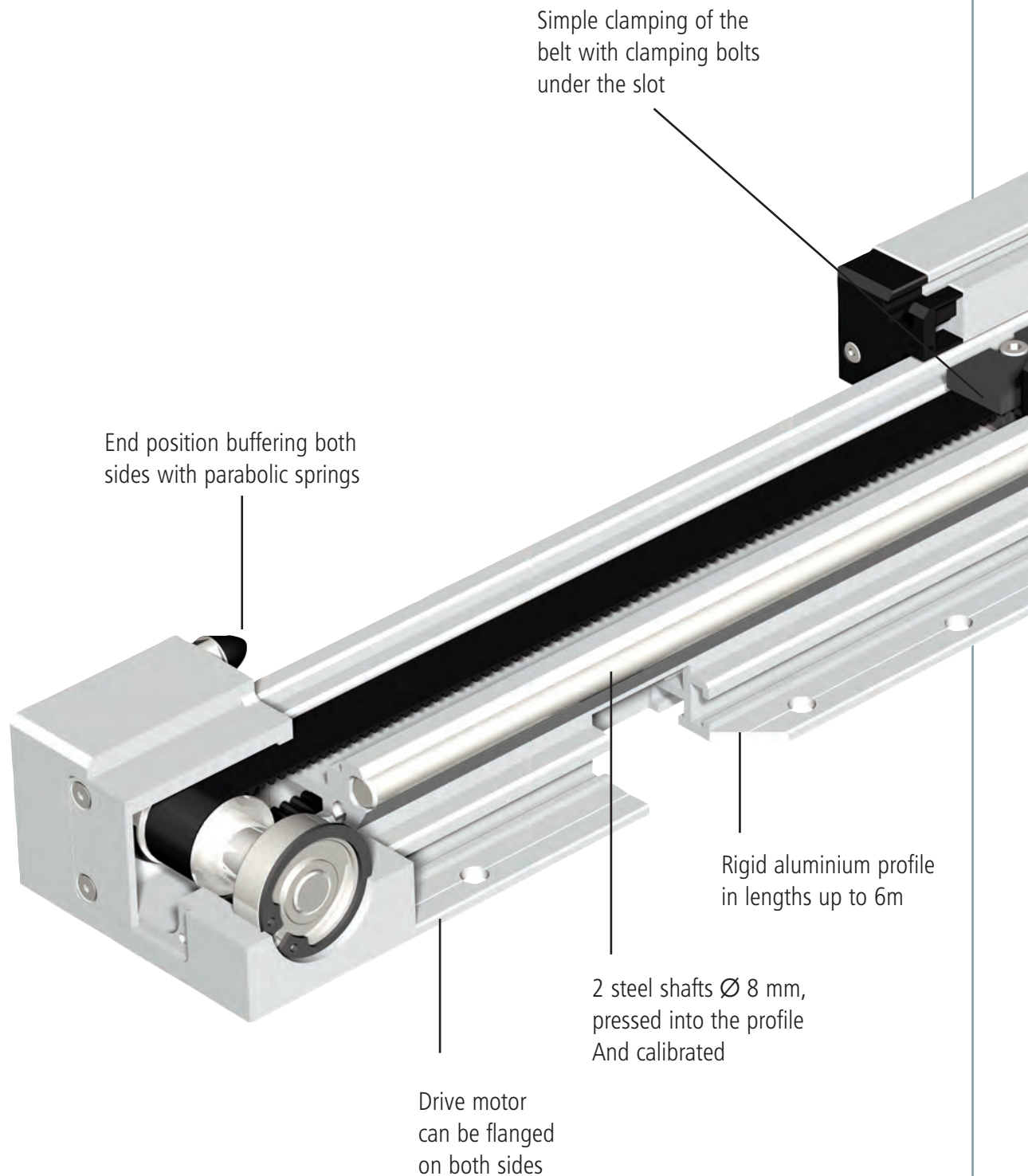


# Functional overview Linear unit LEZ 9



Simple clamping of the belt with clamping bolts under the slot

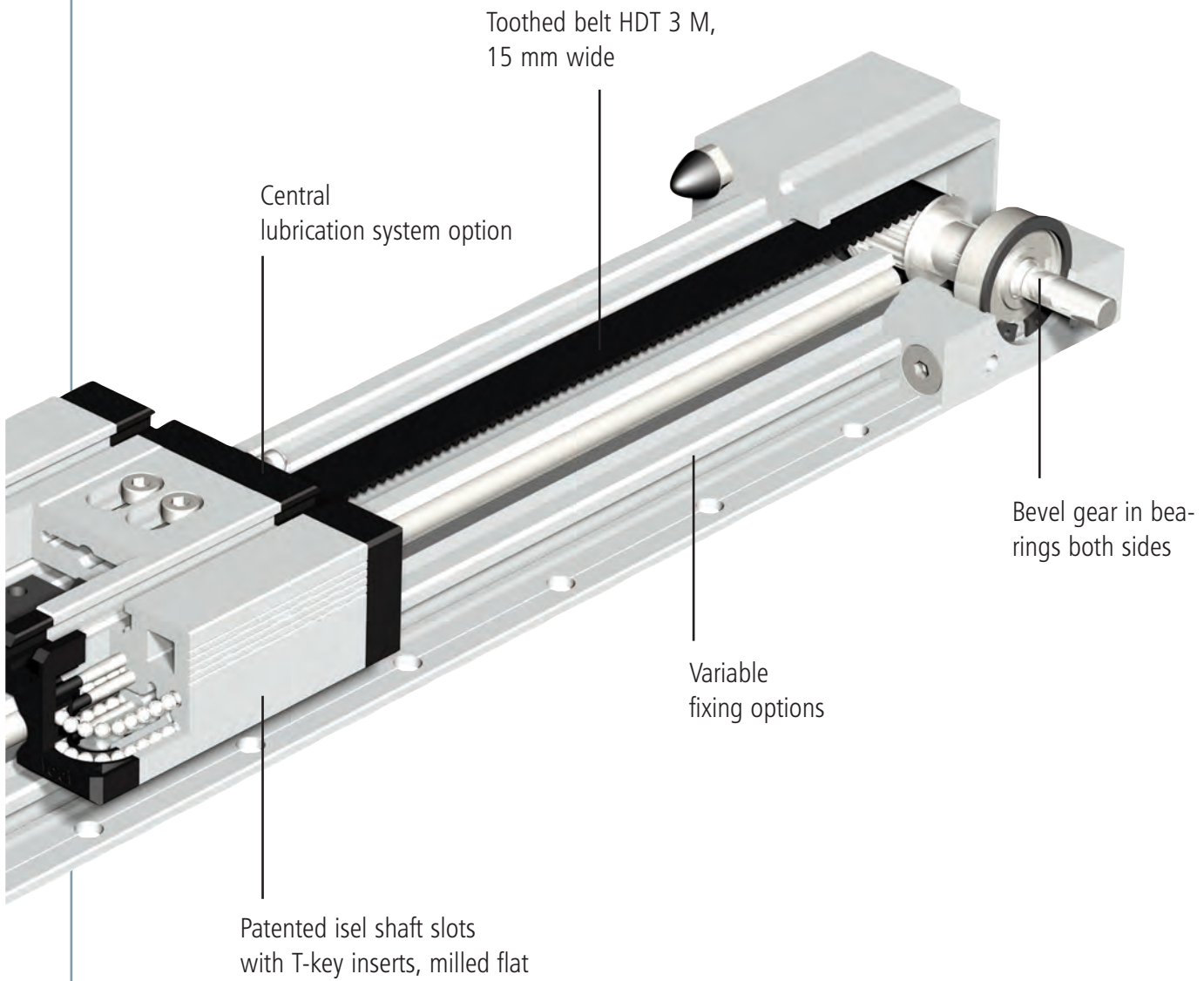
End position buffering both sides with parabolic springs

