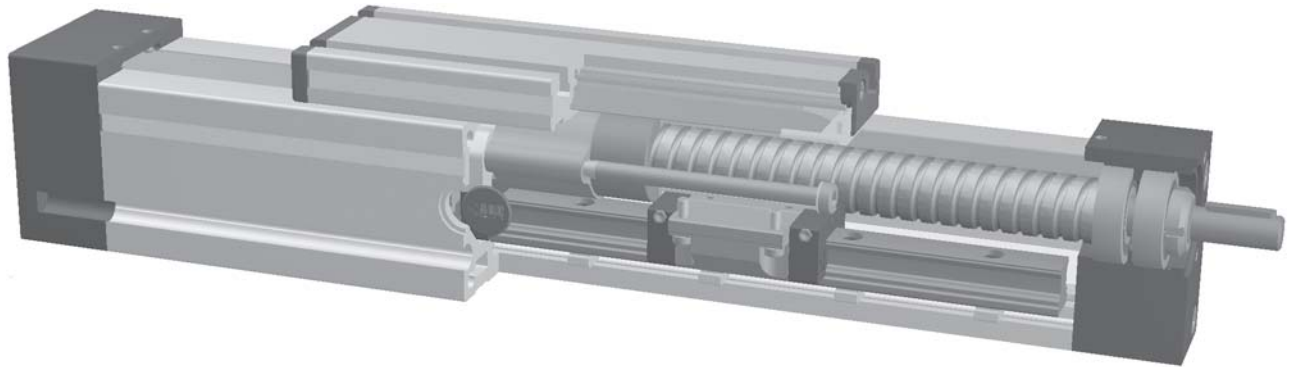


Spindel drives



6.1

Function:

This unit consists of a square aluminium profile with an integrated ball rail. The carriage is driven by means of a rotating spindle with leading nut. The openings of the guide body are sealed by a stainless steel cover band to protect the drive from splash water and dust.

Fitting position:

As required, max. length 3000mm

Carriage connection:

By T-slots

Unit mounting:

By half round slots and tapped holes in the bearing blocks, mounting sets



Forces and torques	Size	QST/K 60		QST/K 80		QST/K 100	
	permitted dyn. Forces*	5000 km	10000 km	5000 km	10000 km	5000 km	10000 km
F_x (N)	900	800	2500	2000	5000	4000	
F_y (N)	274	218	567	450	1288	1023	
F_z (N)	2991	2374	4955	3933	7146	5671	
M_x (Nm)	18	14	41	33	70	56	
$M_y = M_z$ (Nm)	54	43	121	96	197	157	
All forces and torques related to the following:							
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							
No-load torque							
Trapezoidal	18x4/18x8	24x5/24x10	32x6/32x12				
Nm	0,6/0,7	0,6/0,8	1,5/1,7				
Ballscrew	16x5/16x10	25x5/20x20/25x10	32x5/32x10				
Nm	0,4/0,6	0,4/0,7/0,6	1,3/1,6				
Geometrical moments of inertia of aluminium profile							
I_x mm ⁴	4,3x10 ⁵	14,0x10 ⁵	43,0x10 ⁵				
I_y mm ⁴	4,8x10 ⁵	16,6x10 ⁵	48,8x10 ⁵				
E-Modulus N/mm ²	70000	70000	70000				

* referred to life-time

Formula: QST/K

Driving torque:

$$M_o = \frac{F \cdot P \cdot S_f}{2000 \cdot \pi \cdot \mu} + M_{leer}$$

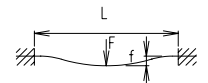
$$P_o = \frac{M_o \cdot n}{9550}$$

F = force (N)
 P = thread pitch (mm)
 S_f = safety factor 1,2 ... 2
 M_{leer} = no-load torque (Nm)
 n = rpm of screw (min⁻¹)
 M_o = driving torque (Nm)
 μ = screw efficiency
 P_o = motor power (KW)

Efficiency of lead screws:

All ballscrew 0.900
 Tr 18x4 0,399
 Tr 18x8 0,565
 Tr 24x5 0,384
 Tr 24x10 0,550
 Tr 32x6 0,360
 Tr 32x12 0,524

