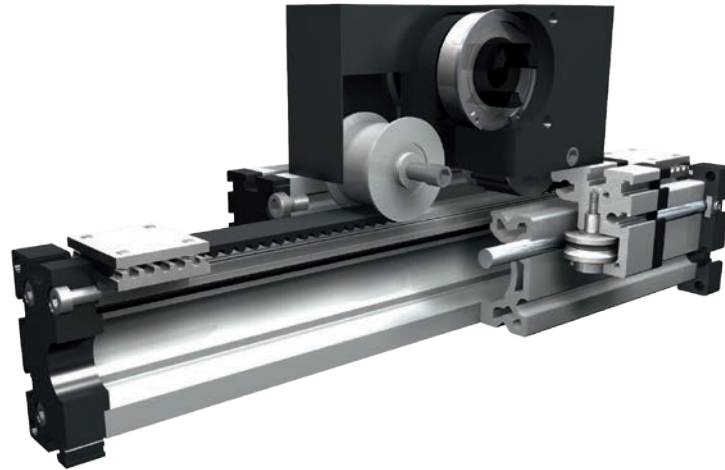


Positioning system ELSZ 30, 40, 60, 60S, 80, 80S, 100, 125

With standard belt

Specifications

3.1



Function:

This linear unit consists of an aluminium square profile with 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. The pulley has maintenance-free ball bearings. Belt tension can be readjusted by a simple tensioning device in one of the end blocks. This device can also be used for symmetrical adjustment of two or more linear units running parallel.

Fitting position:

As required. Max. length without joints 6.000 mm.

Carriage mounting:

By T-slots.

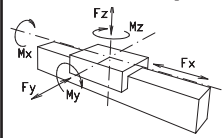
Unit mounting:

By T-slots or tapped holes in the bearing blocks, or mounting sets.

Belt type:

HTD with steel reinforcement, no backlash when changing direction, repeatability $\pm 0,1$ mm.

Forces and torques



| Size | ELSZ 30 | | ELSZ 40 | | ELSZ 60 | | ELSZ 60 S | | ELSZ 80 | | ELSZ 80 S | | ELSZ 100 | | ELSZ 125 | |
|------------|---------|--------|---------|--------|---------|--------|-----------|--------|---------|--------|-----------|--------|----------|--------|----------|--------|
| | static | dynam. | static | dynam. | static | dynam. | static | dynam. | static | dynam. | static | dynam. | static | dynam. | static | dynam. |
| F_x (N) | 200 | 180 | 390 | 350 | 894 | 800 | 894 | 800 | 1900 | 1800 | 1900 | 1800 | 4000 | 3800 | 5900 | 5750 |
| F_y (N) | 90 | 60 | 1200 | 700 | 3000 | 2000 | 4100 | 3100 | 3000 | 2000 | 4600 | 3600 | 8000 | 6500 | 12000 | 9000 |
| F_z (N) | 90 | 60 | 900 | 650 | 1700 | 1100 | 2160 | 1600 | 1700 | 1100 | 3000 | 1800 | 3600 | 2200 | 6000 | 4500 |
| M_x (Nm) | 10 | 5 | 25 | 20 | 67 | 43 | 88 | 65 | 90 | 55 | 170 | 140 | 300 | 230 | 600 | 450 |
| M_y (Nm) | 13 | 6 | 32 | 18 | 90 | 70 | 190 | 140 | 110 | 80 | 270 | 230 | 400 | 270 | 750 | 600 |
| M_z (Nm) | 14 | 7 | 35 | 25 | 120 | 100 | 230 | 170 | 150 | 120 | 300 | 220 | 750 | 500 | 1350 | 1150 |

All forces and torques relate to the following:

$$\frac{F_y}{F_{y_{dyn}}} + \frac{F_z}{F_{z_{dyn}}} + \frac{M_x}{M_{x_{dyn}}} + \frac{M_y}{M_{y_{dyn}}} + \frac{M_z}{M_{z_{dyn}}} \leq 1$$

No-load torque

| | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|
| Nm | 0,2 | 0,7 | 0,9 | 0,9 | 1,1 | 1,2 | 1,5 | 1,8 |
|----|-----|-----|-----|-----|-----|-----|-----|-----|

