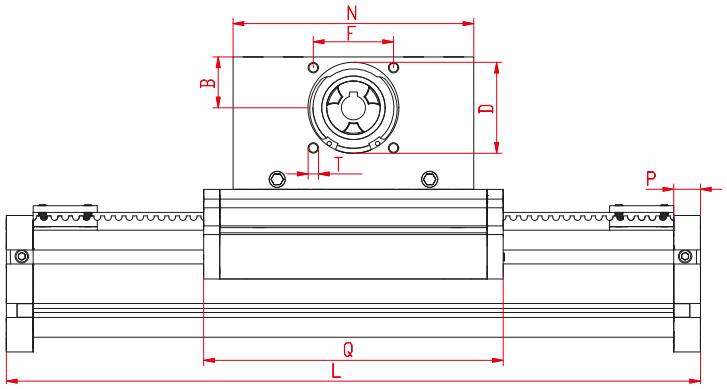
Dimensions (mm)



ELSZ 40 - 100



ELSZ 30, 125



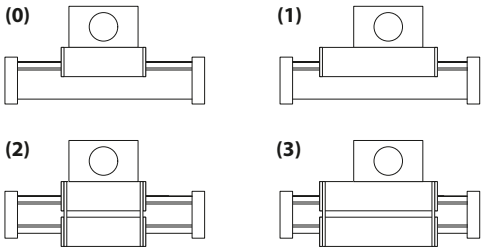
*For slide nuts refer to chapter 2.2 page 2

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

Size ❒	Basic length L	A	B	C	D -0,05	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	38	82	68	30	96	60	104	100	-	49	8,5	-	180	M 8	69	M 8	16	214	M 8	-	6,3 kg	0,62 kg
ELSZ 60S	355	170	38	82	68	30	108	60	102	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	30,5	70	8,5	M 6	270	M 10	88	M 10	20	304	M 10	10,5	14,0 kg	1,00 kg
ELSZ 80S	460	190	60	102	90	40	126	80	138,4	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	M12	M10	310	M 10	112	M 10	30	350	M 10	-	31,0 kg	1,60 kg
ELSZ 125	605	295	62	165	110	60	200	100	139	180	30	107,5	M12	M10	310	M 12	140	M 12	30	365	M 10	-	57,4 kg	1,96 kg

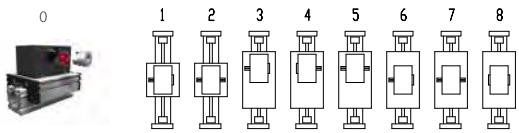
0 **Choice of guide body profile:**
(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

0 **Choice of carriages:**



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

0 **Drive version:**



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 tab:le

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 / Coupling claw:

Size	Shaft ø h6 x length	Key	Coupling
30	10 x 27	3x3x25	9
40	14 x 35	5x5x28	14
60 (S)	18 x 45	6x6x40	19
80 (S)	22 x 45	6x6x40	24
100	30 x 55	8x7x50	28
125	40 x 55	12x8x50	------

ELSZ	**60**	**0**	**0**	**0**	**0**	**0**	**7**	**1**	**1500**
Pos.		1	2	3	4	5	6	7	

Basic length + stroke = total length

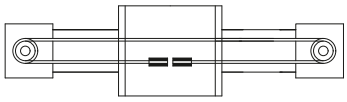
For combination kits and connecting elements refer to chapter 2.2

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

Linear system **ELVZ 60, 60S, 80, 80S, 100, 125**

INTERNAL BELT DRIVE

- CLEAN ROOM
- TOOTHED BELT VERTICAL
- HIGH DYNAMICS

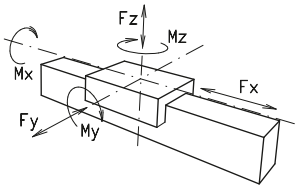


Fraunhofer IPA TESTED DEVICE Linearreinheit ELVZ 60

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.
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/s) max	3	4	4	4	5	6
Tensile force						
permanent (N)	700	700	1000	1000	3100	5000
0,2 s (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 homepage.

Driving torque:

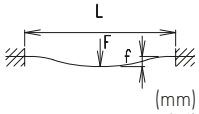
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

Deflection:

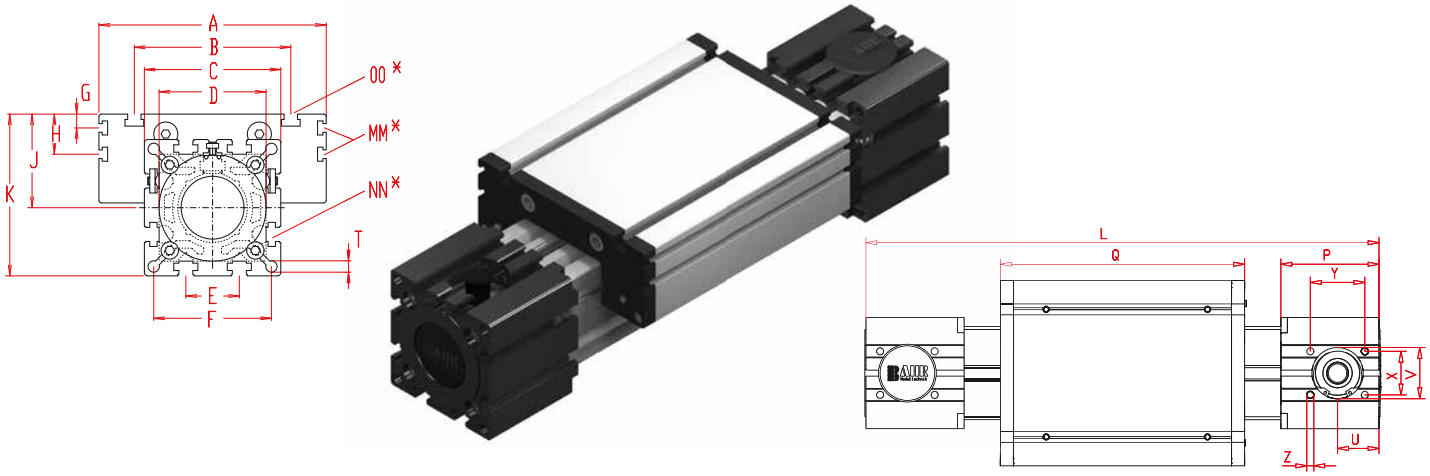
$$f = \frac{F * L^3}{E * I * 192}$$



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

Linear system **ELVZ 60, 60S, 80, 80S, 100, 125**

Dimensions (mm)

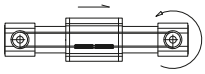
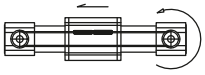


*For slide nuts refer to chapter 2.2 page 2

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

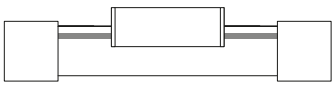
Size ❒	Basic length L	A	B	C	D ± 0,05	E	F	G	H	J	K	MM for	NN for	OO for	P	Q	T	U	V - 0,05	W¹	X	Y	Z	Basic weight	Weight per 100 mm
ELVZ 60	290	144	96	82	62x1	30	69	--	-	49	90	-	M 8	M 8	59	168	8,5	23	37	14	30	36	M 6	4,8 kg	0,62 kg
ELVZ 60S	315	170	108	82	62x1	30	69	--	-	53	94	-	M 8	M 8	59	194	8,5	23	37	14	30	36	M 6	5,8 kg	0,62 kg
ELVZ 80	375	170	117	102	80x1	40	88	10,5	30,5	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	130	365	13	58	90	35	60	85	M10	37,0 kg	2,10 kg

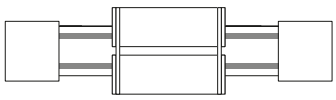
W¹ = standard shaft

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)

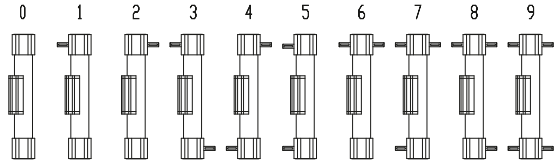
0 **Choice of carriages:**

(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

0 **Drive version:**



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)**	5M 25	80	16
0	**4**	**80 (S)**	5M 25	110	22
0	**9**	**100**	8M 48	144	18
0	**9**	**125**	8M 50	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

ELVZ	60	1	0	0	0	0	4	1	1500
	Pos.	1	2	3	4	5	6	7	

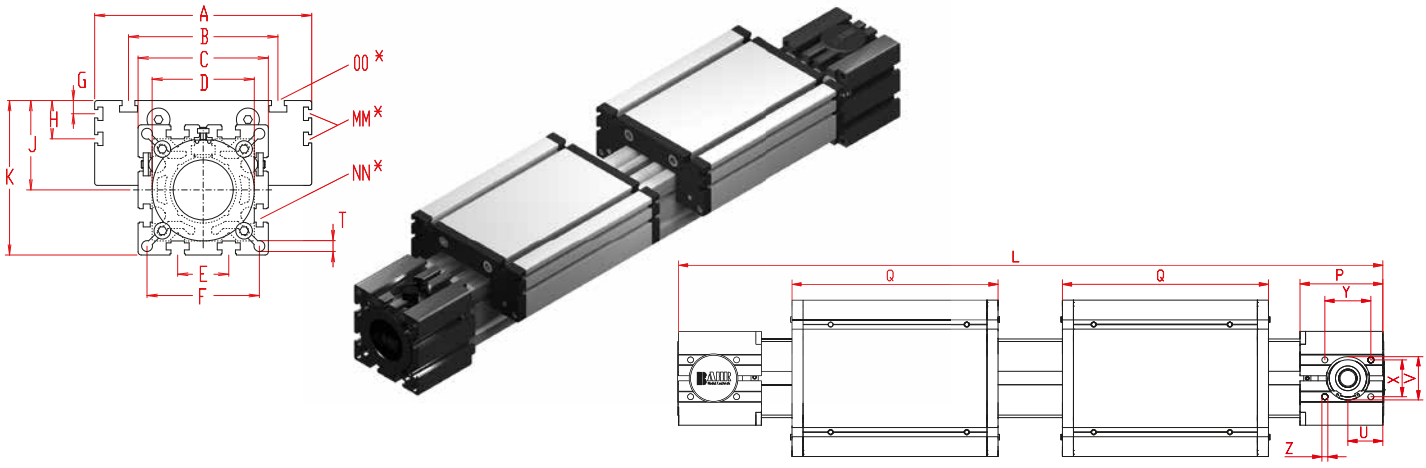
Basic length + stroke = total length

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

Linear system **ELVZ 60, 60S, 80, 80S, 100, 125**

INTERNAL BELT DRIVE - TWO CARRIAGES MOVING IN OPPOSITE DIRECTIONS

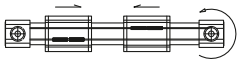


*For slide nuts refer to chapter 2.2 page 2

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

Size ❒	Basic length L	A	B	C	D ± 0,05	E	F	G	H	J	K	MM for	NN for	OO for	P	Q	T	U	V - 0,05	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	10,5	30,5	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	130	365	13	58	90	35	60	85	M10	50,5 kg	2,10 kg

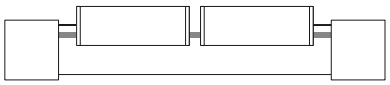
W¹ = standard shaft

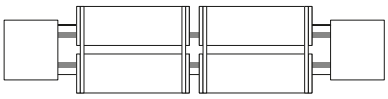
7 **(7)** Belt connection right  **(8)** Belt connection left 

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)

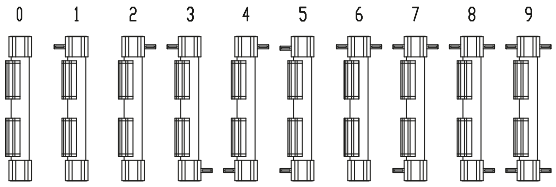
Size	Version 1	
	Q	L
60	184	492
60S	214	542
80	210	602
80S	234	650
100	316	862
125	389	1038

0 **Choice of carriages:**

(0) 

(1) 

0 **Drive version:**



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)**	5M 25	80	16
0	**4**	**80 (S)**	5M 25	110	22
0	**9**	**100**	8M 48	144	18
0	**9**	**125**	8M 50	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

ELVZ	**60**	**7**	**0**	**0**	**0**	**0**	**4**	**1**	**1500**
	Pos.	1	2	3	4	5	6	7	

Basic length + stroke = total length

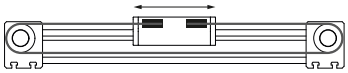
For combination kits and connecting elements refer to chapter 2.2

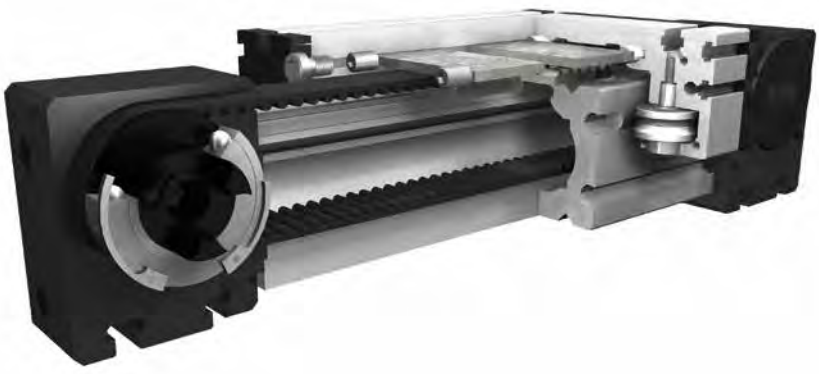
Sample ordering code:
ELVZ 60 right-/left-hand with belt connection right, standard body profile, standard carriage and 4 flush mounted shafts, 1040 mm stroke

Linear system **ELZ 30, 40, 60, 60S, 80, 80S, 100, 125**

BELT DRIVE

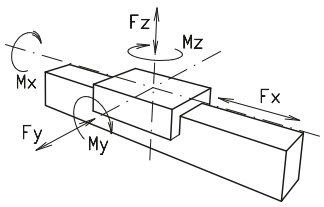
- UNIVERSAL SYSTEM
- LONG SERVICE LIFE
- HIGH SPEED
- LONG TRAVERSE PATH >6000 MM





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. With this series, multi-part assembled units with long strokes can be realized.

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/s) max	2	4	5	7	6	8	10	10
Tensile force							
permanent (N)	200	390	900	900	1900	1900	4000	5900
0,2 s (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 homepage.

Driving torque:

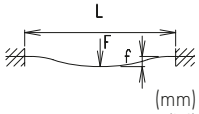
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

Deflection:

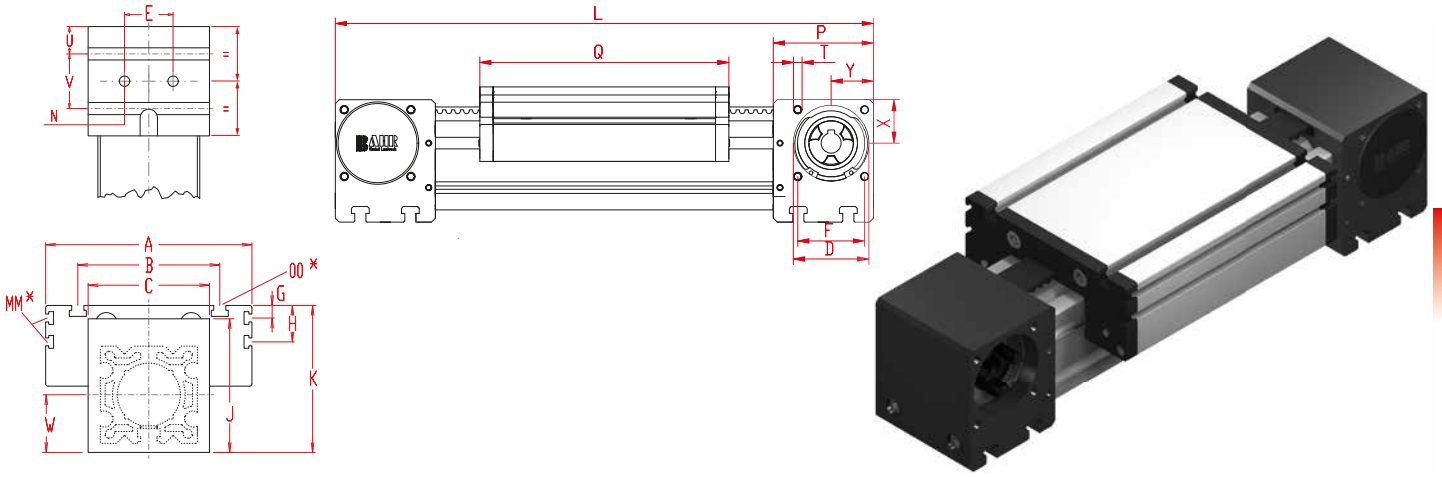
$$f = \frac{F * L^3}{E * I * 192}$$



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

Linear system **ELZ 30, 40, 60, 60S, 80, 80S, 100, 125**

Dimensions (mm)



*For slide nuts refer to chapter 2.2 page 2

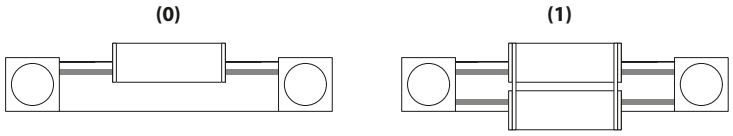
Increasing the carriage length will increase the basic length by the same amount.

