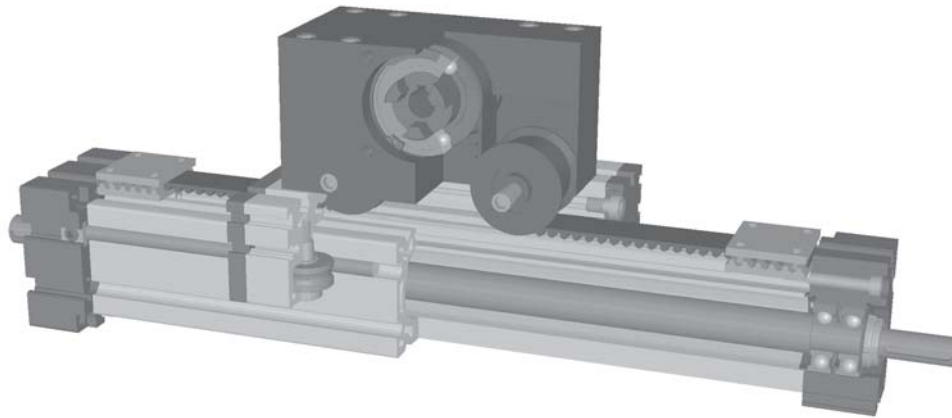


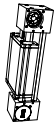
# Positioning system ELSD 40, 60, 80, 80S, 100

Specifications

Belt drive with rotary shaft



3.1



**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.

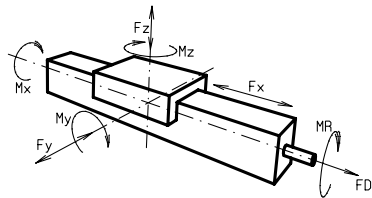
**Fitting position:** As required. Max. length 2.000 mm.

**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 80		ELSD 80 S		ELSD 100	
	Forces/Torques	static	dynamic	static	dynamic	static	dynamic	static	dynamic	static	dynamic
$F_x$ (N)		390	350	894	800	1900	1800	1900	1800	4000	3800
$F_y$ (N)		1200	700	3000	2000	3000	2000	4600	3600	8000	6500
$F_z$ (N)		900	650	1700	1100	1700	1100	3000	1800	3600	2200
$F_0$ (N)		50		150		250		250		400	
$M_x$ (Nm)		25	20	67	43	90	55	170	140	300	230
$M_y$ (Nm)		32	18	90	70	110	80	270	230	400	270
$M_z$ (Nm)		35	25	120	100	150	120	300	220	750	500
$M_k$ (Nm)		5		10		20		20		30	
<b>All forces and torques relate to the following:</b>											
existing values $\frac{F_y}{F_{y_{dyn}}} + \frac{F_z}{F_{z_{dyn}}} + \frac{M_x}{M_{x_{dyn}}} + \frac{M_y}{M_{y_{dyn}}} + \frac{M_z}{M_{z_{dyn}}} \leq 1$											
values of table											
<b>No-load torque</b>											
Nm		0,7		0,9		1,1		1,2		1,5	
Stiction torque $M_k$ (Nm)		0,1		0,1		0,1		0,1		0,1	
<b>Speed</b>											
(m/sec) max		4		5		6		8		8	
<b>Tensile force</b>											
permanent (N)		390		900		1900		1900		4000	
0,2 sec (N)		480		1000		2090		2090		4300	
<b>Geometrical moments of inertia of aluminium profile</b>											
$I_x$ mm <sup>4</sup>		1,32x10 <sup>5</sup>		6,79x10 <sup>5</sup>		18,99x10 <sup>5</sup>		18,99x10 <sup>5</sup>		44,4x10 <sup>5</sup>	
$I_y$ mm <sup>4</sup>		1,34x10 <sup>5</sup>		6,97x10 <sup>5</sup>		18,97x10 <sup>5</sup>		18,97x10 <sup>5</sup>		44,8x10 <sup>5</sup>	
E-Modulus N/mm <sup>2</sup>		70000		70000		70000		70000		70000	



