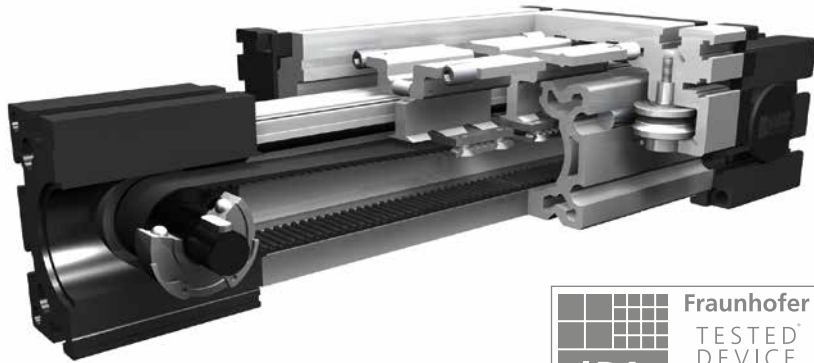


# Linear system **ELHZ 60, 60S, 80, 80S, 100, 125**



## INTERNAL BELT DRIVE

- CLEAN ROOM
- TOOTHED BELT HORIZONTAL
- HIGH DYNAMICS



### Function:

This linear unit consists of an aluminium square profile with integrated, hardened steel guide rods. The carriage, which has internal linear ball bearings that can be adjusted free of play, is driven along the guide rods by a timing belt. Toothed pulley has maintenance-free ball bearings. Belt tension can be readjusted by a simple screw adjustment device in the carriage. This device can also be used for symmetrical adjustment of two or more linear units running parallel.

**This linear unit is suitable for application in clean rooms of clean-room classification 1.000 (corresponding to US Fed. Standard 209 E).**

- Fitting position:** As required. Max. length 3.000 mm.
- Carriage mounting:** By T-slots.
- Unit mounting:** By tapped holes or tapped holes in the bearing block, mounting sets.
- Belt type:** HTD with steel reinforcement, no backlash when changing direction, repeatability  $\pm 0,1$  mm.

| Size   | ELHZ 60              |         | ELHZ 60 S            |         | ELHZ 80               |         | ELHZ 80 S             |         | ELHZ 100             |         | ELHZ 125              |         |
|--|----------------------|---------|----------------------|---------|-----------------------|---------|-----------------------|---------|----------------------|---------|-----------------------|---------|
|  | static               | dynamic | static               | dynamic | static                | dynamic | static                | dynamic | static               | dynamic | static                | dynamic |
| <b>Forces/Torques</b>  |                      |         |                      |         |                       |         |                       |         |                      |         |                       |         |
| $F_x$ (N)  | 700                  | 580     | 700                  | 580     | 1000                  | 840     | 1000                  | 840     | 3100                 | 2600    | 5000                  | 4950    |
| $F_y$ (N)  | 3000                 | 2000    | 4100                 | 3100    | 3000                  | 2000    | 4600                  | 3600    | 8000                 | 6500    | 12000                 | 9000    |
| $F_z$ (N)  | 1700                 | 1100    | 2160                 | 1600    | 1700                  | 1100    | 3000                  | 1800    | 3600                 | 2200    | 6000                  | 4500    |
| $M_x$ (Nm)   | 67                   | 43      | 88                   | 65      | 90                    | 55      | 170                   | 140     | 300                  | 230     | 600                   | 450     |
| $M_y$ (Nm)   | 90                   | 70      | 190                  | 140     | 110                   | 80      | 270                   | 230     | 400                  | 270     | 750                   | 600     |
| $M_z$ (Nm)   | 120                  | 100     | 230                  | 170     | 150                   | 120     | 300                   | 220     | 750                  | 500     | 1350                  | 1150    |
| <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 $\frac{F_y}{F_{y_{dyn}}} + \frac{F_z}{F_{z_{dyn}}} + \frac{M_x}{M_{x_{dyn}}} + \frac{M_y}{M_{y_{dyn}}} + \frac{M_z}{M_{z_{dyn}}} \leq 1$    |                      |         |                      |         |                       |         |                       |         |                      |         |                       |         |
| <b>No-load torque</b>  |                      |         |                      |         |                       |         |                       |         |                      |         |                       |         |
| Nm   | 0,5                  |         | 0,5                  |         | 0,8                   |         | 1,2                   |         | 1,2                  |         | 1,6                   |         |
| <b>Speed</b>   |                      |         |                      |         |                       |         |                       |         |                      |         |                       |         |
| (m/s) max  | 3                    |         | 4                    |         | 4                     |         | 4                     |         | 5                    |         | 6                     |         |
| <b>Tensile force</b>   |                      |         |                      |         |                       |         |                       |         |                      |         |                       |         |
| permanent (N)  | 700                  |         | 700                  |         | 1000                  |         | 1000                  |         | 3100                 |         | 5000                  |         |
| 0,2 s (N)  | 800                  |         | 800                  |         | 1150                  |         | 1150                  |         | 3400                 |         | 5450                  |         |
| <b>Geometrical moments of inertia of aluminium profile</b>   |                      |         |                      |         |                       |         |                       |         |                      |         |                       |         |
| $I_x$ mm <sup>4</sup>  | 6,79x10 <sup>5</sup> |         | 6,79x10 <sup>5</sup> |         | 18,99x10 <sup>5</sup> |         | 18,99x10 <sup>5</sup> |         | 44,4x10 <sup>5</sup> |         | 101,5x10 <sup>5</sup> |         |
| $I_y$ mm <sup>4</sup>  | 6,97x10 <sup>5</sup> |         | 6,97x10 <sup>5</sup> |         | 18,97x10 <sup>5</sup> |         | 18,97x10 <sup>5</sup> |         | 44,8x10 <sup>5</sup> |         | 101,5x10 <sup>5</sup> |         |
| E-Modulus N/mm <sup>2</sup>  | 70000                |         | 70000                |         | 70000                 |         | 70000                 |         | 70000                |         | 70000                 |         |