Size ❒	Basic length L	A	B	C	D -0,05	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	10,5	30,5	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

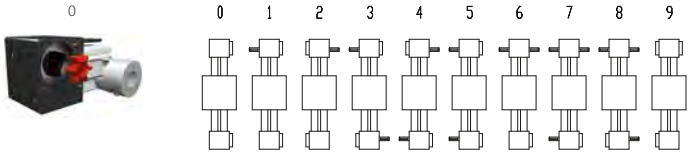
0 **Choice of guide body profile:**
(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

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

0 **Choice of carriages:**



0 **Drive version:**



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 / Coupling claw:

Size	Shaft ø h6 x length	Key	Coupling
30	6 x 15	2x2x12	7
40	10 x 27	3x3x22	9
60 (S)	14 x 35	5x5x28	14
80 (S)	18 x 45	6x6x40	19
100	22 x 45	6x6x40	24
125	30 x 55	8x7x50	28

ELZ	40	1	0	0	0	0	3	1	1500
	Pos.	1	2	3	4	5	6	7	

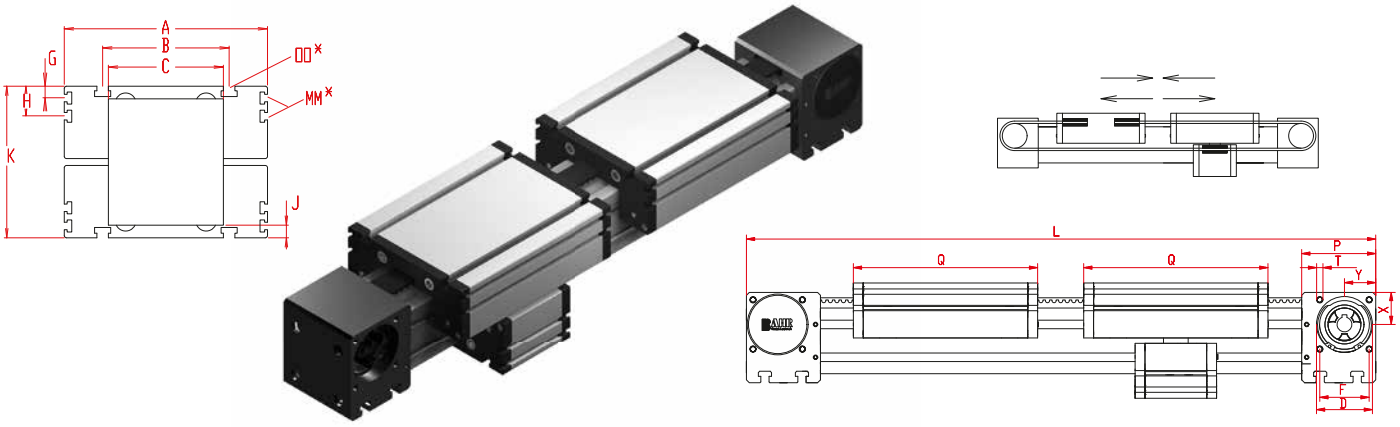
Basic length + stroke = total length

For combination kits and connecting elements refer to chapter 2.2

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

Linear system **ELZ 30, 40, 60, 60S, 80, 80S, 100, 125**

BELT DRIVE WITH TWO CARRIAGES MOVING IN OPPOSITE DIRECTIONS



*For slide nuts refer to chapter 2.2 page 2

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

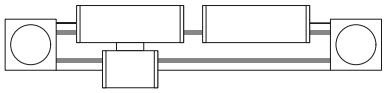
Size ❒	Basic length L	A	B	C	D - 0,05	F	G	H	J	K	MM for	OO for	P	Q	T	X	Y	Basic weight	Weight per 100 mm
ELZ 30	250	70	56	42	28	25	-	-	5	52	-	M 6	36	82	M 4	16	16	1,2 kg	0,13 kg
ELZ 40	350	100	66	58	37	32	-	-	6	70	-	M 6	49	122	M 5	20,5	20,5	2,8 kg	0,24 kg
ELZ 60	460	144	96	80	47	42	-	-	8	98	-	M 8	59	168	M 6	27	26	7,4 kg	0,62 kg
ELZ 60S	510	170	108	80	47	42	-	-	12	106	-	M 8	59	194	M 6	27	26	7,4 kg	0,62 kg
ELZ 80	570	170	117	100	68	60	10,5	30,5	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

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)

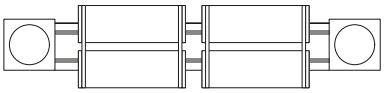
Size	Version 1	
	Q	L
30	94	274
40	138	382
60	184	492
60S	214	554
80	210	602
80S	234	650
100	316	862
125	389	1038

0 **Choice of carriages:**

(0)



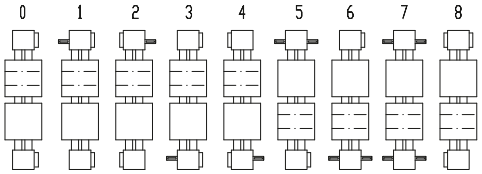
(1)



0 **Coupling - shaft mounting:**

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 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 / Coupling claw:

Size	Shaft ø h6 x length	Key	Coupling
30	6 x 15	2x2x12	7
40	10 x 27	3x3x22	9
60 (S)	14 x 35	5x5x28	14
80 (S)	18 x 45	6x6x40	19
100	22 x 45	6x6x40	24
125	30 x 55	8x7x50	28

ELZ	40	3	0	0	0	0	3	1	1500
	Pos.	1	2	3	4	5	6	7	

Basic length + stroke = total length

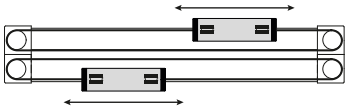
For combination kits and connecting elements refer to chapter 2.2

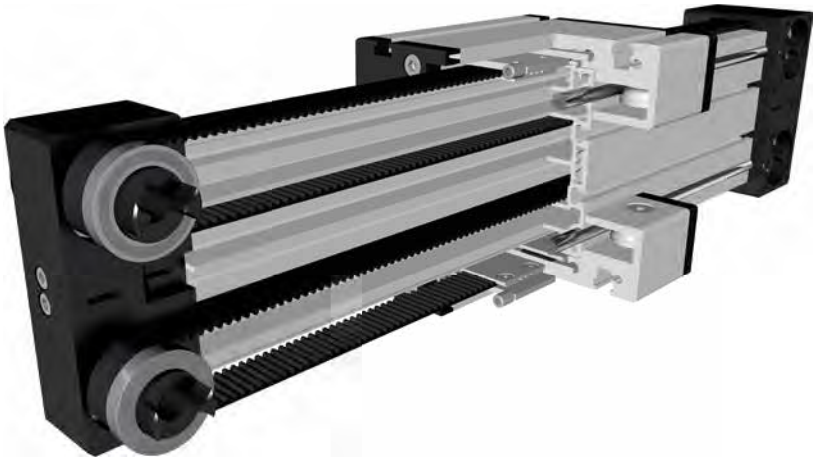
Sample ordering code:
ELZ 40, right/left hand with standard body profile, standard carriage, coupling claw on one side, 1150 mm stroke.

Linear system **ELZD 60 (S) W**

BELT DRIVE WITH TWO SEPARATELY DRIVEN CARRIAGES

- HIGHER PROFILE STABILITY
- INDEPENDENT CARRIAGES
- HIGHER FORCE FIXTURE

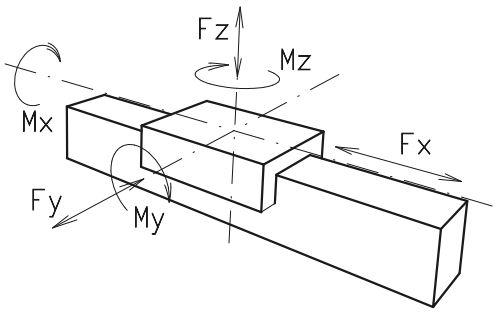




Function:
The guide body consists of an aluminium square profile with lateral, parallel, form-fit, internal hardened steel rods. Two carriages, which are driven individually by a timing belt, move along the guide body independently of one another. Due to the rectangular profile high torques and loads can be taken up. In addition, a very high stability and low deflection are ensured for long axis systems. The belt tension can be easily readjusted via a tensioning device within the carriage. This device also helps to adjust the symmetry of the carriages in applications where two parallel linear units are used.

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

Forces and torques



Size	60		60 S	
Forces/Torques	static	dynamic	static	dynamic
F_x (N)	894	800	894	800
F_y (N)	3000	2000	4100	3100
F_z (N)	1700	1100	2160	1600
M_x (Nm)	67	43	88	65
M_y (Nm)	90	70	190	140
M_z (Nm)	120	100	230	170
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	
Speed				
(m/s) max	5		7	
Tensile force				
permanent (N)	900		900	
0,2 s (N)	1000		1000	
Geometrical moments of inertia of aluminium profile				
I_x mm^4	2,8 x 10^6		2,8 x 10^6	
I_y mm^4	9,6 x 10^5		9,6 x 10^5	
E-Modulus N/mm^2	70000		70000	

For life-time calculation of rollers use our homepage.

Driving torque:

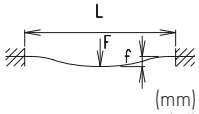
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

Deflection:

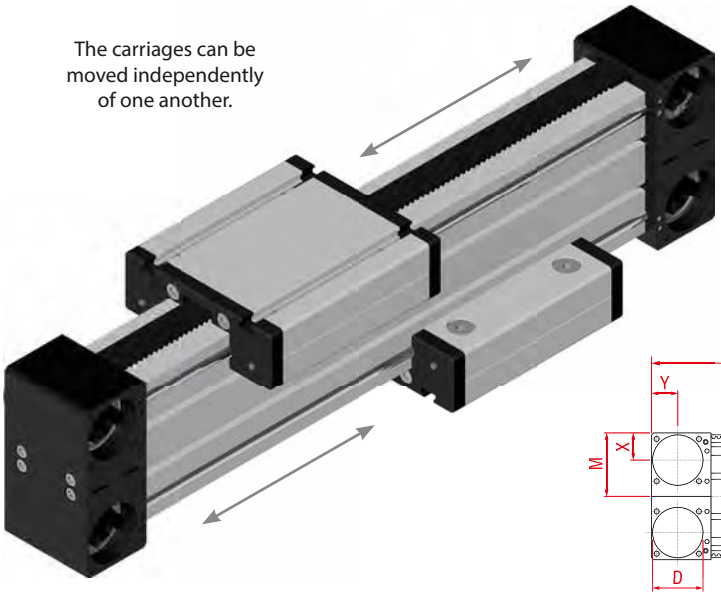
$$f = \frac{F * L^3}{E * I * 192}$$

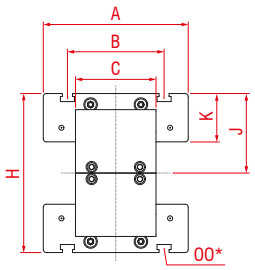


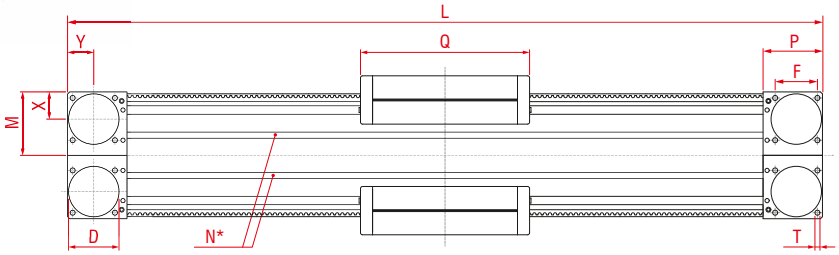
f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

Linear system **ELZD 60 (S) W**

The carriages can be moved independently of one another.







*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 -0,05	F	H	J	K	M	N for	OO for	P	Q	T	X	Y	Basic weight	Weight per 100 mm
ELZD 60 **W**	290	144	96	80	47	42	158	79	48	71	M5	M8	59	168	M6	27	26	9,6 kg	1,0 kg
ELZD 60S **W**	315	170	108	80	47	42	166	83	52	71	M5	M8	59	194	M6	27	26	11,6 kg	1,0 kg

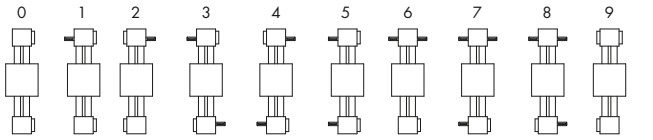
0 **Choice of guide body profile:**
(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

0 **Choice of carriages:**

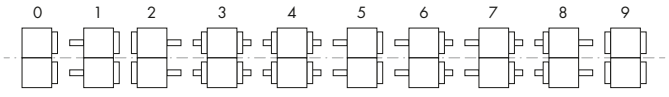
(0)

0 **Drive version:**

(0)

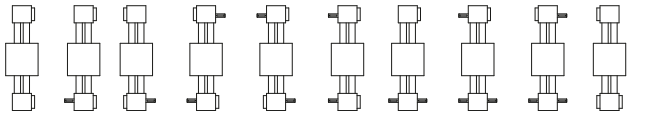


Top drive version:
Version 9 is the same as 0, but with double sided coupling claw.



Mirror plane
Drive version
(top and bottom identical)

(0)



Bottom drive version:
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	**60 (S)**	5M25	130	26

Shaft dimensions / Coupling claw:

Size	Shaft ø h6 x length	Key	Coupling
60 (S)	14 x 35	5x5x28	14

ELZD	60 W	1	0	0	0	0	4	1	1500
	Pos.	1	2	3	4	5	6	7	

Basic length + stroke = total length

For combination kits and connecting elements refer to chapter 2.2

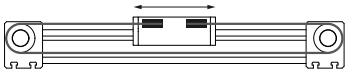
Sample ordering code:
ELZD 60 W, standard body profile, standard carriage, coupling claw on one side, 1210 mm stroke

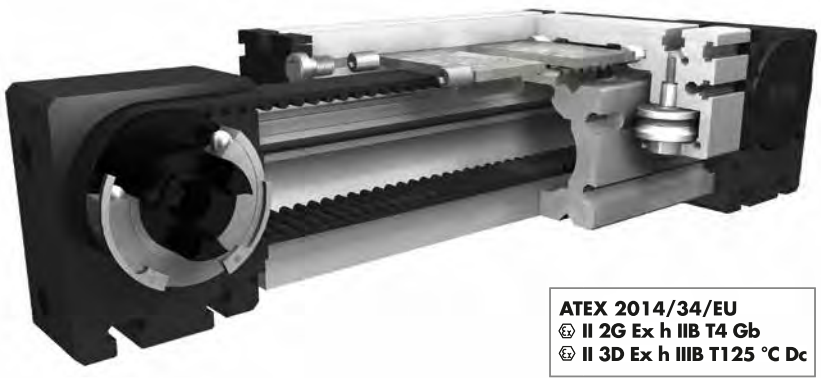
Linear system **ELZ** Ex **30, 40, 60, 60S, 80, 80S, 100, 125**

BELT DRIVE - EX GUIDE

UNIVERSAL SYSTEM
EX-GUIDE
HIGH SPEED

3.1





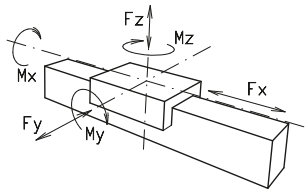
ATEX 2014/34/EU
Ex II 2G Ex h IIB T4 Gb
Ex II 3D Ex h IIIB T125 °C Dc

Function:
Like ELZ. The positioning system is suitable for use according to the intended purpose in potentially explosive areas (see ATEX 2014/34/EU marking). An operating manual is included in the scope of delivery. The system is certified for the following areas:

ATEX 2014/34/EU **II 2G EX h IIB T4 Gb:**
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, EPL Gb.

ATEX 2014/34/EU **II 3D EX h IIIB T125 °C Dc:**
All application areas except for underground mining. Dust atmosphere category 3. Maximum permissible surface temperature: 125°C, EPL Dc.

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/s) 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 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 homepage.

Driving torque:

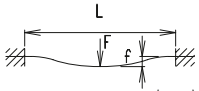
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

Deflection:

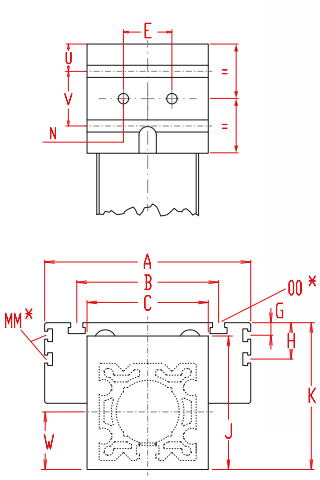
$$f = \frac{F * L^3}{E * I * 192}$$

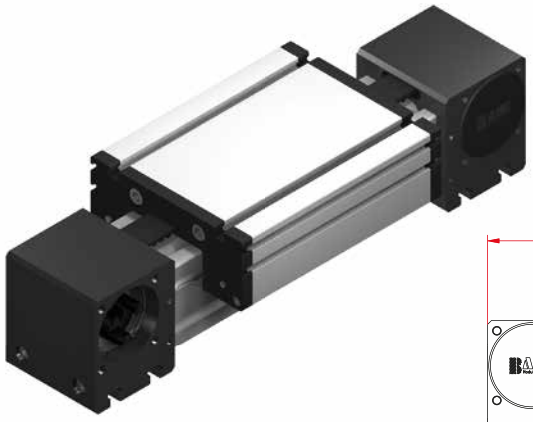


f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

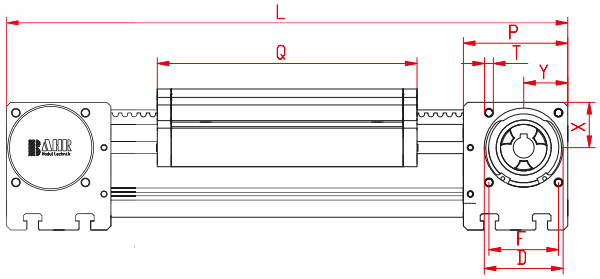
Linear system **ELZ** ⟨Ex⟩ **30, 40, 60, 60S, 80, 80S, 100, 125**

Dimensions (mm)





ATEX 2014/34/EU
⟨Ex⟩ II 2G Ex h IIB T4 Gb
⟨Ex⟩ II 3D Ex h IIIB T125 °C Dc



*For slide nuts refer to chapter 2.2 page 2

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

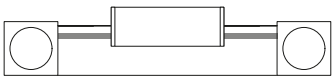
Size ❒	Basic length L	A	B	C	D -0,05	E	F	G	H	J	K	MM for	N	OO for	P	Q	T	U	V	W	X	Y	Basic weight	Weight per 100 mm
ELZex 40	225	100	66	58	37	18	32	-	-	58	64	-	M 6	M 6	49	122	M 5	12,5	24	29	20,5	20,5	1,9 kg	0,24 kg
ELZex 60	290	144	96	80	47	30	42	-	-	82	90	-	M 8	M 8	59	168	M 6	15	30	41	27	26	4,8 kg	0,62 kg
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	10,5	30,5	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

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

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

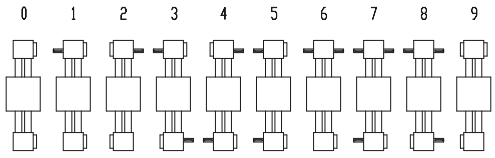
0 **Choice of carriages:**

(0)



(1)

0 **Drive version:**



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 / Coupling claw:

Size	Shaft ø h6 x length	Key	Coupling
40	10 x 27	3x3x22	9
60 (S)	14 x 35	5x5x28	14
80 (S)	18 x 45	6x6x40	19
100	22 x 45	6x6x40	24
125	30 x 55	8x7x50	28

ELZex	40	1	0	0	0	0	3	1	1500
Pos.		1	2	3	4	5	6	7	

Basic length + stroke = total length

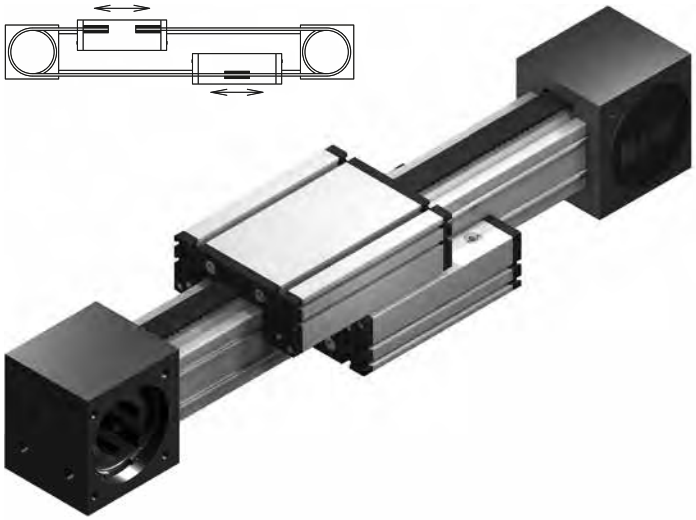
For combination kits and connecting elements refer to chapter 2.2

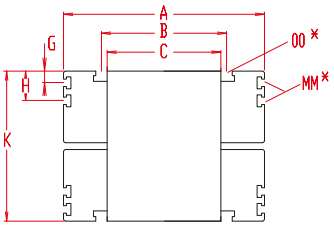
Sample ordering code:
ELZex 40, standard body profile, standard carriage, coupling claw on one side, 1275 mm stroke.

