

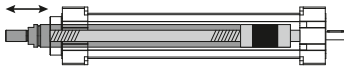


# Linear system EHT/EHK 60, 80

## 1.1 SPINDLE DRIVEN

-  LIFTING SYSTEM
-  PRECISION



**Function:**

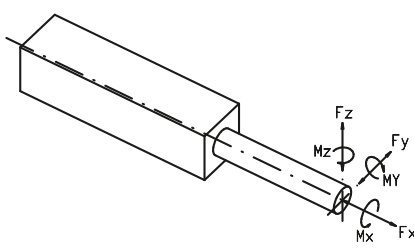
The rotary motion of the threaded spindle is converted into a linear motion of the pressure tube. Due to the piston rod principle, high axial forces can be realised, e. g. for shelf and dosing applications.

**Mounting position:**

Variable, max. length 1500 mm

**Fixation:**

By C- and T-nuts or mounting sets

| Forces and torques   | Size   | EH 60                |       | EH 80                 |       |
|--|--|----------------------|-------|-----------------------|-------|
|  | Forces / Torques   | static               | dynam | static                | dynam |
|  | $F_x$ (N)  | 1800                 | 1200  | 3000                  | 2500  |
|  | $F_y$ (N)  | 130                  | 80    | 210                   | 140   |
|  | $F_z$ (N)  | 130                  | 80    | 210                   | 140   |
|  | $M_x$ (Nm)   | 20                   | 11    | 27                    | 16    |
|  | $M_y$ (Nm)   | 95                   | 60    | 190                   | 110   |
|  | $M_z$ (Nm)   | 95                   | 60    | 190                   | 110   |
|  | <b>All forces and torques relate to the following:</b><br>existing values $\frac{F_y}{F_{y_{dyn}}} + \frac{F_z}{F_{z_{dyn}}} + \frac{M_x}{M_{x_{dyn}}} + \frac{M_y}{M_{y_{dyn}}} + \frac{M_z}{M_{z_{dyn}}} \leq 1$<br>table values |                      |       |                       |       |
| <b>No-load torque</b>  |  |                      |       |                       |       |
| Trapezoidal thread   |  | 18x4                 | 18x8  | 24x5                  | 24x10 |
| (Nm)   |  | 0,40                 | 0,50  | 0,60                  | 0,80  |
| Ballscrew  |  | 16x5                 | 16x10 | 25x5                  | 25x10 |
| (Nm)   |  | 0,20                 | 0,40  | 0,40                  | 0,60  |
| <b>Geometrical moments of inertia of aluminium profile</b>                         |  |                      |       |                       |       |
| $I_x$ mm <sup>4</sup>  |  | 4,75x10 <sup>5</sup> |       | 15,41x10 <sup>5</sup> |       |
| $I_y$ mm <sup>4</sup>  |  | 4,88x10 <sup>5</sup> |       | 16,02x10 <sup>5</sup> |       |
| Elastic-modulus N/mm <sup>2</sup>  |  | 70000                |       | 70000                 |       |

Driving torque:

$$M_a = \frac{F \cdot P \cdot S_i}{2000 \cdot \pi \cdot \mu} + M_n$$

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

- F = force (N)
- P = thread pitch (mm)
- S<sub>i</sub> = safety factor 1,2 ... 2
- M<sub>n</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>a</sub> = motor power (KW)

Efficiency of lead screws:

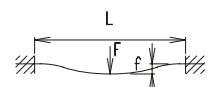
All ballscrew 0,900

- Tr 18x4 0,399
- Tr 18x8 0,565
- Tr 24x5 0,384
- Tr 24x10 0,550

Deflection:

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

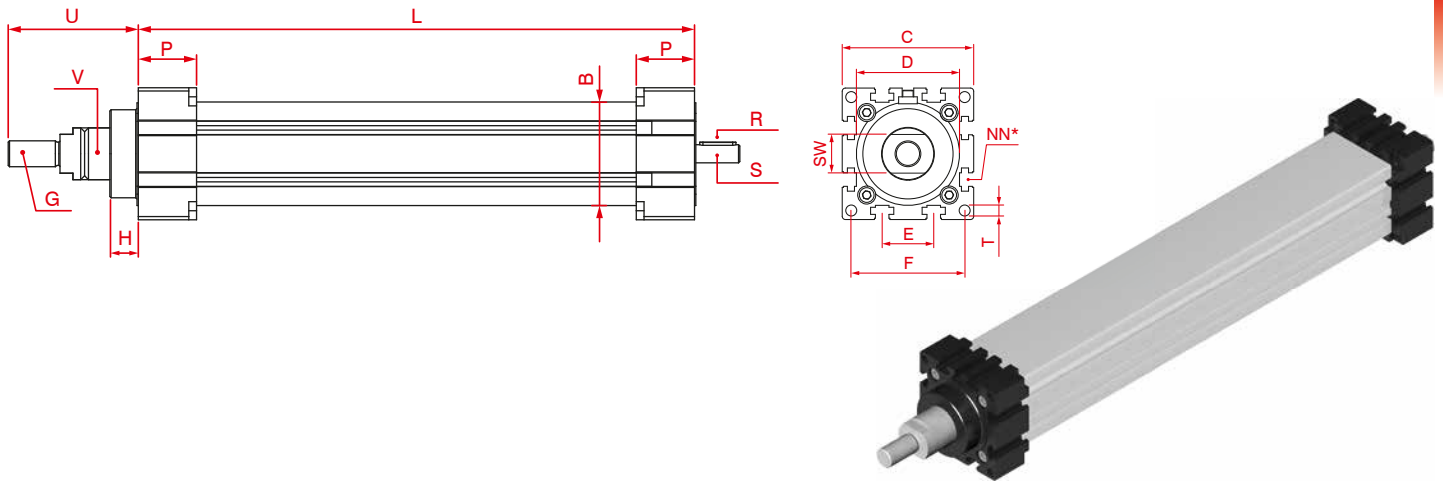
- f = deflection (mm)
- F = load (N)
- L = free length (mm)
- E = elastic modulus 70000 (N/mm<sup>2</sup>)
- I = second moment of area (mm<sup>4</sup>)



