

# Positioning system HDT/K 16

**Function:**

Combined lifting/rotating unit, in which a rotating motion of the leading nut is transferred into a linear movement.

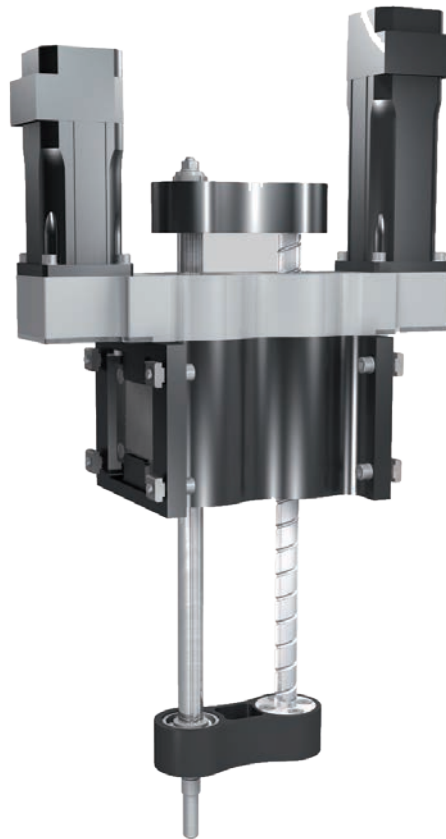
A splined shaft is mounted parallel to the spindle and serves in a double function both as a guide and as a transfer element for a rotating motion of a gripper or tool that is mounted on the pivot of the splined shaft.

**Fitting position:**

As required. Max. length size HD 16 = 600 mm

**Unit mounting:**

By bores, mounting sets.



Forces and torques	Size	HDT/K	
	Forces / Torques	static	dynam.
	$F_x$ (N)	150	90
	$F_y$ (N)	150	90
	$F_z$ (N)	260	180
	$M_x$ (Nm)	90	70
	$M_y$ (Nm)	90	70
	$M_z$ (Nm)	110	48
	<b>All forces and torques relate to the following:</b> existing values $\frac{F_y}{F_{y_{dyn}}} + \frac{F_z}{F_{z_{dyn}}} + \frac{M_x}{M_{x_{dyn}}} + \frac{M_y}{M_{y_{dyn}}} + \frac{M_z}{M_{z_{dyn}}} \leq 1$ table values		
<b>No-load torque</b>			
Trapezoidal thread		18x4	18x8
(Nm)		0,60	0,80
Ballscrew		16 x 5	16 x 10
(Nm)		0,40	0,6
			16 x 16
			0,7

13.1



**Formula: HDT/K**

Driving torque:

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

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

- F = force (N)
- P = thread pitch (mm)
- S<sub>f</sub> = safety factor 1,2 ... 2
- M<sub>leer</sub> = no-load torque (Nm)
- n = rpm of screw (min<sup>-1</sup>)
- M<sub>o</sub> = driving torque (Nm)
- μ = screw efficiency (~ 1,22)
- w = friction coefficient (KW)
- P<sub>o</sub> = motor power

Efficiency of lead screws:

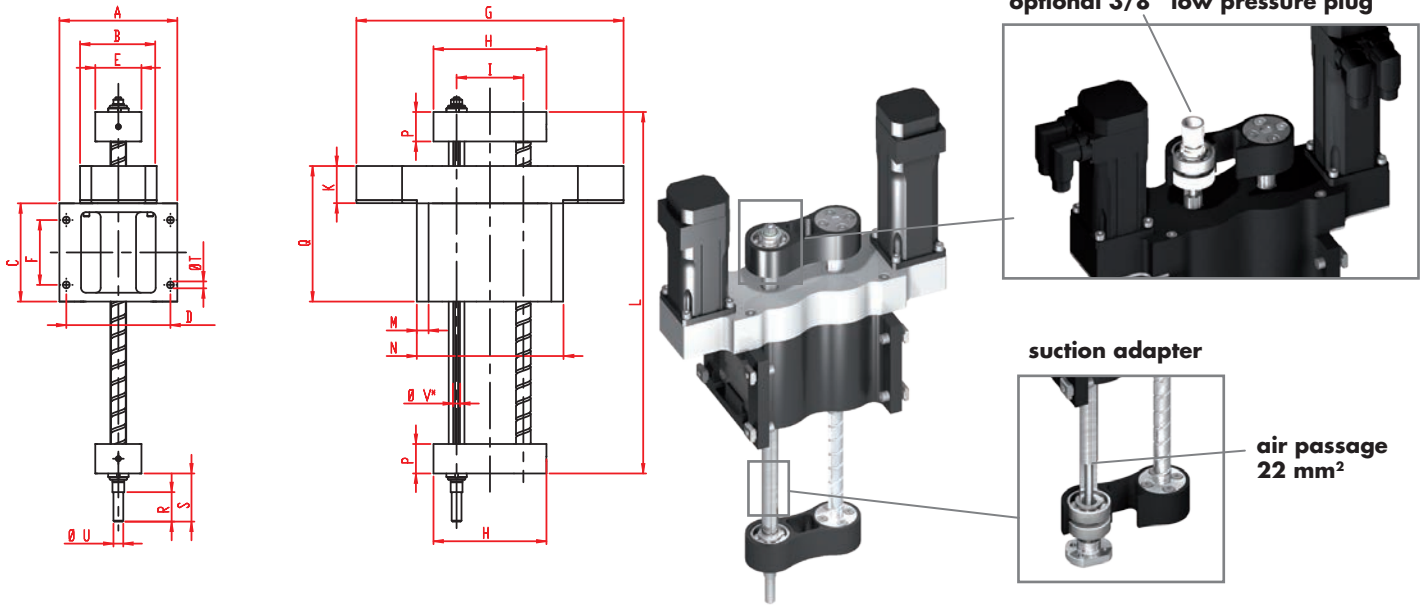
- All ballscrew 0.900
- Tr 18x4 0,399 Tr 18x8 0,565

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

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

# Positioning system HDT/K 16

Dimensions (mm)



Size □	Basic length L	A	B	C	D	E	F	G	H	I	K	M	N	P	Q	R	S	T ∅	U ∅	V** ∅	Basic weight	Weight per 100 mm
HD 16	210	120	78	100	106	47	66	272	115	68	37,8	12	149	30	138	30	49	7	10	8	6,48 kg	0,25 kg

\*\* Hollow shaft diameter

**K Spindle:**  
(T) trapezoidal thread (K) ballscrew

**1 Selection of screw:**  
(1) right hand (2) left hand

**0 Choice of guide body profile:**  
(0) standard (1) corrosion-protected screws

0 Selection of screw:	Size	Standard	Multistart screw	Standard	Multistart screw
		trapezoidal thread	trapezoidal thread	ballscrew	ballscrew
	16	(0) Tr 18x4	(1) Tr 18x8	(0) Kg 16x5	(1) Kg 16x10 (2) Kg 16x16

**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)**

**380** Basic length + stroke = total length

**Repeatability:**  
± 0,2 mm trapezoidal  
± 0,025 mm ballscrew

HDK	16	1	0	0	0	0	0	0	00380
Pos.	1	2	3	4	5	6	7		

Sample ordering code:  
HDK16, ballscrew right hand thread, standard body profile, spindle 16x5, 180 mm stroke

