

**MTJZ**

## CHARACTERISTICS

The **MTJZ** series contains Z-axis Linear Units with toothed belt drive, integrated Ball rail system and compact dimensions. This Linear Units provide high performance features such as, high speed, good accuracy and repeatability by vertical applications.

They can easily be combined to multi-axis systems.

Excellent price-/performance ratio and quick delivery time are ensured.

The compact, precision-extruded aluminum Profile from 6063 AL with integrated Zero-backlash Ball rail guide system, allows high load capacities and optimal cycles for the movement of larger masses at high speed.

In the linear units MTJZ is used a pre-tensioned steel reinforced AT polyurethane timing toothed belt. In conjunction with a Zero-backlash drive pulley high moments with alternating loads with good positioning accuracy, low wear and low noise can be realized.

The in the Profile slot driving Polyurethane timing belt protects all the parts in the Profile from dust and other contaminations

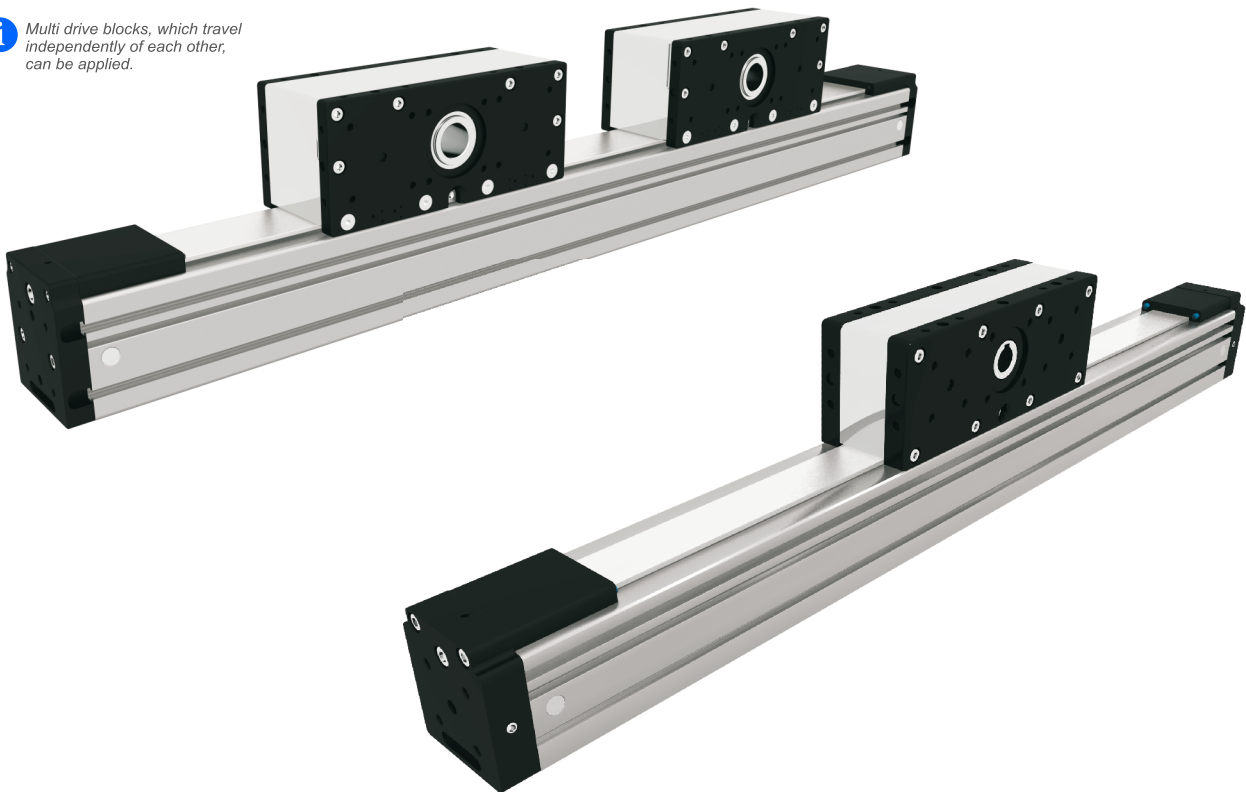
The aluminum Profile includes T-slots for attaching sensors and switches. Also, a Reed switch can be used here.

The drive block provides the possibility to attach a Motor or Gearbox housing and additional accessories on it.

Central lubrication port on the drive block allows easy re-lubrication of the Ball rail guide.