For life-time calculation of rollers use our homepage.

Driving torque:

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

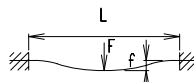
$$P_o = \frac{M_o \cdot n}{9550}$$

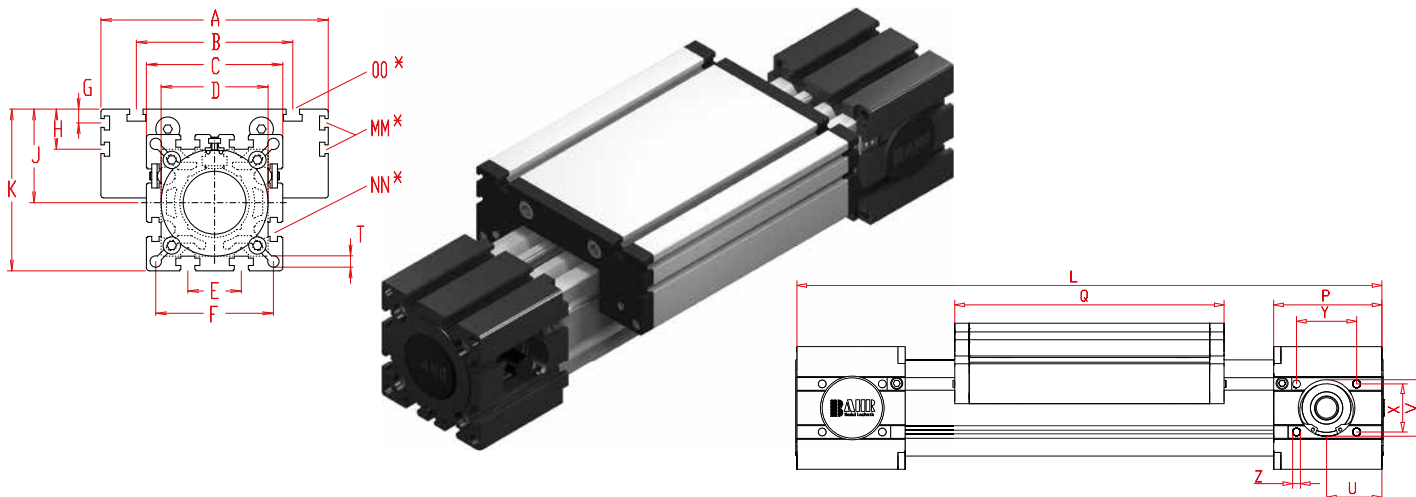
- F = force (N)
- P = pulley action perimeter (mm)
- S<sub>i</sub> = safety factor 1,2 ... 2
- M<sub>n</sub> = no-load torque (Nm)
- n = rpm pulley (min<sup>-1</sup>)
- M<sub>o</sub> = driving torque (Nm)
- P<sub>o</sub> = motor power (KW)

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>)