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

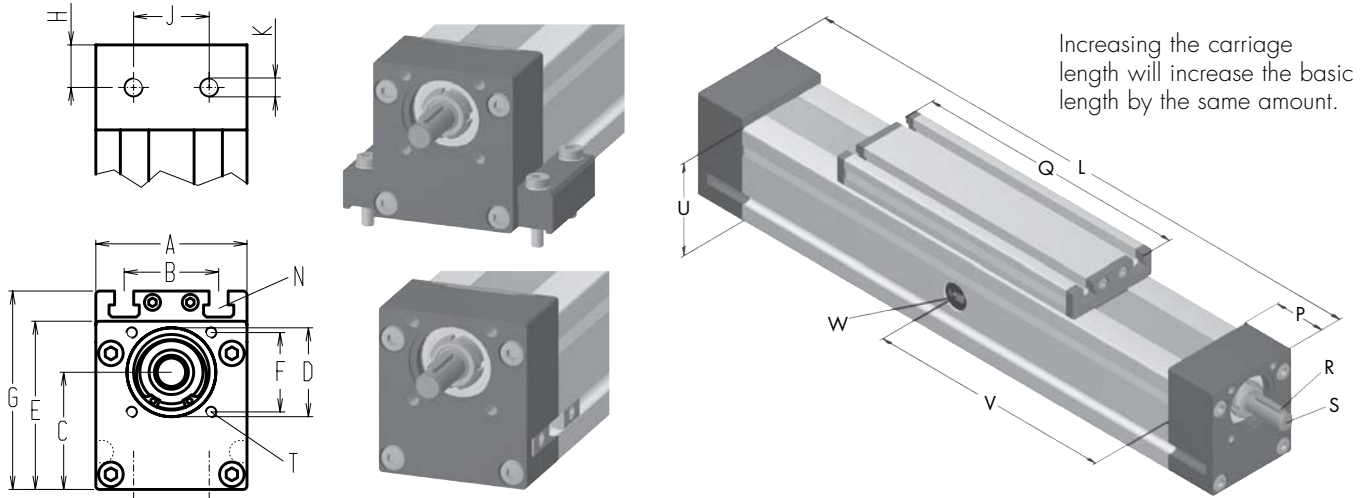


f = deflection (mm)
 F = load (N)
 L = free length (mm)
 E = elastic modulus 70000 (N/mm²)
 I = second moment of area (mm⁴)

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

Positioning system QST/K 60, 80, 100

Dimensions (mm)



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

Size □	Basic length L	A	B	C	D Ø	E	F □	G	H	J	K for	M for	P	Q	Shaft		T for	U	Basic weight	Weight per 100 mm
															R Key	S Ø x length				
QST/K 60	270	60	36	45	37	67	32	79	19	18	M6	M6	38	188	3x3x25	10h6x27	M5	60	4,1 kg	0,5 kg
QST/K 80	350	80	50	62	47	89	42	106	22,5	40	M10	M8	45	250	5x5x28	14h6x35	M6	80	7,5 kg	0,9 kg
QST/K 100	410	100	66	75	68	112	60	129	28,5	50	M10	M10	57	288	6x6x40	22h6x45	M8	100	14,8 kg	1,3 kg

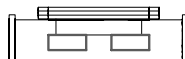
6.1



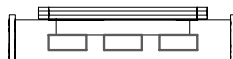
[K] Spindle:
(T) Trapezoidal thread (K) Ballscrew

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

[0] Choice of carriage
(0)



(1)



Size	Carriage version 1	
	Q	Basic length L
60	255	350
80	336	436
100	383	510

[0] Choice of journal:
(0) one shaft (locating bearing side) (1) one shaft (non-locating bearing side) (2) shaft on both sides

[0] Selection of screw:

Size	Standard trapezoidal thread		Standard ballscrew		Multistart-screw ballscrew	
	(0)	(1)	(0)	(1)	(1)	(2)
60	(0) Tr 18x4	(1) Tr 18x8	(0) Kg 16x5	(1) Kg 16x10	(2) Kg 16x16	
80	(0) Tr 24x5	(1) Tr 24x10	(0) Kg 25x5	(1) Kg 20x20	(2) Kg 25x10	
100	(0) Tr 32x6	(1) Tr 32x12	(0) Kg 32x5	(1) Kg 32x10	(2) Kg 25x25	