Rigid aluminium profile in lengths up to 6m

2 steel shafts Ø 8 mm, pressed into the profile And calibrated

Drive motor can be flanged on both sides

# Functional overview Linear unit LEZ 9



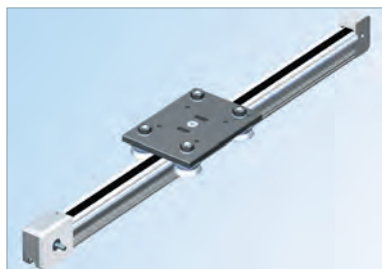
# Linear units with toothed belt drive

## LEZ 1

Guides and shaft slides also available stainless.



with shaft slides



with roller carriages

### Features

- Aluminium profile, miniature linear guide LFS-8-2
- no-play feed with toothed belt drive
  - toothed belt with 3 mm interval
  - Width 9 mm
- Feed per turn: 60 mm
- Repeatability less than or equal to  $\pm 0.2$  mm
- Max. feed. 1,5 m/s
- Limit or reference switch accuracy < 0,1 mm (with drive modules)

Accessories are on page C98.

### Options:

- special lengths in 100 mm raster to order, max. 6000 mm
- Also available as direct drive with
  - step motor
  - DC servo motor
- Overrun limit switches with connecting cable (only in combination with integrated drive module)

### Ordering key

232 005 XXXX

#### Drives/Slides

#### Roller carriages

- 8 = without motor, with shaft slides
- 9 = without motor, with roller carriages

#### Profile lengths LFS-8-2 (mm)

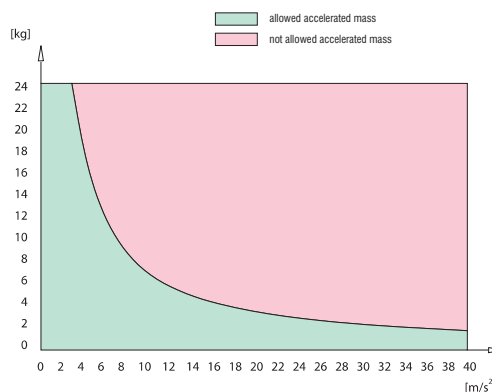
- 298, 398, 498, 598, 675, 698, 798, 998, 1498, 1798, 1998, 2498, 2998
- (e. g. 398 mm = 040
- 675 mm = 068)
- Option: up to 6000 mm

### Technical specification

Belt type.....HTD 3M, width 9 mm  
 Slide weight.....0.430 kg  
 Weight without drive module.....1000 mm = 3 kg  
 specific weight of the toothed belt.....0.0225 kg/m  
 Roller carriage weight.....1.03 kg  
 specific guide weight.....0.200 kg/100 mm  
 Effective diameter of the synchronous disks..... $\varnothing 19.10$  mm  
 Moment of inertia of the synchronous disks..... $5.585 \cdot 10^{-7}$  kgm<sup>2</sup>  
 Feed per turn.....60 mm

### Load diagram

Permitted accelerated weights relative to the belt strength.\*



\* with vertical construction, the acceleration due to gravity ( $g = 9.81 \text{ m/s}^2$ ) must be taken into account

Bending data is on page C 23.

