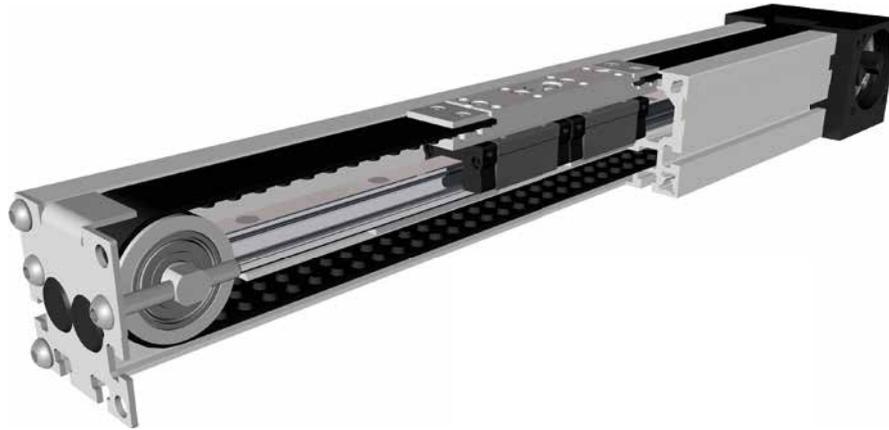# Positioning system LSN 60

Belt drive

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.

12.1

Forces and torques

Size	60	
permitted dyn. Forces*	5000 km	10000 km
F_x (N)	1170	1040
F_y (N)	1410	990
F_z (N)	3520	2500
M_x (Nm)	33	23
M_y (Nm)	104	73
M_z (Nm)	100	70

All forces and torques related to the following:

existing values / table values

$$\frac{F_y}{F_{y_{dyn}}} + \frac{F_z}{F_{z_{dyn}}} + \frac{M_x}{M_{x_{dyn}}} + \frac{M_y}{M_{y_{dyn}}} + \frac{M_z}{M_{z_{dyn}}} \leq 1$$

No-load torque	
Nm	0,6

Speed	
(m/s) max	5

Tensile force	
Dauer (N)	1170
0,2 s (N)	950

Geometrical moments of inertia of aluminium profile	
I_x mm^4	4,37x10^5
I_y mm^4	5,78x10^5
E-Modul N/mm²	70000

For life-time calculation use our homepage.   * referred to life-time
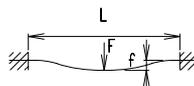
Driving torque:

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

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

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/mm²)
I	= second moment of area	(mm⁴)

Positioning system LSN 60
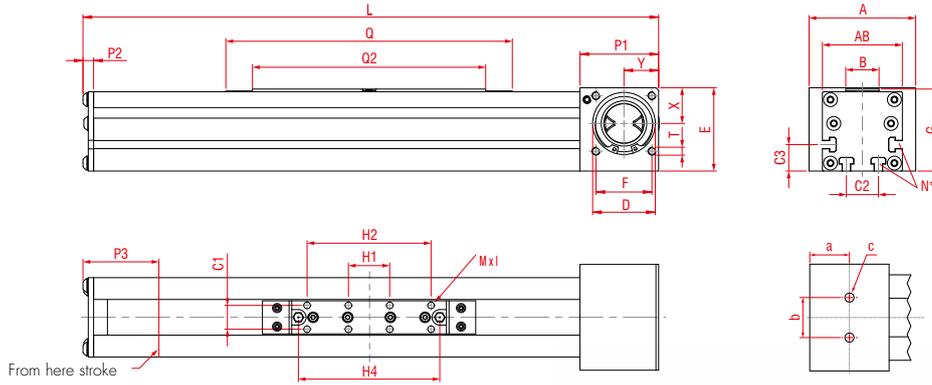
2 cupped-type lubricating nipples for each carriage

(0)

(1)

(2)
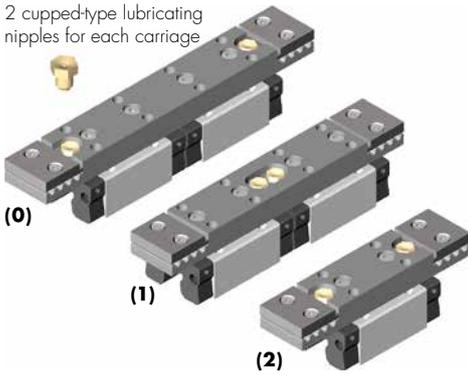
Hose connections available on request.
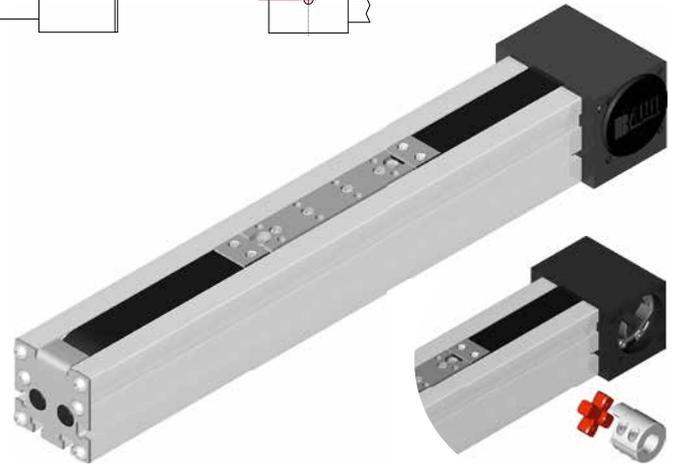
*For slide nuts refer to chapter 2.2 page 2

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

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

12.1

0 **Choice of carriages:**

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

0 **Drive version:**

0   1   2   6
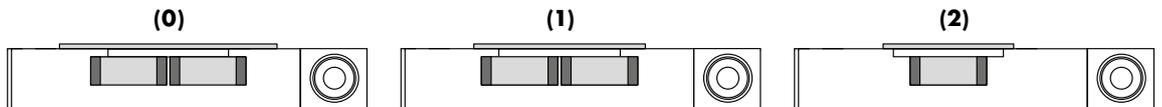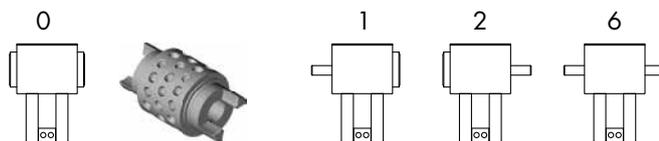
Belt table:

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

Shaft dimensions / Coupling claw:

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

LSN	60	1	0	0	0	0	8	1	01500

—— Basic length + stroke = total length

Pos.   1 2 3 4 5 6 7

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

From here stroke