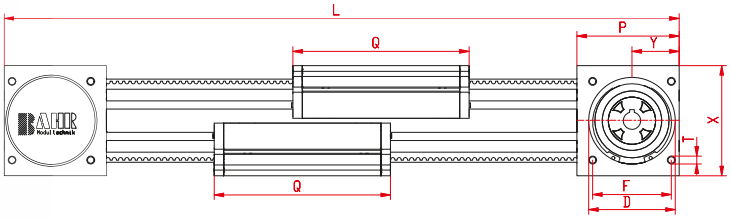
Positioning system ELZG 30, 40, 60, 60S, 80, 80S

Belt drive

Dimensions (mm)







*For slide nuts refer to chapter 2.2 page 2

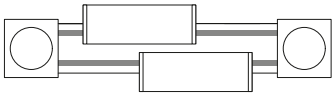
Increasing the carriage length will increase the basic length by the same amount.

Size ❒	Basic length L	A	B	C	D - 0,05	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	122	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	10,5	30,5	140	M 6	M 10	130	194	M 10	140	60	20,5 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	21,5 kg	1,15 kg

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 **Choice of carriages:**

(0)

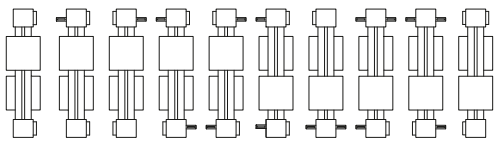


For standard carriage length see 'Q' in table. The carriages can be delivered in any non-standard length upon request; the longer the carriage, the higher the load capacity.

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. 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 / Coupling claw

Size	Shaft Ø h6 x length	Key	Coupling
30	10 x 27	3x3x25	9
40	14 x 35	5x5x28	14
60 (S)	18 x 45	6x6x40	19
80 (S)	22 x 45	6x6x40	24

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

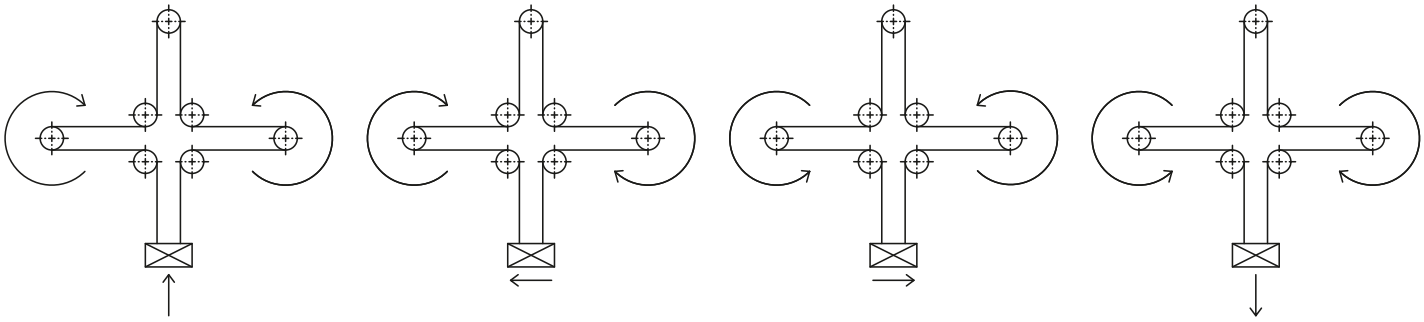
Basic length + stroke = total length

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.

Linear system **ELZI 30, 40, 60**

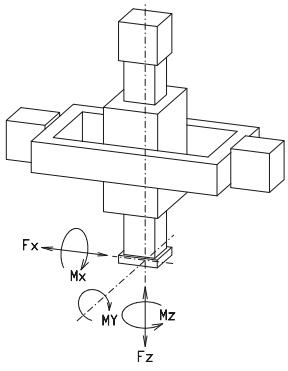
X/Z - PORTAL



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_z (N)	180	160	1200	900	1600	1200
M_x (Nm)	15	9	25	20	67	43
M_y (Nm)	20	13	32	22	90	70
M_z (Nm)	23	18	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/s) max	2		4		5	
Tensile force (please use necessarily the Mulco life-time calculation, see Chapter 4.2						
permanent (N)	390		894		1900	
0,2 s (N)	480		1000		2090	
Geometrical moments of inertia of aluminium profile						
I_x mm⁴ (X-/Z-Achse)	$0{,}31x10^5$ / $0{,}41x10^5$		$1{,}12x10^5$ / $1{,}32x10^5$		$4{,}06x10^5$ / $6{,}79x10^5$	
I_y mm⁴ (X-/Z-Achse)	$1{,}70x10^5$ / $0{,}40x10^5$		$7{,}20x10^5$ / $1{,}34x10^5$		$24{,}3x10^5$ / $6{,}97x10^5$	
E-Modulus N/mm²	70000		70000		70000	

For life-time calculation of rollers use our homepage.

Driving torque:

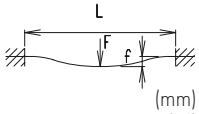
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

Deflection:

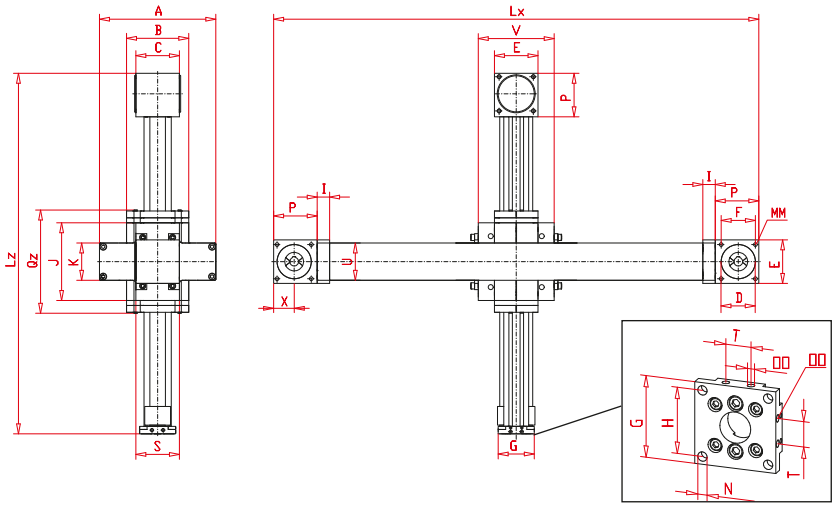
$$f = \frac{F * L^3}{E * I * 192}$$

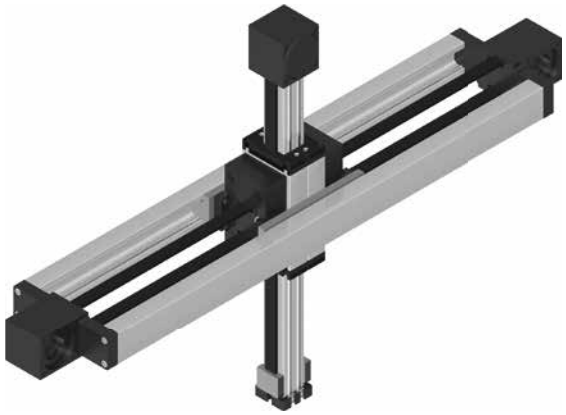


f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

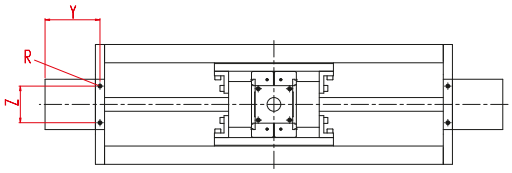
Linear system **ELZI 30, 40, 60**

Dimensions (mm)





Endpiece for gripper



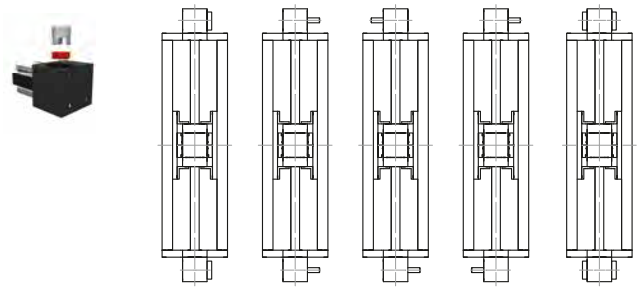
Size	X-Axie		Z-Axis	
	Profile	moving mass	Profile	moving mass
30	2 x UL40	4,5 kg	EL30	1,0 kg
40	2 x UL60	7,0 kg	EL40	2,4 kg
60	2 X UL80	19,0 kg	EL60	6,5 kg

Size ❒	Basic legth		A	B	C	D - 0,05	E	F	G	H	I	J	K	MM for	N Ø	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	69	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

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:**

(0) **(0)** **(1)** **(2)** **(3)** **(4)**



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 claw:

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

X-Axis Basic length + stroke = total length

Y-Axes Basic length + stroke = total length

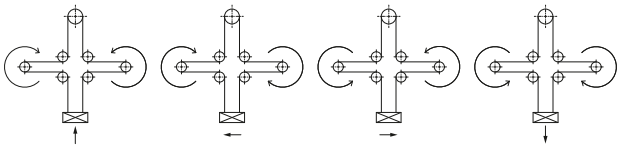
ELZI	**40**	**0**	**0**	**0**	**0**	**0**	**4**	**1**	**1500**
ELZI	**40**	**1**	**0**	**0**	**0**	**0**	**4**	**1**	**700**
Pos.		1	2	3	4	5	6	7	

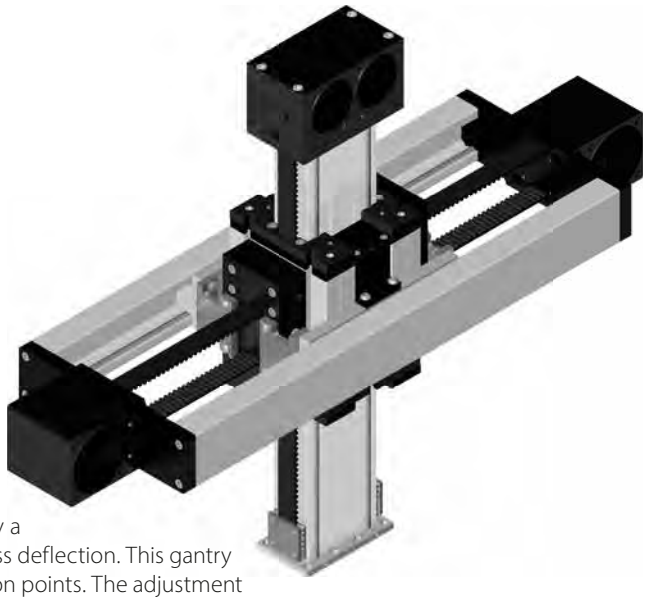
Sample ordering code:
ELZI 40, with standard body profile, coupling claw on one side, stroke X = 1120 / Z = 410mm

Linear system **ELZI 60 SW**

X/Z - PORTAL - REINFORCED VERSION

- BELT DRIVE
- COMPACT DESIGN
- GRIPPER ADAPTATION
- HIGH SPEED

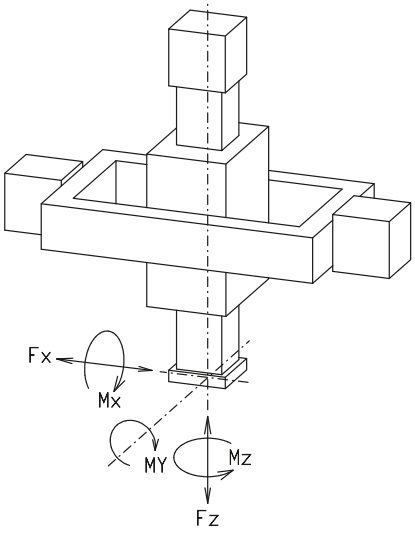




Function:
X/Y-gantry system that consists of a double guided X-axis and a vertical Z-axis. Compared to the ELZI series (standard version), the vertical Z-axis is reinforced by a rectangular profile, which absorbs higher torques, ensures greater stability and less deflection. This gantry system is driven by only one single timing belt that runs through various deflection points. The adjustment is realized by two motors whose coordinates are diagonally orientated to these deflection points.
Key advantageous: this compact design allows high accelerations due to low movable masses.

Fitting position: As required, max. length for x-axes 2000mm, for z-axis 2000mm
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	60 S	
Forces/torques	static	dynam.
F_x (N)	1900	1800
F_z (N)	1600	1200
M_x (Nm)	67	43
M_y (Nm)	190	140
M_z (Nm)	230	170
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 1,1	
Speed		
(m/s) max	5	
Tensile force		
Dauer (N)	1900	
0,2 s (N)	2090	
Geometrical moments of inertia of aluminium profile		
I_x mm⁴ (X-/Z-Achse)	4,06x10⁵ / 9,6x10⁵	
I_y mm⁴ (X-/Z-Achse)	24,3x10⁵ / 2,8 x10⁶	
E-Modul N/mm²	70000	

For life-time calculation of rollers use our homepage.

Driving torque:

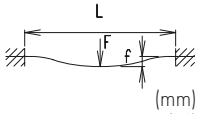
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

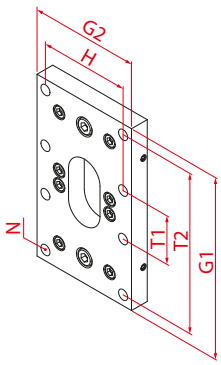
F = force (N)
P = pulley action perimeter (mm)
Si = safety factor 1,2 ... 2
M_n = no-load torque (Nm)
n = rpm pulley (min^{-1})
M_a = driving torque (Nm)
P_a = motor power (KW)

Deflection:

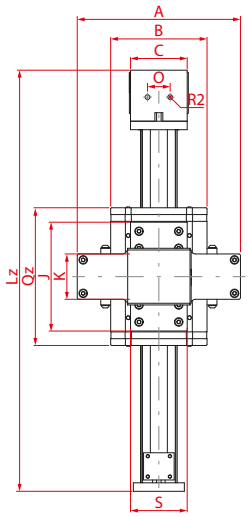
$$f = \frac{F * L^3}{E * I * 192}$$

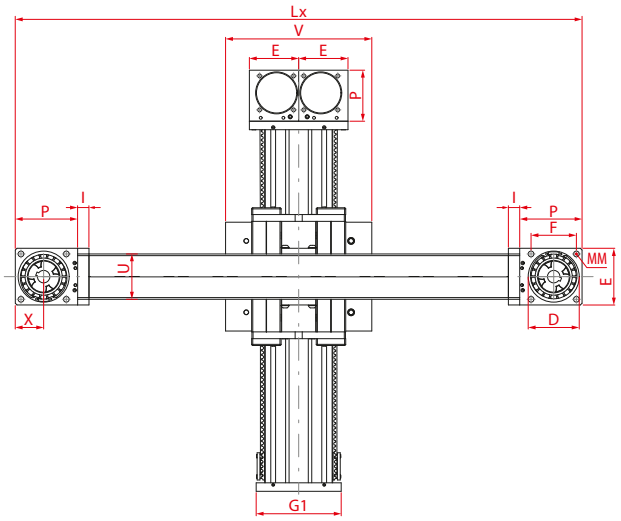


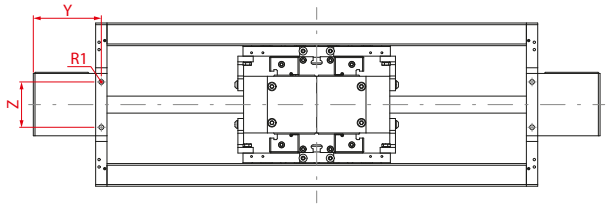
f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)



Endpiece for gripper







Size	G1	G2	H	N Ø	T1	T2
60 S	150	90	74	8,6	40	132

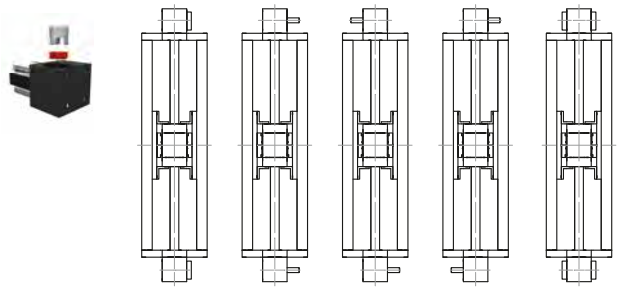
Size	X-Axis		Z-Axis	
	Profile	moving mass	Profile	moving mass
60 S	2x UL 80	26,3 kg	EL 60	11,7 kg

Size ❒	Basic legth		A	B	C	D - 0,05	E	F	I	J	K	MM for	O	P	Qz	R1	R2	S	U	X	Y	Z	Basic weight	Weight per 100 mm X-/Z-Achse
	Lx	Lz																						
ELZI 60 SW	540	420	288	170	100	90	100	80	20	195	80	M10	40	110	243	M10	M10	100	80	50	120	80	35 kg	1,15 kg / 0,85 kg

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:**

(0) **(0)** **(1)** **(2)** **(3)** **(4)**



Belt table:

Code No.		Size	Belt	mm/rev.	Number of teeth
0	**6**	**60**	8M30	224	28

Shaft dimensions / Coupling claw:

Size	Shaft ø h6 x length	Key	Coupling
60 S	22x45	6x6x35	24

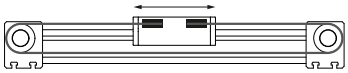
ELZI	**60SW**	**0**	**0**	**0**	**0**	**0**	**6**	**1**	**1500**	**X-Achse** Basic length + stroke = total length
ELZI	**60SW**	**1**	**0**	**0**	**0**	**0**	**6**	**1**	**700**	**Z-Achse** Basic length + stroke = total length
	Pos.	1	2	3	4	5	6	7		

Sample ordering code:
ELZI 60-SW, with standard body profile, standard carriage, coupling claw on one side, stroke X = 960 mm / Z = 280 mm

Linear system **ELZ-NK 60, 60S, 80, 80S, 100**

BELT DRIVE - DEEP-FREEZE AREA

- DEEP-FREEZE CONDITIONS
- LONG SERVICE LIFE
- FOOD INDUSTRY
- RELIABILITY

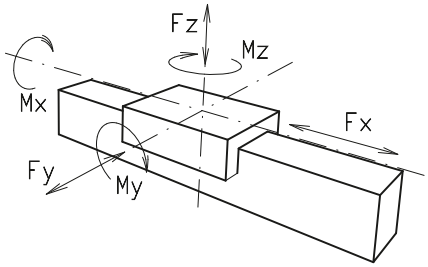


Operating temperature range
-30 °C ≤ -10 °C
NORDKAP

Function:
Highly dynamic linear unit with toothed belt drive and external roller guides. Reliable and low-maintenance guide system with robust track roller guide, suitable for the intended uses in deep temperature applications. Can be used without restriction in the deep temperature range between -30 °C and -10 °C. An operating manual is included in the scope of delivery.