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

**Formula: ELSD**

Driving torque:

$$M_o = \frac{F \cdot P \cdot S}{2000 \cdot \pi} + M_{leer}$$

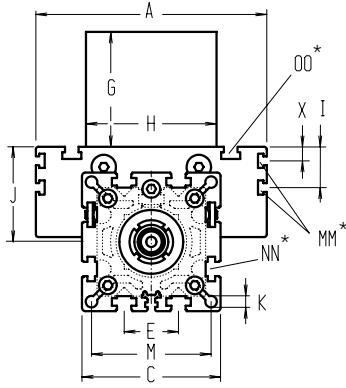
$$P_o = \frac{M_o \cdot n}{9550}$$

- F = force (N)
- P = pulley action perimeter (mm)
- S = safety factor 1,2 ... 2
- $M_{leer}$  = No-load torque (Nm)
- n = rpm pulley (min<sup>-1</sup>)
- $M_o$  = driving torque (Nm)
- $P_o$  = motor power (KW)

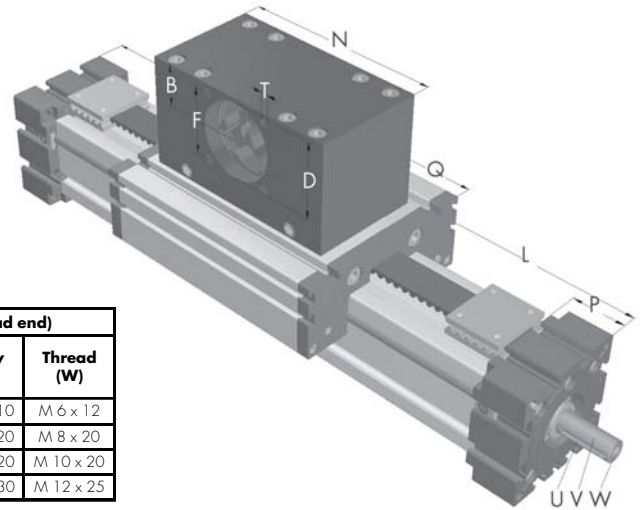
$$f = \frac{F \cdot L^3}{E \cdot I \cdot 192}$$

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





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



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

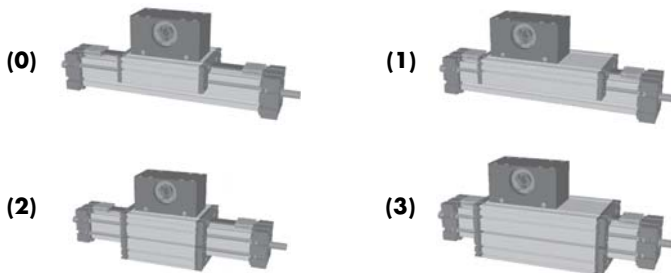
\*For slide-nuts refer to chapter 2.2 page 2

Size □	Basic length L	A	B	C	D	E	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	18	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	42	80	80	-	49	8,5	69	-	130	M 8	M 8	35	168	M 6	-	5,9 kg	0,87 kg
ELSD 80	410	170	39	102	68	40	60	100	100	30	70	8,5	88	M 6	180	M 10	M 10	45	214	M 8	10	12,5 kg	1,30 kg
ELSD 80S	420	190	39	102	68	40	60	100	100	30	71	8,5	88	M 6	180	M 10	M 8	45	224	M 8	12,5	14,0 kg	1,30 kg
ELSD 100	570	230	60	130	90	50	80	130	130	29	89	10,5	112	M10	270	M 10	M 10	55	310	M 10	-	27,0 kg	1,70 kg

**Choice of guide body profile:**

- 0** (0) Standard (1) stainless guide rods (2) stainless guide rods and screws (3) stainless guide rods, rollers and screws

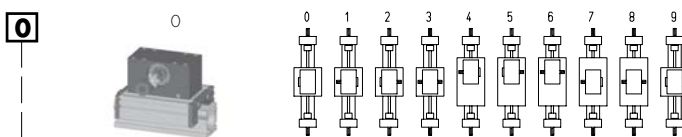
**Choice of carriages:**



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

Top and bottom carriages are rigidly joined, thus enabling higher loads to be applied. This increases the basic length by 16 - 20 mm. For thickness of jointing plate refer to chapter 1.2 page 6.

**Coupling - shaft mounting:**



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 in the pulley bore and securing with 2 locking rings or tension sets (size 100).