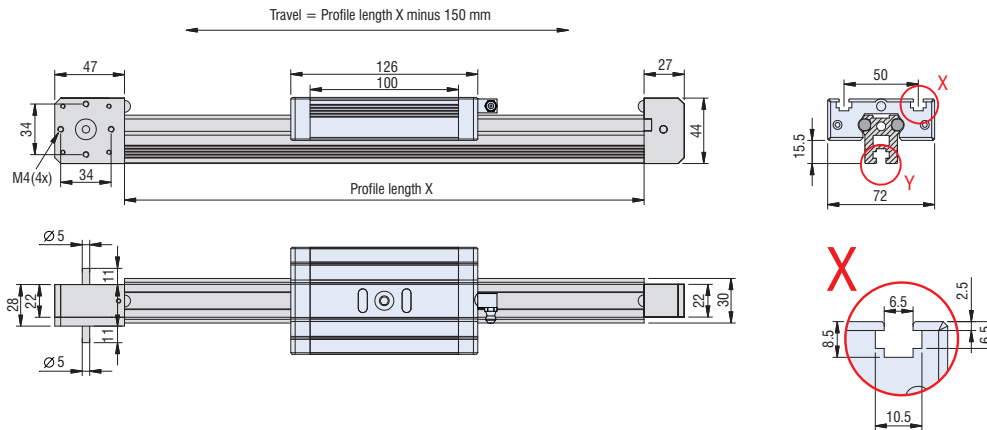
# Linear units

with toothed belt drive

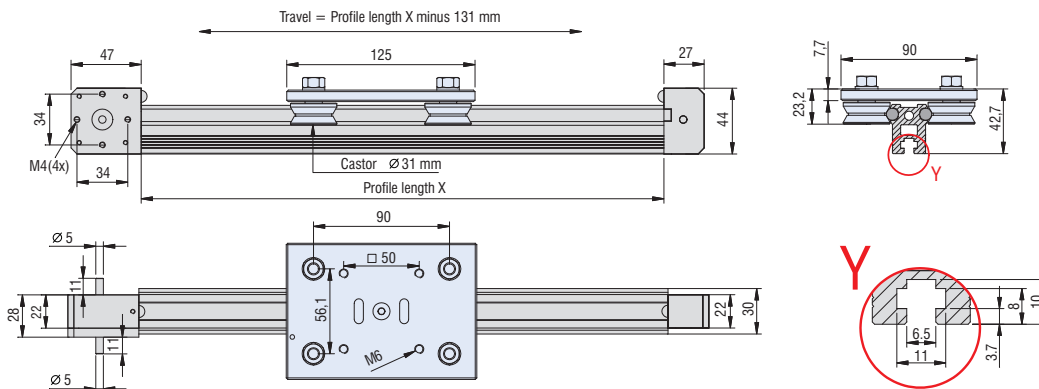
## LEZ 1

### Dimensioned drawings

without motor, with shaft slides



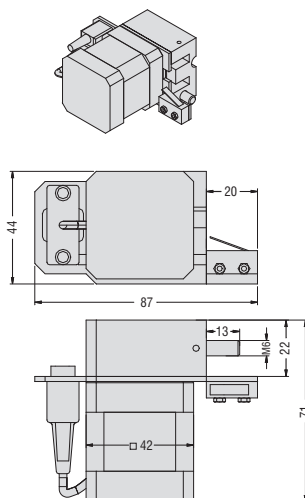
### without motor, with roller carriages



### Motor modules (Motor pin assignments are on page C74.)

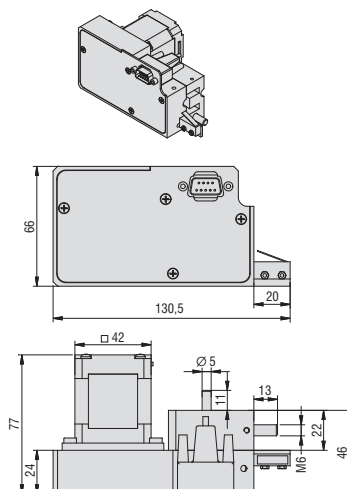
Drive module with step motor  
MS-045 HT (direct drive)  
Feed: 60 mm/turn

Part no.: **396048 3015**



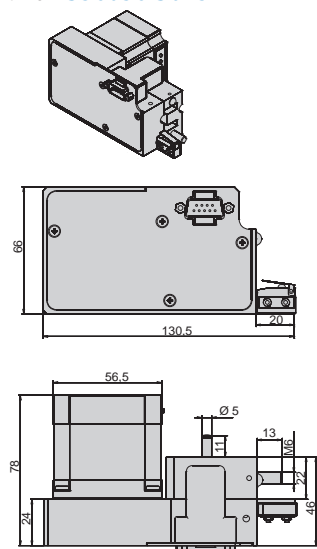
Drive module with step motor  
MS-045 HT (reduction 2:1)  
Feed: 30 mm/turn

Part no.: **396049 3015**



Drive module with step motor  
MS-135 HT (reduction 2:1)  
Feed: 30 mm/turn

Part no.: **396056 3015**



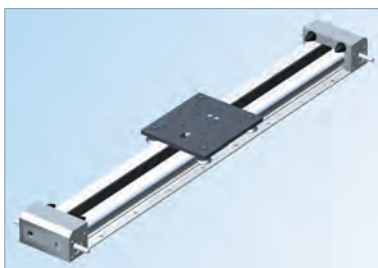
# Linear units with toothed belt drive

## LEZ 2

Guides and shaft slides also available stainless.



with shaft slides



with roller carriages

### Features

- Aluminium profile, with miniature linear guide LFS-8-5
- no-play feed with toothed belt drive - toothed belt with 5 mm interval, Width 25 mm
- Max. feed. 5 m/s
- Shaft slides WS 3, L 176 × W 130 mm
- Feed per turn: 70 mm
- Repeatability less than or equal to ± 0.2 mm
- Limit or reference switch accuracy < 0.1 mm
- available in lengths up to 6,000 mm

Accessories are on page C98.

### Options:

- Special lengths in 100 mm raster to order, max. 6,000 mm
- also as direct drive with
  - Multi-phase motor
  - DC servomotor
- Overrun limit switches with connecting cable (only in combination with integrated drive module)

### Ordering key

232 002 XXXX ————— Profile lengths (mm)  
 696, 996, 1496, 1996,  
 2496, 2996  
 (e. g. 696 mm = 070  
 1496mm = 150)  
 Drive/Slides, Roller carriages  
 8 = without motor, with shaft slides  
 9 = without motor, with roller carriages  
 Option: up to 6000 mm

### Technical specification

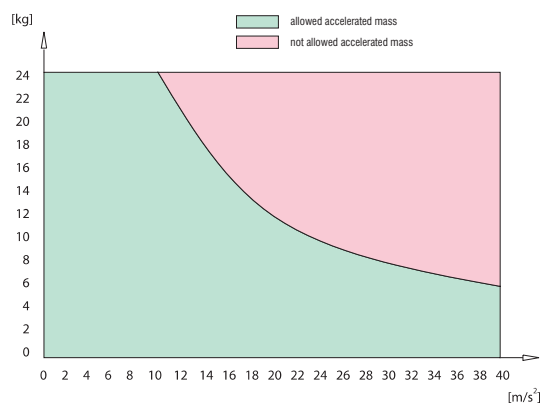
Belt type.....	HTD 5M, width 25 mm
Slide weight.....	0,940 kg
Weight without drive module.....	1000 mm $\hat{=}$ 7.9 kg
specific weight of the toothed belt.....	0.09 kg/m
Roller carriage weight.....	2.03 kg
specific guide weight.....	0.472 kg/100 mm
Effective diameter of the synchronous disks.....	Ø 22.28 mm
Moment of inertia of the synchronous disks.....	5.58·10 <sup>-6</sup> kgm <sup>2</sup>
Feed per turn.....	70 mm

