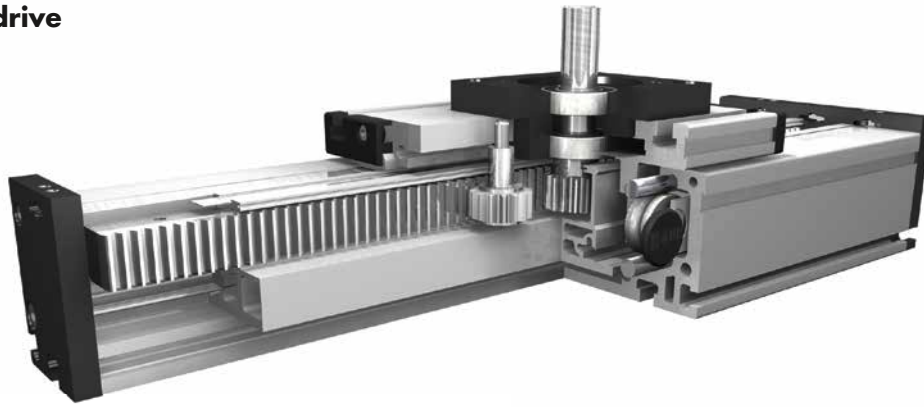# Positioning system DLZA 120, 160, 200

Rack and pinion drive

Function:
This unit consists of a rectangular aluminium profile with 2 integrated roller guides. The carriage, which has internal linear ball bearings that can be adjusted free of play, is driven along the guide rods by a high precision rack. The rack and pinion system is suitable for highly dynamic servo operation and ideal for lifting movements. The pinion is equipped with maintenance-free ball bearings. The rack is lubricated by a toothed felt wheel.
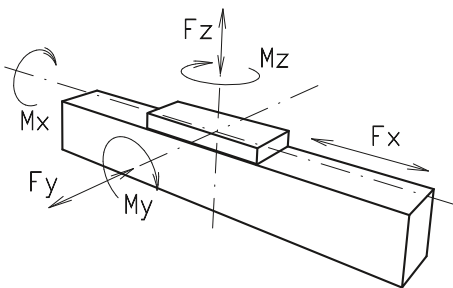
Fitting position: As required. Max. length 6.000 mm without joints.
Carriage mounting: By T-slots.
Unit mounting: By T-slots and mounting sets. The linear axis can be combined with any T-slot profile.
Rack: 6h23 Modul 2 (hardened and ground), repeatability ± 0,1 mm.
Carriage support: In the standard version, the carriage runs on 8 rollers which can be adjusted and serviced at a central servicing position. For longer carriages the number of rollers can be increased.

7.1

Forces and torques

Size	120		160		200	
Forces/Torques	static	dynam.	static	dynam.	static	dynam.
F_x (N)			1900	1800	4000	3800
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:

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

existing values / table values

No-load torque

Nm			1,5		2,6	

Speed

(m/s) max			3		5,0	

Tensile force

permanent (N)			1900		3000	

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/mm²			70000		70000	

For life-time calculation of rollers use our homepage.

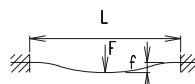Driving torque:

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

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

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/mm²)
I	= second moment of area	(mm^4)