**Belt table**

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

**Shaft dimensions**

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

Basic length + stroke = total length

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

For combination kits and connecting elements refer to chapter 2.2

Sample ordering code:

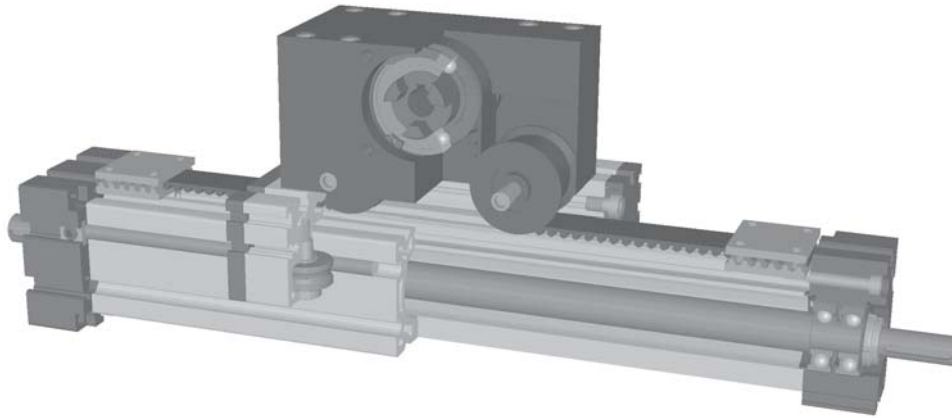
ELSD 60 with standard body profile, standard carriage and coupling claw on one side, 1180 mm stroke



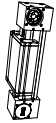
# Positioning system ELSD 40, 60, 80, 80S, 100

Specifications

Belt drive with widened belt and rotary shaft



3.1



**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.

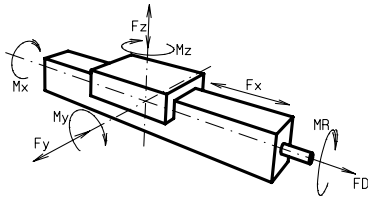
**Fitting position:** As required. Max. length 2.000 mm.

**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 80		ELSD 80 S		ELSD 100	
	Forces/Torques		static	dynamic	static	dynamic	static	dynamic	static	dynamic	static	dynamic
$F_x$ (N)	894	800	1900	1800	4000	3800	4000	3800	5900	5750		
$F_y$ (N)	1200	700	3000	2000	3000	2000	4600	3600	8000	6500		
$F_z$ (N)	900	650	1700	1100	1700	1100	3000	1800	3600	2200		
$F_b$ (N)	50		150		250		250		400			
$M_x$ (Nm)	25	20	67	43	90	55	170	140	300	230		
$M_y$ (Nm)	32	18	90	70	110	80	270	230	400	270		
$M_z$ (Nm)	35	25	120	100	150	120	300	220	750	500		
$M_b$ (Nm)	5		10		20		20		30			
<b>All forces and torques relate to the following:</b>												
existing values $\frac{F_y}{F_{y_{dyn}}} + \frac{F_z}{F_{z_{dyn}}} + \frac{M_x}{M_{x_{dyn}}} + \frac{M_y}{M_{y_{dyn}}} + \frac{M_z}{M_{z_{dyn}}} \leq 1$												
<b>No-load torque</b>												
Nm	0,7		0,9		1,1		1,2		1,5			
Stiction torque $M_b$ (Nm)	0,1		0,1		0,1		0,1		0,1			
<b>Speed</b>												
(m/sec) max	4		5		6		8		8			
<b>Tensile force</b>												
permanent (N)	900		1900		4000		4000		5900			
0,2 sec (N)	1000		2090		4300		4300		6350			
<b>Geometrical moments of inertia of aluminium profile</b>												
$I_x$ mm <sup>4</sup>	1,32x10 <sup>5</sup>		6,79x10 <sup>5</sup>		18,99x10 <sup>5</sup>		18,99x10 <sup>5</sup>		44,4x10 <sup>5</sup>			
$I_y$ mm <sup>4</sup>	1,34x10 <sup>5</sup>		6,97x10 <sup>5</sup>		18,97x10 <sup>5</sup>		18,97x10 <sup>5</sup>		44,8x10 <sup>5</sup>			
E-Modulus N/mm <sup>2</sup>	70000		70000		70000		70000		70000			



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

**Formula: ELSD**

Driving torque:

$$M_o = \frac{F \cdot P \cdot S}{2000 \cdot \pi} + M_{leer}$$

$$P_o = \frac{M_o \cdot n}{9550}$$

- F = force (N)
- P = pulley action perimeter (mm)
- S = safety factor 1,2 ... 2
- $M_{leer}$  = No-load torque (Nm)
- n = rpm pulley (min<sup>-1</sup>)
- $M_o$  = driving torque (Nm)
- $P_o$  = motor power (KW)