### Linear guide rail LFS-8-5

Moment of inertia I <sub>x</sub> .....	137,48 cm <sup>4</sup>
Moment of inertia I <sub>y</sub> .....	27,98 cm <sup>4</sup>
Resistance torque W <sub>x</sub> .....	23,91 cm <sup>3</sup>
Resistance torque W <sub>y</sub> .....	13,09 cm <sup>3</sup>

### Load diagram

Permitted accelerated weights relative to the belt strength.\*



\* with vertical construction, the acceleration due to gravity (g = 9.81 m/s<sup>2</sup>) must be taken into account

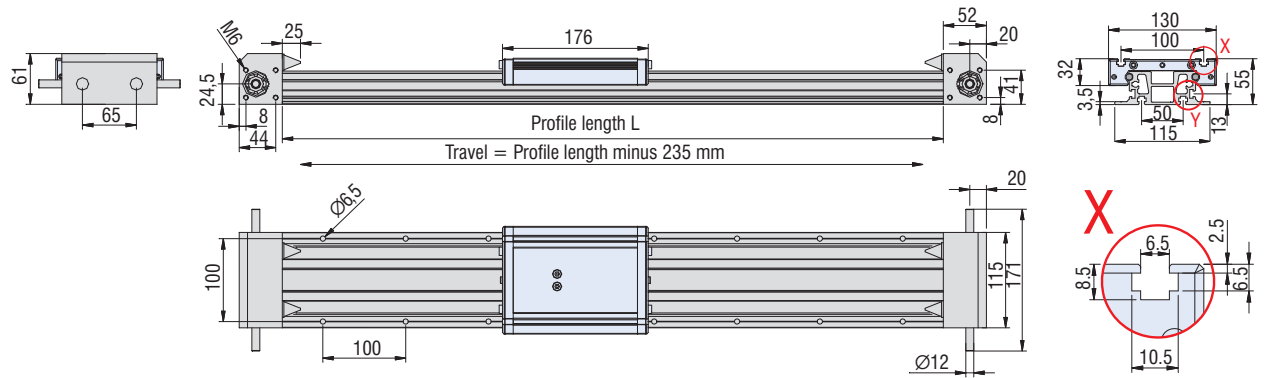
# Linear units

with toothed belt drive

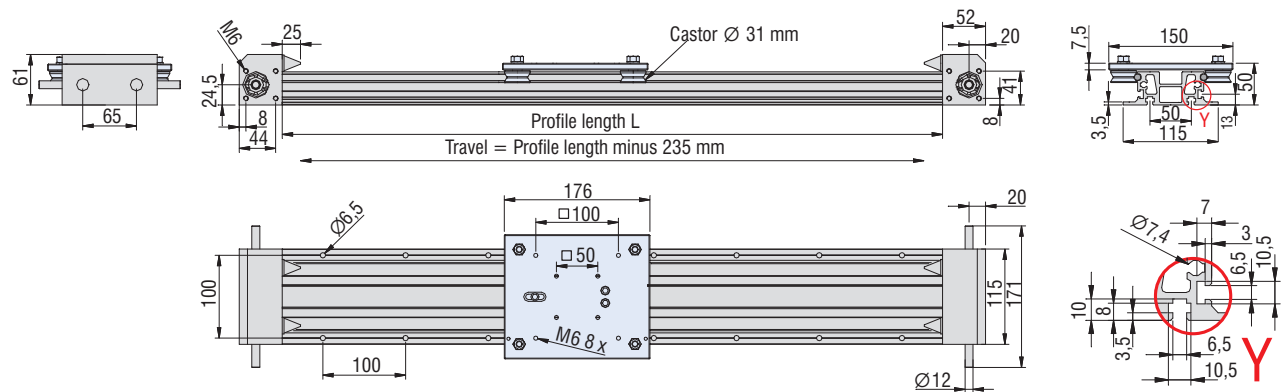
## LEZ 2

### Dimensioned drawings

without motor, with shaft slides



without motor, with roller carriages



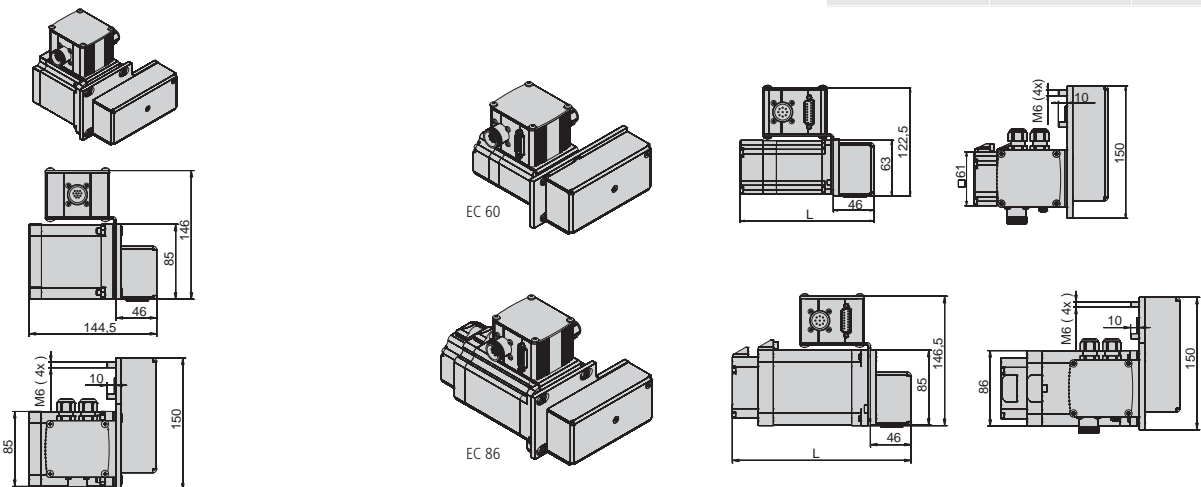
### Motor modules (Motor pin assignments are on page C74.)