Speed

| | | | | | | | | |
|-----------|---|---|---|---|---|---|---|----|
| (m/s) max | 2 | 4 | 5 | 7 | 6 | 8 | 8 | 10 |
|-----------|---|---|---|---|---|---|---|----|

Tensile force

| | | | | | | | | |
|---------------|-----|-----|------|------|------|------|------|------|
| permanent (N) | 200 | 390 | 900 | 900 | 1900 | 1900 | 4000 | 5900 |
| 0,2 s (N) | 280 | 480 | 1000 | 1000 | 2090 | 2090 | 4300 | 6350 |

Geometrical moments of inertia of aluminium profile

| | | | | | | | | |
|-----------------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|-----------------------|----------------------|-----------------------|
| I_x mm ⁴ | 4,09x10 ⁴ | 1,32x10 ⁵ | 6,79x10 ⁵ | 6,79x10 ⁵ | 18,99x10 ⁵ | 18,99x10 ⁵ | 44,4x10 ⁵ | 101,5x10 ⁵ |
| I_y mm ⁴ | 4,00x10 ⁴ | 1,34x10 ⁵ | 6,97x10 ⁵ | 6,97x10 ⁵ | 18,97x10 ⁵ | 18,97x10 ⁵ | 44,8x10 ⁵ | 101,5x10 ⁵ |
| E-Modulus N/mm ² | 70000 | 70000 | 70000 | 70000 | 70000 | 70000 | 70000 | 70000 |

For life-time calculation of rollers use our CD-ROM or homepage!

Formula: ELSZ

Driving torque:

$$M_o = \frac{F \cdot P \cdot S_1}{2000 \cdot \pi} + M_{leer}$$

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

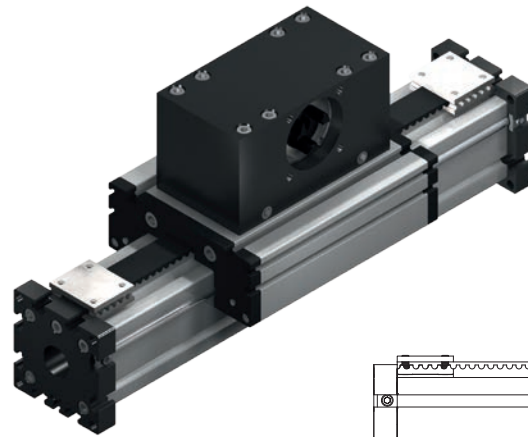
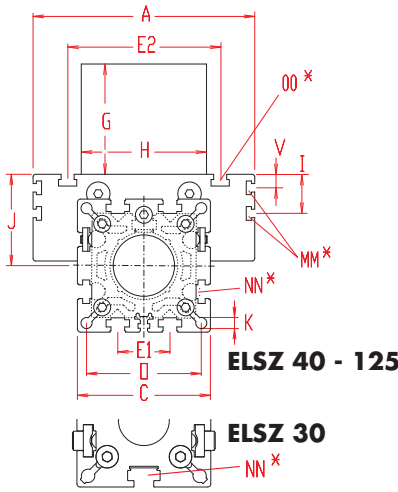
F = force (N)
 P = pulley action perimeter (mm)
 S₁ = safety factor 1,2 ... 2
 M_{leer} = no-load torque (Nm)
 n = rpm pulley (min⁻¹)
 M_o = driving torque (Nm)
 P_o = motor power (KW)

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

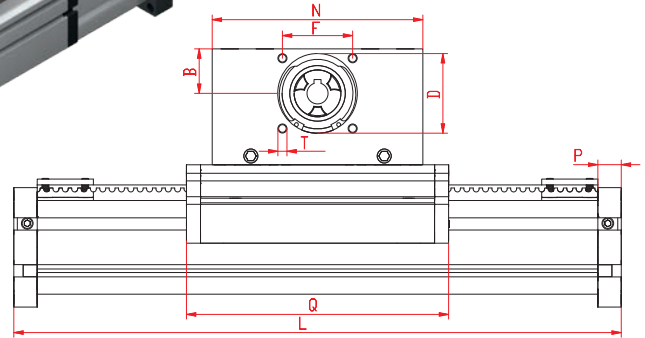
f = deflection (mm)
 F = load (N)
 L = free length (mm)
 E = elastic modulus 70000 (N/mm²)
 I = second moment of area (mm⁴)