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	ELZ 60		ELZ 60 S		ELZ 80		ELZ 80 S		ELZ 100	
Forces/Torques	static	dynamic	static	dynamic	static	dynamic	static	dynamic	static	dynamic
F_x (N)	715	640	715	640	1520	1440	1520	1440	3200	3040
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

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

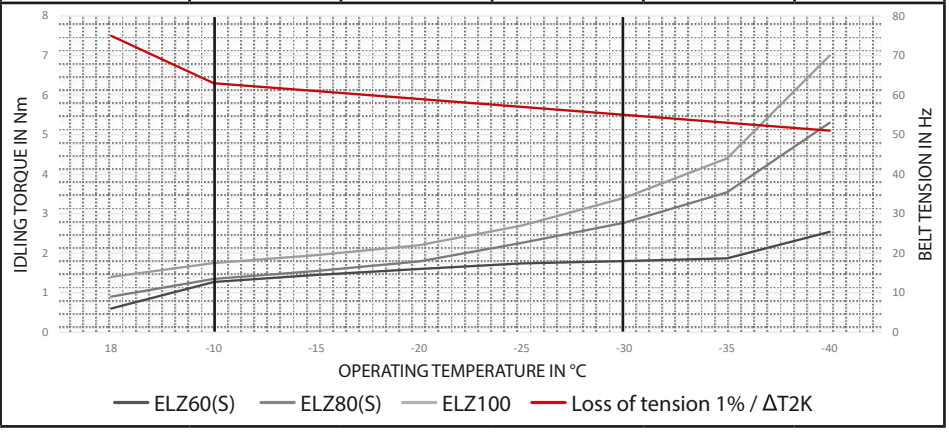
Geometrical moments					
I_x mm^4	6,79x10^5	6,79x10^5	18,99x10^5	18,99x10^5	44,4x10^5
I_y mm^4	6,97x10^5	6,97x10^5	18,97x10^5	18,97x10^5	44,8x10^5
E-Modulus N/mm^2	70000	70000	70000	70000	70000

Area of application Nordkap

Temperature-dependent length adjustment per 1000 mm in mm

ΔL Aluminium	ΔT	ΔL Steel	ΔL
0,119	5 K	0,080	0,039
0,238	10 K	0,160	0,078
0,357	15 K	0,240	0,117
0,476	20 K	0,320	0,156
0,595	25 K	0,400	0,195
0,714	30 K	0,480	0,234
0,833	35 K	0,560	0,273
0,952	40 K	0,640	0,312
1,071	45 K	0,720	0,351
1,190	50 K	0,800	0,390
1,309	55 K	0,880	0,429
1,428	60 K	0,960	0,468
1,547	65 K	1,040	0,507
1,666	70 K	1,120	0,546

Speed					
(m/s) max	3	5	5	6	8



For life-time calculation of rollers use our homepage.

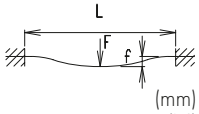
Driving torque:

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

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

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

Deflection:

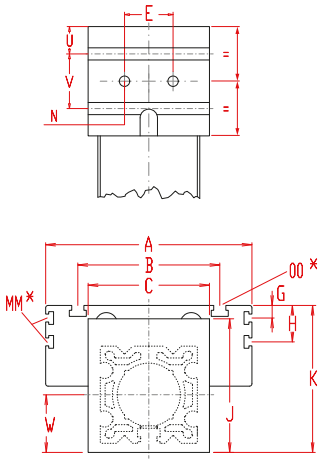


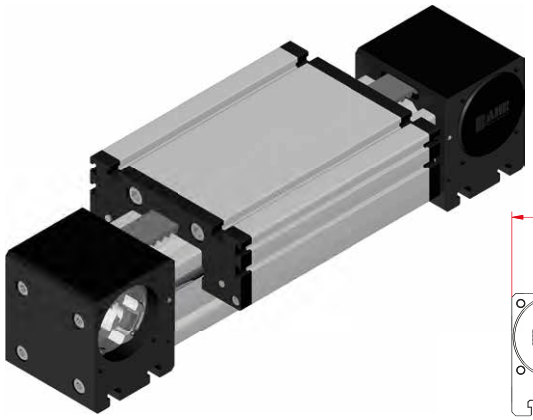
$$f = \frac{F * L^3}{E * I * 192}$$

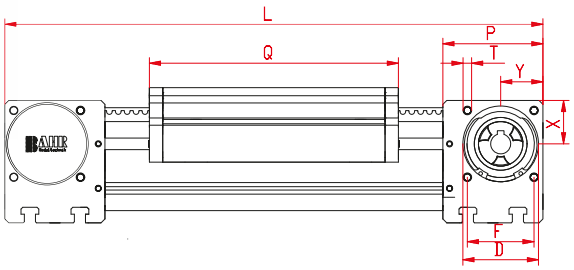
f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

Linear system **ELZ-NK 60, 60S, 80, 80S, 100**

Dimensions (mm)







Operating temperature range
-30°C ≤ -10°C
NORDKAP

*For slide nuts refer to chapter 2.2 page 2

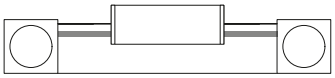
Increasing the carriage length will increase the basic length by the same amount.

Size ❒	Basic length L	A	B	C	D - 0,05	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
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
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
80	375	170	117	100	68	40	60	10,5	30,5	110	121	M 6	M 10	M 10	90	194	M 8	22,5	45	51	39	38	10,0 kg	1,00 kg
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
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

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 **Choice of carriages:**

(0)



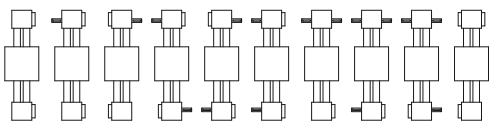
(1)

Size	Version 1	
	Q	L
60	184	306
60S	214	335
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. 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	**4**	**60 (S)**	5M25	130	26
0	**7**	**80 (S)**	8M30	192	24
0	**9**	**100**	8M50	256	32

Shaft dimensions / Coupling claw:

Size	Shaft ø h6 x length	Key	Coupling
60 (S)	14 x 35	5x5x28	14
80 (S)	18 x 45	6x6x40	19
100	22 x 45	6x6x40	24

ELZ-NK	60	1	0	0	0	0	4	1	1500
	Pos.	1	2	3	4	5	6	7	

Basic length + stroke = total length

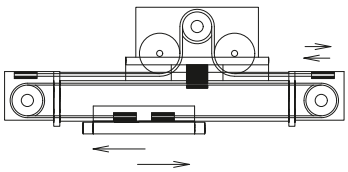
For combination kits and connecting elements refer to chapter 2.2

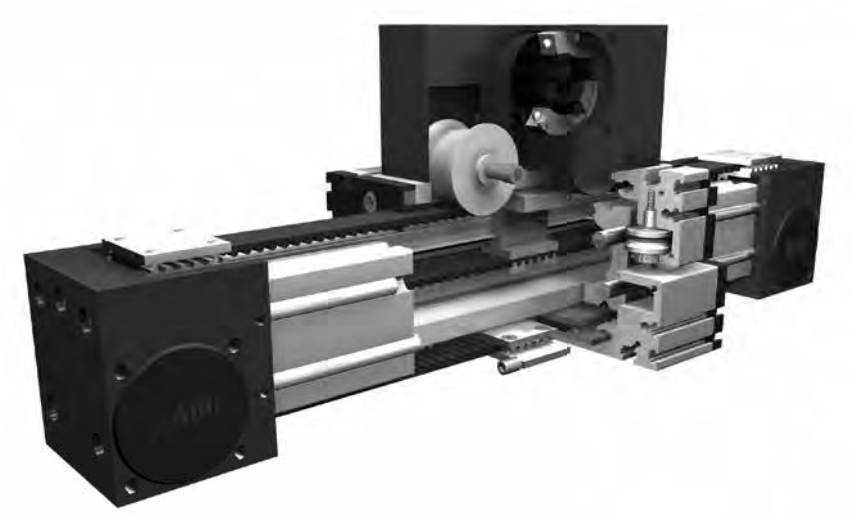
Sample ordering code:
ELZ-NK 60, standard body profile, standard carriage, coupling claw on one side, 1210 mm stroke.

Linear system **ELZT 40, 60, 60S, 80, 80S, 100**

TELESCOPIC BELT DRIVE

- Ω OMEGA SYSTEM
- TELESCOPIC SYSTEM
- VERTICAL INSTALLATION POSITION
- CANTILEVER AXIS

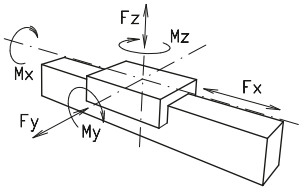




Function:
This unit consists of an aluminium square profile with integrated, hardened steel guide rods. Two carriages, which have internal linear ball bearings that can be adjusted free of play, are driven along the guide rods in opposite directions by 2 belts. The pulleys include maintenance-free ball 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.

Fitting position: Vertical, conditionally horizontal; 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/s) max	4		5		7		6		8		8	
Tensile force												
permanent (N)	360		580		580		1800		1800		4000	
0,2 s (N)	450		700		700		2200		2200		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 homepage.

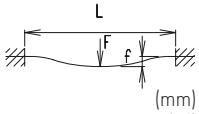
Driving torque:

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

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

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

Deflection:

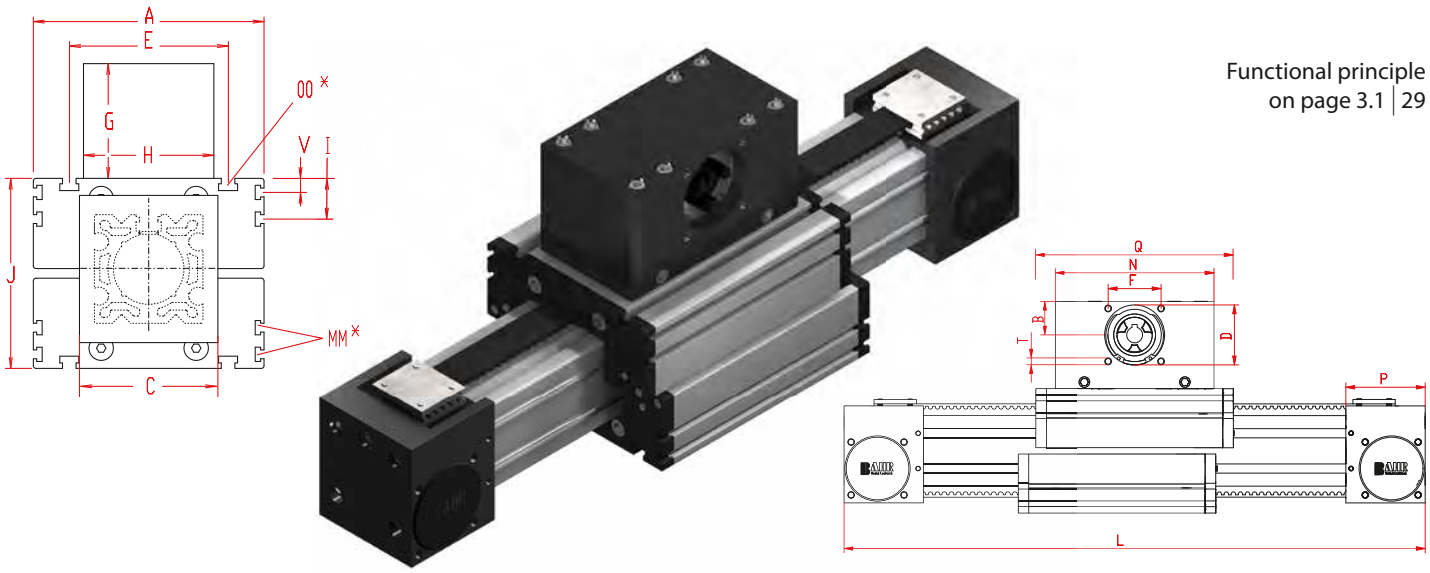


$$f = \frac{F * L^3}{E * I * 192}$$

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

Linear system **ELZT 40, 60, 60S, 80, 80S, 100**

Dimensions (mm)



Functional principle
on page 3.1 | 29

3.1

*For slide nuts refer to chapter 2.2 page 2

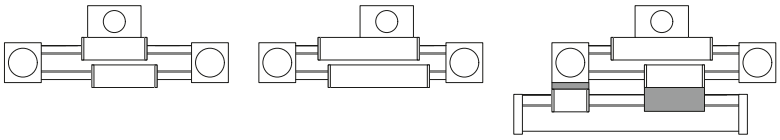
Increasing the carriage length will increase the basic length by the same amount.

Size ❒	Basic length L	A	B	C	D - 0,05	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	30,5	140	M 6	270	M 10	90	304	M 10	10,5	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	570	230	62	130	110	100	143	160	29	178	M 10	310	M 10	110	350	M 10	-	40,6 kg	1,95 kg

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 **Choice of carriages:**

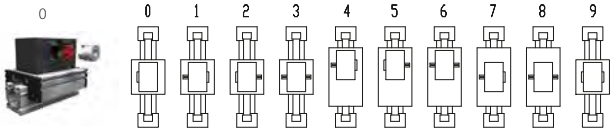
(0) **(1)** **(3)**



Size	Version 1		Version 3	
	Q	L	Q	L
40	257	360	257	360
60	353	480	353	480
60S	379	506	379	506
80	469	659	469	659
80S	489	679	489	679
100	575	795	575	795

0 **Drive version:**

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 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 / Coupling Claw:

Size	Shaft ø h6 x length	Key	Coupling
40	14 x 35	5x5x28	14
60 (S)	18 x 45	6x6x40	19
80 (S)	22 x 45	6x6x40	24
100	30 x 55	8x7x40	28

ELZT	**60**	**6**	**0**	**0**	**0**	**0**	**4**	**1**	**1500**
	Pos.	1	2	3	4	5	6	7	

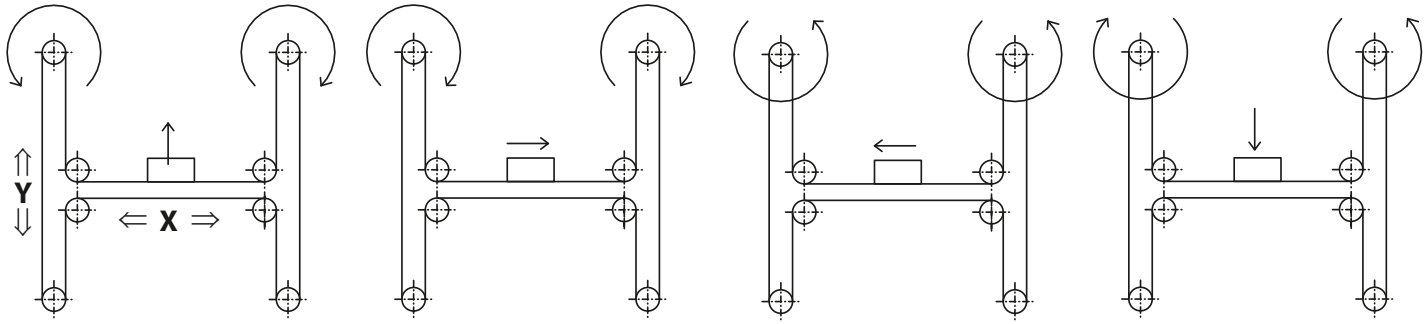
Basic length + stroke = total length

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

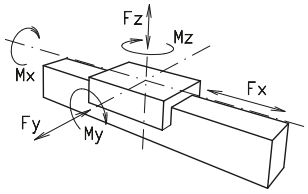
Linear system **ELZU 30, 40, 60, 60S, 80, 80S, 100**

SURFACE PORTAL



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/s) max	2		4		5		5		6		6		8	
Tensile force														
permanent (N)	200		390		900		900		1900		1900		3600	
0,2 s (N)	280		480		1000		1000		2090		2090		4000	
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	
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	
E-Modulus N/mm^2	70000		70000		70000		70000		70000		70000		70000	

For life-time calculation of rollers use our homepage.

