

# Linear system **GGT/K 90**

1.1

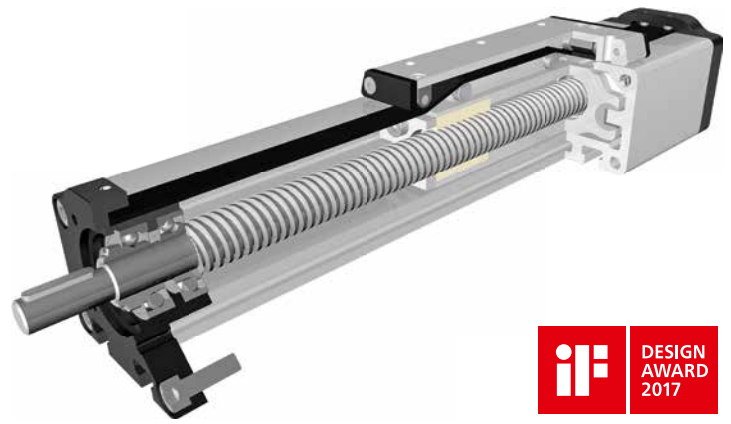
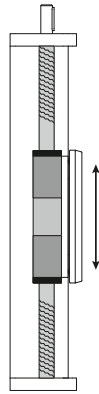
## SPINDLE DRIVEN

 SLIDE UNIT

 LIFTING SYSTEM

 IF DESIGN AWARD 2017

 EASY CLEANING



### Function:

Optimized spindle axis for wheelchair lifting systems, lifting platforms and other lifting applications. The guide body consists of an aluminium square profile with an integrated sliding guide. The plastic slide bushes integrated in the carriage ensure a very low friction resistance on anodized aluminium. The carriage is moved by means of a rotating thread spindle with an assigned follower nut. The opening in the guide body is closed by a plastic cover band. This plastic cover band is abrasion-free and is pressed into the profile by means of ball bearings.

### Fitting position:

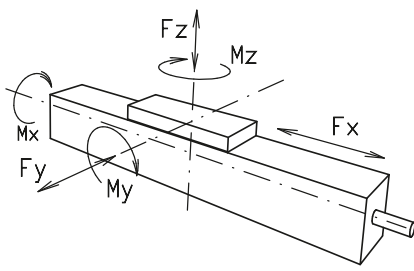
As required. Max. length 3.000 mm

### Carriage mounting:

By tapped holes in the carriage.

### Unit mounting:

By T-slots or tapped holes in the bearing block and mounting sets.

| Forces and torques   | Size   |         |      |
|--|--|---------|------|
|  | GGT/K 90   |         |      |
|  | Forces / Torques   |         |      |
|  | static   | dynamic |      |
|  | $F_x$ (N)  | 4200    | 3500 |
|  | $F_y$ (N)  | 1000    | 900  |
|  | $F_z$ (N)  | 1125    | 1000 |
|  | $M_x$ (Nm)   | 82      | 75   |
|  | $M_y$ (Nm)   | 220     | 200  |
|  | $M_z$ (Nm)   | 165     | 150  |
| <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   | 24x5   | 24x10   |      |
| (Nm)   | 0,50   | 0,80    |      |
| Ballscrew  | 25x5   | 25x10   |      |
| (Nm)   | 0,40   | 0,60    |      |
| <b>Geometrical moments of inertia of aluminium profile</b>                         |  |         |      |
| $I_x$ mm <sup>4</sup>  | 11,05x10 <sup>9</sup>  |         |      |
| $I_y$ mm <sup>4</sup>  | 23,60x10 <sup>9</sup>  |         |      |
| Elastic-modulus N/mm <sup>2</sup>  | 70000  |         |      |

Driving torque:

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

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

$F$  = 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>)  
 $M_o$  = driving torque (Nm)  
 $\mu$  = screw efficiency  
 $P_o$  = motor power (KW)

Efficiency of lead screws:

All ballscrew 0,900

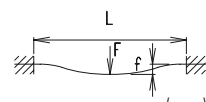
Tr 24x5 0,384

Tr 24x10 0,550

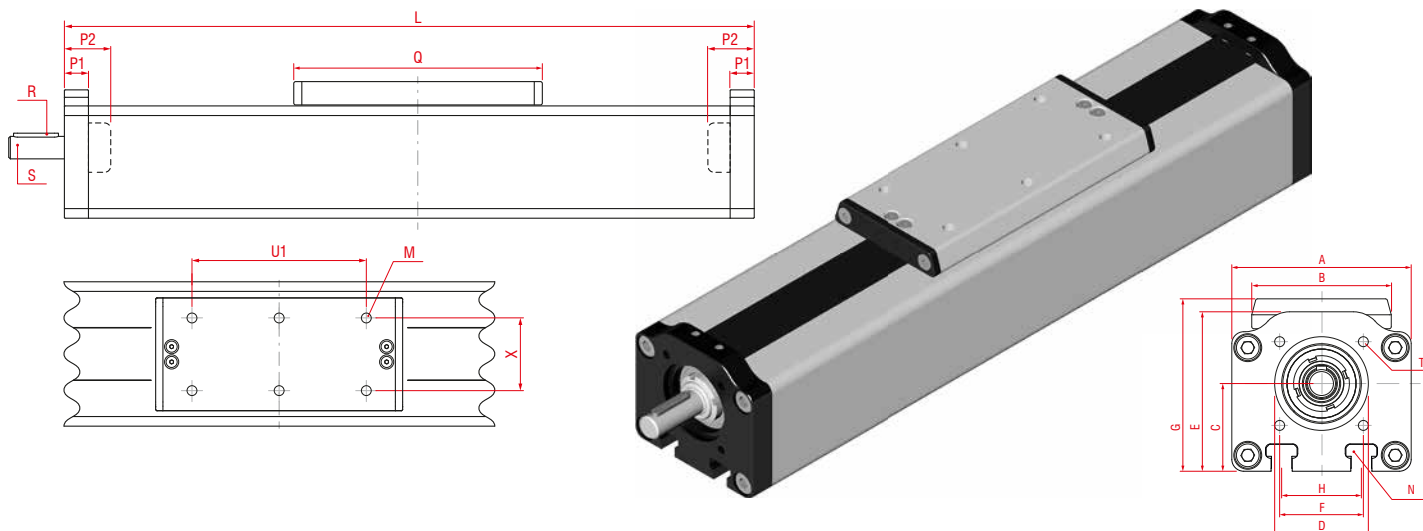
Deflection:

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

$f$  = 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



\*For slide nuts refer to chapter 2.2 page 2

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

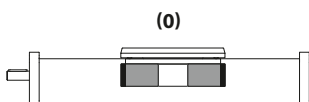
| Size            | Basic length L | A  | B  | C  | D<br>-0,05 | E  | F<br>□ | G  | H  | M  | N<br>for | P1 | P2 | Q   | Shaft    |                    | T<br>for | U1  | X  | Basic weight | Weight per 100 mm |
|-----------------|----------------|----|----|----|------------|----|--------|----|----|----|----------|----|----|-----|----------|--------------------|----------|-----|----|--------------|-------------------|
|                 |                |    |    |    |            |    |        |    |    |    |          |    |    |     | R<br>key | S<br>∅ h6 x length |          |     |    |              |                   |
| <b>GGT/K 90</b> | 242            | 90 | 78 | 44 | 47         | 80 | 42     | 87 | 40 | M8 | M8       | 15 | 36 | 170 | 5x5x28   | 14x35              | M6       | 120 | 50 | 4,5 kg       | 1,134 kg          |

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

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

**0 Choice of guide body profile:**  
(0) Standard (1) corrosion-protected screws  
(4) expanded corrosion-protected version (depending on the availability of components)

**0 Choice of carriages:**



**0 Drive version:**  
(0) right (locating bearing side) (1) left (non-locating bearing side) (2) shaft on both sides

| Size | Standard    |                  | Multistart screw |                           |
|------|-------------|------------------|------------------|---------------------------|
|      | Standard    | Multistart screw | Standard         | Multistart screw          |
| 90   | (0) Tr 24x5 | (1) Tr 24x10     | (0) Kg 25x5      | (1) Kg 25x10 (2) Kg 20x20 |

Tr = trapezoidal thread / Kg = 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

**GG T 90 1 0 0 0 0 0 0 1500** Basic length + stroke = total length  
Pos. 1 2 3 4 5 6 7

Sample ordering code:

GGT 90, trapezoidal thread right hand thread, standard body profile, carriage version 0, drive version 0, spindle Tr 24x5, 1258 mm stroke