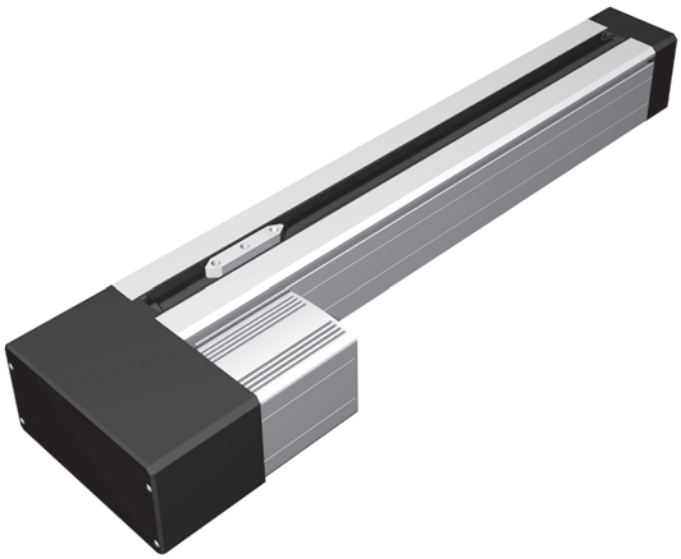
mechanics

Linear units
with spindle drive

LES 4



LES 4 with side belt drive module

Features

- Aluminium shaft housing profile W75 × H75 mm, naturally anodised
- Clamping area and profile underside milled flat
- with 2 precision steel shafts Ø 12 h6, material Cf53, Hardness 60 ± 2 HRC
- Aluminium shaft slots WS 5/70, 2 x WS 5/70 (70 mm long), adjustable for no play, central lubrication system
- Recirculating ball transmission with 2.5/4/5/10 and 20 mm pitches
- Profile sealing with friction-resistant lip seals
- Cast aluminium end plates
- with 2 limit or reference switches, Repeatability ± 0.02 mm
- sealed angular contact bearings in drive - steel flange

Options:
- Black powder-coated aluminium profile
- Electromagnetic brake
- Steel slots LS2 (Part no. 223007)
- Limit switch attachment kit (see accessories)

Ordering key

234 XXX 0XXX

Drive
0 = Preparation Direct drive modules
1 = Preparation Belt drive module

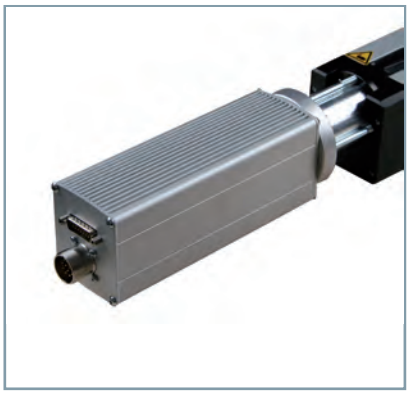
Shaft slots
0 = 1 Shaft slots 70 mm
2 = 2 shaft slots 70 mm

Profile length (L1)
e.g. 029 = 290 mm (min.)
299 = 2990 mm (max.)
(rounded to the last digit)
Standard profile lengths in 100 mm raster - to order

Recirculating ball drive
0 = none
1 = Pitch 2.5 mm
2 = Pitch 4.0 mm
3 = Pitch 5.0 mm
4 = Pitch 10 mm
5 = Pitch 20 mm

Drive modules

see page 72 et seq. of the catalogue



Technical specification
Aluminium profile

Aluminium profile LES 4	
Moment of inertia I_x	107.711 cm⁴
Moment of inertia I_y	125.843 cm⁴
*Centre of gravity see dimensioned drawing	33.23 mm
Cross-sectional area	18.81 cm²
Material	AlMgSiO, 5F22
Anodising	E6/EV1
Weight with steel shafts	6.2 kg/m
Weight with steel shafts and spindles	7.6 kg/m

No load running torques

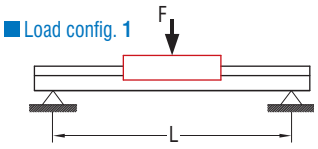
No load running torques					
Speed (rpm)	Spindle pitch				
	2.5	4	5	10	20
500	15	15	16	17	18
1500	19	19	19	20	21
3000	23	24	24	25	26

