

## Spindle driven with trapezoidal or ballscrew spindle

**Function:**

The rotary movement of the spindle is translated into a linear motion. Carriage and square tube are connected by a clamping block. The result is a telescopic movement.

**Fitting position:** As required. Max. length 3.000 mm

**Carriage mounting:** By T-slots and tapped holes

**Unit mounting:** By T-slots and tapped holes in the mounting surface.

| Forces and torques   | Size   | EG(T/K)H 40 |                      | EG(T/K)H 60 |                       | EG(T/K)H 80 |         |
|--|--|-------------|----------------------|-------------|-----------------------|-------------|---------|
|  | Forces / Torques   | static      | dynamic              | static      | dynamic               | static      | dynamic |
|  | $F_x$ (N)  | 1500        | 1200                 | 2500        | 2000                  | 4200        | 3500    |
|  | $F_y$ (N)  | 350         | 315                  | 500         | 450                   | 1000        | 900     |
|  | $F_z$ (N)  | 500         | 450                  | 750         | 675                   | 1125        | 1000    |
|  | $M_x$ (Nm)   | 20          | 18                   | 33          | 30                    | 82          | 75      |
|  | $M_y$ (Nm)   | 44          | 40                   | 77          | 70                    | 220         | 200     |
|  | $M_z$ (Nm)   | 33          | 30                   | 55          | 50                    | 165         | 150     |
|  | <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       | 28x5                  | 28x10       |         |
| (Nm)   | 0,70   | 0,70        | 0,50                 | 0,80        | 0,80                  | 1,0         |         |
| <b>Geometrical moments of inertia of aluminium profile</b> |  |             |                      |             |                       |             |         |
| $I_x$ mm <sup>4</sup>                                      | 1,35x10 <sup>5</sup>   |             | 5,65x10 <sup>5</sup> |             | 19,14x10 <sup>5</sup> |             |         |
| $I_y$ mm <sup>4</sup>                                      | 1,48x10 <sup>5</sup>   |             | 6,12x10 <sup>5</sup> |             | 20,12x10 <sup>5</sup> |             |         |
| E-modulus N/mm <sup>2</sup>                                | 70000  |             | 70000                |             | 70000                 |             |         |

Driving torque:

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

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

$F$  = force (N)  
 $P$  = thread pitch (mm)  
 $S_i$  = safety factor 1,2 ... 2  
 $M_n$  = no-load torque (Nm)  
 $n$  = rpm of screw (min<sup>-1</sup>)  
 $M_a$  = driving torque (Nm)  
 $\mu$  = screw efficiency  
 $w$  = friction coefficient ~1,22  
 $P_a$  = motor power (kW)

Efficiency of lead screws:

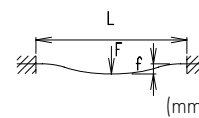
All ballscrew 0,900

$Tr$  10x3 0,375  
 $Tr$  18x4 0,399  
 $Tr$  18x8 0,565  
 $Tr$  24x5 0,384  
 $Tr$  24x10 0,550  
 $Tr$  28x5 0,349  
 $Tr$  28x10 0,513

Deflection:

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

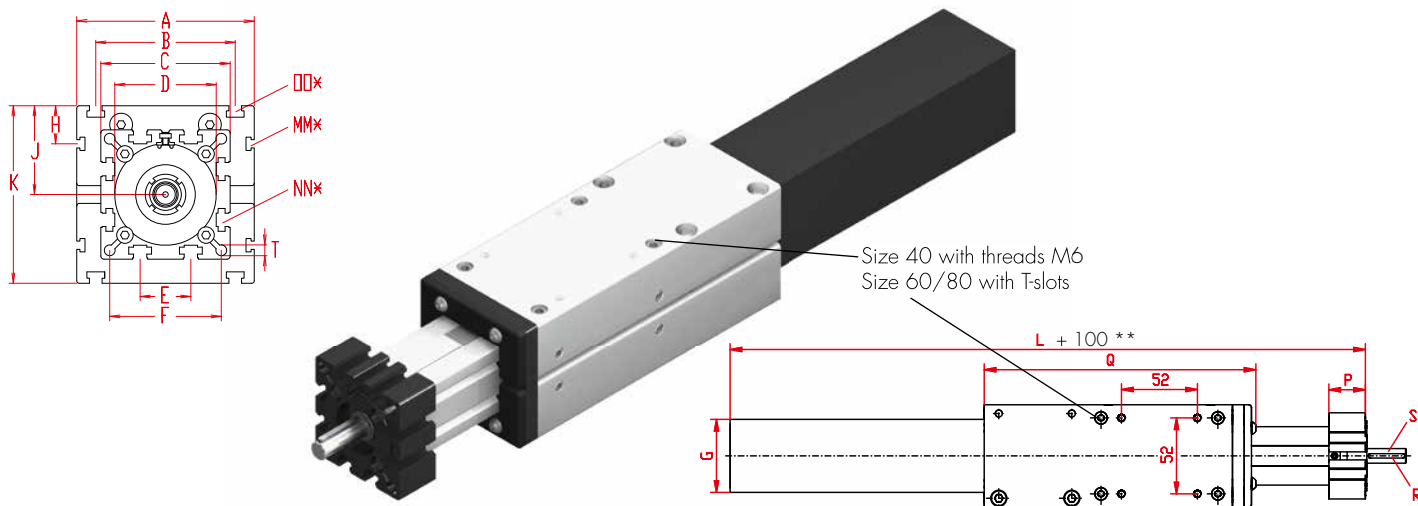
$f$  = deflection (mm)  
 $F$  = load (N)  
 $L$  = free length (mm)  
 $E$  = elastic modulus 70000 (N/mm<sup>2</sup>)  
 $I$  = second moment of area (mm<sup>4</sup>)



