

Timing Belt Feed Axis

(Open Timing Belt Feed Axis)

LEZ 3

(ZF 3)

Feeds and Shaft Slides are also available in Rust-Proof Designs!



- Option:
 - special lengths (100 1/mm raster) upon request, max. 6,000 mm
 - limit switch with connecting cable (only integrated in connection with drive module)

Features

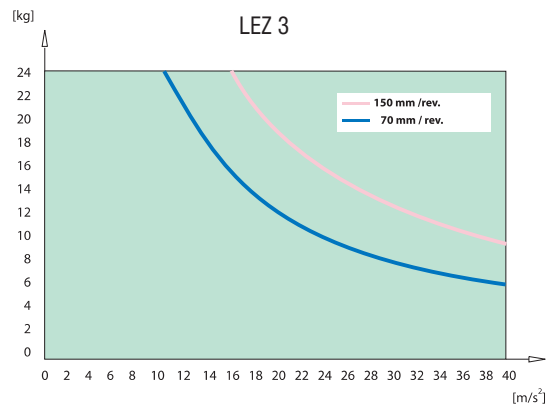
- Aluminium profile with midget linear guide LFS-8-4
- Clearance-free feed with timing belt feed axis
 - timing belt with 5 mm pitch, width 25 mm
- Feed 5 m/s, at the most
- Shaft slide WS 3, L 176 x W 130 mm
- Feed per revolution: 70 mm or 150 mm
- Repeatability lower or equal ± 0.2 mm
- Limit and/orreference switch, accuracy < 0.1 mm
- Available in lengths up to 6,000 mm
- Motor modules can be flange-mounted on the right or left side

Technical Data

Belt version.....	HTD 5M, width 25 mm
Weight of slide.....	0.940 kg
Weight without drive module.....	1,000 mm $\hat{=}$ 10.5 kg
Nominal mass of timing belt.....	0.09 kg/m
Weight of slide.....	2.03 kg
Nominal weight of guide.....	0.472 kg/100 mm
Feed per revolution.....	70 mm
Effective diameter of the synchronized pulleys	
Feed 70 mm/revolution.....	22.28 mm
Feed 150 mm/revolution.....	47.75 mm
Moment of inertia of the synchronized pulleys	
Feed 70 mm/revolution.....	5.58×10^{-6} kgm ²
Feed 150 mm/revolution.....	1.796×10^{-4} kgm ²

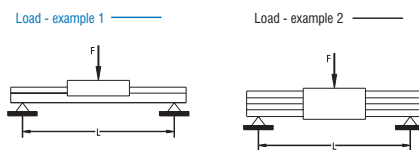
Load Diagram

Permissible accelerated masses related to belt strength*

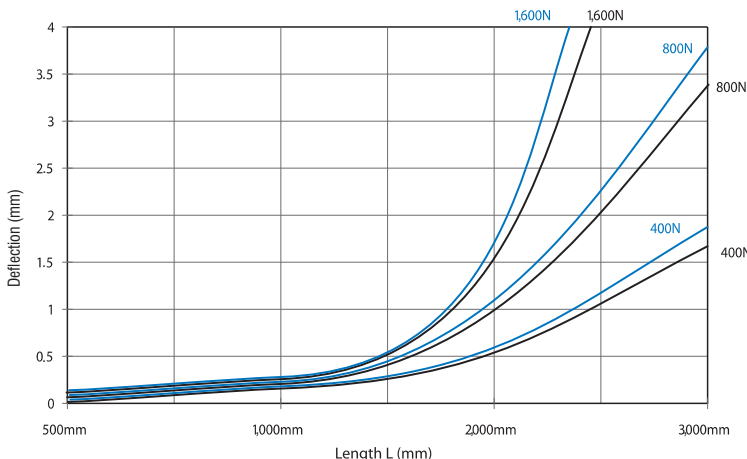


* At vertical assembly, the acceleration due to gravity ($g = 9.81 \text{ m/s}^2$) has to be taken into account