Positioning system ELSZ 30, 40, 60, 60S, 80, 80S, 100, 125

Dimensions (mm)



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



3.1

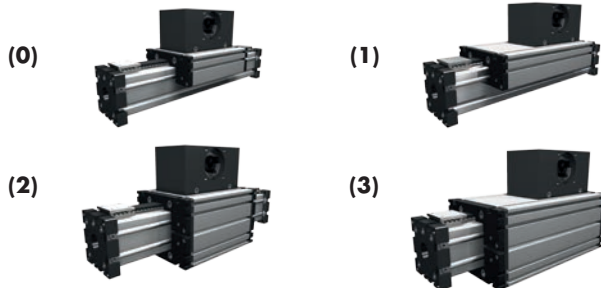
*For slide nuts refer to chapter 2.2 page 2

| Size | Basic length L | A | B | C | D | E1 | E2 | F | G | H | I | J | K | MM for | N | NN for | O | OO for | P | Q | T | V | Basic weight | Weight per 100 mm |
|----------|----------------|-----|----|-----|-----|----|-----|-----|-----|-----|----|-------|------|--------|-----|--------|-----|--------|----|-----|------|------|--------------|-------------------|
| ELSZ 30 | 182 | 70 | 16 | 42 | 28 | - | 56 | 25 | 45 | 42 | - | 26 | 4,2 | - | 90 | M 6 | 35 | M 6 | 12 | 108 | M 4 | - | 1,33 kg | 0,16 kg |
| ELSZ 40 | 230 | 100 | 20 | 58 | 37 | 25 | 66 | 32 | 65 | 60 | - | 35 | 6,5 | - | 110 | M 6 | 47 | M 6 | 12 | 142 | M 5 | - | 2,1 kg | 0,24 kg |
| ELSZ 60 | 280 | 144 | 30 | 82 | 47 | 30 | 96 | 42 | 80 | 80 | - | 49 | 8,5 | - | 130 | M 8 | 69 | M 8 | 16 | 168 | M 6 | - | 5,1 kg | 0,62 kg |
| ELSZ 60S | 305 | 170 | 30 | 82 | 47 | 30 | 108 | 42 | 80 | 80 | - | 53 | 8,5 | - | 130 | M 8 | 69 | M 8 | 16 | 194 | M 6 | - | 6,1 kg | 0,62 kg |
| ELSZ 80 | 365 | 170 | 39 | 102 | 68 | 40 | 117 | 60 | 100 | 100 | 30 | 70 | 8,5 | M 6 | 180 | M 10 | 88 | M 10 | 20 | 214 | M 8 | 10 | 11,0 kg | 1,00 kg |
| ELSZ 80S | 375 | 190 | 39 | 102 | 68 | 40 | 126 | 60 | 100 | 100 | 30 | 71 | 8,5 | M 6 | 180 | M 8 | 88 | M 8 | 20 | 225 | M 8 | 12,5 | 12,0 Kg | 1,00 Kg |
| ELSZ 100 | 535 | 230 | 60 | 130 | 90 | 50 | 155 | 80 | 130 | 130 | 29 | 89 | 10,5 | M 10 | 270 | M 12 | 112 | M 10 | 30 | 310 | M 10 | - | 25,8 kg | 1,60 kg |
| ELSZ 125 | 595 | 295 | 62 | 165 | 110 | 60 | 200 | 100 | 139 | 160 | 30 | 107,5 | M 10 | M 10 | 310 | M 12 | 140 | M 12 | 30 | 365 | M 10 | - | 54,5 kg | 1,94 kg |

Choice of guide body profile:

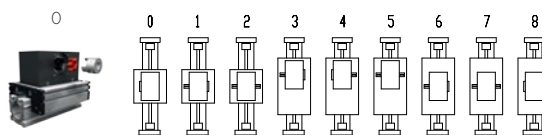
- (0) Standard
- (2) corrosion-protected guide rods and screws
- (4) expanded corrosion-protected version (depending on the availability of components)