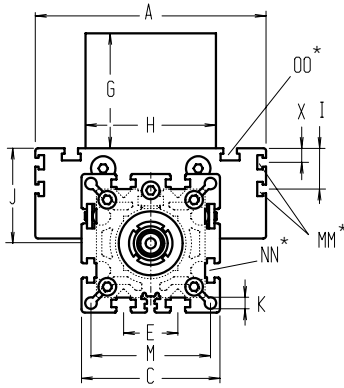
$$f = \frac{F \cdot L^3}{E \cdot I \cdot 192}$$

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

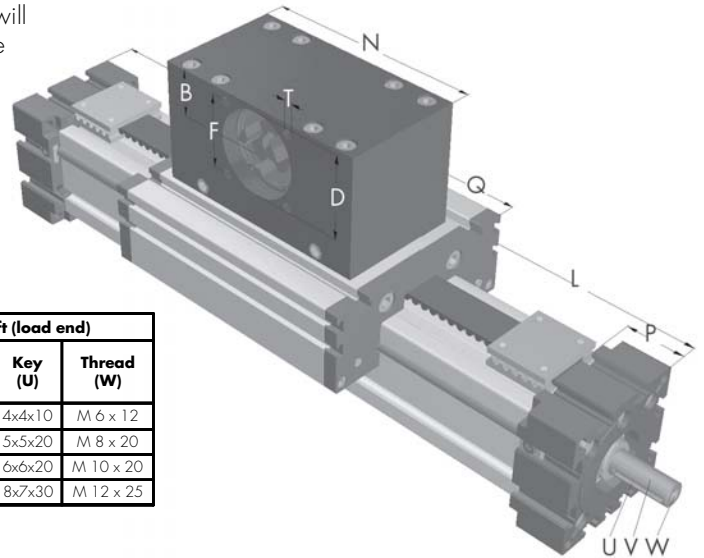


# Positioning system ELSD 40, 60, 80, 80S, 100

Dimensions (mm)



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



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

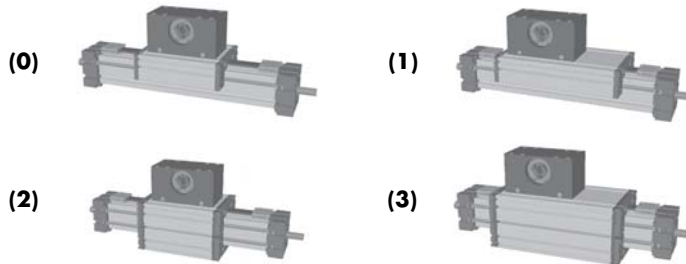
\*For slide-nuts refer to chapter 2.2 page 2

Size □	Basic length L	A	B	C	D	E	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	18	42	83	80	-	35	6,5	47	-	130	M 6	M 6	25	162	M 6	-	2,7 kg	0,40 kg
ELSD 60	354	144	39	82	68	30	60	105	100	-	49	8,5	69	-	180	M 8	M 8	35	218	M 8	-	6,5 kg	0,87 kg
ELSD 80	500	170	60	102	90	40	80	140	130	30	70	8,5	88	M 6	270	M 10	M 10	45	304	M 10	10	13,7 kg	1,30 kg
ELSD 80S	500	190	60	102	90	40	80	140	130	30	71	8,5	88	M 6	270	M 10	M 8	45	304	M 10	12,5	15,2 kg	1,30 kg
ELSD 100	610	230	62	130	110	50	100	143	160	29	89	10,5	112	M10	310	M 10	M 10	55	350	M 10	-	33,4 kg	1,70 kg

### Choice of guide body profile:

**0** (0) Standard (1) stainless guide rods (2) stainless guide rods and screws (3) stainless guide rods, rollers and screws

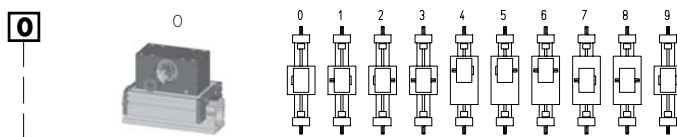
### Choice of carriages:



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

Top and bottom carriages are rigidly joined, thus enabling higher loads to be applied. This increases the basic length by 16 - 20 mm. For thickness of jointing plate refer to chapter 1.2 page 6.

### Coupling - shaft mounting:



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 in the pulley bore and securing with 2 locking rings or tension sets (size 80 + 100).

### Belt table

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

### Shaft dimensions

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

Basic length + stroke = total length

ELSD 60 0 0 0 0 0 7 1 01500

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