Deflection



Deflection Timing Belt Feed Axis LEZ 3



Idle Torques

70 mm/revolution

Revolution [1/min]	Idle torque [Nm]
500	0.16
1,500	0.24
3,000	0.36

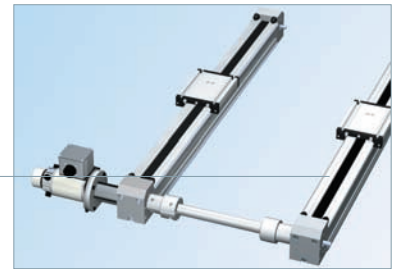
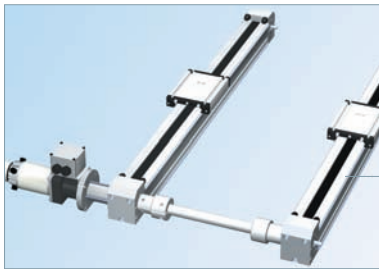
150 mm / Revolution

Revolution [1/min]	No-load torque [Nm]
500	0.60
1,500	0.70
3,000	0.80

Timing Belt Feed Axis

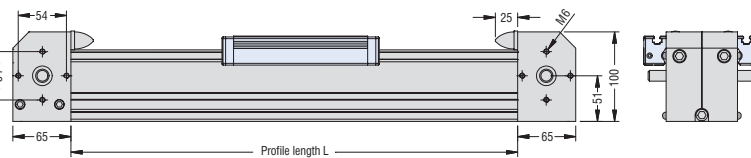
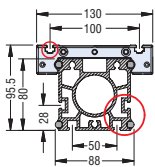
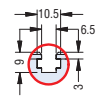
LEZ 3 (ZF 3)

Timing Belt Feed Axis with Shaft Slide

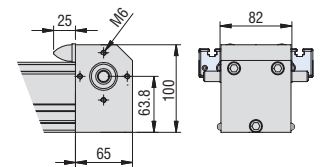


Feed: 150 mm / Revolution
70 mm / Revolution

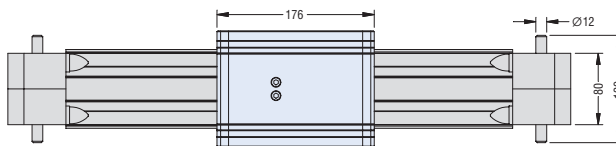
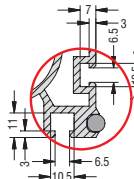
Feed: 70 mm / Revolution



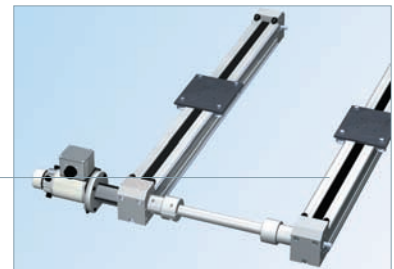
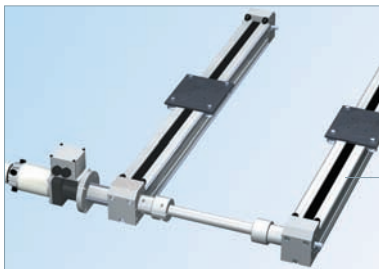
Feed: 70 mm / Revolution



Travel range = profile length L minus 235 mm

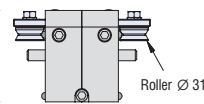
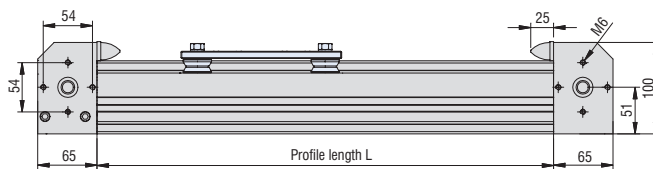
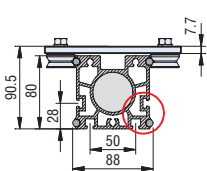