For the linear units MTJZ various adaptation options, for attaching (or redirecting), for Motors or Gearboxes are available.

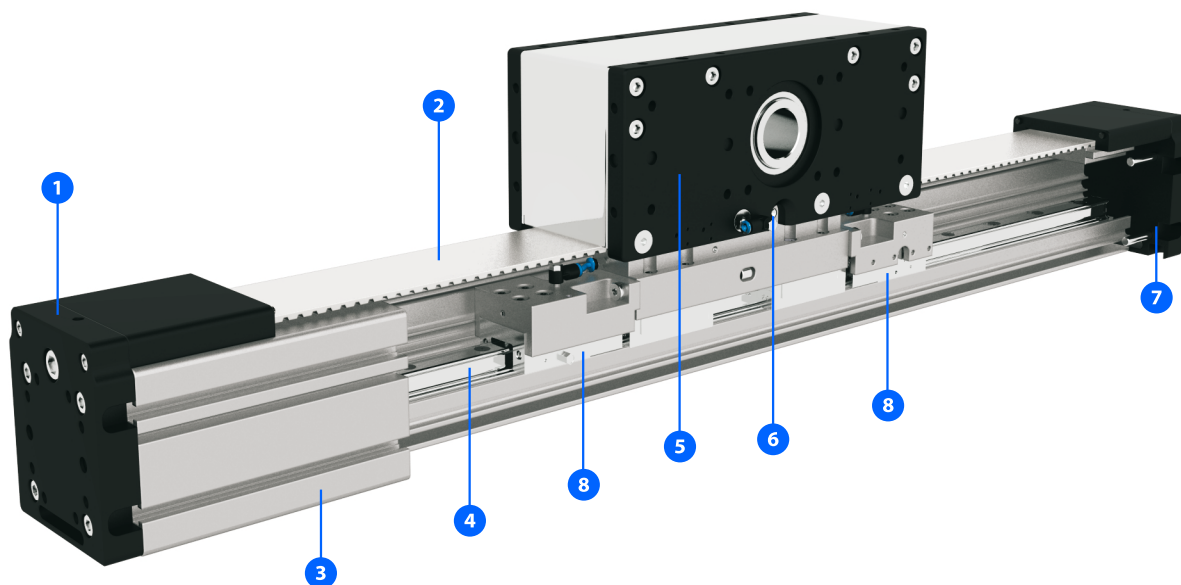
**i** Multi drive blocks, which travel independently of each other, can be applied.



**i** The aluminium profiles are manufactured according to the medium EN 12020-2 standard

*Straightness = 0,35 mm/m; Max. torsion = 0,35 mm/m; Angular torsion = 0,2 mm/40 mm; Parallelism = 0,2 mm*

STRUCTURAL DESIGN



- 1 - Tension End with integrated belt tensioning system
- 2 - AT polyurethane toothed belt with steel tension cords
- 3 - Aluminium profile-Hard anodized
- 4 - Linear Ball Guideway
- 5 - Drive block with pulley, Motor flange; with built in Magnets
- 6 - Central lubrication port; both sides
- 7 - Tension End with integrated belt tensioning system
- 8 - Clamping and braking element for linear guideway

HOW TO ORDER

**MTJZ** - **65** - **700** - **10** - **0** - **2** - **350**

Series : \_\_\_\_\_

**MTJZ**

Size : \_\_\_\_\_

**40**

**65**

**80**

**110**

Absolute Stroke [mm] : \_\_\_\_\_

(Absolute stroke = Effective stroke + 2 x Safety stroke)

Type of drive pulley : \_\_\_\_\_

**0** : Pulley with through hole

**1** : Pulley with journal

**10** : Pulley with journal (without Keyway)

**2** : Pulley with journal on both sides

**20** : Pulley with journal on both sides (without Keyway)

**!** *MTJZ 110 only available with drive pulley with through hole*

Clamping element : \_\_\_\_\_

**0** : Without

**1** : With (available only for MTJZ 110)

**!** *Only as emergency break!*

Number of drive blocks : \_\_\_\_\_

The stated number specifies the number of drive blocks on one Linear unit (up to 5 drive blocks available)