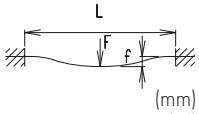
Driving torque:

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

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

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

Deflection:

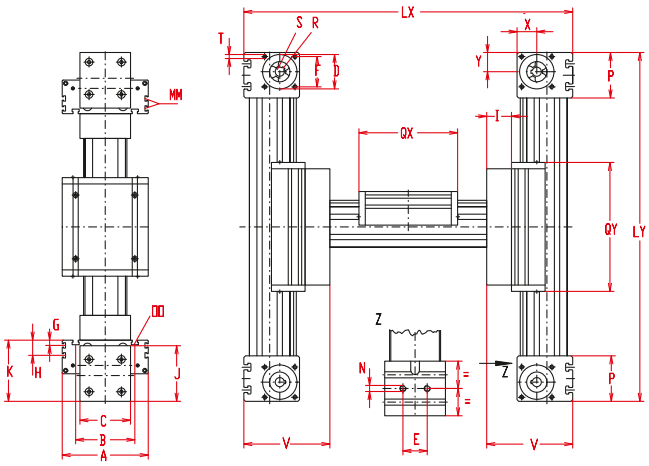


$$f = \frac{F * L^3}{E * I * 192}$$

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

Linear system **ELZU 30, 40, 60, 60S, 80, 80S, 100**

Dimensions (mm)



*For slide nuts refer to chapter 2.2 page 2

Size ❒	Basic length		A	B	C	D - 0,05	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
	Lx	Ly																							
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	122	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	10,5	30,5	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	44	110	122	M6	M10	M 8	90	214	264	M 8	166	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

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 **Choice of carriages:**

(0)

(1)

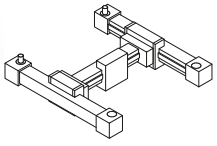
(2)

Size	Version 1				Version 2			
	Qx	Lx	Qy	Ly	Qx	Lx	Qy	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

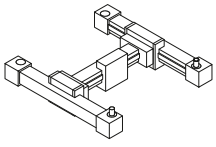
0 **Drive version:**

(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 / Coupling claw:

Size	Shaft ø h6 x length	Key	Coupling
30	6 x 15	2x2x12	7
40	10 x 27	3x3x25	9
60 (S)	14 x 35	5x5x28	14
80 (S)	18 x 45	6x6x40	19
100	22 x 45	6x6x40	24

ELZU	60	7	0	0	0	0	4	1	1500

X-Axis Basic length + stroke = total length

Y-Axes Basic length + stroke = total length

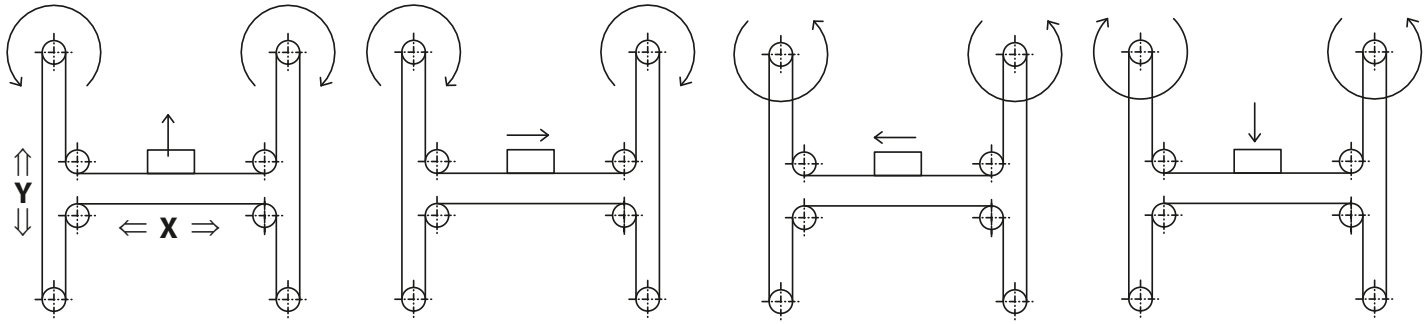
ELZU	60	8	0	0	0	0	4	1	700
Pos.		1	2	3	4	5	6	7	

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

Linear system **ELZU 60 S W**

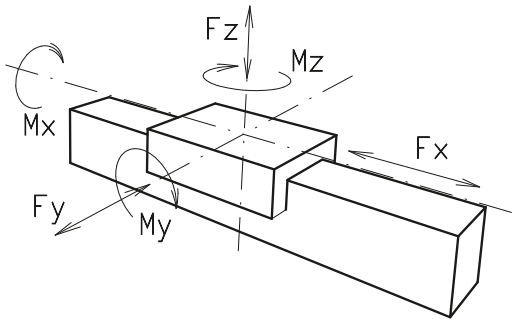
SURFACE PORTAL - STRENGTHENED CONSTRUCTION



Function:
Surface gantry consisting of two Y axes and one X axis. The unit is driven by a rotating belt, which remains connected through various deflection points. Due to the rectangular profile high torques and loads can be taken up. In addition, a very high stability and low deflection are ensured for long axis systems. The belt tension can be easily readjusted via a tensioning device within the carriage. The movement is realised by two motors. The coordinate lies diagonal to the deflection points of the X axis. Advantage: Only small masses are moved and thus it is possible to achieve high accelerations.

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.

Forces and torques



Size	60 S	
Forces/Torques	static	dynamic
F_x (N)	894	800
F_y (N)	4100	3100
F_z (N)	2160	1600
M_x (Nm)	88	65
M_y (Nm)	190	140
M_z (Nm)	230	170
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	1,2	
Speed		
(m/s) max	5	
Tensile force		
permanent (N)	900	
0,2 s (N)	1000	
Geometrical moments of inertia of aluminium profile - Y-Axis		
I_x mm⁴	$6{,}79 \times 10^5$	
I_y mm⁴	$6{,}97 \times 10^5$	
E-Modul N/mm²	70000	
Geometrical moments of inertia of aluminium profile - X-Axis		
I_x mm⁴	$2{,}8 \times 10^6$	
I_y mm⁴	$9{,}6 \times 10^5$	
E-Modulus N/mm²	70000	

For life-time calculation of rollers use our homepage.

Driving torque:

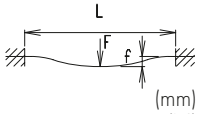
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

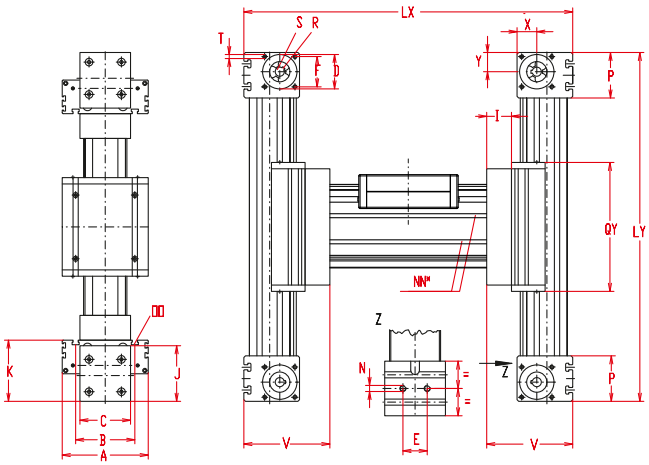
Deflection:

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



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

Linear system **ELZU 60 S W**



*For slide nuts refer to chapter 2.2 page 2

Size	Basic length		A	B	C	D - 0,05	E	F	I	J	K	N for	NN for	OO for	P	Qx	Qy	T	V	X	Y	Basic weight	Weight per 100 mm
	Lx	Ly																					
ELZU 60 S **W**	450	400	170	108	80	47	30	42	33	82	94	M 8	M5	M 8	59	194	280	M6	127	27	26	17,9 kg	0,9 kg

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 **Choice of carriages:**

(0)

(1)

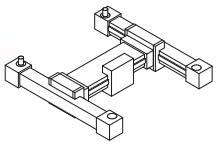
(2)

Size	Version 1				Version 2			
	Qx	Lx	Qy	Ly	Qx	Lx	Qy	Ly
60 S	214	470	280	400	214	470	300	420

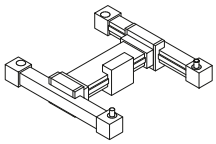
0 **Drive version:**

(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	**4**	**60 S**	5M25	130	26

Shaft dimensions / Coupling claw:

Size	Shaft ø h6 x length	Key	Coupling
60 S	14 x 35	5x5x28	14

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

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

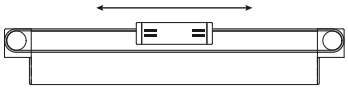
For combination kits and connecting elements refer to chapter 2.2

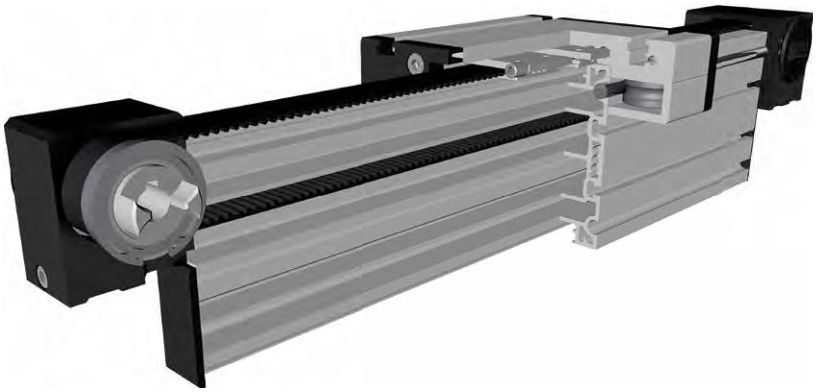
Sample ordering code:
ELZU 60S W, standard body profile, standard carriage, coupling claw on one side, stroke X = 1080 / Y = 298 mm

Linear system **ELZ 60 (S) W**

BELT DRIVE

- HIGHER PROFILE STABILITY
- HIGHER FORCE FIXTURE
- LONG TRAVERSE PATH

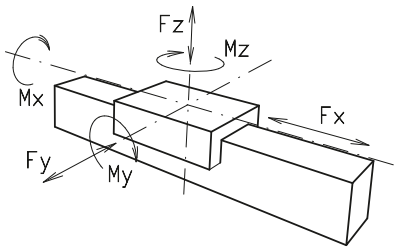




Function:
The guide body consists of an aluminium square profile with lateral, parallel, form-fit, internal hardened steel rods. The guide carriage, which is driven along the shafts by a timing belt, moves on the guide body with internal linear ball bearings that are adjustable free of play. Due to the rectangular profile high torques and loads can be taken up. In addition, a very high stability and low deflection are ensured for long axis systems. The belt tension can be easily readjusted via a tensioning device within the carriage. This device also helps to adjust the symmetry of the carriages in applications where two parallel linear units are used.

Fitting position: As required. Max. length 3.000 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	60		60 S	
Forces/Torques	static	dynamic	static	dynamic
F_x (N)	894	800	894	800
F_y (N)	3000	2000	4100	3100
F_z (N)	1700	1100	2160	1600
M_x (Nm)	67	43	88	65
M_y (Nm)	90	70	190	140
M_z (Nm)	120	100	230	170
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	
Speed				
(m/s) max	5		7	
Tensile force				
permanent (N)	900		900	
0,2 s (N)	1000		1000	
Geometrical moments of inertia of aluminium profile				
I_x mm^4	2,8 x 10^6		2,8 x 10^6	
I_y mm^4	9,6 x 10^5		9,6 x 10^5	
E-Modulus N/mm^2	70000		70000	

For life-time calculation of rollers use our homepage.

Driving torque:

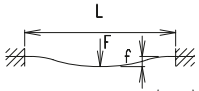
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

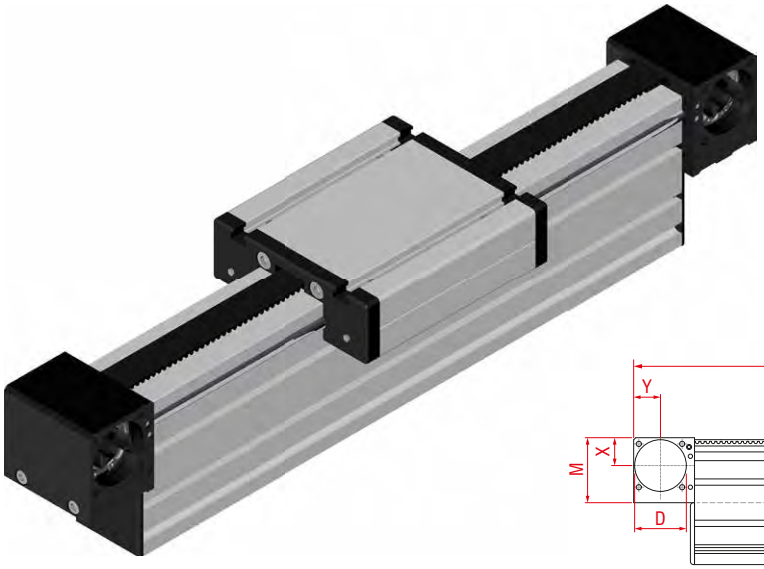
Deflection:

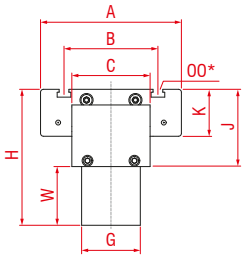
$$f = \frac{F * L^3}{E * I * 192}$$

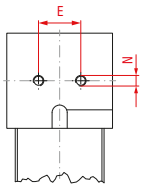


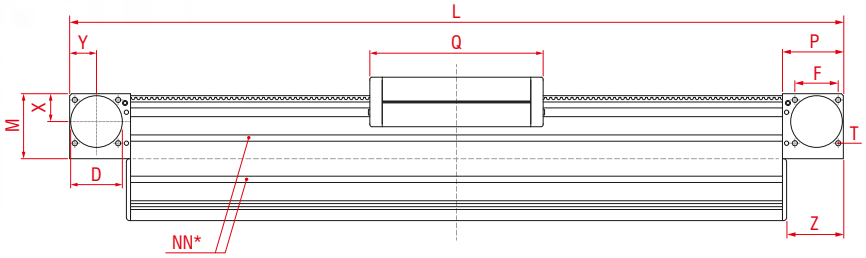
f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

Linear system **ELZ 60 (S) W**









*For slide nuts refer to chapter 2.2 page 2

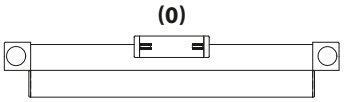
Increasing the carriage length will increase the basic length by the same amount.

Size	Basic length L	A	B	C	D - 0,05	E	F	G	H	J	K	M	N	NN for	OO for	P	Q	T	W	X	Y	Z	Basic weight	Weight per 100 mm
ELZ 60 **W**	290	144	96	80	47	30	42	60	139	79	48	71	M8	M5	M8	59	168	M6	60	27	26	55	5,4 kg	0,8 kg
ELZ 60S **W**	315	170	108	80	47	30	42	60	143	83	52	71	M8	M5	M8	59	194	M6	60	27	26	55	6,4 kg	0,8 kg

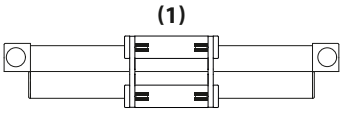
0 **Choice of guide body profile:**
(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

0 **Choice of carriages:**

(0)

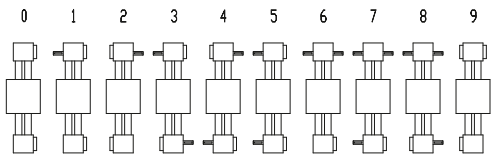


(1)



Size	Version 1	
	Q	L
60	184	306
60 S	214	335

0 **Drive version:**



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**	**60 (S)**	5M25	130	26

Shaft dimensions / Coupling claw:

Size	Shaft ø h6 x length	Key	Coupling
60 (S)	14 x 35	5x5x28	14

ELZ	**60 W**	**1**	**0**	**0**	**0**	**0**	**4**	**1**	**1500**
	Pos.	1	2	3	4	5	6	7	

Basic length + stroke = total length

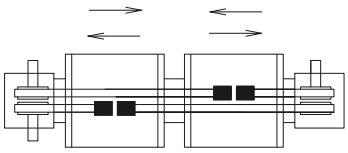
For combination kits and connecting elements refer to chapter 2.2

Sample ordering code:
ELZ 60 W, standard body profile, standard carriage, coupling claw on one side, 1210 mm stroke

Linear system **ELZZ 60, 60S, 80, 80S, 100, 125**

BELT DRIVE - TWO SEPARATELY DRIVEN CARRIAGES

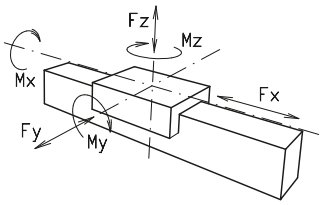
- UNIVERSAL SYSTEM
- INDEPENDENT CARRIAGES
- HIGHER FORCE FIXTURE
- COMPACT DESIGN



Function:
This linear unit consists of an aluminium square profile with integrated, hardened steel guide rods. 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/s) max	5		5		6		8		10		10	
Tensile force												
permanent (N)	298		298		679		679		1210		1900	
0,2 s (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 homepage.

Driving torque:

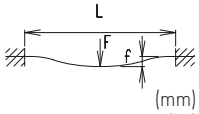
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

Deflection:

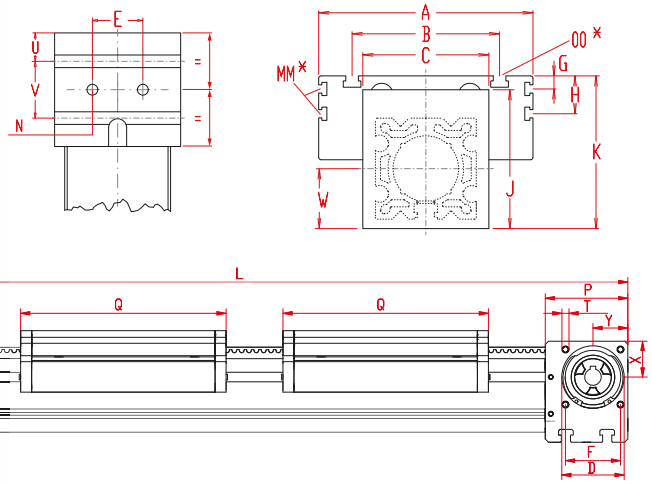
$$f = \frac{F * L^3}{E * I * 192}$$



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

Linear system **ELZZ 60, 60S, 80, 80S, 100, 125**

Dimensions (mm)



*For slide nuts refer to chapter 2.2 page 2

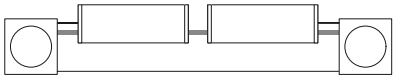
Increasing the carriage length will increase the basic length by the same amount.

Size ❒	Basic length L	A	B	C	D - 0,05	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	10,5	30,5	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

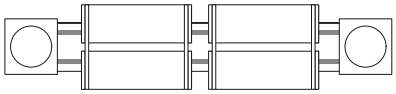
0 **Choice of guide body profile:**
(0) Standard **(2)** corrosion-protected guide rods and screws

0 **Choice of carriages:**

(0)



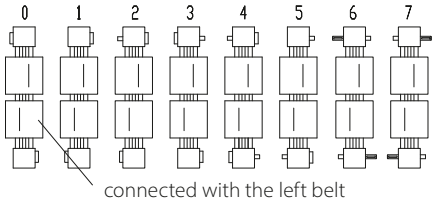
(1)



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

0 **Drive version:**

The standard version is supplied without shaft.



connected with the left belt

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 / Coupling claw:

Size	Shaft ø h6 x length	Key	Coupling
60 (S)[1]	14 x 35	5x5x30	14
60 (S)[2]	10 x 27	3x3x25	14
80 (S)[1]	18 x 45	6x6x40	19
80 (S)[2]	14 x 35	5x5x28	19
100[1]	22 x 45	6x6x40	24
100[2]	18 x 45	6x6x40	24
125[1]	30 x 55	8x7x50	28
125[2]	22 x 45	6x6x40	28

ELZZ	**60**	**4**	**0**	**0**	**0**	**0**	**2**	**1**	**1500**
	Pos.	1	2	3	4	5	6	7	

Basic length + stroke = total length

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

Linear system **LLN 60, 80**

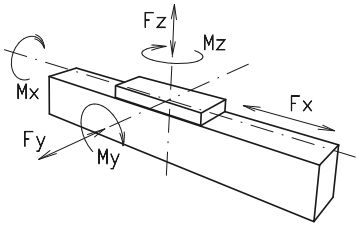
BELT DRIVE

- LOW OPERATING VOLUME
- INDEPENDENT INSTALLATION POSITION
- NUBBED BELT
- LOW-VIBRATION RUN

Function:
The guide body consists of an aluminium square profile, with an integrated roller guide. The carriage is moved by a revolving interior nobbed belt. The advantage of this system: The belt is guided within the profile, so that the system is independent of the mounting position. The nobbed belt is self-tracking and has a very low operating noise level thanks to its nobs being offset by 45°. Furthermore, it is almost vibration-free in the transition sections. At the front face there is a timing belt deflection unit containing a toothed pulley with two coupling claws in the standard version. On the opposite side there is a bearing piece plate containing a tensioning device for the timing belt.