Positioning system DLZA 120, 160, 200
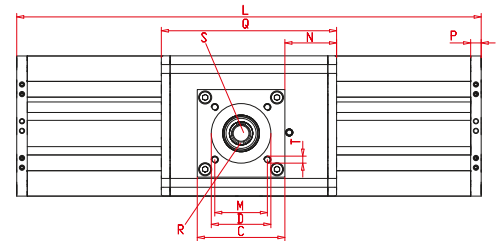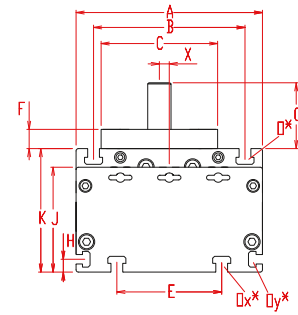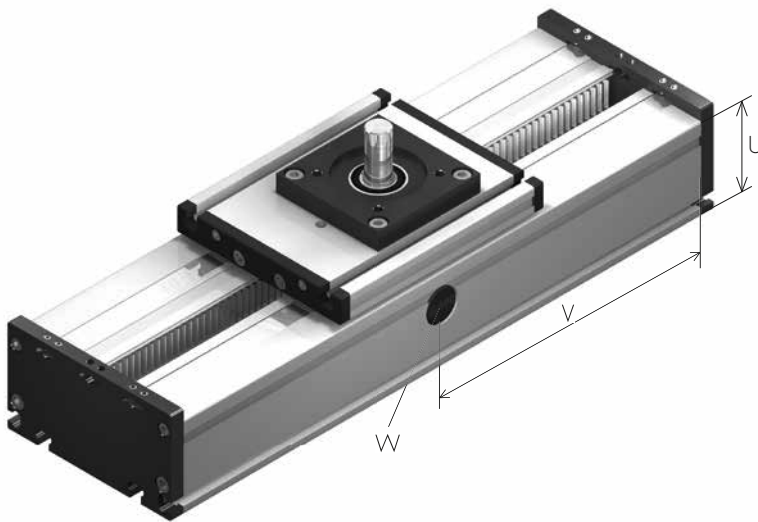
V = Q + 100 mm
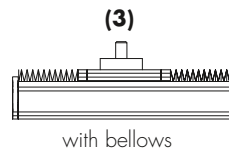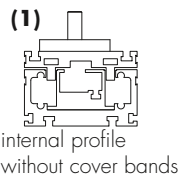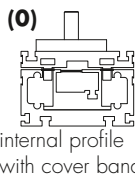W = servicing position

*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	M	N	O for	Ox for	Oy for	P	Q	T for	U	X	Basic weight	Weight per 100 mm
DLZA 120																							
DLZA 160	240	160	130	100	68	90	16,5	56,5	11	90	106	60	59	M 8	M 8	M 6	12	200	M 8	80	8,5	13,0 kg	2,10 kg
DLZA 200	320	200	160	120	90	140	20	45	15	110	129	80	95	M 10	M 10	M 8	15	270	M 8	100	5	28,9 kg	6,15 kg

0 Choice of guide body profile:

(0) internal profile with cover bands

(1) internal profile without cover bands

(3) with bellows

Stainless versions upon request.

0 Choice of carriage:

(0) **(1)** **(2)**
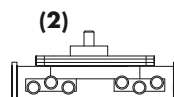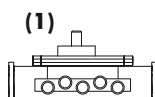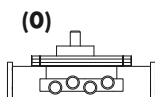
Size □	Version 0		Version 1		Version 2	
	Q	L	Q	L	Q	L
120						
160	200	240	250	290	>300	>340
200	270	320	330	380	>410	>460

1 Drive version:
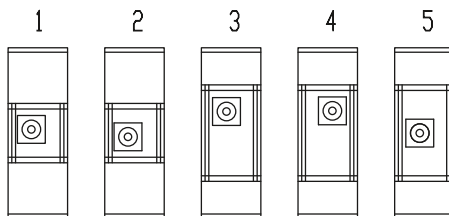
1   2   3   4   5

Shaft dimensions

Size □	Shaft ø h6 x length	Key	Pinion	
	S	R	mm/rev.	Modul
120				
160	20 x 40	6x6x35	100,53	2
200	18 x 25	6x6x20	94,25	2

Basic length + stroke = total length

DLZA	160	1	0	0	1	0	0	1	01500

Pos. 1 2 3 4 5 6 7

Sample ordering code:
DLZA160 with internal profile and cover bands, standard carriage, 1260 mm stroke.