Distance between two drive blocks [mm] : \_\_\_\_\_

Leave blank : For the case of one drive block

## TECHNICAL DATA

### General technical data

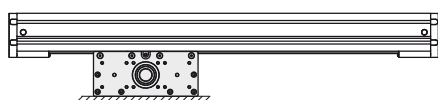
| Linear Unit | Drive block length<br>Lv [ mm ] | Dynamic load capacity<br>C [ N ] | Dynamic moment |           |           | Mass of drive block<br>[ kg ] | Maximum Repeatability<br>[ mm ] | Max. length<br><sup>2</sup> (Version 1)<br><sup>3</sup> Lmax [ mm ] | Max. length<br><sup>2</sup> (Version 2)<br><sup>3</sup> Lmax [ mm ] | Max. Stroke                  |                              | Min. Stroke<br><sup>1</sup> [ mm ] |
|-------------|---------------------------------|----------------------------------|----------------|-----------|-----------|-------------------------------|---------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|------------------------------|------------------------------|------------------------------------|
|             |                                 |                                  | Mx [ Nm ]      | My [ Nm ] | Mz [ Nm ] |                               |                                 |                                                                     |                                                                     | <sup>3</sup> (Ver. 1) [ mm ] | <sup>3</sup> (Ver. 2) [ mm ] |                                    |
| MTJZ 40     | 120                             | 4610                             | 28             | 120       | 120       | 0,95                          | ±0,08                           | 1000                                                                | 3000                                                                | 792                          | 2792                         | 25                                 |

<sup>1</sup> For minimum stroke below the stated value in the table above please contact us.

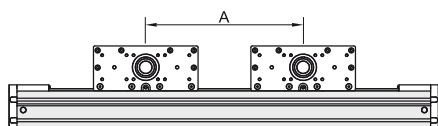
<sup>2</sup> For lengths / stroke over the stated value in the table above please contact us.  
Values for max. stroke are not valid for multiple drive blocks  
(equation of defining the linear unit length for particular size of the linear unit needs to be used).

#### <sup>3</sup> Mounting versions

Version 1: Mounting by the drive block, profile travels



Version 2: Mounting by the profile, drive blocks travel



Multiple drive blocks, which travel independently of each other, can be applied.

| Linear Unit | Max. permissible loads |           |            |            |            |
|-------------|------------------------|-----------|------------|------------|------------|
|             | Forces                 |           | Moments    |            |            |
|             | Fpy [ N ]              | Fpz [ N ] | Mpx [ Nm ] | Mpy [ Nm ] | Mpz [ Nm ] |
| MTJZ 40     | 2320                   | 1510      | 14         | 40         | 62         |

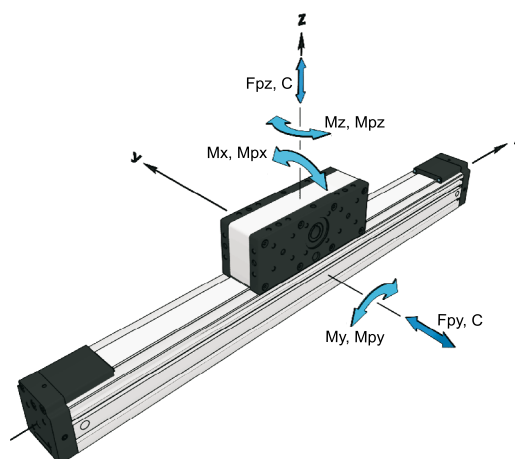
| Operating conditions |             |
|----------------------|-------------|
| Operating temp.      | 0°C ~ +60°C |
| Duty cycle           | 100%        |

For operating temperature out of the presented range, please contact us.

#### **i** Recommended values of loads

All the data of dynamic moments and load capacities stated in the upper table are theoretical without considering any safety factor. The safety factor depends on the application and its requested safety. We recommend a minimum safety factor (fs = 5.0)

Modulus of elasticity:  $E = 70000 \text{ N} / \text{mm}^2$



### Drive and belt data

| Linear Unit | * Max. travel speed<br>[ m / s ] | Max. drive torque<br>[ Nm ] | No load torque of drive block<br>[ Nm ] | Puley drive ratio<br>[ mm / rev ] | Pulley diameter<br>[ mm ] | Belt type | Belt width<br>[ mm ] | Max. force transmitted by belt<br>[ N ] | Specific spring constant<br>Cspec [ N ] | * Max. acceleration<br>[ m/s <sup>2</sup> ] |
|-------------|----------------------------------|-----------------------------|-----------------------------------------|-----------------------------------|---------------------------|-----------|----------------------|-----------------------------------------|-----------------------------------------|---------------------------------------------|
|             |                                  |                             |                                         |                                   |                           |           |                      |                                         |                                         |                                             |
| MTJZ 40     | 5                                | 3,6                         | 0,2                                     | 99                                | 31,51                     | AT3       | 20                   | 230                                     | 225000                                  | 70                                          |

\* For travel speed and acceleration over the stated value in the table above please contact us.