Mounting position: Variable, max. one-piece-length: 6.000 mm.
Carriage connection: By threaded holes.
Fixation: By T-slots and mounting sets. The linear axis can be combined with any T-slot profile.
Timing belt: N10 with reinforcing steel mesh, no backlash when changing direction, repeatability ± 0.1 mm.
Carriage support: The carriage runs on 5 rollers which can be adjusted and serviced at each central servicing position. Two grease nipples at the carriage enable relubrication of the positioning system.

Forces and torques



Size	60		80	
Forces/Torques	static	dynamic	static	dynamic
F_x (N)	1073	960	1900	1800
F_y (N)	780	650	1900	1500
F_z (N)	1170	845	2100	1700
M_x (Nm)	20	13	85	60
M_y (Nm)	78	65	140	110
M_z (Nm)	52	39	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	
Speed				
(m/s) max	6		10	
Geometrical moments of inertia of aluminium profile				
I_x mm^4	4,47x10^5		15,83x10^5	
I_y mm^4	5,59x10^5		20,68x10^5	
Elastic modulus N/mm^2	70000		70000	

For life-time calculation of rollers use our homepage.

Driving torque:

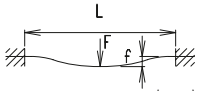
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

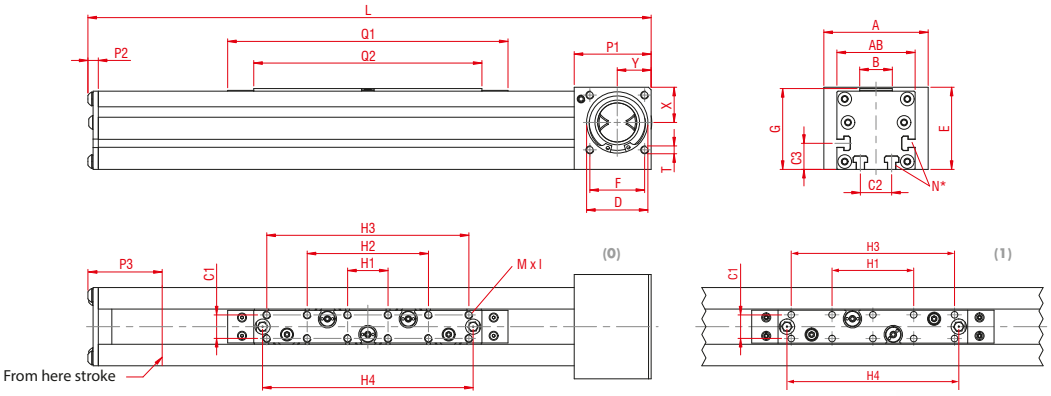
Deflection:

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

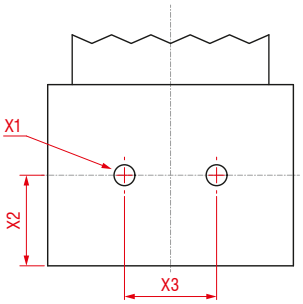


f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

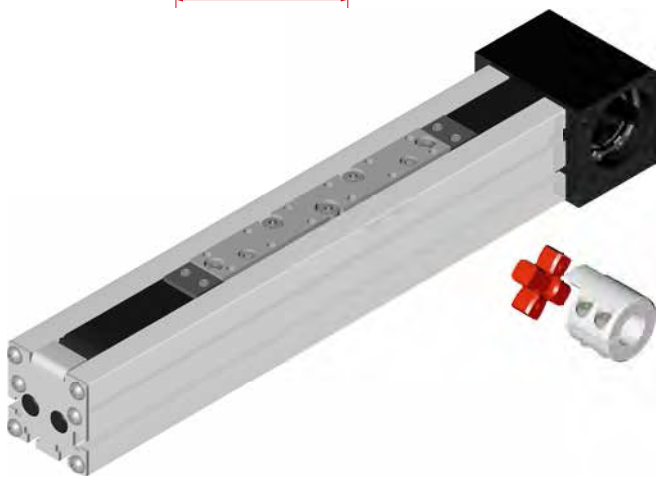
Linear system **LLN 60, 80**



pulley-block



Size	X1	X2	X3
LL 60	M8	29,5	30
LL 80	M10	47,5	40



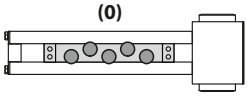
*For slide nuts refer to chapter 2.2 page 2

Size ❒	Basic length L	A	AB ❒	B	C1	C2	C3	D -0,05	E	F	G	M	N for	P1	P2	P3	T	X	Y	Basic weight	Weight per 100 mm
LLN 60	330	80	60	25	18	24	20	47	63	42	62,5	M6x6	M5	59	6	55	M6	27	26	2,75 kg	0,41 kg
LLN 80	495	100	80	25	18	30	22	68	93	60	83	M6x10	M6	90	9	84	M8	45	40	8,45 kg	0,90 kg

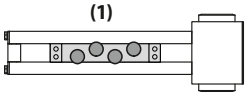
0 **Choice of guide body profile:**
(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

0 **Choice of carriages:**

(0)



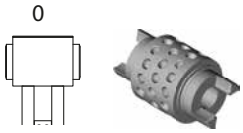
(1)



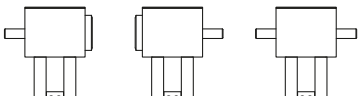
Carriage	L	Q1	Q2	H1	H2	H3	H4
LL 60 Vers. (0)	330	215	171	31	93	155	161,5
LL 60 Vers. (1)	299	184	140	62	---	124	130,5
LL 80 Vers. (0)	495	320	245	30	90	150	228
LL 80 Vers. (1)	435	260	185	40	---	120	168

0 **Drive version:**

0



1 2 6



Belt table:

Code No.		Size	Belt	mm/rev.	Number of teeth
0	8	**60**	Nubbed belt N10	130	13
0	8	**80**	Nubbed belt N10	176	18

Shaft dimensions / Coupling claw:

Size	Shaft Ø h6 x length	Feather key	Coupling
60	14 x 35	5x5x28	14
80	18 x 45	6x6x45	19

LLN	60	1	0	0	0	0	8	1	1500
Pos.		1	2	3	4	5	6	7	

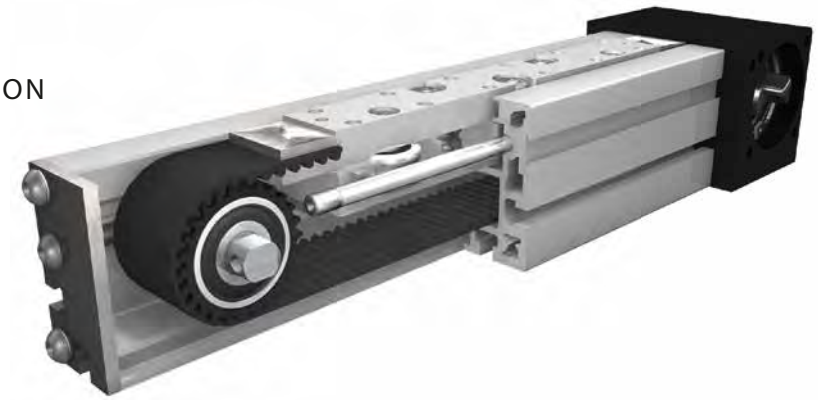
Basic length + stroke = total length

Sample ordering code:
LLN60, standard body profile, double-sided coupling claw, 1170 mm stroke

Linear system **LLZ 40, 60, 80, 100**

BELT DRIVE

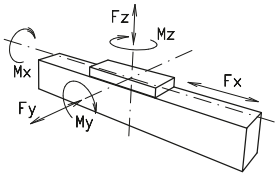
- INDEPENDENT INSTALLATION POSITION
- LONG TRAVERSE PATH >6000 MM
- INTERNAL GUIDE
- SIMPLE & SOLID



Function:
The guide body consists of an aluminium square profile, with an integrated roller guide. The carriage is moved by means of an internal rotating toothed belt. On one end there is a pulley block with coupling claws on both sides (standard version). On the opposite end there is a plate with a retensioning device for the toothed belt.

Fitting position: As required. Max. length 6.000 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.
Belt performance: HTD with steel reinforcement, no backlash when changing direction, repeatability ± 0,1 mm.
Carriage support: The carriage runs on 5 rollers which can be adjusted and serviced at each central servicing position. Two grease nipples at the carriage enable relubrication of the positioning system.

Forces and torques



Size	40		60		80		100	
Forces/Torques	static	dynamic	static	dynamic	static	dynamic	static	dynamic
F_x (N)	800	250	1073	960	1900	1800	4000	3800
F_y (N)	130	65	780	650	1900	1500	1900	1500
F_z (N)	400	210	1170	845	2100	1700	2100	1700
M_x (Nm)	3	1	20	13	85	60	85	60
M_y (Nm)	13	6	78	65	140	110	150	110
M_z (Nm)	24	12	52	39	110	90	120	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	0,4		0,6		0,8		1,2	
Speed								
(m/s) max	4		6		10		10	
Geometrical moments of inertia of aluminium profile								
I_x mm⁴	$1{,}01 \times 10^5$		$4{,}47 \times 10^5$		$15{,}83 \times 10^5$		$35{,}51 \times 10^5$	
I_y mm⁴	$1{,}31 \times 10^5$		$5{,}59 \times 10^5$		$20{,}68 \times 10^5$		$46{,}41 \times 10^5$	
Elastic modulus N/mm²	70000		70000		70000		70000	

For life-time calculation of rollers use our homepage.

Driving torque:

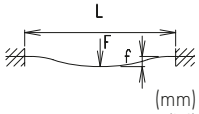
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

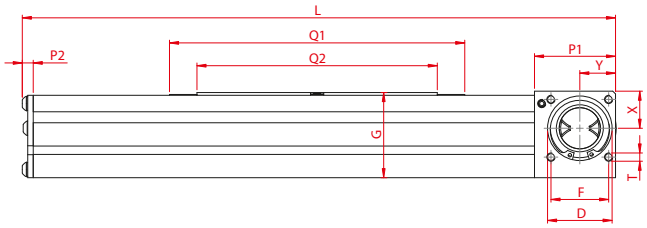
Deflection:

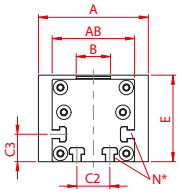
$$f = \frac{F * L^3}{E * I * 192}$$

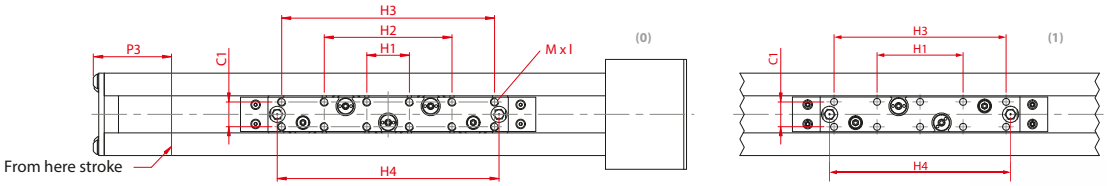


f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

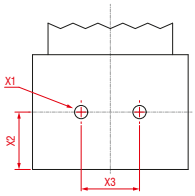
Linear system **LLZ 40, 60, 80, 100**





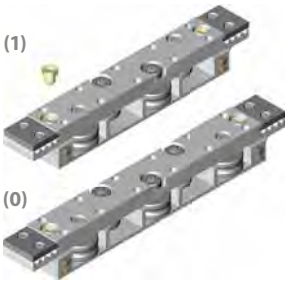


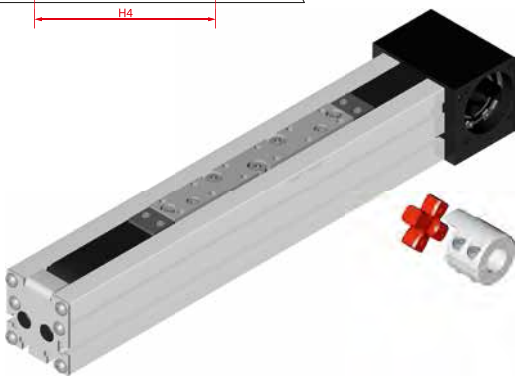
pulley block



Hose connections
available on request.

Size	X1	X2	X3
LL 40	---	---	---
LL 60	M8	29,5	30
LL 80	M10	47,5	40
LL 100	M12	55	50





2 cupped-type lubricating nipples for each carriage

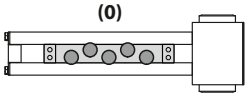
*For slide nuts refer to chapter 2.2 page 2

Size ❐	Basic length L	A	AB ❐	B	C1	C2	C3	D -0,05	E	F	G	M	N for	P1	P2	P3	T	X	Y	Basic weight	Weight per 100 mm
LLZ 40	222	52	40	15	10	12	14	28	41	25	42	M4x6	M4	36	4	34	M4	16	16	0,69 kg	0,22 kg
LLZ 60	330	80	60	25	18	24	20	47	63	42	62,5	M6x6	M5	59	6	55	M6	27	26	2,75 kg	0,41 kg
LLZ 80	495	100	80	25	18	30	22	68	93	60	83	M6x10	M6	90	9	84	M8	45	40	8,45 kg	0,90 kg
LLZ 100	540	130	100	42	26	40	30	90	110	80	103	M8x12	M8	110	11	109	M10	49,4	50	14,56 kg	1,18 kg

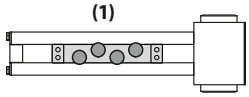
0 **Choice of guide body profile:**
(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

0 **Choice of carriages:**

(0)



(1)

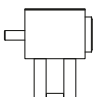


Carriage	L	Q1	Q2	H1	H2	H3	H4
LL 40 Vers. (0)	222	152	122	21	63	105	111
LL 40 Vers. (1)	200	130	100	42	---	84	90
LL 60 Vers. (0)	330	215	175	31	93	155	161,5
LL 60 Vers. (1)	299	184	144	62	---	124	130,5
LL 80 Vers. (0)	495	320	251	30	90	150	228
LL 80 Vers. (1)	435	260	191	40	---	120	168
LL 100 Vers. (0)	540	320	250	30	90	150	242
LL 100 Vers. (1)	481	261	191	30	90	150	183

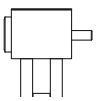
0 **Drive version:**

0

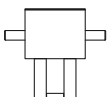
1



2



6



Belt table:

Code No.		Size	Belt	mm/rev.	Number of teeth
0	2	**40**	3M 20	75	25
0	3	**60**	5M 30	130	26
0	4	**80**	8M 30	176	22
0	7	**100**	8M 50	224	28

Shaft dimensions / Coupling claw:

Size	Shaft Ø h6 x length	Feather key	Coupling
40	6 x 15	2x2x12	7
60	14 x 35	5x5x28	14
80	18 x 45	6x6x40	19
100	22 h6 x 45	6x6x40	24

LLZ	60	1	0	0	0	0	3	1	1500
	Pos.	1	2	3	4	5	6	7	

Basic length + stroke = total length

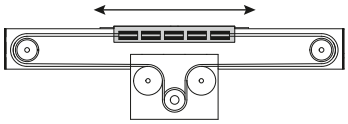
Sample ordering code:
LLZ60, standard body profile, double-sided coupling claw, 1170 mm stroke

11.1

Linear system **LLZS 60**

BELT DRIVE

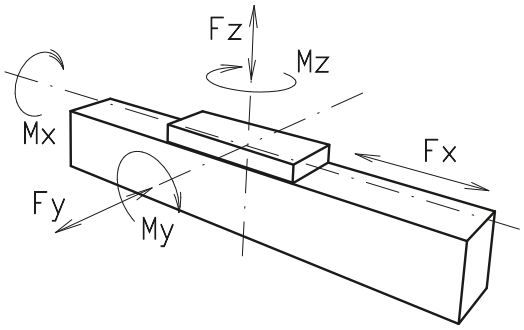
INDEPENDENT INSTALLATION POSITION
OMEGA SYSTEM
VARIABLE DRIVE BLOCK



Function:
The guide body consists of an aluminium square profile, with an integrated roller guide. The carriage is moved by means of an rotating toothed belt. The toothed belt is diverted within a drive block positioned centrically. The result is an enormous compactness with regard to the overall system length. There is a plate on both sides with a tensioning device for the toothed belt.

Fitting position: As required. Max. length 6.000 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.
Belt performance: HTD with steel reinforcement, no backlash when changing direction, repeatability ± 0,1 mm.
Carriage support: The carriage runs on 5 rollers which can be adjusted and serviced at each central servicing position. Two grease nipples at the carriage enable relubrication of the positioning system.

Forces and torques



Size	60	
Forces/Torques	static	dynamic
F_x (N)	1073	960
F_y (N)	780	650
F_z (N)	1170	845
M_x (Nm)	20	13
M_y (Nm)	78	65
M_z (Nm)	52	39
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	
Speed		
(m/s) max	6	
Tensile force		
permanent (N)	1050	
0,2 s (N)	1150	
Geometrical moments of inertia of aluminium profile		
I_x mm^4	4,47x10^5	
I_y mm^4	5,59x10^5	
Elastic modulus N/mm^2	70000	

For life-time calculation of rollers use our homepage.