Choice of carriages:



| Size | Version 1 | | Version 2 | | Version 3 | |
|------|-----------|-----|-----------|-----|-----------|-----|
| | Q | L | Q | L | Q | L |
| 30 | 175 | 245 | 124 | 194 | 197 | 267 |
| 40 | 237 | 325 | 158 | 246 | 253 | 341 |
| 60 | 303 | 415 | 184 | 296 | 319 | 431 |
| 60S | 329 | 431 | 214 | 325 | 349 | 451 |
| 80 | 379 | 525 | 230 | 381 | 395 | 541 |
| 80S | 399 | 545 | 245 | 395 | 419 | 565 |
| 100 | 535 | 760 | 326 | 551 | 551 | 776 |
| 125 | 640 | 870 | 389 | 619 | 664 | 894 |

Drive version:



The standard version is supplied without shaft. A shaft can be retrofitted by inserting it into the pulley bore and securing it with 2 locking rings or tension sets (size 100 + 125).

Version 8 is the same as 0, but with double sided coupling claw.

Belt table

| Code No. | Size | Belt | mm/rev. | Number of teeth |
|----------|--------|------|---------|-----------------|
| 0 1 | 30 | 3M12 | 75 | 25 |
| 0 3 | 40 | 5M15 | 100 | 20 |
| 0 4 | 60 (S) | 5M25 | 130 | 26 |
| 0 7 | 80 (S) | 8M30 | 192 | 24 |
| 0 9 | 100 | 8M50 | 256 | 32 |
| 1 0 | 125 | 8M70 | 304 | 38 |

Shaft dimensions

| Size | Shaft $\varnothing h6 \times$ length | Key | Coupling |
|--------|--------------------------------------|--------|----------|
| 30 | 6 x 15 | 2x2x12 | 7 |
| 40 | 10 x 27 | 3x3x25 | 9 |
| 60 (S) | 14 x 35 | 5x5x28 | 14 |
| 80 (S) | 18 x 45 | 6x6x40 | 19 |
| 100 | 22 x 45 | 6x6x40 | 24 |
| 125 | 30 x 55 | 8x7x50 | 28 |

Basic length + stroke = total length

ELSZ 60 0 0 0 0 0 4 1 01500

For combination kits and connecting elements refer to chapter 2.2

Pos. 1 2 3 4 5 6 7

Sample ordering code:

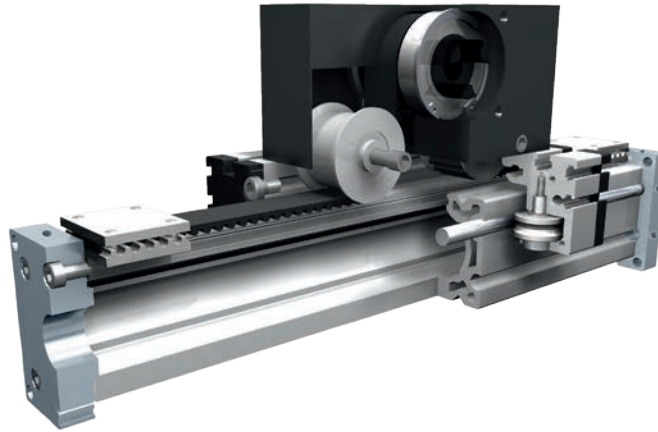
ELSZ 60 with standard body profile, standard carriage and coupling claw on one side, 1220 mm stroke.

Positioning system ELSZ 30, 40, 60, 60S, 80, 80S, 100, 125

With widened belt drive

Specifications

3.1

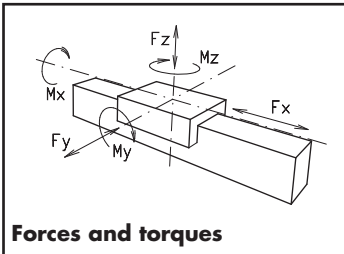


Function:

This linear unit consists of an aluminium square profile with 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. The pulley has maintenance-free ball bearings. Belt tension can be readjusted by a simple tensioning device in one of the end blocks. This device can also be used for symmetrical adjustment of two or more linear units running parallel.