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

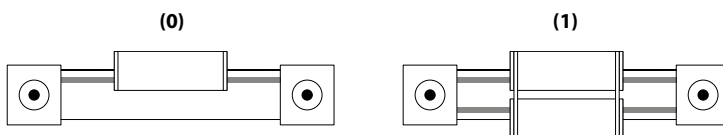
| Size     | Basic length L | A   | B   | C   | D ± 0,05 | E  | F   | G    | H    | J     | K   | MM for | NN for | OO for | P   | Q   | T    | U  | V -0,05 | W' | X  | Y  | Z   | Basic weight | Weight per 100 mm |
|----------|----------------|-----|-----|-----|----------|----|-----|------|------|-------|-----|--------|--------|--------|-----|-----|------|----|---------|----|----|----|-----|--------------|-------------------|
| ELHZ 60  | 290            | 144 | 96  | 82  | 62x1     | 30 | 69  | --   | -    | 49    | 90  | -      | M 8    | M 8    | 59  | 168 | 8,5  | 23 | 37      | 14 | 30 | 36 | M 6 | 4,8 kg       | 0,62 kg           |
| ELHZ 60S | 315            | 170 | 108 | 82  | 62x1     | 30 | 69  | --   | -    | 53    | 94  | -      | M 8    | M 8    | 59  | 194 | 8,5  | 23 | 37      | 14 | 30 | 36 | M 6 | 5,8 kg       | 0,62 kg           |
| ELHZ 80  | 375            | 170 | 117 | 102 | 80x1     | 40 | 88  | 10,5 | 30,5 | 70    | 121 | M 6    | M10    | M10    | 90  | 194 | 8,5  | 38 | 47      | 18 | 40 | 50 | M 8 | 10,0 kg      | 1,00 kg           |
| ELHZ 80S | 395            | 190 | 126 | 102 | 80x1     | 40 | 88  | 12,5 | 30   | 71    | 122 | M 6    | M10    | M 8    | 90  | 214 | 8,5  | 38 | 47      | 18 | 40 | 50 | M 8 | 11,0 kg      | 1,00 kg           |
| ELHZ 100 | 530            | 230 | 155 | 130 | 110x1    | 50 | 112 | -    | 29   | 89    | 154 | M10    | M10    | M10    | 110 | 300 | 10,5 | 45 | 68      | 19 | 50 | 64 | M10 | 24,0 kg      | 1,60 kg           |
| ELHZ 125 | 630            | 295 | 200 | 165 | 130x2    | 60 | 142 | -    | 30   | 107,5 | 190 | M10    | M10    | M12    | 130 | 365 | 13,0 | 58 | 90      | 35 | 60 | 85 | M10 | 37,0 kg      | 2,10 kg           |

W' = standard shaft

**0 Choice of guide body profile:**

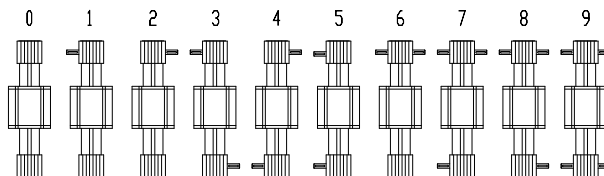
- (0) Standard (2) corrosion-protected guide rods and screws
- (4) expanded corrosion-protected version (depending on the availability of components)

**0 Choice of carriages:**



| Size | Version 1 |     |
|------|-----------|-----|
|      | Q         | L   |
| 60   | 184       | 306 |
| 60S  | 214       | 336 |
| 80   | 210       | 391 |
| 80S  | 234       | 415 |
| 100  | 316       | 546 |
| 125  | 389       | 649 |

**0 Drive version:**



The standard version 0 is supplied with 4 flush mounted shafts.

**Belt table:**

| Code No. | Size   | Belt  | mm/rev. | Number of teeth |
|----------|--------|-------|---------|-----------------|
| 0 4      | 60 (S) | 5M 25 | 80      | 16              |
| 0 4      | 80 (S) | 5M 25 | 110     | 22              |
| 0 9      | 100    | 8M 48 | 144     | 18              |
| 0 9      | 125    | 8M 50 | 192     | 24              |

**Shaft dimensions:**

| Size   | Shaft ø h6 x length | Key    |
|--------|---------------------|--------|
| 60 (S) | 14 x 35             | 5x5x28 |
| 80 (S) | 18 x 45             | 6x6x40 |
| 100    | 22 x 45             | 6x6x40 |
| 125    | 30 x 55             | 8x7x50 |

**ELHZ 60 0 0 0 0 0 4 1 1500**

Pos. 1 2 3 4 5 6 7

Basic length + stroke = total length

Sample ordering code:

ELHZ 60, with standard body profile, standard carriage and 4 flush mounted shafts, 1210 mm stroke.