Drive module with step motor  
MS-600 HT (reduction 2:1)  
Feed: 35 mm/turn

Part no.: **396086 3060**

Drive module with EC servomotors  
(Reduction 2:1)  
Feed: 35 mm/turn

Part number	Motor module	Length L
396 415 3260	EC 60S with brake	151.5 mm
396 415 3060	EC 60S without brake	198.5 mm
396 423 3060	EC 60L	186.5 mm
396 444 3070	EC 86S	177.5 mm
396 466 3070	EC 86L	202.5 mm



# Linear units with toothed belt drive

## LEZ 3

Guides and shaft slides also available stainless.



with shaft slides



with roller carriage

### Features

- Aluminium profile, miniature linear guide LFS-8-4
- no-play feed with toothed belt drive, toothed belt with 5 mm interval, width 25 mm
- Max. feed. 5 m/s
- Shaft slides WS3, L176 × W130 mm
- Feed per turn: 70 mm or 150 mm
- Repeatability less than or equal to ± 0.2 mm
- Limit or reference switch accuracy < 0.1 mm
- available in lengths up to 6,000 mm
- Motor modules right and left can be flanged

Accessories are on page C98.

#### Options:

- Special lengths in 100 mm raster to order, max. 6,000 mm
- Overrun limit switches with connecting cable (only in combination with integrated drive module)

### Ordering key

23200X XXXX

#### Profile lengths (mm)

698, 998, 1498, 1998, 2498, 2998

(e. g. 698 mm = 070

1498 mm = 150)

#### Feed

6 = 150 mm / turn

7 = 70 mm / turn

#### Slides, roller carriages

0 = with shaft slides

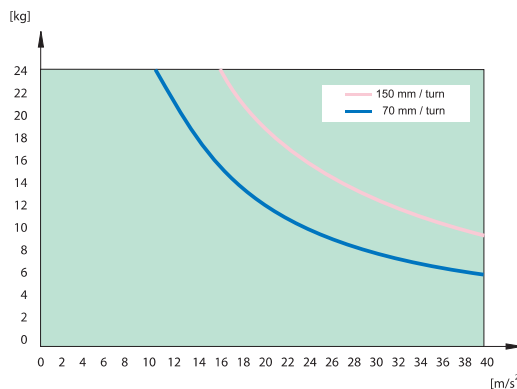
1 = with roller carriages

### Technical specification

Belt type.....	HTD 5M, width 25 mm
Slide weight.....	0.940 kg
Weight without drive module.....	1000 mm <sup>2</sup> = 10.5 kg
specific weight of the toothed belt.....	0.09 kg/m
Roller carriage weight.....	2.03 kg
specific guide weight.....	0.648 kg/100 mm
Feed per turn.....	70 mm or 150 mm
Effective diameter of the synchronous disks	
Feed 70 mm/turn.....	22.28 mm
Feed 150 mm/turn.....	47.75 mm
Moment of inertia of the synchronous disks	
Feed 70 mm/turn.....	5.58E-6 kgm <sup>2</sup>
Feed 150 mm/turn.....	1,796.10 <sup>-4</sup> kgm <sup>2</sup>

### Load diagram

Permitted accelerated weights relative to the belt strength.\*



\* with vertical construction, the acceleration due to gravity (g=9.81 m/s<sup>2</sup>) must be considered

Bending data is on page C 27.

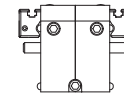
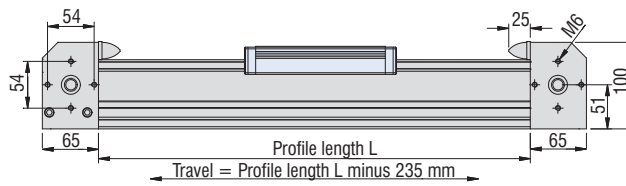
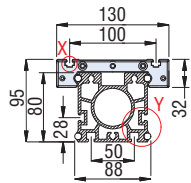
# Linear units

with toothed belt drive

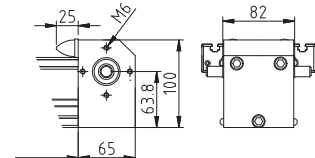
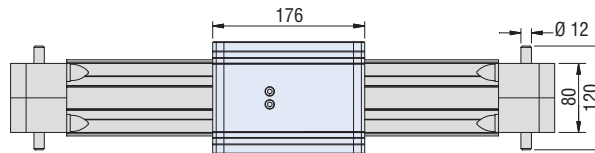
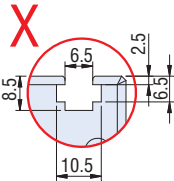
## LEZ 3

### Dimensioned drawings

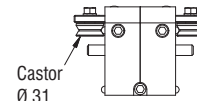
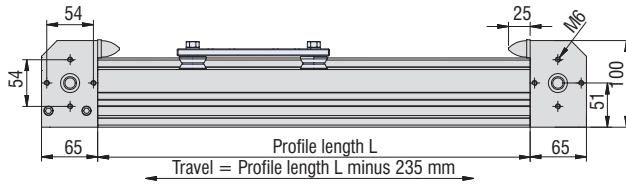
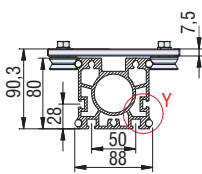
with shaft slides



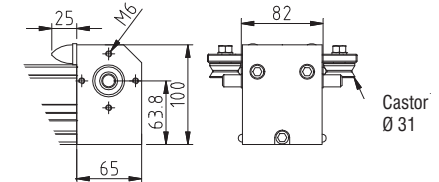
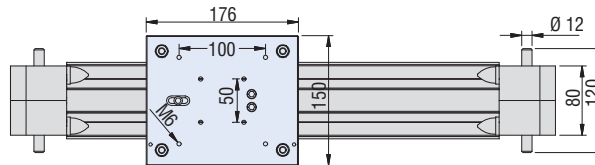
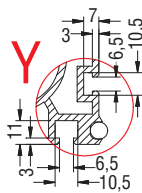
Feed: 70 mm/turn



with roller carriages

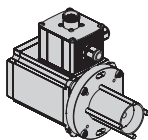


Feed: 70 mm/turn



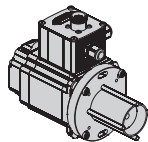
### Motor modules (Motor pin assignments are on page C74.)