Fitting position:
Carriage mounting:
Unit mounting:
Belt type:

As required. Max. length without joints 6.000 mm.
By T-slots.
By T-slots, threads or tapped holes in the bearing blocks, or mounting sets.
HTD with steel reinforcement, no backlash when changing direction, repeatability $\pm 0,1$ mm.



| Size | ELSZ 30 | | ELSZ 40 | | ELSZ 60 | | ELSZ 60 S | | ELSZ 80 | | ELSZ 80 S | | ELSZ 100 | | ELSZ 125 | |
|------------|---------|--------|---------|--------|---------|--------|-----------|--------|---------|--------|-----------|--------|----------|--------|----------|--------|
| | static | dynam. | static | dynam. | static | dynam. | static | dynam. | static | dynam. | static | dynam. | static | dynam. | static | dynam. |
| F_x (N) | 390 | 350 | 894 | 800 | 1900 | 1800 | 1900 | 1800 | 4000 | 3800 | 4000 | 3800 | 5900 | 5750 | 7900 | 7500 |
| F_y (N) | 90 | 60 | 1200 | 700 | 3000 | 2000 | 4100 | 3100 | 3000 | 2000 | 4600 | 3600 | 8000 | 6500 | 12000 | 9000 |
| F_z (N) | 90 | 60 | 900 | 650 | 1700 | 1100 | 2160 | 1600 | 1700 | 1100 | 3000 | 1800 | 3600 | 2200 | 6000 | 4500 |
| M_x (Nm) | 10 | 5 | 25 | 20 | 67 | 43 | 88 | 65 | 90 | 55 | 170 | 140 | 300 | 230 | 600 | 450 |
| M_y (Nm) | 13 | 6 | 32 | 18 | 90 | 70 | 190 | 140 | 110 | 80 | 270 | 230 | 400 | 270 | 750 | 600 |
| M_z (Nm) | 14 | 7 | 35 | 25 | 120 | 100 | 230 | 170 | 150 | 120 | 300 | 220 | 750 | 500 | 1350 | 1150 |

All forces and torques relate to the following:

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

No-load torque

| | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|
| Nm | 0,5 | 0,7 | 0,9 | 0,9 | 1,2 | 1,2 | 1,5 | 1,8 |
|----|-----|-----|-----|-----|-----|-----|-----|-----|

Speed

| | | | | | | | | |
|-----------|---|---|---|---|---|---|---|---|
| (m/s) max | 2 | 4 | 5 | 7 | 8 | 8 | 8 | 8 |
|-----------|---|---|---|---|---|---|---|---|

Tensile force

| | | | | | | | | |
|---------------|-----|-----|-------|------|------|------|------|------|
| permanent (N) | 390 | 894 | 1 900 | 1900 | 4000 | 4000 | 5900 | 7900 |
| 0,2 s (N) | 480 | 480 | 2090 | 2090 | 4300 | 4300 | 6350 | 8500 |

Geometrical moments of inertia of aluminium profile

| | | | | | | | | |
|-----------------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|-----------------------|----------------------|-----------------------|
| I_x mm ⁴ | 4,09x10 ⁴ | 1,32x10 ⁵ | 6,79x10 ⁵ | 6,79x10 ⁵ | 18,99x10 ⁵ | 18,99x10 ⁵ | 44,4x10 ⁵ | 101,5x10 ⁵ |
| I_y mm ⁴ | 4,00x10 ⁴ | 1,34x10 ⁵ | 6,97x10 ⁵ | 6,97x10 ⁵ | 18,97x10 ⁵ | 18,97x10 ⁵ | 44,8x10 ⁵ | 101,5x10 ⁵ |
| E-Modulus N/mm ² | 70000 | 70000 | 70000 | 70000 | 70000 | 70000 | 70000 | 70000 |

For life-time calculation of rollers use our CD-ROM or homepage!