### Mass and planar moment of inertia

| Linear Unit | * Mass of linear unit<br>[ kg ]                                                                     | Planar moment of inertia |                        |
|-------------|-----------------------------------------------------------------------------------------------------|--------------------------|------------------------|
|             |                                                                                                     | Iy [ cm <sup>4</sup> ]   | Iz [ cm <sup>4</sup> ] |
| MTJZ 40     | $1,7 + 0,0023 \times (\text{Abs. stroke} + (\text{nb} - 1) \times A) + 0,95 \times (\text{nb} - 1)$ | 9,8                      | 11,6                   |

\* Absolute stroke [mm]

A - Distance between two drive blocks [mm]  
nb - Number of drive blocks



Mass calculation doesn't include mass of motor, reduction gear, switches and clamps.

TECHNICAL DATA

Mass moment of inertia

| Linear Unit | *<br>Mass moment of inertia<br>(Version 1)<br>[ 10 <sup>-4</sup> kg m <sup>2</sup> ]                | Mass moment of inertia of drive block<br>(Version 2)<br>[ 10 <sup>-4</sup> kg m <sup>2</sup> ] |
|-------------|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| MTJZ 40     | $2,1 + 0,0058 \times (\text{Abs. stroke} + (\text{nb} - 1) \times A) + 0,22 \times (\text{nb} - 1)$ | 2,6                                                                                            |

\*Absolute stroke [mm]  
A - Distance between two drive blocks [mm]  
nb - Number of drive blocks

Deflection of the linear unit

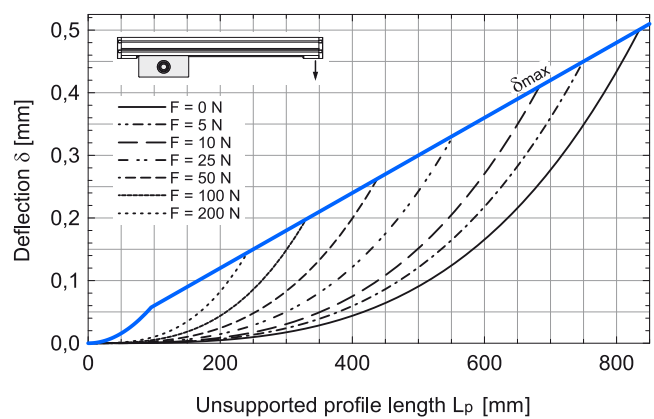
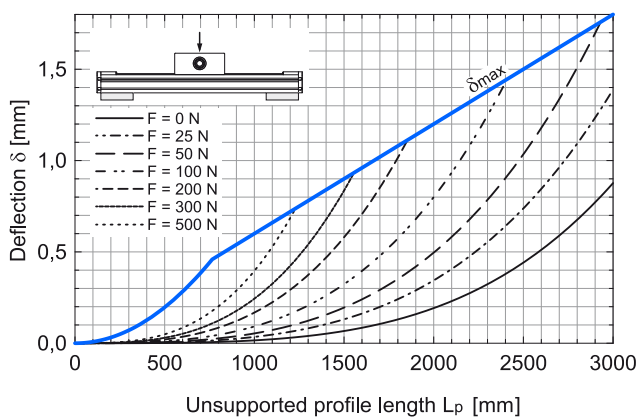
**Fixed - fixed mounting**

**Fixed - free mounting**

$\delta$  Maximum deflection of the linear unit [mm]  
 $\delta_{max}$  Maximum permissible deflection of the linear unit [mm]  
 F Applied force [N]  
 Lp Unsupported profile length [mm]

