

Positioning system QST/K 60, 80, 100

Specifications

Spindle 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

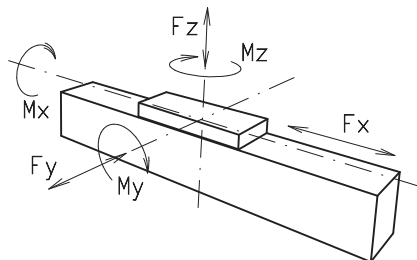
Carriage connection:

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)	1415	1010	3570	2542	4082	2910
F _z (N)	3525	2510	8500	6050	10300	7360
M _x (Nm)	33	23	107	76	142	101
M _y (Nm)	190	143	604	430	838	597
M _z (Nm)	176	125	550	392	745	532
C (N)	7800		18800		22800	
All forces and torques related to the following:						
existing values	$\frac{F_y}{F_{y_{dyn}}} + \frac{F_z}{F_{z_{dyn}}} + \frac{M_x}{M_{x_{dyn}}} + \frac{M_y}{M_{y_{dyn}}} + \frac{M_z}{M_{z_{dyn}}} \leq 1$					
table values						
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:

$$M_a = \frac{F \cdot P \cdot S_s}{2000 \cdot \pi \cdot \mu} + M_{leer}$$

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

F = force (N)
 P = thread pitch (mm)
 S_s = 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)

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

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)

Nominal lifetime:

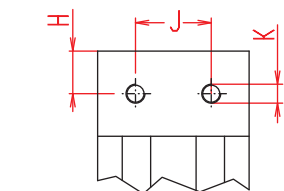
$$L = \left(\frac{C}{F} \right)^3 \times 10^5$$

L = Lifetime in meters
 C = Dynamic load factor (N)
 F = Medium load (N)

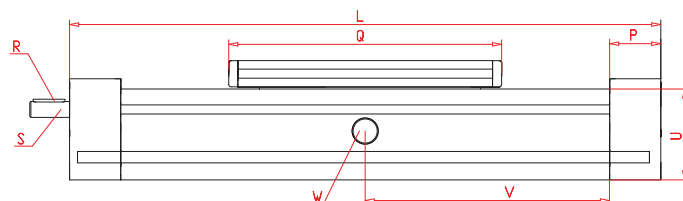
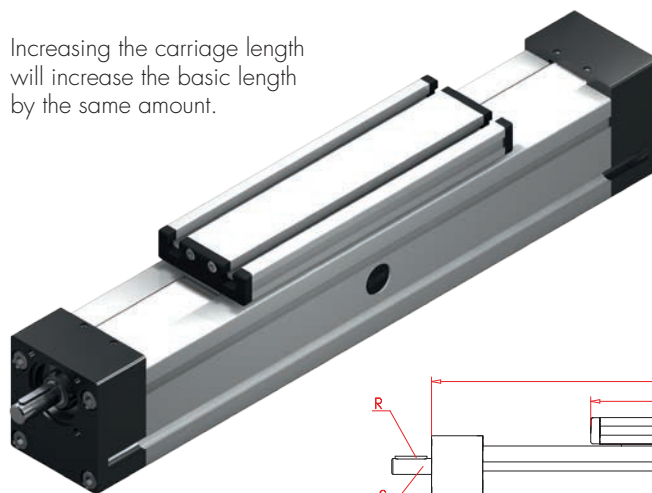
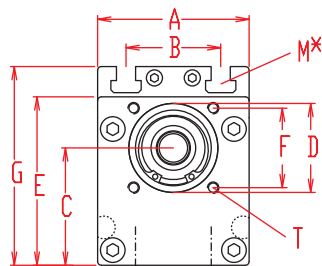
For the diagram for critical speeds of lead screws refer to chapter 4.2 page 3

Positioning system QST/K 60, 80, 100

Dimensions (mm)



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



*For slide nuts refer to main catalog 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	P	Q	Shaft		T for	U	Basic weight	Weight per 100 mm
															R Key	S Øh6x 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

**Spindle:**

(T) Trapezoidal thread (K) Ballscrew

**Selection of screw:**

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

**Choice of carriage:**

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

**Drive version:**

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

**Selection of screw:**

Size

Standard

Multistart screw

Standard

Multistart screw

Trapezoidal thread

Ballscrew

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

(3) Kg 25x25

100

(0) Tr 32x6

(1) Tr 32x12

(0) Kg 32x5

(1) Kg 32x10

(2) Kg 32x32 *

(3) Kg 32x20**

* = Basic and carriage length (L and Q) increase over 47 mm

** = Basic and carriage length (L and Q) increase over 11 mm

**Choice of guide body profile:**

(0) Standard (1) corrosion-protected screws

(4) expanded corrosion-protected version (depending on the availability of components)