Formula: ELSZ

Driving torque:

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

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

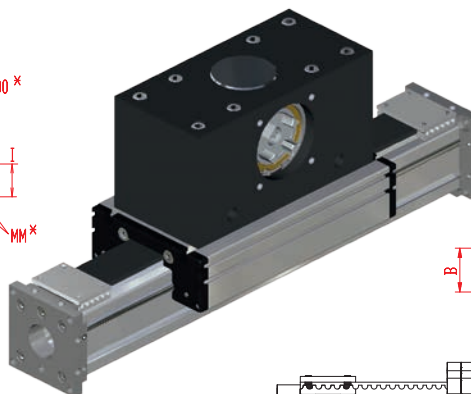
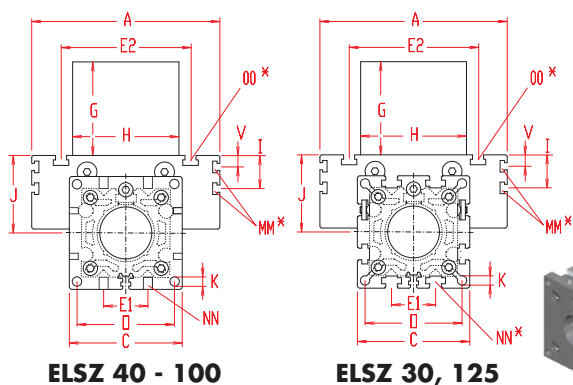
- F = force (N)
- P = pulley action perimeter (mm)
- S = safety factor 1,2 ... 2
- M_{leer} = no-load torque (Nm)
- n = rpm pulley (min⁻¹)
- M_o = driving torque (Nm)
- P_o = motor power (KW)

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

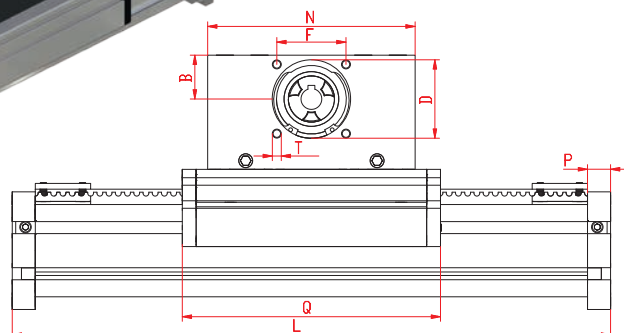
- f = deflection (mm)
- F = load (N)
- L = free length (mm)
- E = elastic modulus 70000 (N/mm²)
- I = second moment of area (mm⁴)

Positioning system ELSZ 30, 40, 60, 60S, 80, 80S, 100, 125

Dimensions (mm)



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



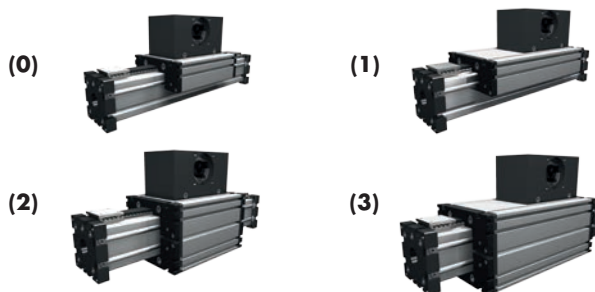
*For slide nuts refer to chapter 2.2 page 2

| Size | Basic length L | A | B | C | D | E1 | E2 | F | G | H | I | J | K | MM for | N | NN for | O | OO for | P | Q | T | V | Basic weight | Weight per 100 mm |
|----------|----------------|-----|----|-----|-----|----|-----|-----|-----|-----|----|-------|------|--------|-----|--------|-----|--------|----|-----|------|------|--------------|-------------------|
| ELSZ 30 | 210 | 70 | 20 | 42 | 37 | - | 56 | 32 | 55 | 60 | - | 26 | 4,2 | - | 110 | M 6 | 35 | M 6 | 12 | 128 | M 5 | - | 1,5 kg | 0,16 kg |
| ELSZ 40 | 260 | 100 | 30 | 58 | 47 | 18 | 66 | 42 | 83 | 80 | - | 35 | 6,5 | - | 130 | M 6 | 47 | M 6 | 12 | 164 | M 6 | - | 2,7 kg | 0,24 kg |
| ELSZ 60 | 355 | 144 | 39 | 82 | 68 | 30 | 96 | 60 | 105 | 100 | - | 49 | 8,5 | - | 180 | M 8 | 69 | M 8 | 16 | 214 | M 8 | - | 6,3 kg | 0,62 kg |
| ELSZ 60S | 355 | 170 | 39 | 82 | 68 | 30 | 108 | 60 | 105 | 100 | - | 53 | 8,5 | - | 180 | M 8 | 69 | M 8 | 16 | 214 | M 8 | - | 7,3 kg | 0,62 kg |
| ELSZ 80 | 460 | 170 | 60 | 102 | 90 | 40 | 117 | 80 | 140 | 130 | 30 | 70 | 8,5 | M 6 | 270 | M 10 | 88 | M 10 | 20 | 304 | M 10 | 10 | 14,0 kg | 1,00 kg |
| ELSZ 80S | 460 | 190 | 60 | 102 | 90 | 40 | 126 | 80 | 140 | 130 | 30 | 71 | 8,5 | M 6 | 270 | M 10 | 88 | M 8 | 20 | 304 | M 10 | 12,5 | 15,0 Kg | 1,00 Kg |
| ELSZ 100 | 575 | 230 | 62 | 130 | 110 | 50 | 155 | 100 | 143 | 160 | 29 | 89 | M 12 | M 10 | 310 | M 10 | 112 | M 10 | 30 | 350 | M 10 | - | 31,0 kg | 1,60 kg |
| ELSZ 125 | 605 | 295 | 62 | 165 | 110 | 60 | 200 | 100 | 139 | 180 | 30 | 107,5 | M 12 | M 10 | 310 | M 12 | 140 | M 12 | 30 | 365 | M 10 | - | 57,4 kg | 1,96 kg |