Timing Belt Feed Axis with Carriage



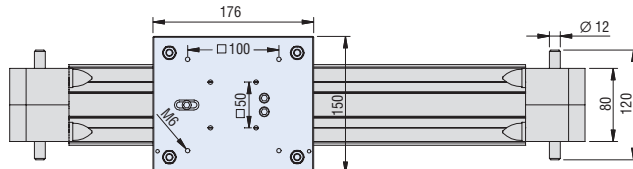
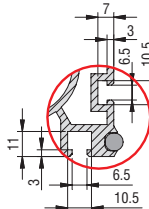
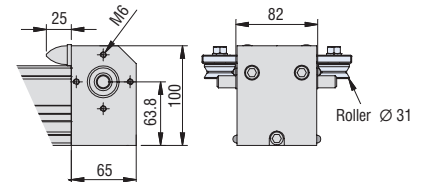
Feed: 150 mm / Revolution
70 mm / Revolution

Feed: 70 mm / Revolution



Travel range = profile length L minus 235

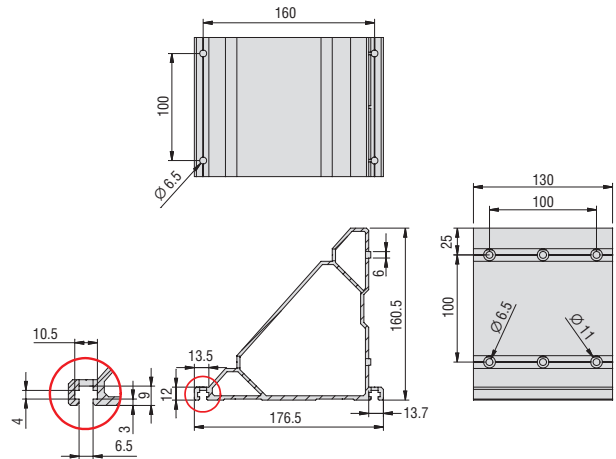
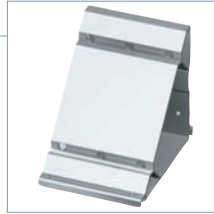
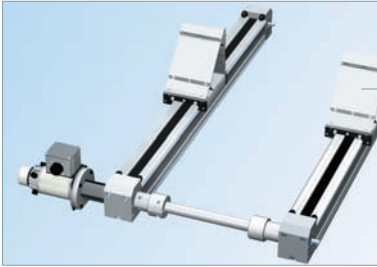
Feed: 70 mm / Revolution



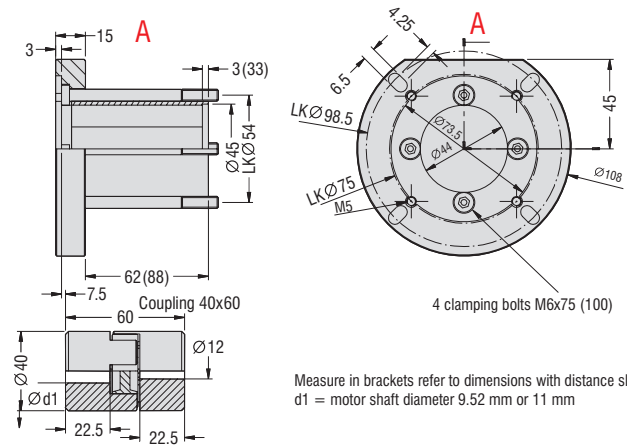
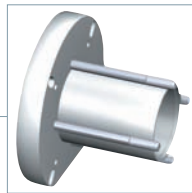
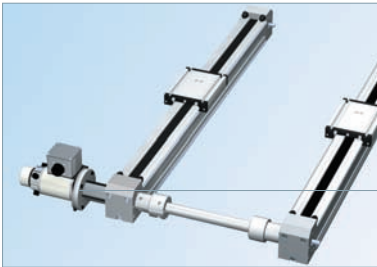
Timing Belt Feed Axis

LEZ 3 (ZF 3)

