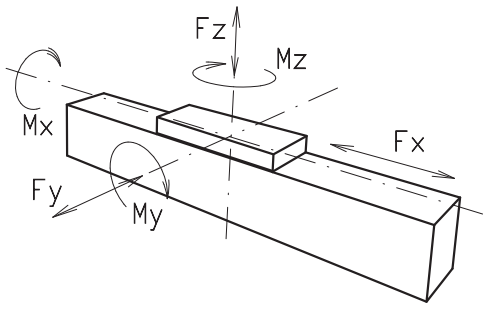
Positioning system QST/KE 60, 80, 100

Spindle drives **Specifications**

Function:
This unit consists of a square aluminium profile with an integrated ball rail and is covered by a stainless steel sheet (thickness 0.37mm, material 1.4301). 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-nuts and bores through the cover.
Unit mounting: By the bearing blocks

Forces and torques



Size	QST/KE 60		QST/KE 80		QST/KE 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

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	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/KE
Driving torque:

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

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

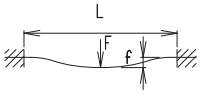
F	= force	(N)
P	= thread pitch	(mm)
S_i	= safety factor 1,2 ... 2	
M_{leer}	= no-load torque	(Nm)
n	= rpm of screw	(min^{-1})
M_a	= driving torque	(Nm)
μ	= screw efficiency	
P_a	= motor power	(KW)

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

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

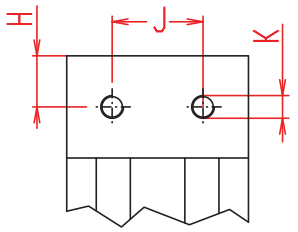


f = deflection	(mm)
F = load	(N)
L = free length	(mm)
E = elastic modulus 70000	(N/mm^2)
I = second moment of area	(mm^4)

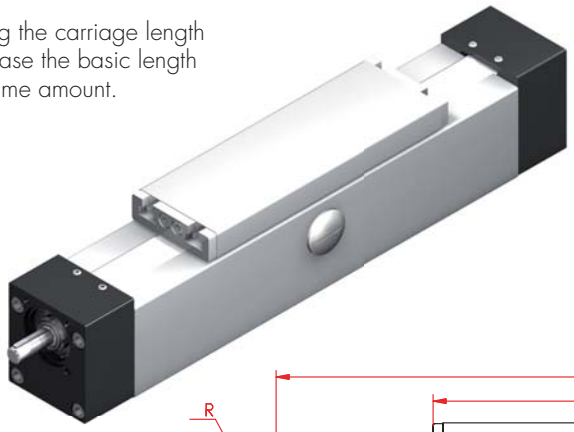
For the diagram for critical speeds of lead screws refer to the main catalog chapter 5.2 page 3

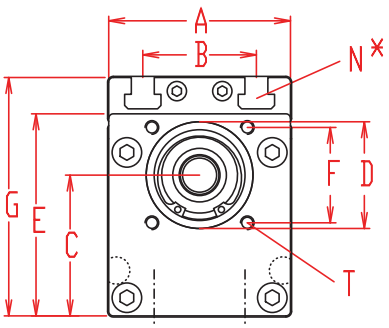
Positioning system QST/KE 60, 80, 100

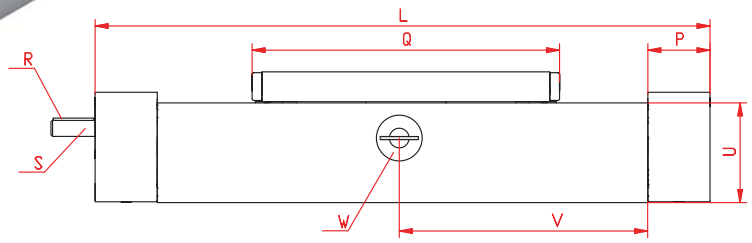
Dimensions (mm)



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 mm W = servicing position

Size ❒	Basic length L	A	B	C	D	E	F ❒	G	H	J	K for	N for	P	Q	Shaft R Key	Shaft S Øh6 x length	T for	U	Basic weight	Weight per 100 mm
QST/KE 60	270	61	36	45,5	37	67,5	32	80	19	18	M6	M6	38	188	3x3x25	10h6x27	M5	61	4,1 kg	0,5 kg
QST/KE 80	350	81	50	62,5	47	89,5	42	107	22,5	40	M10	M8	45	250	5x5x28	14h6x35	M6	81	7,5 kg	0,9 kg
QST/KE 100	410	101	66	75,5	68	112,5	60	130	28,5	50	M10	M10	57	288	6x6x40	22h6x45	M8	101	14,8 kg	1,3 kg

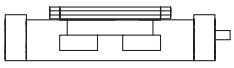
K **Spindle:**
(T) Trapezoidal thread **(K)** Ballscrew

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

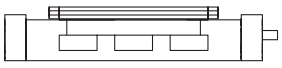
Choice of carriage

0

(0)



(1)



Size	Carriage version 1 Q	Carriage version 1 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	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
100	**(0)** Tr 32x6	**(1)** Tr 32x12	**(0)** Kg 32x5	**(1)** Kg 32x10	**(2)** Kg 32x32 *

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

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	E	80	1	0	0	0	0	0	0	01500
			Pos.	1	2	3	4	5	6	7	

Sample ordering code:
QSKE80, ballscrew right hand thread, standard carriage, one shaft (locating bearing side), spindle 25x5, 1150 mm stroke.