Drive module with stepper motor (direct drive)



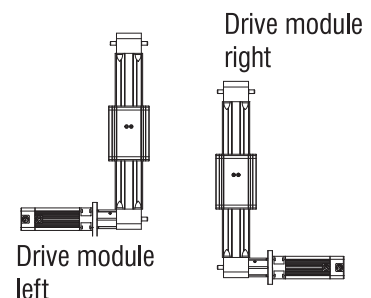
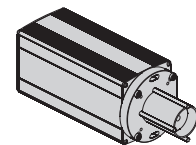
Part number	Motormodul	
396 085 0060	MS 600 HT	right
396 085 0061	MS 600 HT	left
396 088 0060	MS 900 HT	right
396 088 0061	MS 900 HT	left

Drive module with EC servomotor EC 86 (direct drive)



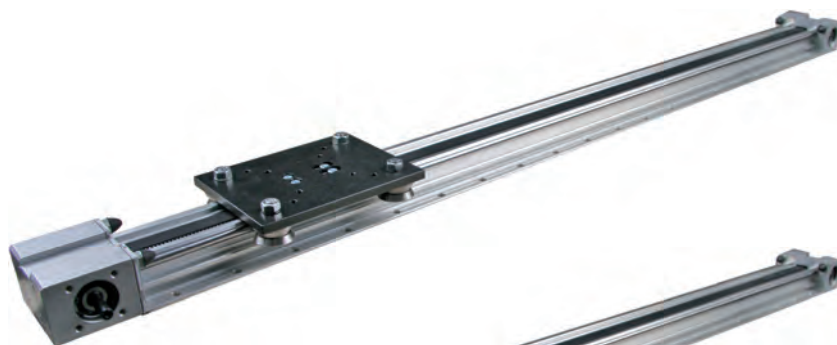
Part number	Motor module	Length L
396 444 0070	EC 86S	177.5 mm
396 466 0070	EC 86L	202.5 mm

Drive module with DC servomotor DC 300 (direct drive)  
Part no.: **396114 0060**



# Linear units with toothed belt drive

## LEZ 9



with roller carriages



with shaft slides

### Features

- Aluminium profile  
Linear guide LFS-8-7
- no-play feed with  
toothed belt drive
- toothed belt with 3 mm interval  
Width 15 mm
- Max. feed. 2 m/s
- Shaft slides WS 11  
L 96 × W 95 mm
- Feed per turn: 60 mm
- Repeatability less than or  
equal to ± 0,2 mm
- Limit or reference switch  
accuracy < 0.1 mm
- Servomotor

Accessories are on page C98.

#### Options:

- Special lengths in 100 mm raster  
to order
- Stepper motor

### Ordering key

232010 XXXX\*

Profile lengths (mm)

496, 996, 1496, 1996, 2496, 2996

(e. g. 496 mm = 0050

1496 mm = 0150)

#### Note:

Please order drive modules separately on the listed part numbers and specify here, whether the delivery should take place with or without attachment.

\* Only for model with shaft slide (model with carriage on request)

### Technical specification

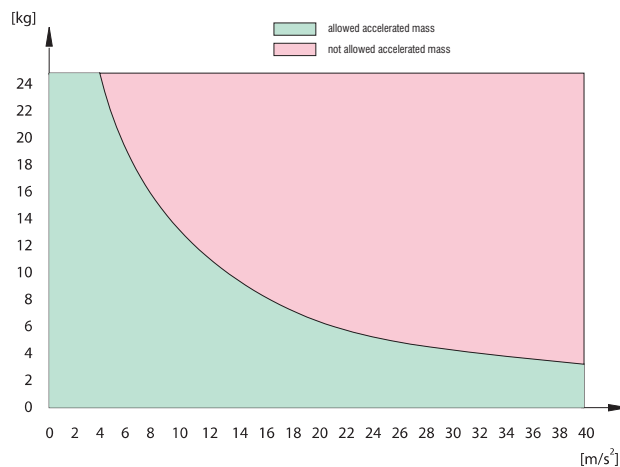
Belt type.....	HTD 3M, width 15 mm
Slide weight.....	0.4 kg
Weight without drive module.....	1000 mm = 4.4 kg
specific weight of the toothed belt.....	0.04 kg/m
specific guide weight.....	0.29 kg/100 mm
Effective diameter of the synchronous disks.....	Ø 19.1 mm
Moment of inertia of the synchronous disks.....	5.58E-6 kgm <sup>2</sup>
Feed per turn.....	60 mm

#### Linear guide rail LFS-8-7

Moment of inertia I <sub>x</sub> .....	29.34 cm <sup>4</sup>
Moment of inertia I <sub>y</sub> .....	10.86 cm <sup>4</sup>
Resistance torque W <sub>x</sub> .....	7.52 cm <sup>3</sup>
Resistance torque W <sub>y</sub> .....	5.68 cm <sup>3</sup>

### Load diagram

Permitted accelerated weights relative to the belt strength.\*



\* with vertical construction, the acceleration due to gravity (g=9.81 m/s<sup>2</sup>) must be considered