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

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Dimensions (mm)



1.1

\*For slide nuts refer to chapter 2.2 page 2

| Size  | Pressure pipe Spindle | Basic length L | B  | C   | D ± 0,05 Ø x length | E  | F  | G Ø x length | H  | NN für | P  | R      | S Ø x length | SW | T   | U   | V Ø | Basic weight | Weight per 100 mm |
|-------|-----------------------|----------------|----|-----|---------------------|----|----|--------------|----|--------|----|--------|--------------|----|-----|-----|-----|--------------|-------------------|
| EH 60 | Ø 30 KG 16x5          | 165            | 60 | 82  | 62x1                | 30 | 69 | M16x1,5x32   | 20 | M8     | 35 | 3x3x25 | 10x27        | 24 | 8,5 | 77  | 30  | 2,42 kg      | 0,96 kg           |
| EH 60 | Ø 30 KG 16x10-16      | 175            | 60 | 82  | 62x1                | 30 | 69 | M16x1,5x32   | 20 | M8     | 35 | 3x3x25 | 10x27        | 24 | 8,5 | 77  | 30  | 2,42 kg      | 0,96 kg           |
| EH 60 | Ø 30 Tr 18x4-8        | 165            | 60 | 82  | 62x1                | 30 | 69 | M16x1,5x32   | 20 | M8     | 35 | 3x3x25 | 10x27        | 24 | 8,5 | 77  | 30  | 2,37 kg      | 0,84 kg           |
| EH 80 | Ø 40 KG 25x5          | 183            | 80 | 102 | 80x1                | 40 | 88 | M20x1,5x40   | 22 | M10    | 45 | 5x5x28 | 14x35        | 30 | 8,5 | 100 | 40  | 5,07 kg      | 1,50 kg           |
| EH 80 | Ø 40 KG 25x10         | 202            | 80 | 102 | 80x1                | 40 | 88 | M20x1,5x40   | 22 | M10    | 45 | 5x5x28 | 14x35        | 30 | 8,5 | 100 | 40  | 5,07 kg      | 1,50 kg           |
| EH 80 | Ø 40 KG 25x25         | 233            | 80 | 102 | 80x1                | 40 | 88 | M20x1,5x40   | 22 | M10    | 45 | 5x5x28 | 14x35        | 30 | 8,5 | 100 | 40  | 5,07 kg      | 1,50 kg           |
| EH 80 | Ø 40 Tr 24x5-10       | 183            | 80 | 102 | 80x1                | 40 | 88 | M20x1,5x40   | 22 | M10    | 45 | 5x5x28 | 14x35        | 30 | 8,5 | 100 | 40  | 5,01 kg      | 1,26 kg           |

**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 (2) corrosion-protected screws (4) expanded corrosion-protected version, only for trapezoidal thread (on request)

| Size | Selection of screw: |                  | Kg = ballscrew |                  |              |
|------|---------------------|------------------|----------------|------------------|--------------|
|      | Standard            | Multistart screw | Standard       | Multistart screw |              |
| 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 25x10     | (2) Kg 25x25 |

Repeatability: ± 0,2 mm Trapezoidal ± 0,025 mm Ballscrew

**0** Ballscrew pitch accuracy: (only ballscrew)  
(0) 0,05 mm / 300 mm (2) 0,025 mm / 300 mm

**0** End play of ball nut: (only ballscrew)  
(0) 0,04 mm (Standard), (1)\* < 0,02 mm, (2)\* 2% apply prestress

EH K 80 1 0 0 0 0 0 0 1000 — Basic length + stroke = total length  
Pos. 1 2 3 4 5 6 7

For combination kits and connecting elements refer to chapter 2.2

Sample ordering code:  
EHK80, ballscrew right hand thread, standard body profile, spindle Kg 25x5, 817 mm stroke