**Ballscrew pitch accuracy:**

(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) 0,04 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

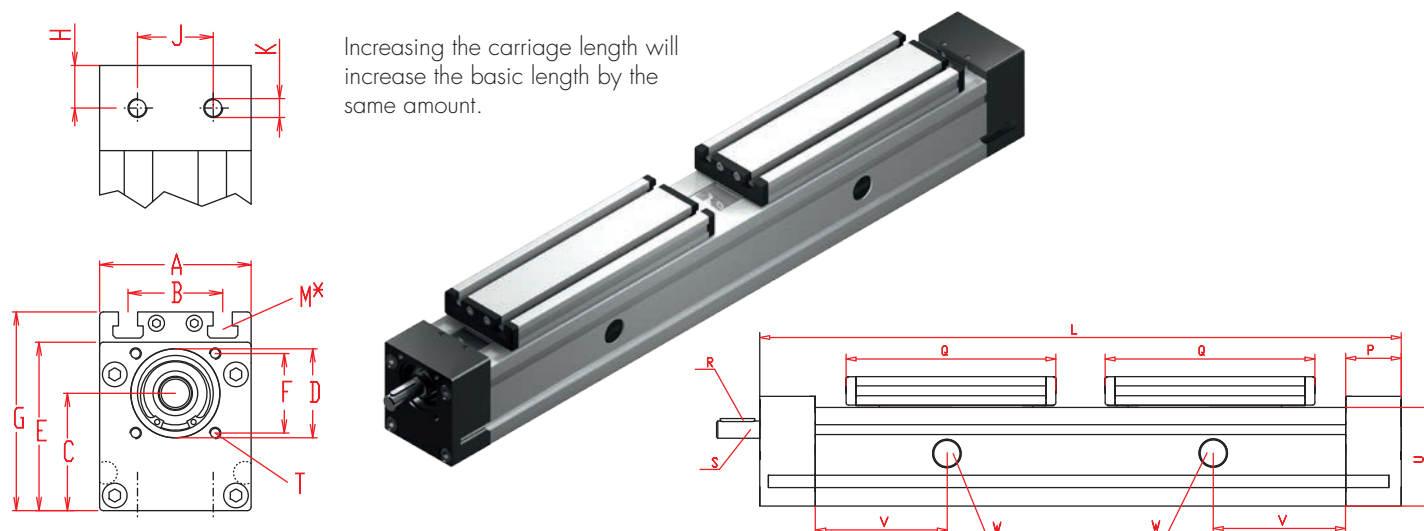
QS	K	80	1	0	0	0	0	0	0	0	1500
Pos. 1	2	3	4	5	6	7					

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.

*For slide nuts refer to main catalog chapter 2.2 page 2

$V = Q + 100 \text{ mm}$

W = servicing position

Size	Basic length L selection of screw		A	B	C	D	E	F	G	H	J	K	M for	P	Q	Shaft		T for	U	Basic weight	Weight per 100 mm
	3	4														R Key	S Øh6x 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

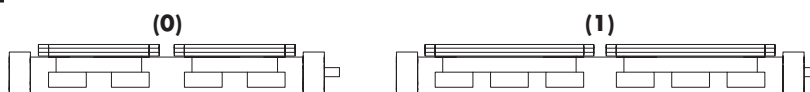
K Spindle:

(T) Trapezoidal thread (K) Ballscrew

3 Selection of screw:

(3) right - left hand (4) divided spindle

0 Choice of carriage:



0 Drive version:

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

0 Selection of screw:

Ballscrew right hand

Size

Standard

Multistart screw

60

(0) 16x5

(1) 16x10*

(2) 16x16*

80

(0) 25x5

(1) 20x20*

(2) 25x10*

100

(0) 32x5

(1) 32x10*

(2) 32x32**

Ballscrew left hand

Trapezoidal right hand thread

upon request

(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,

** = only for selection of divided spindle, Basic and carriage length (L and Q) increase over 94 mm

0 Choice of guide body profile:

(0) Standard (1) corrosion-protected screws

(4) expanded corrosion-protected version (depending on the availability of components)

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)

QS K 80 3 0 0 0 0 0 0 01500

Pos. 1 2 3 4 5 6 7

1500

Basic length + stroke = total length

Sample ordering code:

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