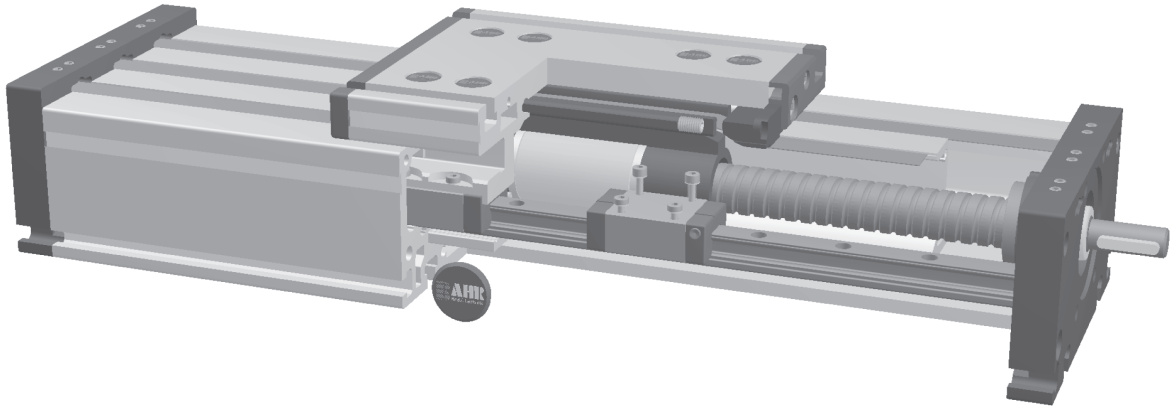


# Positioning system DST/DSK 160, 200

Specifications

## Spindle drives



### Function:

This unit consists of a rectangular aluminium profile with 2 integrated rail guidance. 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. The openings of the guide body are sealed with 3 stainless steel cover bands to protect the drive from splash water and dust. Another option is to cover the opening with a bellows.

### Fitting position:

As required. Max. length 3.000 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.

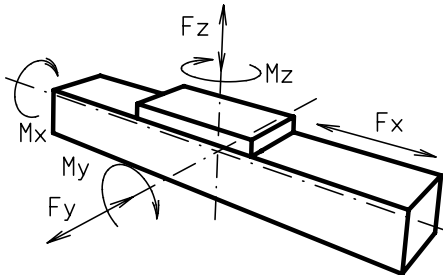
### Carriage support:

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  $\pm 0,025$  mm, trapezoidal thread  $\pm 0,2$  mm.

8.1



### Forces and torques



Size	160		200			
<b>permitted dyn. Forces*</b>	5000 km	10000 km	5000 km	10000 km		
$F_x$ (N)	5000	4000	10000	8000		
$F_y$ (N)	2236	1775	5155	4092		
$F_z$ (N)	5278	4189	11311	8977		
$M_x$ (Nm)	282	224	752	597		
$M_y$ (Nm)	283	225	813	646		
$M_z$ (Nm)	300	238	862	684		
<b>All forces and torques related to the following:</b>						
existing values	$\frac{F_y}{F_{y_{dyn}}} + \frac{F_z}{F_{z_{dyn}}} + \frac{M_x}{M_{x_{dyn}}} + \frac{M_y}{M_{y_{dyn}}} + \frac{M_z}{M_{z_{dyn}}} \leq 1$					
values of table						
<b>No-load torque</b>						
Trapezoidal thread	24 x 5	24 x 10	32 x 6	32 x 12		
(Nm)	1,0	1,3	1,5	1,7		
Ballscrew	25 x 5	20 x 20	32 x 5	32 x 10	32 x 20	32 x 32
(Nm)	1,0	1,2	1,3	1,6	1,7	1,7
<b>Geometrical moments of inertia of aluminium profile</b>						
$I_x$ mm <sup>4</sup>	2,13x10 <sup>6</sup>		4,81 x10 <sup>6</sup>			
$I_y$ mm <sup>4</sup>	12,33x10 <sup>6</sup>		26,0 x10 <sup>6</sup>			
Elastic modulus N/mm <sup>2</sup>	70000		70000			

\* referred to life-time

### Formula: DST/K

Driving torque:

$$M_a = \frac{F \cdot p \cdot S}{2000 \cdot \pi \cdot \mu} + M_{leer}$$

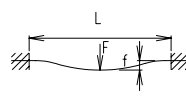
$$P_o = \frac{M_a \cdot n}{9550}$$

- F = force (N)
- P = thread pitch (mm)
- S<sub>p</sub> = safety factor 1,2 ... 2
- M<sub>leer</sub> = no-load torque (Nm)
- n = rpm of screw (min<sup>-1</sup>)
- M<sub>a</sub> = driving torque (Nm)
- μ = screw efficiency
- P<sub>o</sub> = motor power (KW)