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

# Positioning system EGTH /EGKH 40, 60, 80

Dimensions (mm)



\*For slide nuts refer to chapter 2.2 page 2

\*\* The basic length (minimum length) of the unit (L+100) includes a stroke of 100mm

| Size □ | Basic length L+** | A   | B   | C   | D ±0,05 | E  | F  | G  | H  | J  | K   | MM for | NN for | OO for | P  | Q   | R      | S Ø h6 x length | T   | Basic weight | Weight per 100 mm |
|--------|-------------------|-----|-----|-----|---------|----|----|----|----|----|-----|--------|--------|--------|----|-----|--------|-----------------|-----|--------------|-------------------|
| EG H40 | 255               | 70  | -   | 58  | 48x1    | 18 | 47 | 50 | -  | 35 | 70  | -      | M 6    | -      | 25 | 190 | 3x3x25 | 10x27           | 6,5 | 3,0 kg       | 0,44 kg           |
| EG H60 | 345               | 100 | 80  | 82  | 62x1    | 30 | 69 | 70 | -  | 49 | 98  | -      | M 8    | M 8    | 35 | 250 | 5x5x28 | 14x35           | 8,5 | 7,0 kg       | 0,71 kg           |
| EG H80 | 390               | 140 | 110 | 102 | 80x1    | 40 | 88 | 90 | 30 | 70 | 140 | M 6    | M 10   | M 10   | 45 | 300 | 6x6x40 | 18x45           | 8,5 | 12,8 kg      | 1,35 kg           |

**T Spindle:**

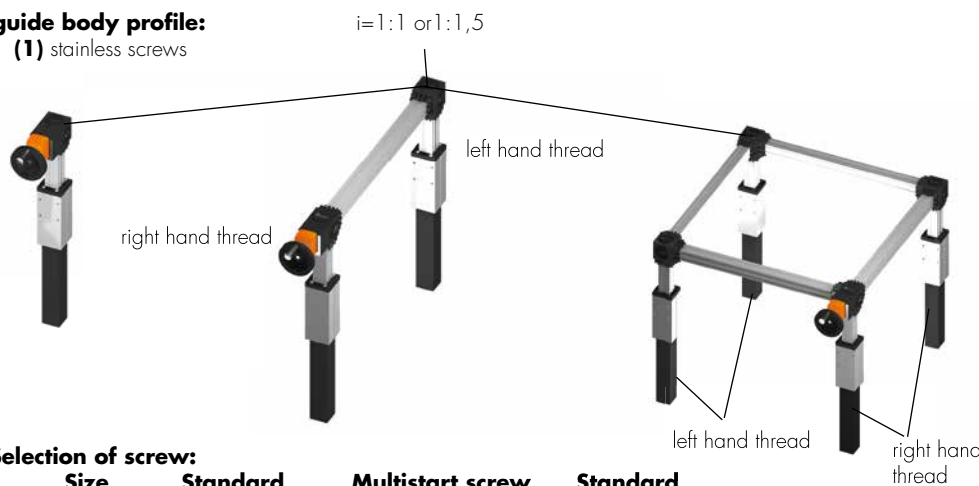
(T) Trapezoidal thread (K) Ballscrew

**1 Selection of screw:**

(1) right hand (2) left hand

**0 Choice of guide body profile:**

(0) Standard (1) stainless screws



**0 Selection of screw:**

| Size | Standard trapezoidal thread | Multistart screw | Standard ballscrew |
|------|-----------------------------|------------------|--------------------|
| 40   | (0) Tr 18x4                 | (1) Tr 18x8      | (0) Kg 16x5        |
| 60   | (0) Tr 24x5                 | (1) Tr 24x10     | (0) Kg 25x5        |
| 80   | (0) Tr 28x5                 | (1) Tr 28x10     | (0) Kg 32x5        |

**0 Ballscrew pitch accuracy:**

(0) 0,05 mm / 300 mm (Standard) (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

**Repeatability:**

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

**755** Basic length + stroke = total length

EG T H 40 1 0 0 0 0 0 0 00755

For combination kits and connecting elements refer to chapter 2.2

Pos. 1 2 3 4 5 6 7

Sample ordering code:

EGTH40, trapezoidal right hand thread, standard body profile, 500 mm stroke