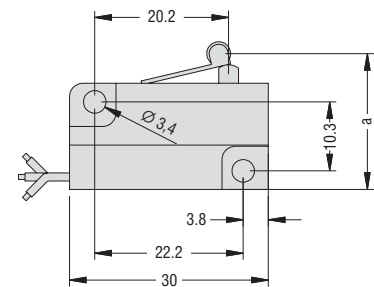
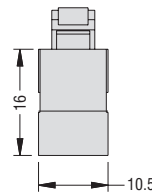
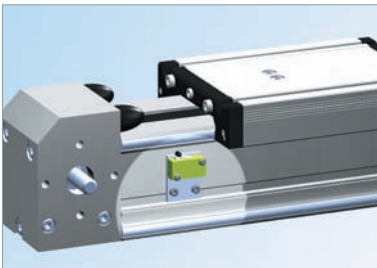
Mounting Angle



Coupling Casing Set 2



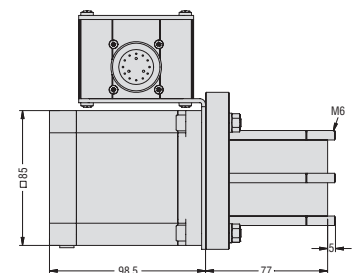
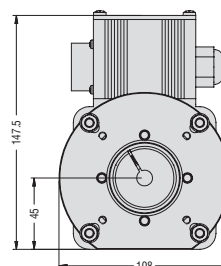
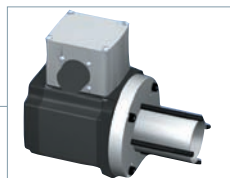
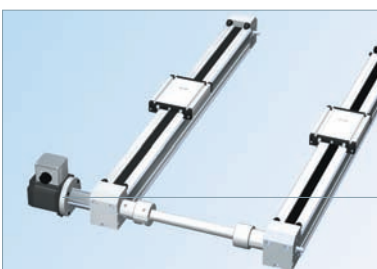
Limit Switch



Dimensions a (mm)	Actuator position
21.9 ± 0.3	Rest position
20.7 ± 0.4	Switching point
21.0 ± 0.4	Back-switch point
18.9 ± max.	End position (minimum measure)

Drive Module with Stepper Motor MS-430 HT

Feed: 70 mm / rev.

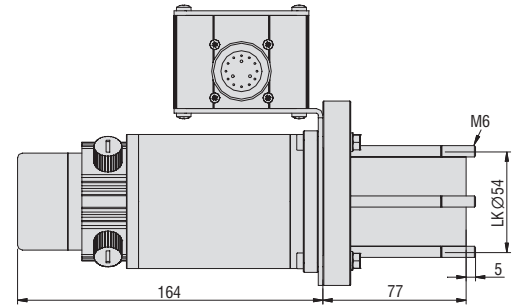
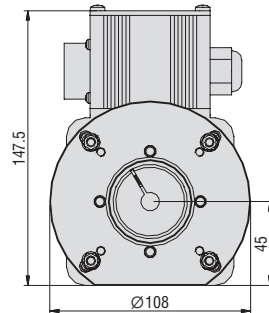
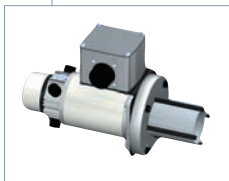
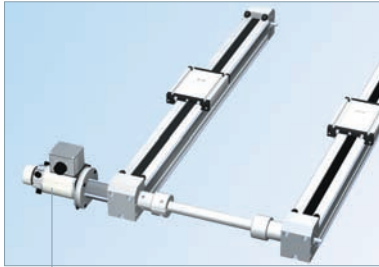


Timing Belt Feed Axis

LEZ 3 (ZF 3)

Drive Module with DC Servo Motor MV 300

Feed: 70 mm/Revolution



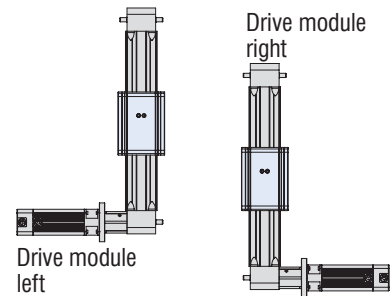
Drive Modules

Stepping Motor MS 430 HT

Holding torque – bipolar..... 600 Ncm
 Stepping angle, full step..... 1.8 degree
 Stepping angle, half-step..... 0.9 degree
 Nominal voltage – bipolar..... 2.8 V
 Resistance of winding..... 0.66 W
 Winding inductivity..... 2.5 mH
 Current of winding – bipolar...5.9 A