Deflection:

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

- f = deflection (mm)
- F = load (N)
- L = free length (mm)
- E = elastic moduust 70000(N/mm<sup>2</sup>)
- I = second moment of area (mm<sup>4</sup>)



Efficiency of lead

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

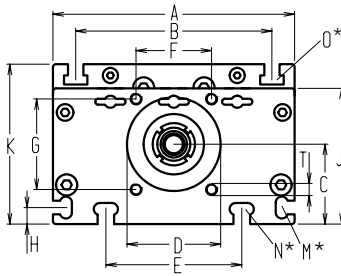
The diagram for critical speeds of lead screws refer to chapter 5.2 page 3

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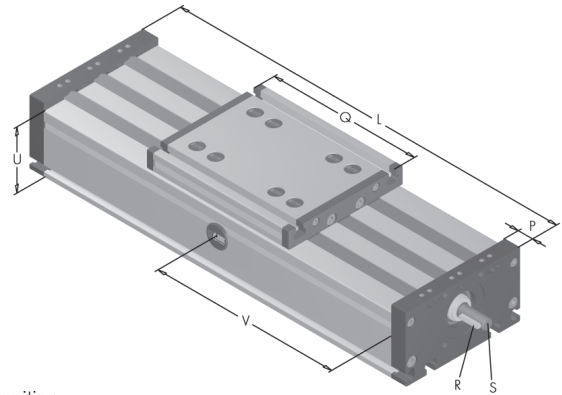


# Positioning system DST/DSK 160, 200

Dimensions (mm)



Increasing the carriage length will increase the basic length by the same amount.



\*For slide-nuts refer to chapter 2.2 page 2  $V = Q + 100 \text{ mm}$   $W = \text{servicing position}$

Size	Basic length L	A	B	C	D	E	F	G	H	J	K	M for	N for	O for	P	Q	Shaft		T	U	Basic weight	Weight per 100 mm
																	R Key	S Ø x length				
DS 160	260	160	130	53	62	90	50	60	11	90	106	M 6	M 8	M 8	20	200	5x5x28	14 h6 x 35	M 8	80	7,2 kg	2,1 kg
DS 200	320	200	160	66	68	140	60	60	15	110	129	M 8	M 10	M 10	20	270	6x6x40	22 h6 x 45	M 8	100	19,4 kg	3,5 kg

## Spindle:

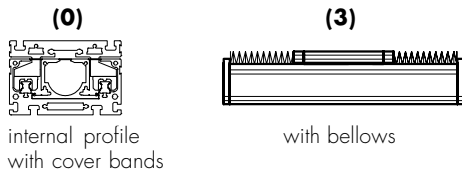
**T** (T) Trapezoidal thread (K) Ballscrew

### Selection of screw:

**1** (1) right hand (2) left hand (Ballscrew by inquiry)

### Choice of guide body profile:

**0**



internal profile with cover bands

with bellows

Stainless versions upon request.

### Choice of carriages:

**0**



Size	Version 0		Version 1	
	Q	L	Q	L
160	200	260	>230	>290
200	270	320	>310	>360

### Choice of journal:

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

### Selection of screw:

Ballscrew right hand	Size 160	Standard (0) 25x5	Multistart-screw (1) 20x20 (2) 25x10 (3) 25x25
Ballscrew left hand	Size 200 upon request	(0) 32x5	(1) 32x10 (2) 32x20 (3) 32x32

Trapezoidal right hand thread	Size 160	(0) 24x5	(1) 24x10
	200	(0) 32x6	(1) 32x12
Trapezoidal left hand thread	Size 160	(0) 24x5	(1) 24x10
	200	(0) 32x6	(1) 32x12

### Ballscrew pitch accuracy:

**0** (0) 0,1 mm / 300 mm (Standard) (1) 0,05 mm / 300 mm (2) 0,025 mm / 300 mm

### End play of ball nut:

**0** (0) 0,04 mm (Standard) (1)\* < 0,02 mm (2)\* 2% apply prestress  
\* only in combination with pitch accuracy (1) or (2)

**1500** Basic length + stroke = total length

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

Inductive proximity switch sets, which can be mounted inside of the square profile, are available as accessories. Coupling and a special plug are mounted from the outside. For additional accessories refer to chapter 2.2 – 4.2.