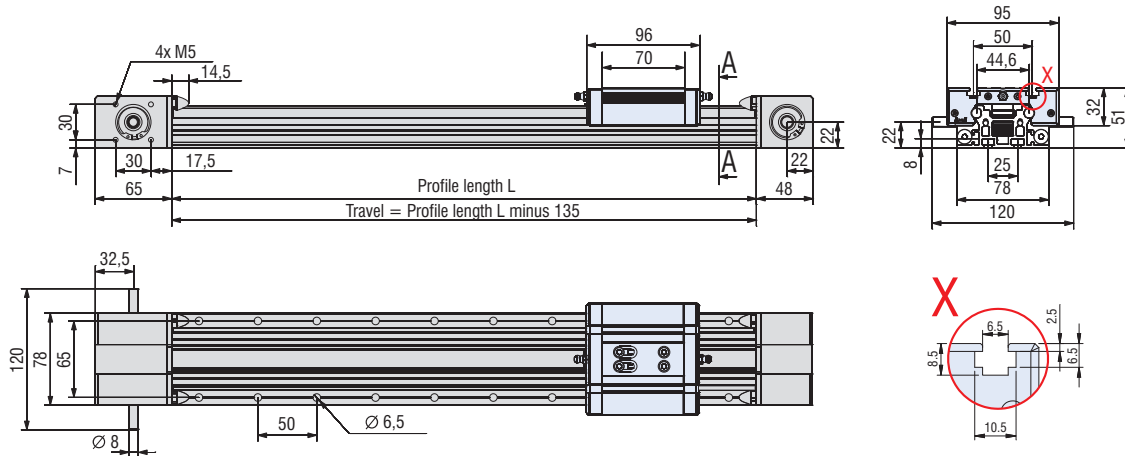
# Linear units

with toothed belt drive

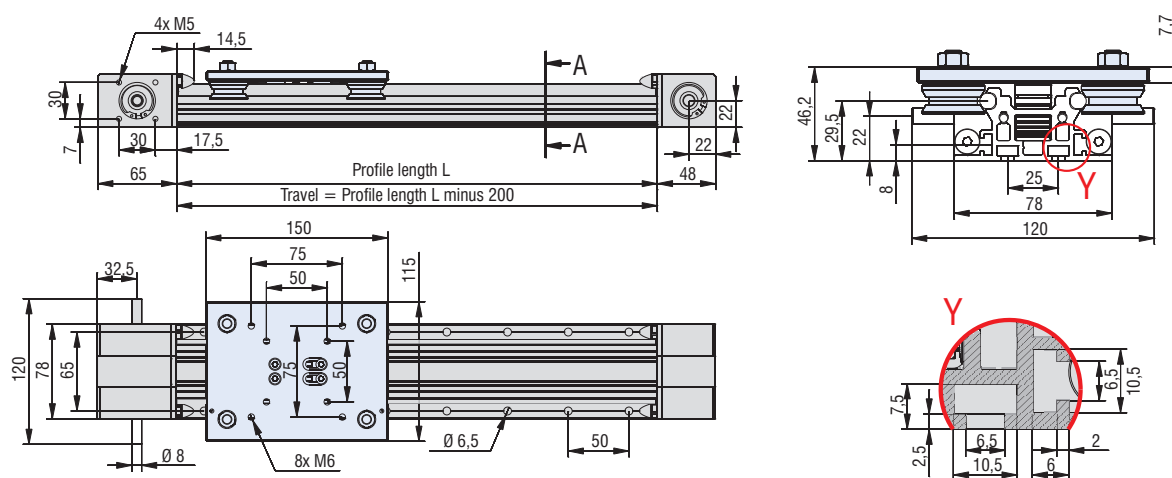
## LEZ 9

### Dimensioned drawings

with shaft slides



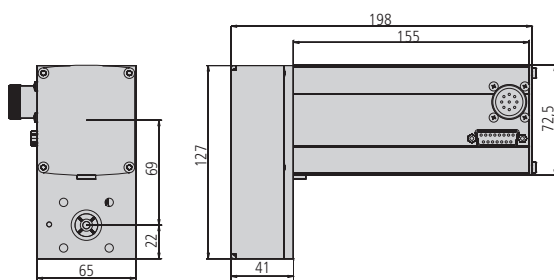
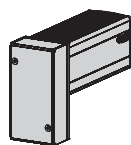
### with roller carriages



### Motor modules (Motor pin assignments are on page C74.)

Drive module with stepper motor MS 200 HT  
(Reduction 2:1)  
Feed: 30mm / turn

Part number	Motor module	
396 058 3017	MS 200 HT	right
396 058 3018	MS 200 HT	left



Drive module with DC servomotor DC 100  
(Reduction 2:1)  
Feed: 30mm / turn

Part no.: 396112 3063

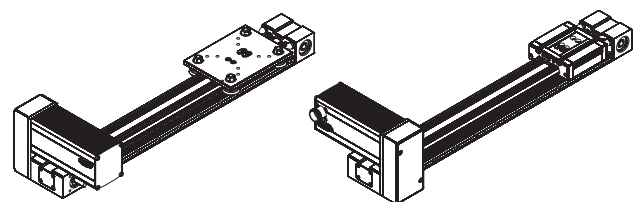
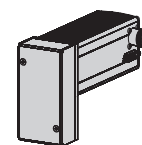
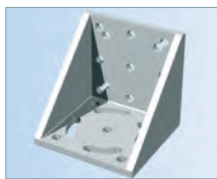


Figure:  
LEZ 9 with roller carriage and MS 200 HAT stepper motor Mounted on left

Figure:  
LEZ 9 with shaft slide and DC 100 servomotor mounted on right

# Accessories

## LEZ 1



Angle bracket

- for LEZ 1

Part no.: **209110 0010**



20/30 coupling

- for LEZ 1
- 1 VE = 1 coupling

Part no.: **218001 5080**

### Shaft slide 1/70

- L 96 × W 72 × H 28.5 mm
- Clamping surface plane milled, T-slot insert, M6
- central lubrication system option, adjustable for no play
- Weight: 0.35 kg
- Option: stainless steel version

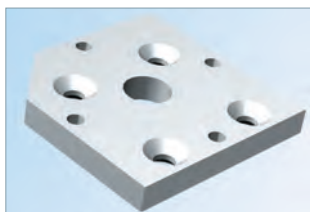
Part no.: **223 100 0070**  
stainless steel: **223 101 0070**