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

QS K 80 1 0 0 0 0 0 0 0 1500

Pos. 1 2 3 4 5 6 7

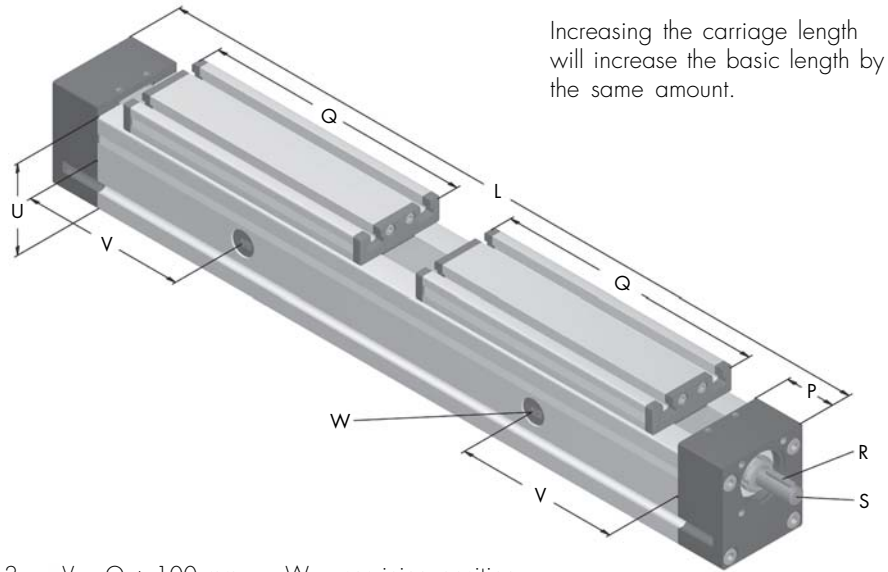
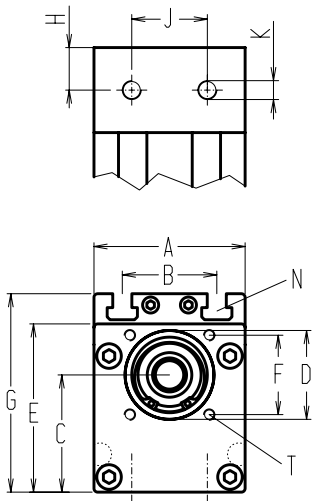
Sample ordering code:

QSK80, ballscrew right hand thread, standard carriage, one shaft (locating bearing side), spindle 25x5, 1150 mm stroke.



Positioning system QST/K 60, 80, 100

Dimensions (mm)



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

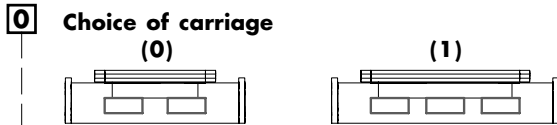
6.1

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

Size	Basic length L selection of screw		A	B	C	D ∅	E	F □	G	H	J	K for	M for	P	Q	Shaft		T for	U	Basic weight	Weight per 100 mm
	3	4														R Key	S ∅ x length				
QST/K 60	460	500	60	36	45	37	67	32	79	19	18	M6	M6	38	188	3x3x25	10h6x27	M5	60	5,4 kg	0,5 kg
QST/K 80	600	640	80	50	62	47	89	42	106	22,5	40	M10	M8	45	250	5x5x28	14h6x35	M6	80	9,8 kg	0,9 kg
QST/K 100	700	740	100	66	75	68	112	60	129	28,5	50	M10	M10	57	288	6x6x40	22h6x45	M8	100	18,6 kg	1,3 kg

[K] Spindle:
(T) Trapezoidal thread (K) Ballscrew

[3] Selection of screw:
(3) right - left hand (4) divided spindle



[0] Choice of journal:
(0) shaft right hand thread (1) shaft left hand thread (2) shaft on both sides

Selection of screw:	Size	Standard	Multistart-screw	Carriage version 1	
				Basic length L	selection of spindle
Ballscrew right hand	60	(0) 16x5	(1) 16x10*	(2) 16x16*	
	80	(0) 25x5	(1) 20x20*	(2) 25x10*	
	100	(0) 32x5	(1) 32x10*	(2) 25x25	
Ballscrew left hand	upon request				
Trapezoidal right hand thread	60	(0) 18x4	(1) 18x8		
	80	(0) 24x5	(1) 24x10		
	100	(0) 32x6	(1) 32x12		
Trapezoidal left hand thread	60	(0) 18x4	(1) 18x8		
	80	(0) 24x5	(1) 24x10		
	100	(0) 32x6	(1) 32x12		

* = only for selection of divided spindle

[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)

[1500] Basic length + stroke = total length

QS K 80 3 0 0 0 0 0 0 0 1500
Pos. 1 2 3 4 5 6 7

Sample ordering code:
QSK80, ballscrew right - left hand thread, standard carriage, shaft on right hand thread, spindle 25x5, 860 mm stroke.