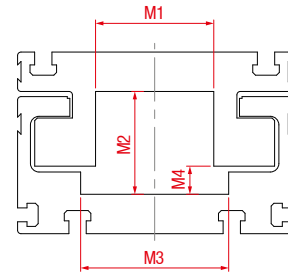


Positioning system DSM 160P, 200P

Linear motor drive



Function:

This unit consists of a rectangular aluminium profile with 2 integrated rail guidance. The linear motor DSM unit is based on the principle of a linear, synchronous AC motor.

The guiding profile is fitted with permanent magnets as stator (secondary part). The carriage is fitted with the actuator (primary part). The magnetic attraction causes a force between carriage and guiding profile also in the absence of current. This force can be used for the initial tension of the bearings. Several carriages (primary parts) can be driven independently on one guiding profile. A special design of the carriage geometry results in the guiding profile being covered. This prevents small parts from falling into the system, so that clean-room applications are possible.

Fitting position:

As required. Max. length 3.000 mm without joints.

Carriage mounting:

By threaded 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 4 runner blocks which can be serviced at a central servicing position. For longer carriages the number of runner blocks can be increased. Repeatability ± 0,05mm mm. Repeated accuracy max. ± 0,05mm up to 3.000 mm

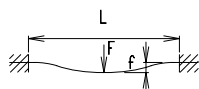
10.1

Forces and torques	Size	160			200			
	Motor size	1	2	3	1	2	3	
<p> F_z = external force by load F_α = magnetic attraction force F_{zm} = maximum force in consideration of motor power $F_{zm} = F_z + F_\alpha$ </p>	permitted dyn.Forces*	10000 km			10000 km			
	F_n (N)	1200	1800	5500	3600	5500	11000	
	F_{zm} (N)	1590	2800	7030	4990	7640	13860	
	F_z (N)	1775	1775	3550	4092	4092	8184	
	M_x (Nm)	160	128	153	357	231	462	
	M_y (Nm)	373	351	532	769	556	1540	
	M_z (Nm)	222	261	328	585	654	906	
	Number of runner blocks	4	4	8	4	4	8	
	All forces and torques related to the following:							
	existing values $\frac{F_y}{F_{y_{dyn}}} + \frac{F_{zm}}{F_{zm_{dyn}}} + \frac{M_x}{M_{x_{dyn}}} + \frac{M_y}{M_{y_{dyn}}} + \frac{M_z}{M_{z_{dyn}}} \leq 1,5$ table values							
Motor specifications Fx								
Motor size	1	2	3	1	2	3		
Carriage weight (kg)	4,8	5,3	7,1	10,9	11,4	16,9		
Weight primary part (kg)	1,4	3,7	5,2	4,5	6,4	8,4		
permanent (N)	115	271	406	383	574	766		
Max. (N) 1s	323	607	911	868	1301	1735		
Moving force without current								
N	30	30	60	40	40	80		
Geometrical moments of inertia of aluminium profile								
I_x mm ⁴	2,13 x 10 ⁶			4,81 x 10 ⁶				
I_y mm ⁴	12,3 x 10 ⁶			26,0 x 10 ⁶				
Elastic modulus N/mm ²	70000			70000				

* referred to life-time

Deflection:

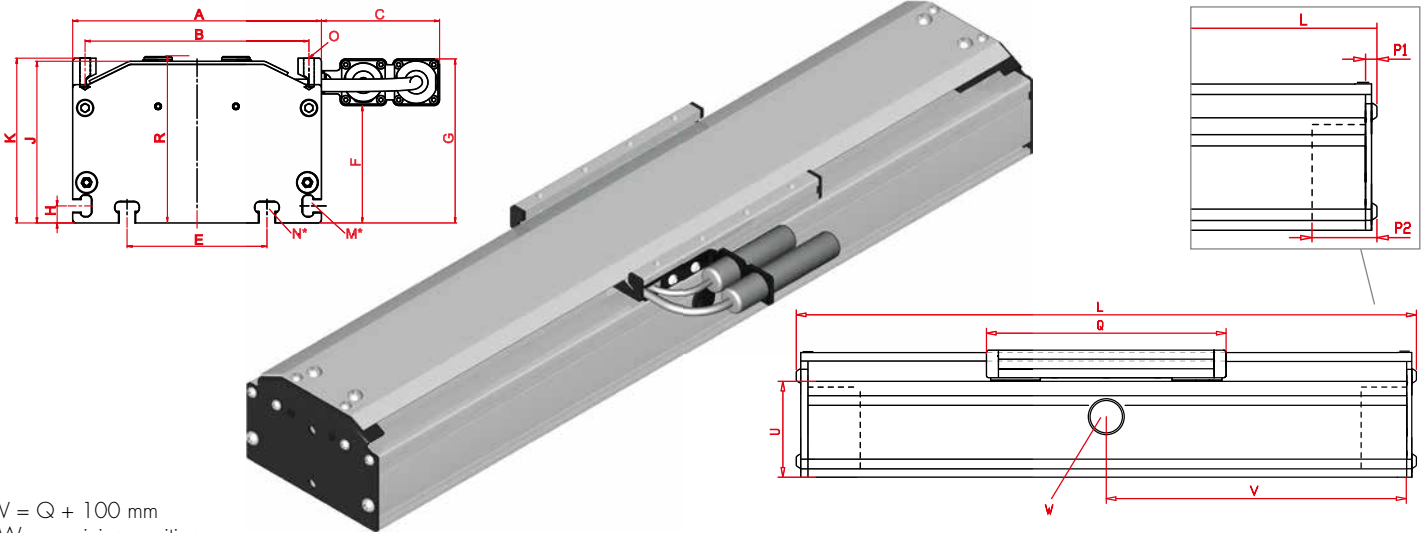
$$f = \frac{F \cdot L^3}{E \cdot I \cdot 192}$$



- f = deflection (mm)
- F = load (N)
- L = free length (mm)
- E = elastic modulus 70000 (N/mm²)
- I = second moment of area (mm⁴)

Positioning system DSM 160P, 200P

Dimensions (mm)



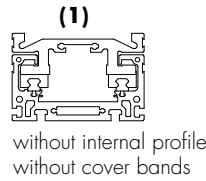
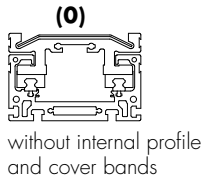
V = Q + 100 mm
W = servicing position

*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 L	A	B	C	E	F	G	H	J	K	M for	N for	O for	R	P1	P2	U	Basic weight Motor size 1/2/3	Weight per 100mm Motor size 1/2/3
DSM 160P	Q + 108	160	144	76	90	76	106	11	104	106	M 6	M 8	M 8	107	9	57	80	12,1/15/20	1,7/2,1/2,1
DSM 200P	Q + 126	200	182	76	140	96	126	15	128	129	M 8	M 10	M 10	130	10	62	100	26,1/29,6/36,8	2,8/2,8/2,8

0 Choice of guide body profile:



Size	M1	M2	M3	M4
DS 120	52	45	64	13
DS 160	70	60	85	17
DS 200	84	77	100	15

Helper table for provided motors

Stainless version upon request.

1 Measurement system:

- (1) Measurement system LE100/1 5V Resolution 0.05
- (2) Measurement system LE100/1 10,5-30V Resolution 0.05
- (3) Hall sensor
- (4) Measurement system provided by customer

1 Plug:



1 Motor size:

- (1) Motor size 1 with Q₁
 - (2) Motor size 2 with Q₂
 - (3) Motor size 3 with Q₃
 - (4) Supply with Q₁*
 - (5) Supply with Q₂*
 - (6) Supply with Q₃*
- * = provided by customer

Dimensioning criteria for motor output						
	l _p □	b _p □	h _{ps} □	Q ₁	Q ₂	Q ₃
160	Q-70	71	50	316	360	461
200	Q-70	85	62	410	444	610

l_p = length primary part; b_p = width primary part;
h_{ps} = height primary part + height secondary part + interspaces primary/secondary part

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. For linear encoder refer to chapter 9.1.

1500 Basic length + stroke = total length

DSM 160P 0 0 1 1 0 0 1 01500

Pos. 1 2 3 4 5 6 7

Sample ordering code:

DSM160P, Bahr Modultechnik Linear motor, standard body profile, Measurement system LE100/1 5V, Plug Pos. 1, motor size 1, 1094mm stroke