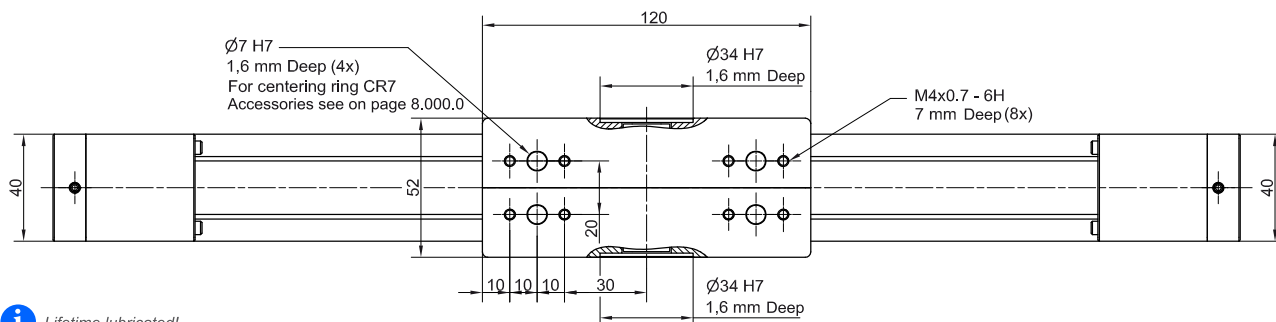
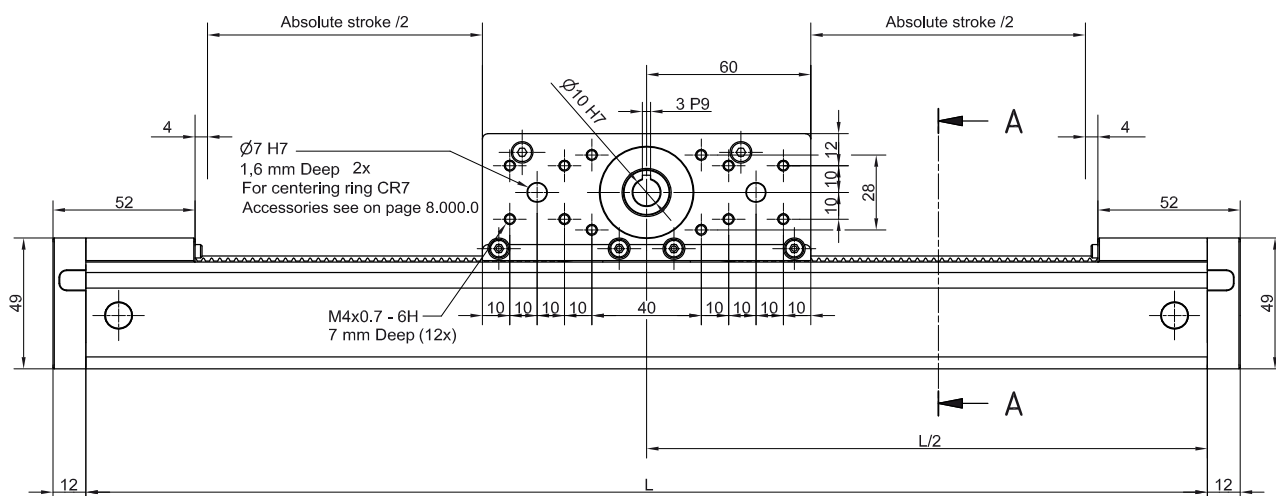
**i** The maximum permissible deflection  $\delta_{max}$  must not be exceeded. In the case that maximum deflection  $\delta$  exceeds the maximum permissible deflection  $\delta_{max}$  additional profile supports are needed.

MTJZ 40



DIMENSIONS

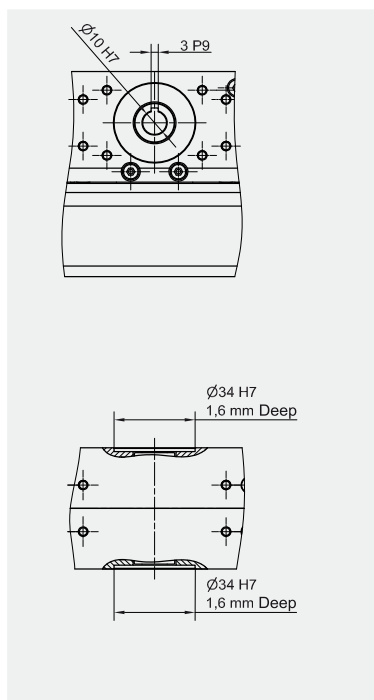
**i** Linear Unit doesn't include any safety  
Absolute stroke = Effective stroke + 2 x Safety stroke.