Sample ordering code:

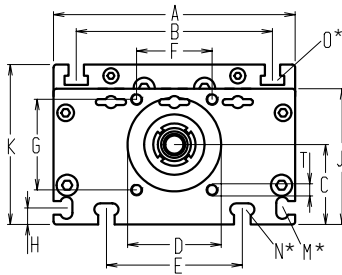
DST160, trapezoidal right hand thread, with internal profile and cover bands, standard carriage, one shaft (locating bearing side), spindle 24x5, 1240 mm stroke.



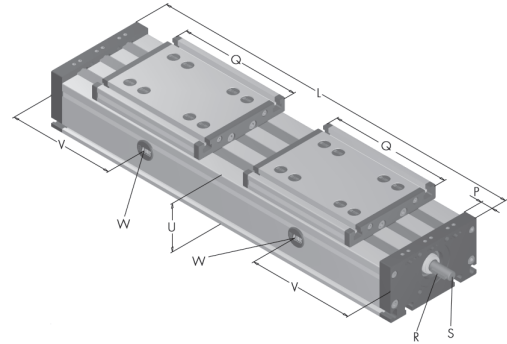
# Positioning system DST/DSK 160, 200

Dimensions (mm)

with trapezoidal thread or ballscrew, right-hand and left-hand thread or divided spindles



Increasing the carriage length will increase the basic length by the same amount.



\*For slide-nuts refer to chapter 2.2 page 2  $V = Q + 100$  mm  $W =$  servicing position

Size	Basic length L	A	B	C	D	E	F	G	H	J	K	M for	N for	O for	P	Q	Shaft		T	U	Basic weight	Weight per 100 mm
																	R Key	S $\varnothing \times$ length				
DS 160	470	160	130	53	62	90	50	60	11	90	106	M 6	M 8	M 8	20	200	5x5x28	14 h6 x 35	M 8	80	10,1 kg	2,1 kg
DS 200	590	200	160	66	68	140	60	60	15	110	129	M 8	M 10	M 10	20	270	6x6x40	22 h6 x 45	M 8	100	35,9 kg	3,5 kg

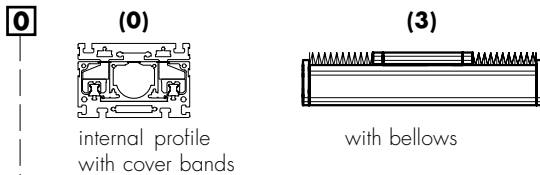
**Spindle:**

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

**Selection of screw:**

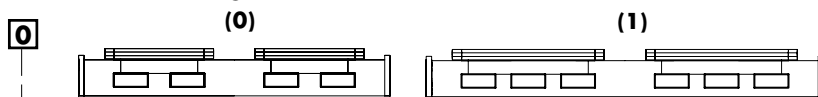
**3** (3) right - left hand (ballscrew by inquiry) (4) divided spindle

**Choice of guide body profile:**



Stainless versions upon request.

**Choice of carriages:**



Size	Version 0		Version 1	
	Q	L	Q	L
160	200	470	>230	>530
200	270	590	>310	>680

**Choice of journal:**

**0** (0) shaft right hand thread (1) shaft left hand thread (2) shaft on both sides

**Selection of screw:**

	Size	Standard	Multistart-screw
<b>0</b> Ballscrew right hand	160	(0) 25x5	(1) 20x20* (2) 25x10*
	200	(0) 32x5	(1) 32x10* (2) 32x20* (3) 32x32*
<b>0</b> Ballscrew left hand	upon request		
	Trapezoidal right hand thread	160	(0) 24x5 (1) 24x10
	200	(0) 32x6 (1) 32x12	
Trapezoidal left hand thread	160	(0) 24x5 (1) 24x10	
	200	(0) 32x6 (1) 32x12	

\* = only for selection of divided spindle

**Ballscrew pitch accuracy:**

**0** (0) 0,1 mm / 300 mm (Standard) (1) 0,05 mm / 300 mm (2) 0,025 mm / 300 mm

**End play of ball nut:**

**0** (0) 0,04 mm (Standard) (1)\* < 0,02 mm (2)\* 2% apply prestress  
\* only in combination with pitch accuracy (1) or (2)

**1500** Basic length + stroke = total length

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

Inductive proximity switch sets, which can be mounted inside of the square profile, are available as accessories. Coupling and a special plug are mounted from the outside. For additional accessories refer to chapter 2.2 - 4.2.



Sample ordering code:

DST160, trapezoidal right - left hand thread, with internal profile and cover bands, standard carriage, shaft on right hand thread, spindle 24x5, 1030 mm stroke.