### Limit switch set

- Option: 2. Limit switches
- for LEZ 1

Part no.: **632 125 0002**

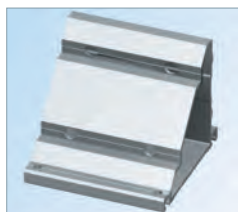
## LEZ 2



Motor fixing plate

- for LEZ 2
- incl. fixing material
- for direct drive see page C78 *et seq.*

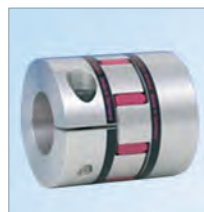
Part no.: **232199 0004**



Angle bracket

- for LEZ 2
- incl. fixing material

Part no.: **232199 0005**

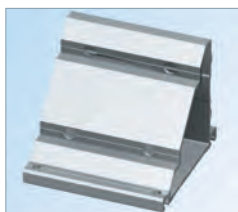


Coupling for Transmission shaft

- for LEZ 2
- 1 VE = 1 coupling

Part no.: **218003 0120**

## LEZ 3



Angle bracket

- for LEZ 3
- incl. fixing material

Part no.: **232199 0005**



Coupling for transmissions shaft

- for LEZ 3
- 1 VE = 2 couplings

Part no.: **218050 0002**

### Transmission shaft $\varnothing$ 25 mm

Length 1m  
Part no.: **219001 0125**

Length 2m  
Part no.: **219001 0225**

### Limit switch set

Motor side  
Part no.: **397201 0000**  
Deviation  
Part no.: **397201 XXXX**

## LEZ 9



30/40 coupling

- for LEZ 9
- 1 VE = 1 coupling

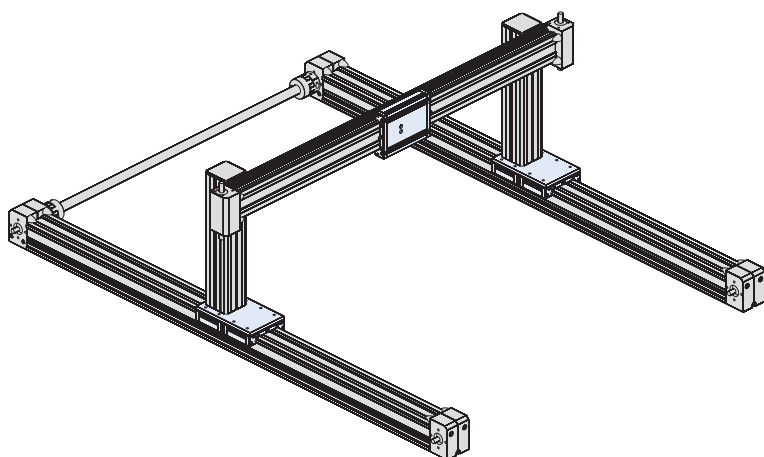
Part no.: **218002 8080**

### Shaft slide WS 11/70

- L 96 × W 96 × H 32 mm
- Clamping surface plane milled, T-slot insert, M6
- central lubrication system option, adjustable for no play
- Weight: 0.4 kg
- Option: stainless steel version

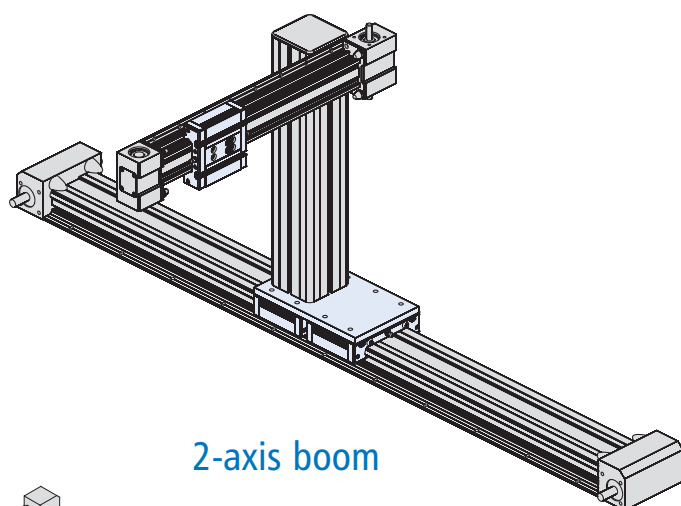
Part no.: **223111 0070**  
stainless: **223111 1070**

## Examples in use



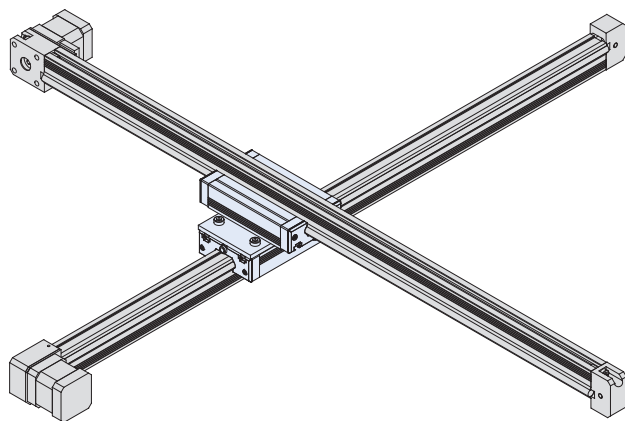
### 2-axis H-design

- 2 × LEZ 3
- 1 × LEZ 2
- Transmission shaft



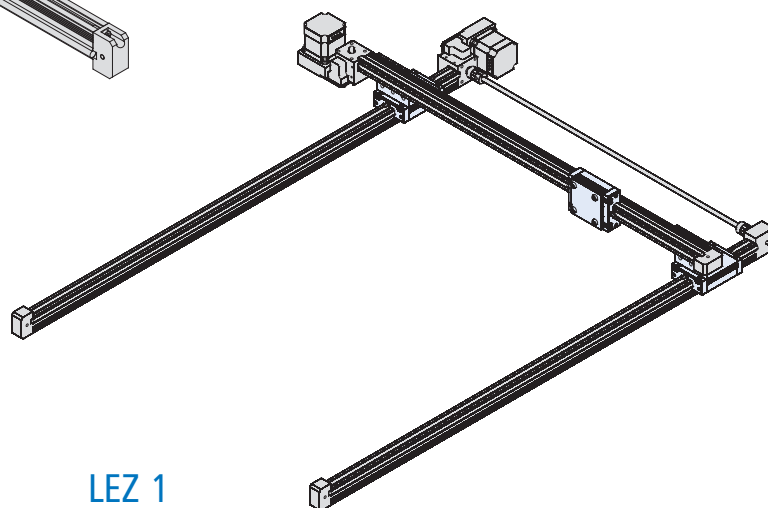
### 2-axis boom

- 1x LEZ 2
- 1x LEZ 9



### Crossbench LEZ 1

- 2 x LEZ 1



### LEZ 1

- 2-axis flatbed configuration