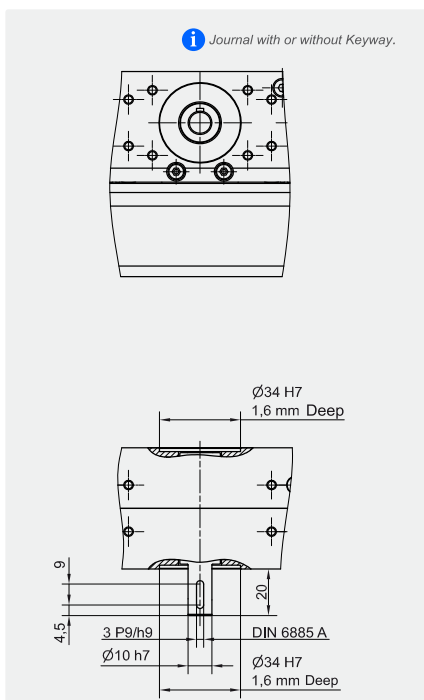
**i** Lifetime lubricated!

**i** All dimensions in mm; Drawings scales are not equal.

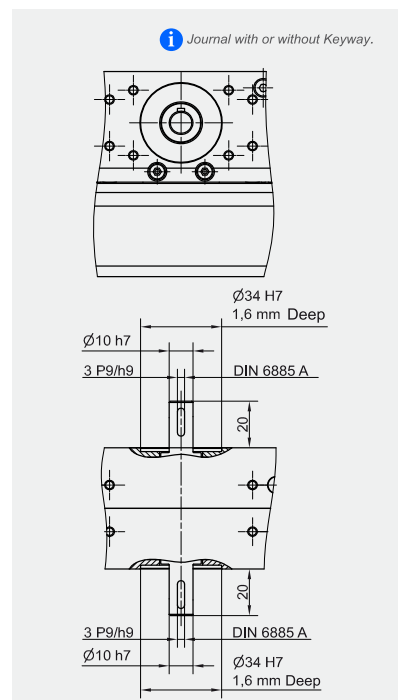
TYPE 0



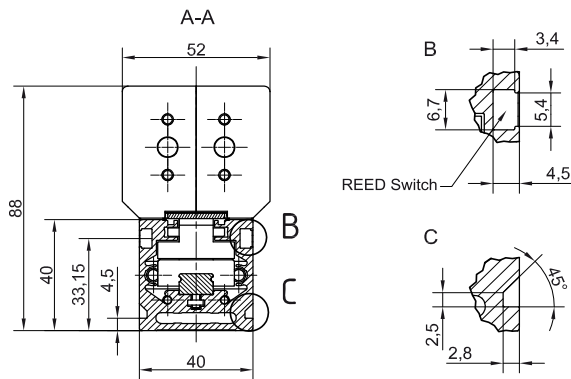
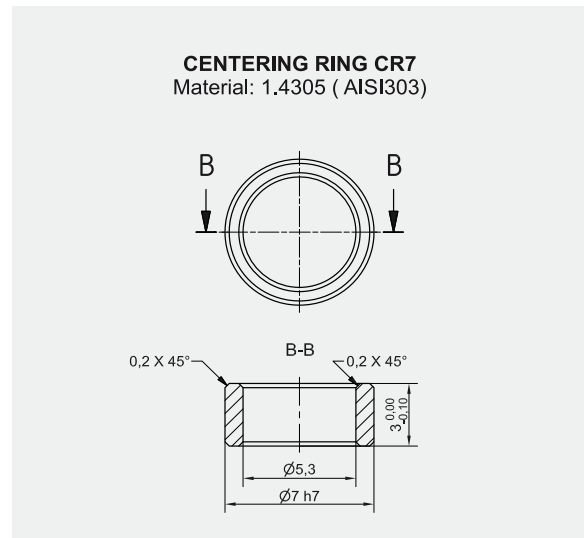
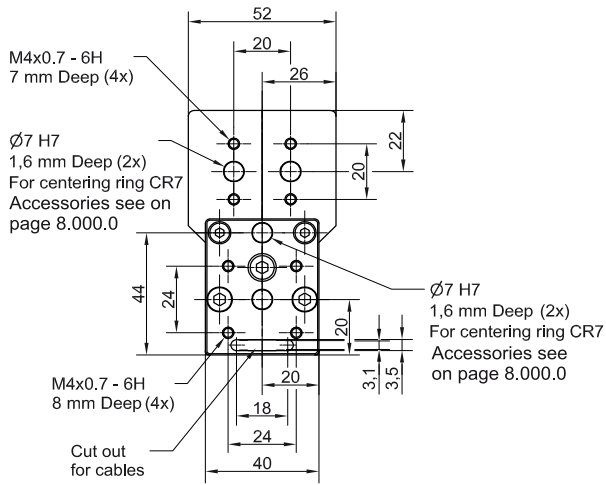
TYPE 1