DC Servo Motor MV 300

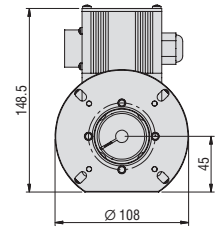
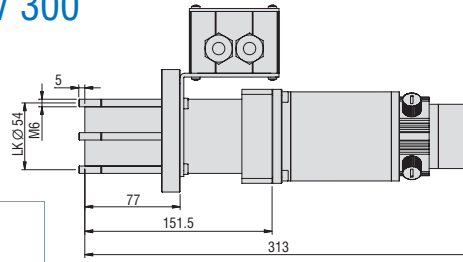
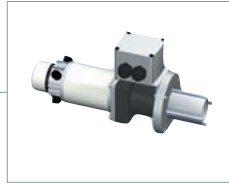
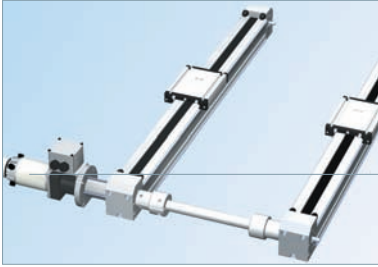
Nominal power..... 300 W
 Nominal speed..... 2,500 rpm
 Nominal torque..... 1,20 Nm
 Nominal Current 5.1 A
 Nominal voltage..... 75 V
 Peak torque..... 3,60 Nm
 Current at peak torque..... 15,3 A
 Ambient temperature..... 0 - 40 °C



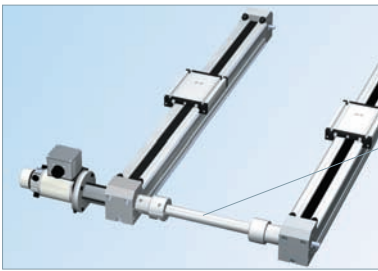
Timing Belt Feed Axis

LEZ 3 (ZF 3)

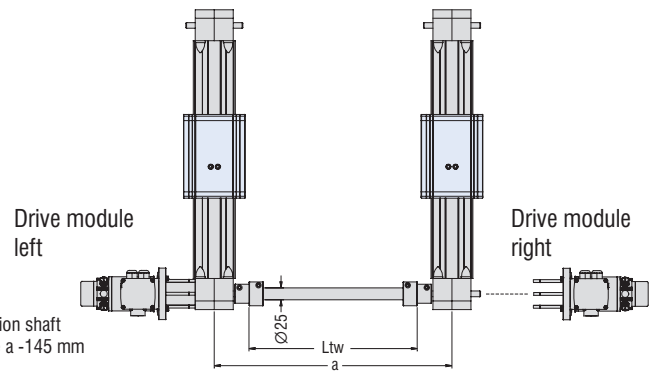
Drive Module with DC Servo Motor MV 300
(Reduction 3:1)
Feed: 150 mm/Revolution