Driving torque:

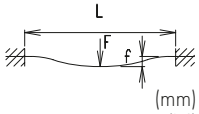
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

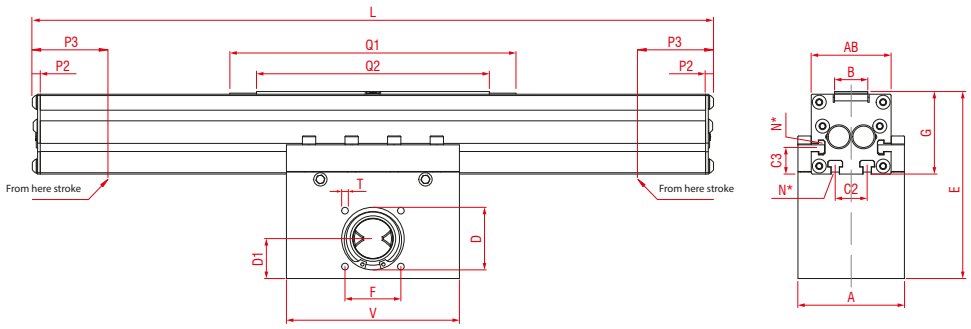
F = force (N)
P = pulley action perimeter (mm)
Si = safety factor 1,2 … 2
M_n = no-load torque (Nm)
n = rpm pulley (min^{-1})
M_a = driving torque (Nm)
P_a = motor power (KW)

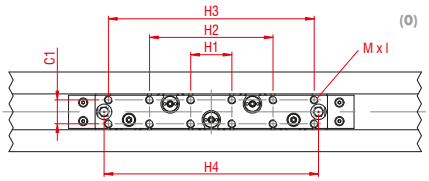
Deflection:

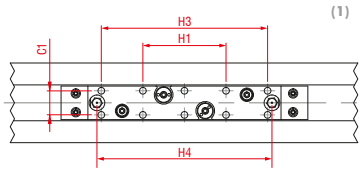
$$f = \frac{F * L^3}{E * I * 192}$$



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







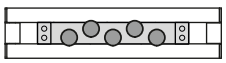
*For slide nuts refer to chapter 2.2 page 2

Size ❒	Basic length L	A	AB ❒	B	C1	C2	C3	D -0,05	D1	E	F	G	M	N for	P2	P3	T	V	Basic weight	Weight per 100 mm
LLZS 60	325	80	60	25	18	24	20	47	30	140,5	42	62	M6x6	M5	6	55	M6	130	4,1 kg	0,41 kg

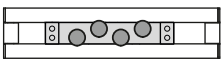
0 **Choice of guide body profile:**
(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

0 **Choice of carriages:**

(0)



(1)

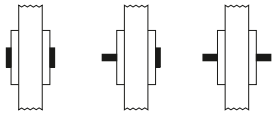


Carriage	L	Q1	Q2	H1	H2	H3	H4
LL 60 Vers. (0)	325	215	175	31	93	155	161,5
LL 60 Vers. (1)	294	184	144	62	---	124	130,5

0 **Drive version:**

0

0 1 6



Belt table:

Code No.		Size	Belt	mm/rev.	Number of teeth
0	3	**60**	5M 30	130	26

Shaft dimensions / Coupling claw:

Size	Shaft Ø h6 x length	Feather key	Coupling
60	14 x 35	5x5x28	14

LLZS	60	1	0	0	0	0	3	1	1500
Pos.		1	2	3	4	5	6	7	

Basic length + stroke = total length

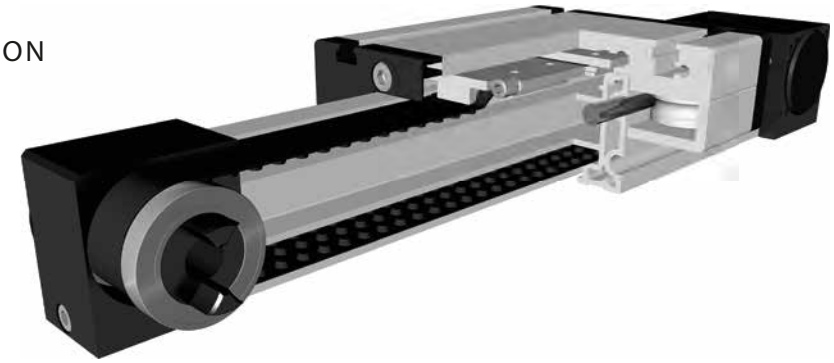
Sample ordering code:
LLZS60, standard body profile, double-sided coupling claw, 1175 mm stroke

11.1

Linear system **MLN 60, 60S**

NUBBED BELT DRIVE

- INDEPENDENT INSTALLATION POSITION
- NOBBED BELT
- LOW OPERATING VOLUME
- PRECISION

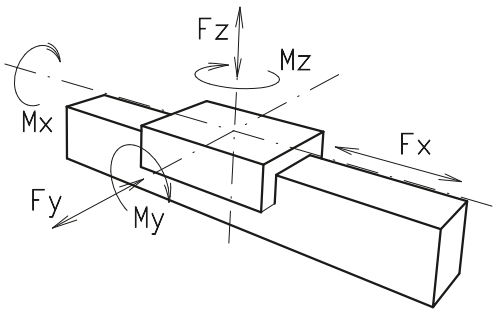


5.1

Function:
The guide body consists of an aluminium square profile with lateral, parallel, form-fit, internal hardened steel rods. The guide carriage, which is driven along the shafts by a nobbed belt, moves on the guide body with internal linear ball bearings that are adjustable free of play. The advantage of this system: The belt is guided within the profile, so that the system is independent of the mounting position. The nobbed belt is self-tracking and has a very low operating noise level thanks to its nobs being offset by 45°. Furthermore, it is almost vibration-free in the transition sections.

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: N10 with steel reinforcement, no backlash when changing direction, repeatability: ± 0,1 mm.

Forces and torques



Size	60		60 S	
Forces/Torques	static	dynamic	static	dynamic
F_x (N)	1950	1300	1950	1300
F_y (N)	3000	2000	4100	3100
F_z (N)	1700	1100	2160	1600
M_x (Nm)	67	43	88	65
M_y (Nm)	90	70	190	140
M_z (Nm)	120	100	230	170
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	
Speed				
(m/s) max	5		7	
Tensile force				
permanent (N)	1050		1050	
0,2 s (N)	1150		1150	
Geometrical moments of inertia of aluminium profile				
I_x mm⁴	4,67x10⁵		4,67x10⁵	
I_y mm⁴	5,21x10⁵		5,21x10⁵	
E-Modulus N/mm²	70000		70000	

For life-time calculation of rollers use our homepage.

Driving torque:

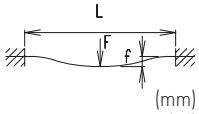
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

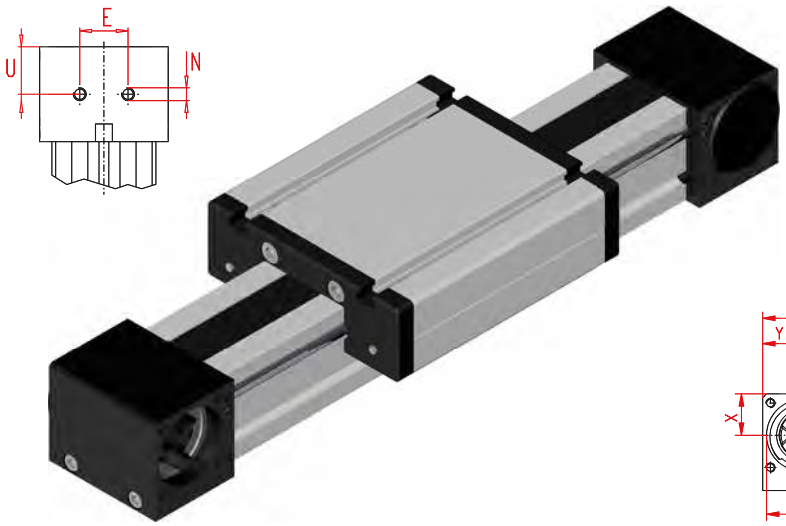
Deflection:

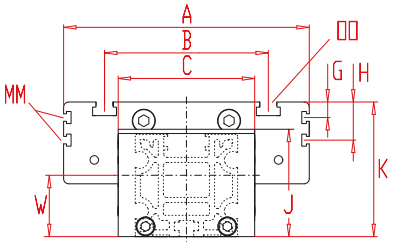
$$f = \frac{F * L^3}{E * I * 192}$$

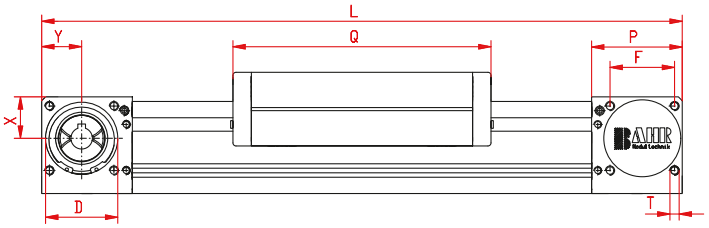


f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

Linear system **MLN 60, 60S**







*For slide nuts refer to chapter 2.2 page 2

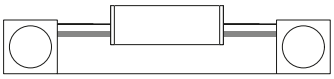
Increasing the carriage length will increase the basic length by the same amount.

Size ❐	Basic length L	A	B	C	D - 0,05	E	F	J	K	N	OO for	P	Q	T	U	W	X	Y	Basic weight	Weight per 100 mm
MLN 60	290	144	96	80	47	30	42	63	79	M 8	M 8	59	168	M 6	29,5	30	27	26	4,7 kg	0,6 kg
MLN 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

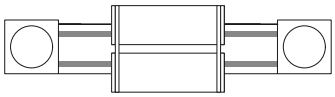
0 **Choice of guide body profile:**
(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

0 **Choice of carriages:**

(0)

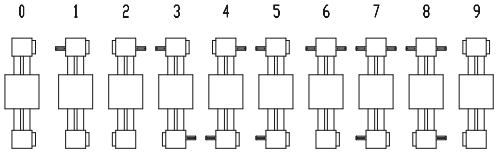


(1)



Size	Version 1	
	Q	L
60	184	306
60S	214	336

0 **Drive version:**



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	**8**	**60 (S)**	Nobbed belt N10	130	13/3

Shaft dimensions / Coupling claw

Size	Shaft ø h6 x length	Key	Coupling
60 (S)	14 x 35	5x5x28	14

MLN	60	1	0	0	0	0	8	1	1500
	Pos.	1	2	3	4	5	6	7	

Basic length + stroke = total length

For combination kits and connecting elements refer to chapter 2.2

Sample ordering code:
MLN 60, standard body profile, standard carriage, drive version 0, knobbelt belt, 1210 mm stroke

Linear system **MLZ 60, 60S, 80, 80S, 100**

BELT DRIVE

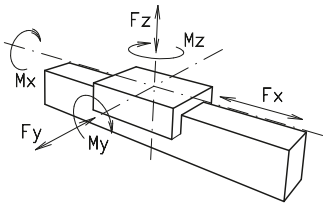
INDEPENDENT INSTALLATION POSITION
UNIVERSALSYSTEM
LONG TRAVERSE PATH >6000 MM

5.1

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. With this series, multi-part assembled units with long strokes can be realized.

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	static	dynamic	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/s) max	5		7		6		8		10	
Tensile force										
permanent (N)	900		900		1900		1900		4000	
0,2 s (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 homepage.

Driving torque:

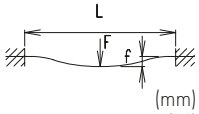
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

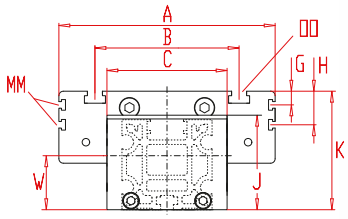
Deflection:

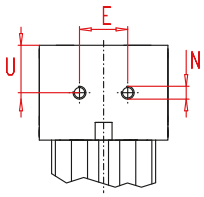
$$f = \frac{F * L^3}{E * I * 192}$$

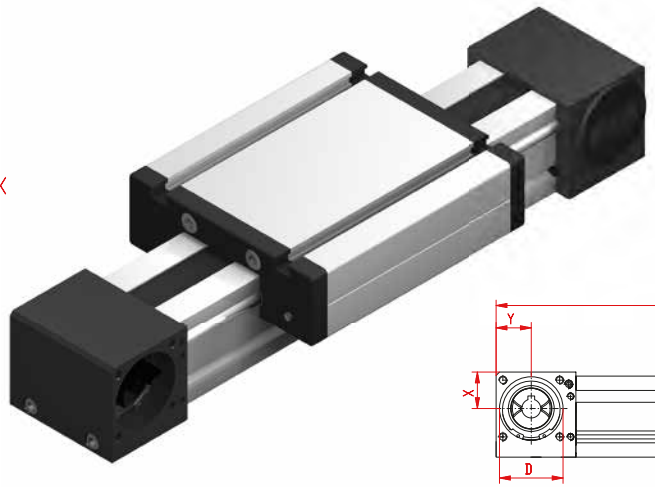


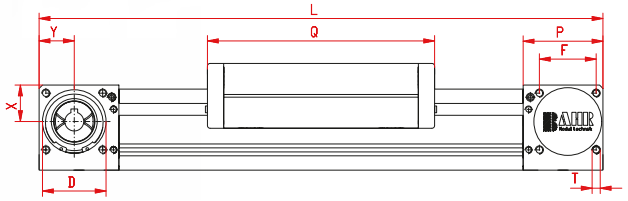
f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

Linear system **MLZ 60, 60S, 80, 80S, 100**









*For slide nuts refer to chapter 2.2 page 2

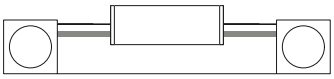
Increasing the carriage length will increase the basic length by the same amount.

Size ❒	Basic length L	A	B	C	D - 0,05	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	10,5	30,5	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

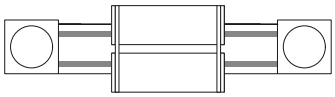
0 **Choice of guide body profile:**
(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

0 **Choice of carriages:**

(0)



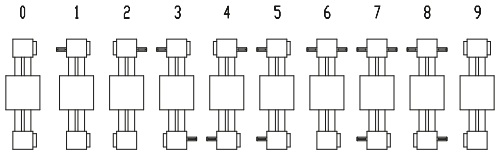
(1)



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

0 **Drive version:**

0



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 (5M19)*	130	26
0	**7**	**80 (S)**	8M30 (8M25)*	176	22
0	**9**	**100**	8M50 (8M40)*	224	28

* effective toothed belt width

Shaft dimensions / Coupling claw

Size	Shaft ø h6 x length	Key	Coupling
60 (S)	14 x 35	5x5x28	14
80 (S)	18 x 45	6x6x40	19
100	22 x 45	6x6x40	24

MLZ	60	1	0	0	0	0	4	1	1500
	Pos.	1	2	3	4	5	6	7	

Basic length + stroke = total length

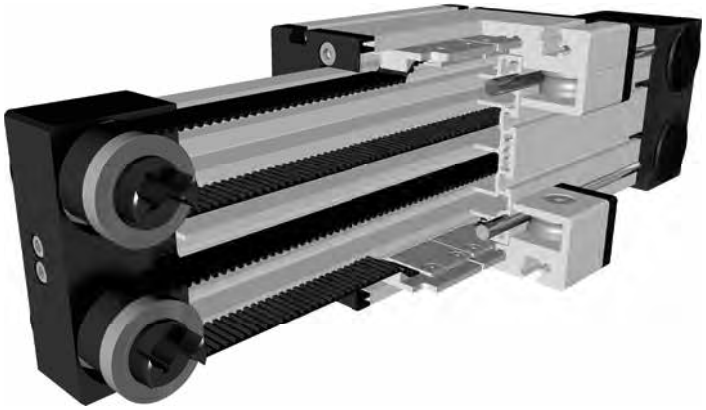
For combination kits and connecting elements refer to chapter 2.2

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

Linear system **MLZD 60 (S) W**

BELT DRIVE - TWO SEPARATELY DRIVEN CARRIAGES

- HIGHER PROFILE STABILITY
- INDEPENDENT CARRIAGES
- HIGHER FORCE FIXTURE
- INDEPENDENT INSTALLATION POSITION

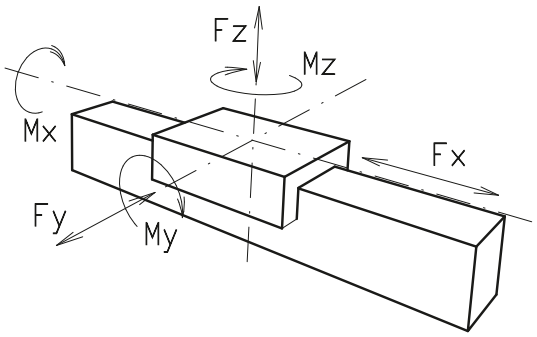


5.1

Function:
The guide body consists of an aluminium square profile with lateral, parallel, form-fit, internal hardened steel rods. Two guide carriages, each with its own drive, move along the guide body. The timing belt is guided within the profile, so that it is independent of the mounting position. Due to the high rectangular profile high torques and loads can be taken up. In addition, a very high stability is ensured for long axis systems. The toothed pulleys have maintenance-free ball bearings. The belt tension can be easily readjusted via a tensioning device within the carriage. This device also helps to adjust the symmetry of the carriages in applications where two parallel linear units are used.

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	60		60 S	
Forces/Torques	static	dynamic	static	dynamic
F_x (N)	894	800	894	800
F_y (N)	3000	2000	4100	3100
F_z (N)	1700	1100	2160	1600
M_x (Nm)	67	43	88	65
M_y (Nm)	90	70	190	140
M_z (Nm)	120	100	230	170
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	
Speed				
(m/s) max	5		7	
Tensile force				
permanent (N)	900		900	
0,2 s (N)	1000		1000	
Geometrical moments of inertia of aluminium profile				
I_x mm^4	2,8 x 10^6		2,8 x 10^6	
I_y mm^4	9,6 x 10^5		9,6 x 10^5	
E-Modulus N/mm^2	70000		70000	

For life-time calculation of rollers use our homepage.

Driving torque:

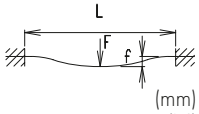
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

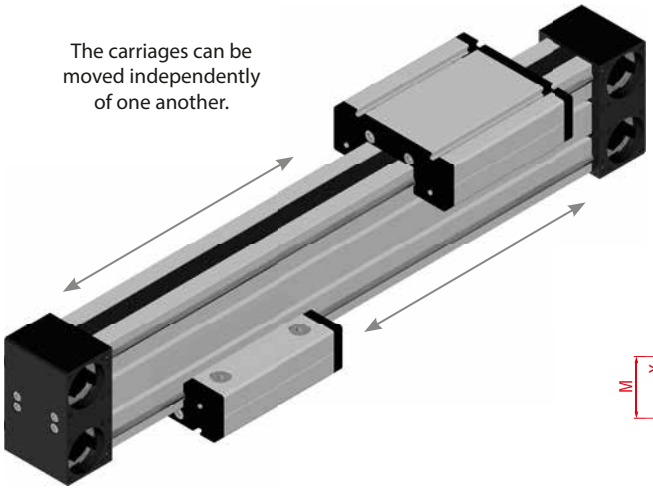
Deflection:

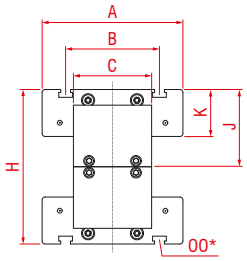
$$f = \frac{F * L^3}{E * I * 192}$$

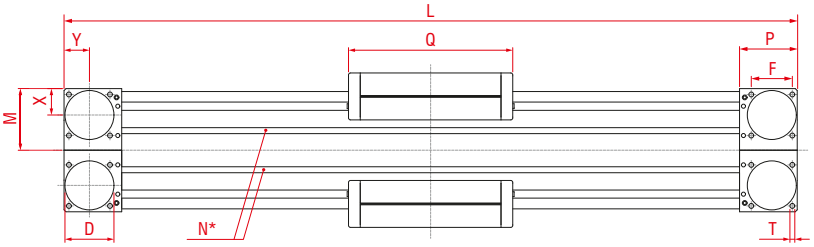


f = deflection (mm)
F = load (N)
L = free length (mm)
E = elastic modulus 70000 (N/mm^2)
I = second moment of area (mm^4)

Linear system **MLZD 60 (S) W**







*For slide nuts refer to chapter 2.2 page 2

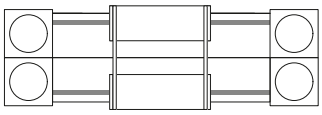
Increasing the carriage length will increase the basic length by the same amount.

