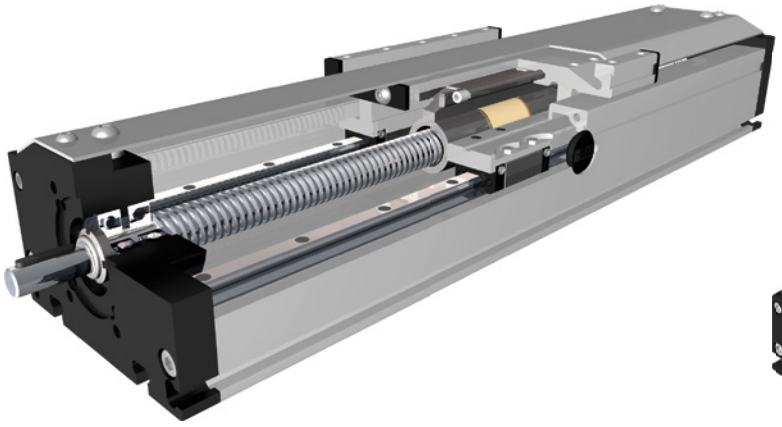
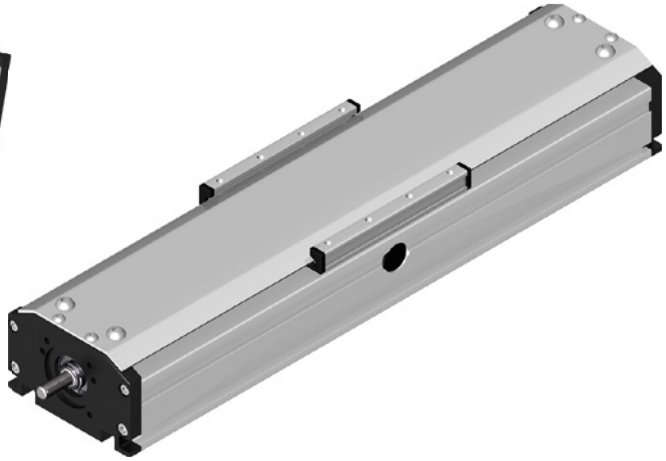
Positioning system DST/DSK 120 P, 160 P, 200 P

Spindle drives

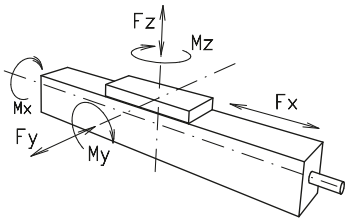




Function:
This unit consists of a rectangular aluminium profile with 2 integrated rail guides. The carriage is driven by means of a rotating spindle with leading nut. Where two parallel linear units are used or where two carriages are mounted on one unit, the leading-nut receiver can be used to adjust the symmetry of the carriages. A special curved aluminium sheet is covering the carriage side. There is only a small gap between carriage and aluminium sheet. The cover profile can be adjusted according to the mounting position.

Fitting position: As required, max. length DST/K 120P / 1600mm, DST/K 160P / 1800mm, DST/K 200P / 2000mm
Carriage mounting: By tapped holes.
Unit mounting: T-slots
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: Ballscrew ± 0,025 mm, trapezoidal thread ± 0,2 mm.

Forces and torques



Size	120		160		200	
permitted dyn. Forces*	5000 km	10000 km	5000 km	10000 km	5000 km	10000 km
F_x (N)	900	800	5000	4000	10000	8000
F_y (N)	1776	1405	5570	3900	15600	11080
F_z (N)	2090	1650	7050	5020	20600	14600
M_x (Nm)	81	64	358	255	1285	915
M_y (Nm)	97	77	369	262	1375	980
M_z (Nm)	96	76	364	258	1345	960
C (N)	2310		7800		22800	

All forces and torques related to the following:

existing values / table values

$$\frac{Fy}{Fy_{dyn}} + \frac{Fz}{Fz_{dyn}} + \frac{Mx}{Mx_{dyn}} + \frac{My}{My_{dyn}} + \frac{Mz}{Mz_{dyn}} \leq 1$$

No-load torque								
Trapezoidal thread	18 x 4	18 x 8	24 x5	24 x 10	32 x 6	32 x 12		
(Nm)	0,8	1,1	1,0	1,3	1,5	1,7		
Ballscrew	16 x 5	16 x 10	25 x 5	20 x 20	32 x 5	32 x 10	32 x 20	32 x 32
(Nm)	0,7	1,0	1,0	1,2	1,3	1,6	1,7	1,7

Geometrical moments of inertia of aluminium profile			
I_x mm⁴	5,61x10⁵	2,13x10⁶	4,81 x10⁶
I_y mm⁴	34,19x10⁵	12,33x10⁶	26,0 x10⁶
Elastic modulus N/mm²	70000	70000	70000

** referred to life-time*

Formula: DST/K P

Driving torque:

$$M_a = \frac{F*P*S_i}{2000*\pi*\mu} + M_{leer}$$

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

F = force (N)
P = thread pitch (mm)
S_i = safety factor 1,2 … 2
M_{leer} = no-load torque (Nm)
n = rpm of screw (min^{-1})
M_a = driving torque (Nm)
μ = screw efficiency
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 moduusl 70000(N/mm^2)
I = second moment of area (mm^4)

Efficiency of lead screws:

All ballscrew	0,900
Tr 24x5	0,384
Tr 24x10	0,550
Tr 32x6	0,360
Tr 32x12	0,524

Nominal lifetime:

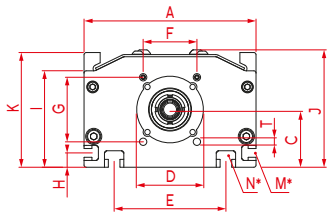
$$L = \left(\frac{C}{F}\right)^3 x10^5$$

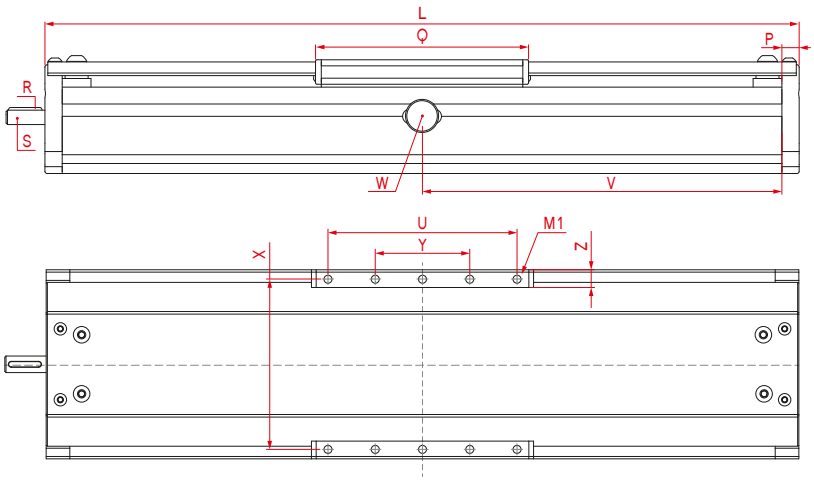
L = Lifetime in meter
C = Dynamic load factor (N)
F = Middle load (N)

For the diagram for critical speeds of lead screws refer to catalog - chapter 4.2 page 3

Positioning system DST/DSK 120 P, 160 P, 200 P

Dimensions (mm)





*For slide nuts refer to chapter 2.2 page 2
Increasing the carriage length will increase the basic length by the same amount.

DS 120 M1 = M6 x 8 only 8 threaded holes in the carriage
DS 160 M1 = M8 x 12 **DS 200** M1 = M10 x 12
V = Q + 100 mm W = servicing position

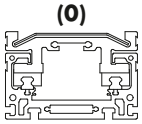
Size	Basic length L	A	C	D	E	F	G	H	I	J	K	M for	N for	P	Q	Shaft R Key	Shaft S Ø x length	T	U	X	Y	Z	Basic weight	Weight per 100 mm
DS 120	220	120	39	47	78	42	42	10	67	82	79	M5	M6	12	148	3x3x25	10x27	M6	120	106	40	11,5	3,67 kg	1,05 kg
DS 160	280	160	53	62	90	50	60	11	89	109	106	M6	M8	20	188	5x5x28	14x35	M8	160	144	80	15		
DS 200																								

T **Spindle:** **(T)** Trapezoidal thread **(K)** Ballscrew

1 **Selection of screw:** **(1)** right hand *(Standard)* **(2)** left hand *(Ballscrew by inquiry)*

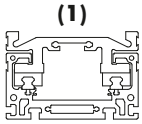
0 **Choice of guide body profile:**

(0)



with cover profile

(1)



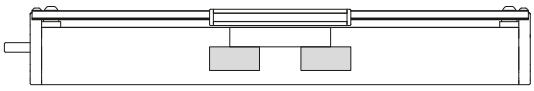
without cover profile

Stainless versions upon request.

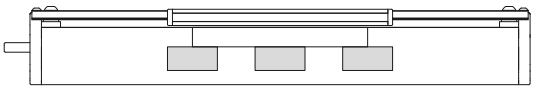
Size	Version 1 Q	Version 1 L
120	>148	>223
160	>220	>330
200		

0 **Choice of carriages:**

(0)



(1)



0 **Drive version:**
(0) one shaft (locating bearing side) **(1)** one shaft (non-locating bearing side) **(2)** shaft on both sides

0

Selection of screw::	Size	Standard	Multistart screw				
Ballscrew right hand	120	**(0)** 16x5	**(1)** 16x10	**(2)** 16x16	**(3)** 20x20	**(4)** 25x5	**(5)** 25x10
	160	**(0)** 25x5	**(1)** 20x20	**(2)** 25x10	**(3)** 25x25		
	200	**(0)** 32x5	**(1)** 32x10	**(2)** 32x20	**(3)** 32x32		
Ballscrew left hand		upon request					
Trapezoidal right hand thread	120	**(0)** 18x4	**(1)** 18x8				
	160	**(0)** 24x5	**(1)** 24x10				
	200	**(0)** 32x6	**(1)** 32x12				
Trapezoidal left hand thread	120	**(0)** 18x4	**(1)** 18x8				
	160	**(0)** 24x5	**(1)** 24x10				
	200	**(0)** 32x6	**(1)** 32x12				

0 **Ballscrew pitch accuracy:**
(0) 0,1 mm / 300 mm *(Standard)* **(1)** 0,05 mm / 300 mm **(2)** 0,025 mm / 300 mm

0 **End play of ball nut:**
(0) 0,04 mm *(Standard)* **(1)*** < 0,02 mm **(2)*** 2% apply prestress
** only in combination with **pitch accuracy (1) or (2)***

DS	T	160 P	1	0	0	0	0	0	0	01500	1500
		Pos.	1	2	3	4	5	6	7		

Basic length + stroke = total length

Sample ordering code:
DST 160 P, trapezoidal right hand thread, with cover profile, standard carriage, one shaft (locating bearing side), spindle 24x5, 1240 mm stroke.