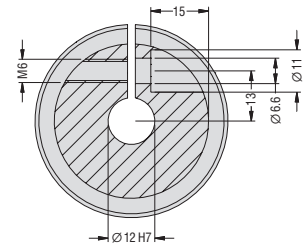
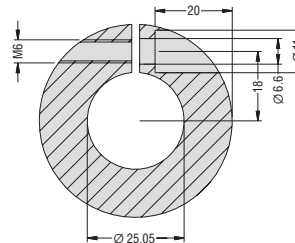
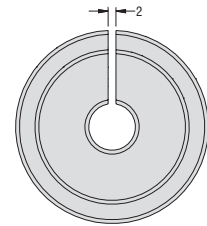
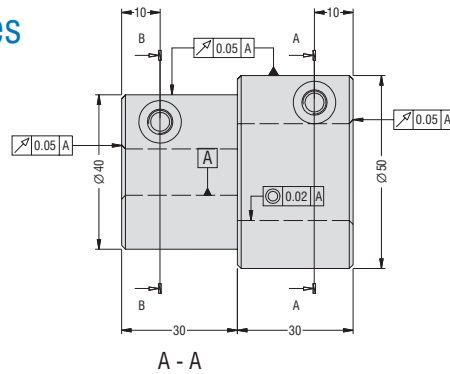
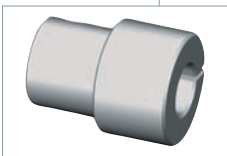
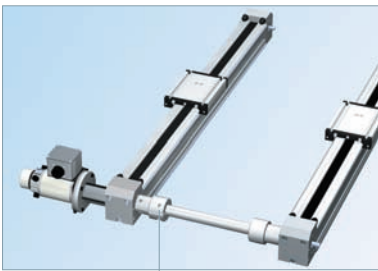
Connection of two Timing Belt Feed Axes
Transmission Shaft



Length of transmission shaft
 $L_{tw} = \text{axis distance } a - 145 \text{ mm}$



Connection of two Timing Belt Feed Axes
Coupling for Transmission Shaft



Moments of Inertia
for Coupling and Transmission Shaft

Coupling

Transmission Shaft (per 100 mm)

$$J_k = 6.643 \cdot 10^{-5} \text{ kgm}^2$$

$$J_{T_{100}} = 5.218 \cdot 10^{-6} \text{ kgm}^2/100 \text{ mm}$$

Timing Belt Feed Axis

LEZ 3

(ZF 3)

Order Key

23200 X X XXX

Feed

6 = 150 mm/revolution
7 = 70 mm/revolution

Drives *

Stepping motor MS 430 HT
DC servo motor MV 300
DC servo motor MV 300 (ratio 3:1)

Slide, Carriages

0 = with shaft slide
1 = with carriage

Drive on the right side	Drive on the left side
Item no.	Item no.
396085 0193	396085 0093
396104 0093	396104 0020
396134 0093	396134 0020

Profile Lengths (mm)

698; 998; 1,498; 1,998; 2,498; 2,998
(e. g. 698 mm = 070
1,498 mm = 150)

* Please, order the drive modules separately; use the above-stated item numbers for this purpose. Do not forget to specify whether the delivery should take place with or without extension.

Order Samples



- with stepping motor MS 430 HT
- feed 70 mm/revolution
- motor connection, left
- with shaft slide
- basic profile length 698 mm

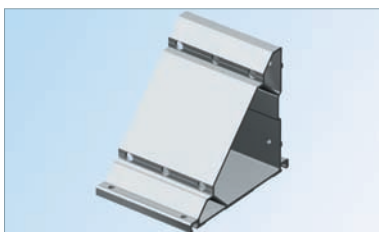
Item no.: **232007 0070** (feed)
item no.: **396085 0093** (drive)



- with DC servo motor MV 300
- feed 70 mm/revolution
- motor connection, left
- with shaft slide
- basic profile length 698 mm

Item no.: **232007 0070** (feed)
item no.: **396104 0020** (drive)

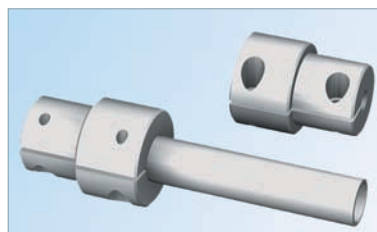
Accessory



Angle Brackets

- for LEZ 3
- incl. fastening

Item no.: **232199 0005**



Coupling for Transmission shaft

- for LEZ 3
- packaging unit: 2 couplings

Item no.: **218050 0002**

Transmission shaft Ø 25 mm

- for LEZ 3

Length 1 m, item no.: **219001 0125**
Length 2 m, item no.: **219001 0225**

Limit Switch set

Motor side

Item no. **397201 0000**

to turn round side

Item no. **397201 XXXX**