Size	Basic length L	A	B	C	D - 0,05	F	H	J	K	M	N for	OO for	P	Q	T	X	Y	Basic weight	Weight per 100 mm
MLZD 60 **W**	290	144	96	80	47	42	158	79	48	71	M5	M8	59	168	M6	27	26	9,3 kg	1,0 kg
MLZD 60S **W**	315	170	108	80	47	42	166	83	52	71	M5	M8	59	194	M6	27	26	11,3 kg	1,0 kg

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)

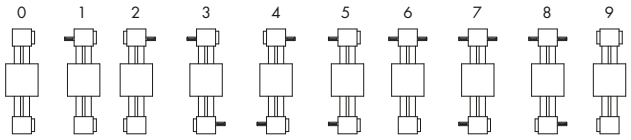
0 **Choice of carriages:**

(0)

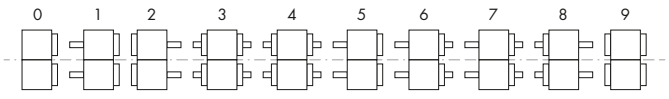


0 **Drive version:**

(0)

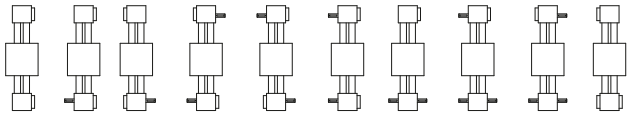


Top drive version:
Version 9 is the same as 0, but with double sided coupling claw.



Mirror plane
Drive version
(top and bottom identical)

(0)



Bottom drive version:
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	**60 (S)**	5M25	130	26

* effective toothed belt width

Shaft dimensions / Coupling claw

Size	Shaft ø h6 x length	Key	Coupling
60 (S)	14 x 35	5x5x28	14

MLZD	60 W	1	0	0	0	0	4	1	1500
	Pos.	1	2	3	4	5	6	7	

Basic length + stroke = total length

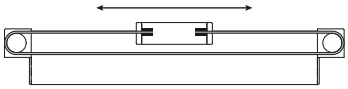
For combination kits and connecting elements refer to chapter 2.2

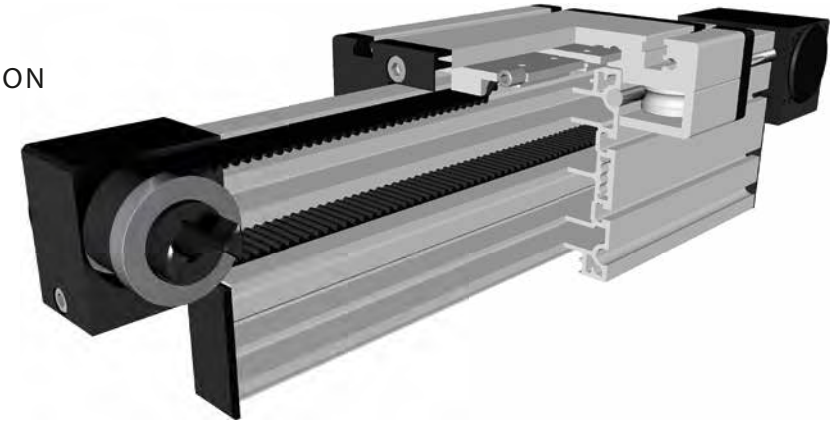
Sample ordering code:
MLZD 60 W, standard body profile, standard carriage, coupling claw on one side, 1210 mm stroke

Linear system **MLZ 60 (S) W**

BELT DRIVE

- INDEPENDENT INSTALLATION POSITION
- HIGHER PROFILE STABILITY
- HIGHER FORCE FIXTURE
- LONG TRAVERSE PATH



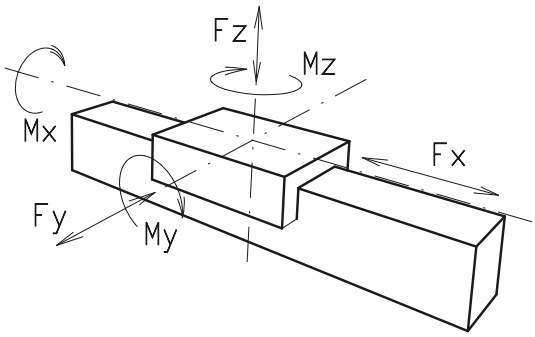


5.1

Function:
The guide body consists of an aluminium square profile with lateral, parallel, form-fit, internal hardened steel rods. The guide carriage, which is driven along the shafts by a timing belt, moves on the guide body with internal linear ball bearings that are adjustable free of play. The advantage of this system: The timing belt is guided within the profile, so that the system is independent of the mounting position. Due to the rectangular profile high torques and loads can be taken up. In addition, a very high stability and low deflection are ensured for long axis systems. The belt tension can be easily readjusted via a tensioning device within the carriage. This device also helps to adjust the symmetry of the carriages in applications where two parallel linear units are used.

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	60		60 S	
Forces/Torques	static	dynamic	static	dynamic
F_x (N)	894	800	894	800
F_y (N)	3000	2000	4100	3100
F_z (N)	1700	1100	2160	1600
M_x (Nm)	67	43	88	65
M_y (Nm)	90	70	190	140
M_z (Nm)	120	100	230	170
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	
Speed				
(m/s) max	5		7	
Tensile force				
permanent (N)	900		900	
0,2 s (N)	1000		1000	
Geometrical moments of inertia of aluminium profile				
I_x mm^4	2,8 x 10^6		2,8 x 10^6	
I_y mm^4	9,6 x 10^5		9,6 x 10^5	
E-Modulus N/mm^2	70000		70000	

For life-time calculation of rollers use our homepage.

Driving torque:

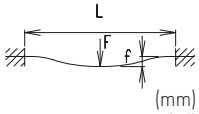
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

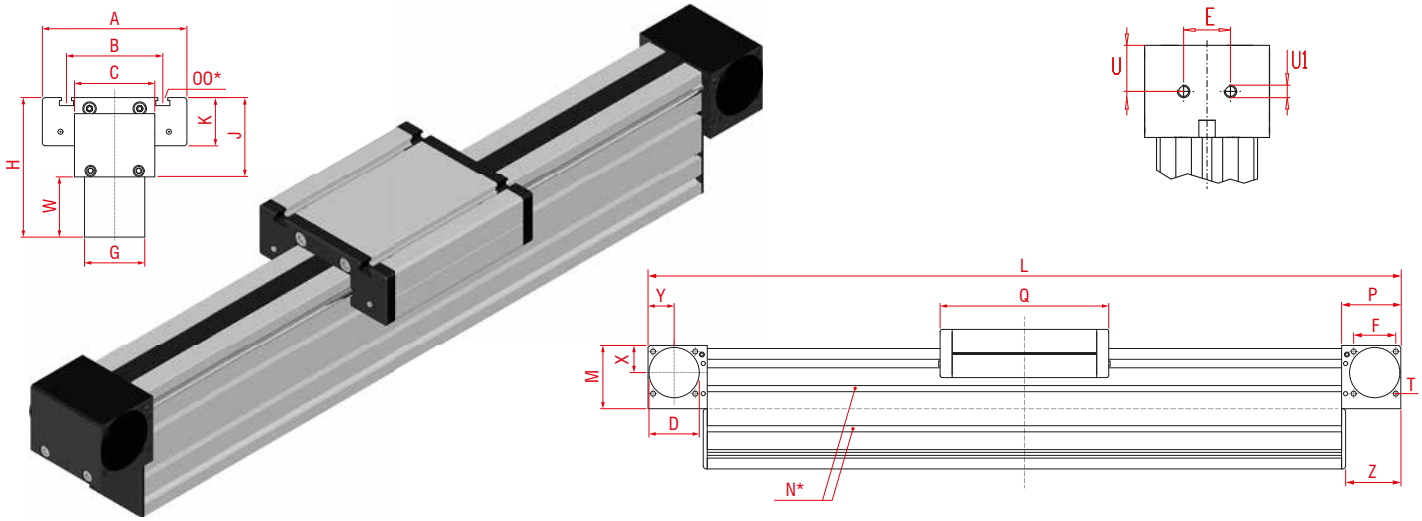
Deflection:

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



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

Positioning systems MLZ 60 (S) W



*For slide nuts refer to chapter 2.2 page 2

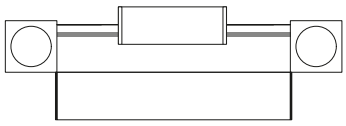
Increasing the carriage length will increase the basic length by the same amount.

Size	Basic length L	A	B	C	D - 0,05	E	F	G	H	J	K	M	N for	OO for	P	Q	T	U	U1	W	X	Y	Z	Basic weight	Weight per 100 mm
MLZ 60 **W**	290	144	96	80	47	30	42	60	139	79	48	63	M5	M8	59	168	M6	29,5	M8	60	27	26	55	5,2 kg	0,8 kg
MLZ 60S **W**	315	170	108	80	47	30	42	60	143	83	52	63	M5	M8	59	194	M6	29,5	M8	60	27	26	55	6,2 kg	0,8 kg

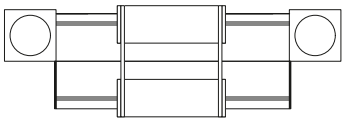
0 **Choice of guide body profile:**
(0) Standard **(2)** corrosion-protected guide rods and screws
(4) expanded corrosion-protected version (depending on the availability of components)

0 **Choice of carriages:**

(0)

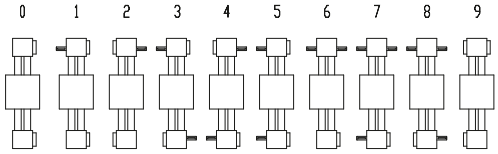


(1)



Size	Version 1	
	Q	L
60	184	306
60 S	214	336

0 **Drive version:**



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

* effective toothed belt width

Shaft dimensions / Coupling claw

Size	Shaft ø h6 x length	Key	Coupling
60 (S)	14 x 35	5x5x28	14

MLZ	60 W	1	0	0	0	0	4	1	1500
	Pos.	1	2	3	4	5	6	7	

Basic length + stroke = total length

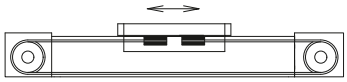
For combination kits and connecting elements refer to chapter 2.2

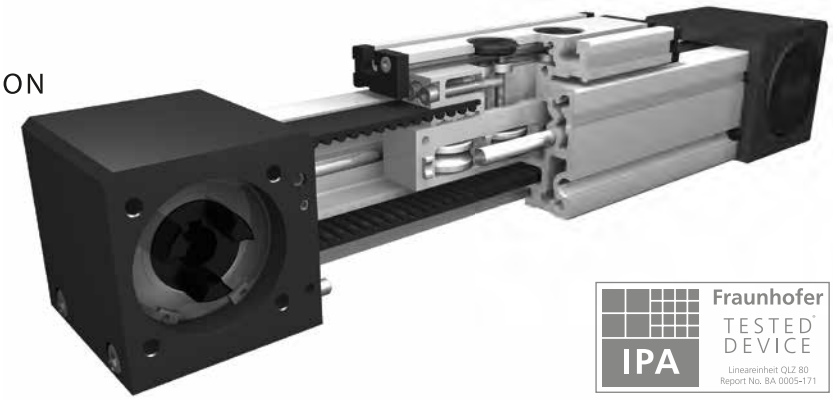
Sample ordering code:
MLZ 60 W, standard body profile, standard carriage, coupling claw on one side, 1210 mm stroke

Linear system **QLZ 60, 80, 100**

BELT DRIVE

- INDEPENDENT INSTALLATION POSITION
- LONG TRAVERSE PATH >6000 MM
- CLEAN ROOM



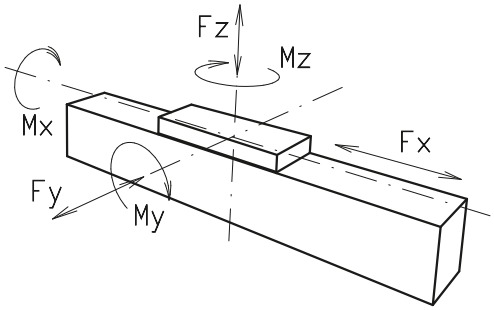


Fraunhofer IPA TESTED DEVICE
Lineareinheit QLZ 80
Report No. BA 0005-171

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). With this series, multi-part assembled units with long strokes can be realized.

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/s) max	4		6		7	
Tensile force						
permanent (N)	900		1900		4000	
0,2 s (N)	1000		2090		4300	
Geometrical moments of inertia of aluminium profile						
I_x mm^4	4,3x10^5		16,5x10^5		34,93x10^5	
I_y mm^4	4,8x10^5		18,7x10^5		45,61x10^5	
Elastic modulus N/mm^2	70000		70000		70000	

For life-time calculation of rollers use our homepage.

Driving torque:

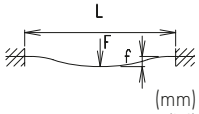
$$M_a = \frac{F * P * S_i}{2000 * \pi} + M_n$$

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

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

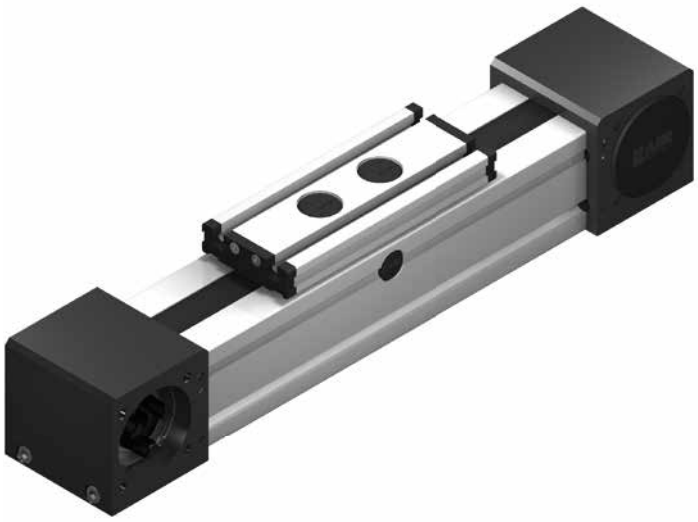
Deflection:

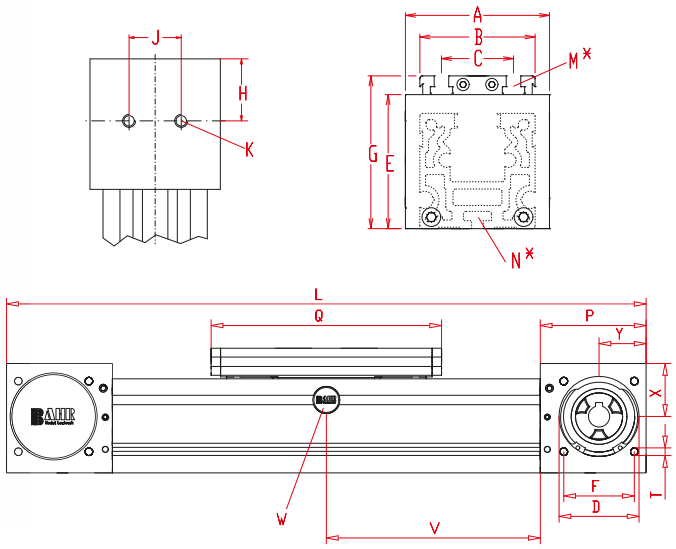
$$f = \frac{F * L^3}{E * I * 192}$$



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

Linear system **QLZ 60, 80, 100**





*For slide nuts refer to chapter 2.2 page 2

V = Q + 100 mm W = servicing position

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

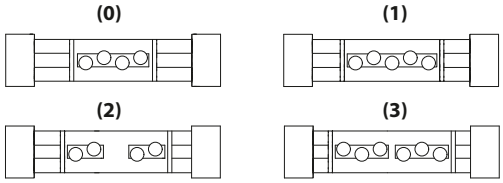
Size ❒	Basic length L	A	B	C	D -0,05	E	F	G	H	J	K	N for	M for	P	Q	T	X	Y	Basic weight	Weight per 100 mm
QLZ 60	280	80	60	36	47	63	42	79	29,5	30	M 8	M 5	M 6	59	152	M 6	27	26	3,2 Kg	0,39 kg
QLZ 80	390	100	80	50	68	93	60	106	47,5	40	M 10	M 6	M 8	90	196	M 8	45	40	9,6 Kg	0,86 Kg
QLZ 100	490	130	100	66	90	110	80	129	55	50	M 12	M 10	M 10	110	260	M 10	49	50	15,8 kg	1,23 Kg

0 **Choice of guide body profile:**

(0) Standard **(2)** corrosion-protected guide rods and screws

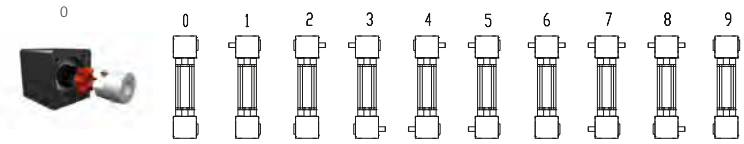
(4) expanded corrosion-protected version (depending on the availability of components)

0 **Choice of carriages:**



Size	Version 1		Version 2		Version 3	
	Q	L	Q	L	Q	L
60	192	320	>232	>360	>232	>360
80	246	440	>296	>490	>296	>490
100	320	550	>388	>610	>388	>610

0 **Drive version:**



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 / Coupling claw:

Code No.		Size	Belt	Pulley		Coupling
				mm/rev.	Number of teeth	
0	**3**	60	5M25	130	26	14
0	**4**	80	8M30	176	22	19
0	**7**	100	8M50	224	28	24

QLZ	80	1	0	0	0	0	4	1	1500
	Pos.	1	2	3	4	5	6	7	

Basic length + stroke = total length

For additional accessories refer to chapter 2.2

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