Linear units
with spindle drive

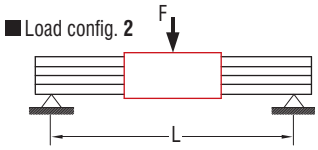
LES 4

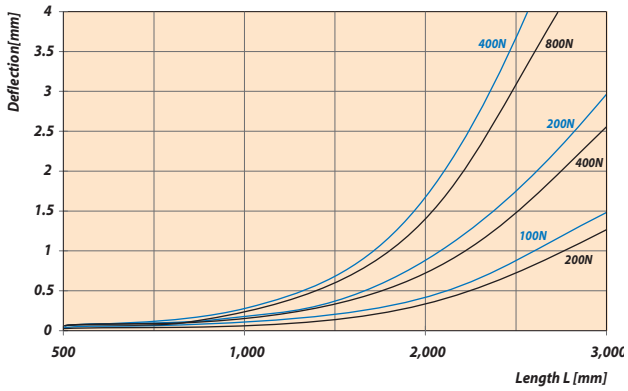
Bending

Load config. **1**



Load config. **2**

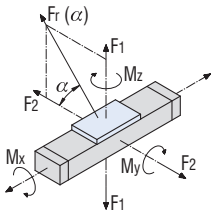




Load factors

$$Fr(\alpha) = \frac{F2}{\cos \alpha}$$

$$Fr(\alpha) = \frac{F1}{\sin \alpha}$$



LES 4 with one WS 5/70	
C_0	2576.65 N
C	1461,14 N
F_1 stat.	2200.67 N
F_1 dyn.	1247.93 N
F_2 stat.	2576.65 N
F_2 dyn.	1461.14 N
M_x stat.	36.45 Nm
M_y stat.	82.16 Nm
M_z stat.	96.20 Nm
M_x dyn.	20.67 Nm
M_y dyn.	46.59 Nm
M_z dyn.	54.55 Nm

LES 4 with two WS 5/70	
C_0	***4,954.5 N***
C	***2,809.5 N***
F_1 stat.	***4,231.5 N***
F_1 dyn.	***2,398.5 N***
F_2 stat.	***4,954.5 N***
F_2 dyn.	***2,809.5 N***
M_x stat.	***44.7 Nm***
M_y stat.	***126.945 Nm***
M_z stat.	***148.635 Nm***
M_x dyn.	***25.2 Nm***
M_y dyn.	***71.955 Nm***
M_z dyn.	***84.285 Nm***

permissible spindle speeds

LES 4 / 5 / 6	Spindle pitch p [mm]	2.5	4	5	10	20
Profile length L [mm]	max. permissible spindle speed n [rpm]	max. permissible feed speed v permissible [mm/s]				
490	4000	167	267	333	667	1333
990	3000	125	200	250	500	1000
1390	1500	63	100	125	250	500
1490 *	3000	125	200	250	500	1000
1990 *	1650	69	110	138	275	550
2490 *	1050	44	70	88	175	350
2990 *	750	31	50	63	125	250

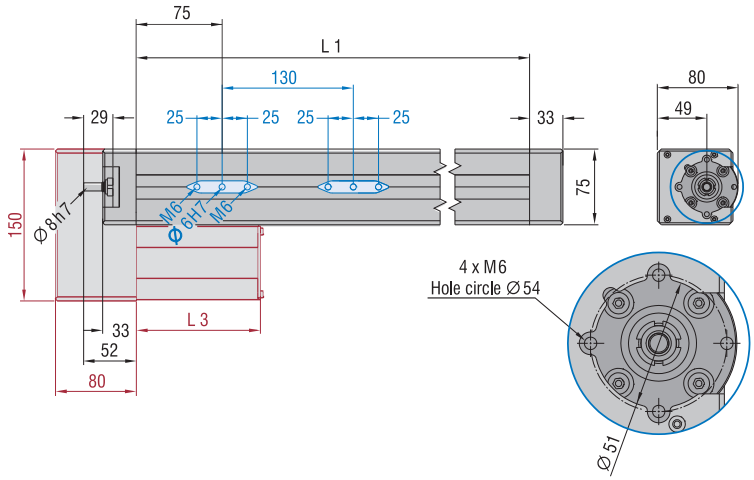
* with spindle support

Dimensioned drawing

process travel

at 1xWS 5/70 = L1 -150 mm
at 2xWS 5/70 = L1 -280 mm

external limit switches see page **C85**



Dimensioned drawing
Aluminium profile