0 Choice of guide body profile:

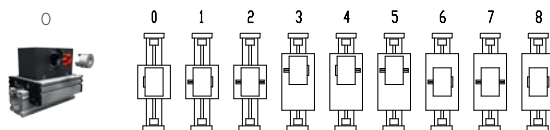
- (0) Standard (2) corrosion-protected guide rods and screws
- (4) expanded corrosion-protected version (depending on the availability of components)

0 Choice of carriages:



| Size | Version 1 | | Version 2 | | Version 3 | |
|------|-----------|-----|-----------|-----|-----------|-----|
| | Q | L | Q | L | Q | L |
| 30 | 195 | 279 | 140 | 222 | 207 | 291 |
| 40 | 257 | 355 | 180 | 276 | 273 | 371 |
| 60 | 353 | 494 | 230 | 371 | 369 | 510 |
| 60S | 379 | 520 | 234 | 375 | 399 | 540 |
| 80 | 469 | 625 | 320 | 476 | 485 | 641 |
| 80S | 489 | 645 | 324 | 480 | 509 | 665 |
| 100 | 575 | 800 | 366 | 591 | 591 | 816 |
| 125 | 640 | 870 | 389 | 619 | 664 | 894 |

0 Drive version:



The standard version is supplied without shaft. A shaft can be retrofitted by inserting it into the pulley bore and securing it with 2 locking rings or tension sets (size 80 + 100).

Version 8 is the same as 0, but with double sided coupling claw.

Belt table

| Code No. | Size | Belt | mm/rev. | Number of teeth |
|----------|--------|-------|---------|-----------------|
| 0 3 | 30 | 5M15 | 100 | 20 |
| 0 4 | 40 | 5M25 | 130 | 26 |
| 0 7 | 60 (S) | 8M30 | 192 | 24 |
| 0 9 | 80 (S) | 8M50 | 256 | 32 |
| 1 0 | 100 | 8M70 | 304 | 38 |
| 1 4 | 125 | 8M100 | 304 | 38 |

Shaft dimensions / Coupling claw

| Size | Shaft ø h6 x length | Key | Coupling |
|--------|------------------------|---------|----------|
| 30 | 10 x 27 | 3x3x25 | 9 |
| 40 | 14 x 35 | 5x5x28 | 14 |
| 60 (S) | 18 x 45 | 6x6x40 | 19 |
| 80 (S) | 22 x 45 | 6x6x40 | 24 |
| 100 | 30 x 55 | 8x7x50 | 28 |
| 125 | 40 x 55 | 12x8x50 | |

Basic length + stroke = total length

ELSZ 60 0 0 0 0 0 7 1 01500

Pos. 1 2 3 4 5 6 7

For combination kits and connecting elements refer to chapter 2.2

Sample ordering code:

ELSZ 60 with standard body profile, standard carriage with widened belt and coupling claw on one side, 1170 mm stroke.