TYPE 2



DIMENSIONS

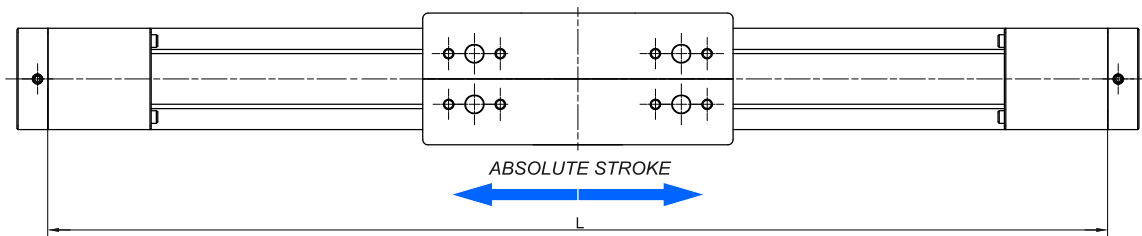


**i** All dimensions in mm; Drawings scales are not equal.

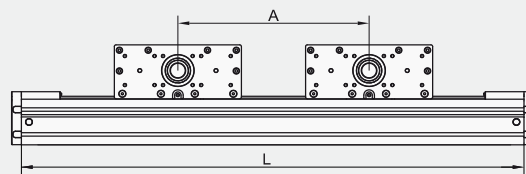
Defining of the linear unit length

$$L = \text{Effective stroke} + 2 \times \text{Safety stroke} + 208 \text{ mm}$$

$$L_{\text{total}} = L + 24 \text{ mm}$$



Multiple drive blocks



$$L = \text{Effective stroke} + 2 \times \text{Safety stroke} + A \times (n_b - 1) + 208 \text{ mm}$$

$$L_{\text{total}} = L + 24 \text{ mm}$$

}  $A \geq 120 \text{ mm}$  **!**



## TECHNICAL DATA

### General technical data

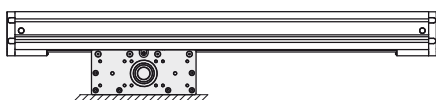
| Linear Unit | Drive block length<br>Lv [ mm ] | Dynamic load capacity<br>C [ N ] | Dynamic moment |           |           | Mass of drive block<br>[ kg ] | Maximum Repeatability<br>[ mm ] | Max. length<br><sup>3</sup> (Version 1)<br>Lmax [ mm ] | Max. length<br><sup>3</sup> (Version 2)<br>Lmax [ mm ] | Max. Stroke                     |                                 | Min. Stroke<br>[ mm ] |
|-------------|---------------------------------|----------------------------------|----------------|-----------|-----------|-------------------------------|---------------------------------|--------------------------------------------------------|--------------------------------------------------------|---------------------------------|---------------------------------|-----------------------|
|             |                                 |                                  | Mx [ Nm ]      | My [ Nm ] | Mz [ Nm ] |                               |                                 |                                                        |                                                        | <sup>3</sup> (Ver. 1)<br>[ mm ] | <sup>3</sup> (Ver. 2)<br>[ mm ] |                       |
| MTJZ 65     | 200                             | 19800                            | 158            | 1025      | 1025      | 3,2                           | ±0,08                           | 1200                                                   | 6000                                                   | 880                             | 5680                            | 40                    |

<sup>1</sup> For minimum stroke below the stated value in the table above please contact us.

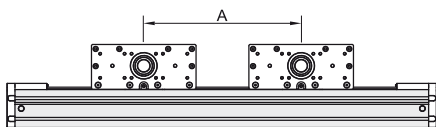
<sup>2</sup> For lengths / stroke over the stated value in the table above please contact us.  
Values for max. stroke are not valid for multiple drive blocks  
(equation of defining the linear unit length for particular size of the linear unit needs to be used).

#### <sup>3</sup> Mounting versions

Version 1: Mounting by the drive block, profile travels



Version 2: Mounting by the profile, drive blocks travel



Multiple drive blocks, which travel independently of each other, can be applied.

| Linear Unit | Max. permissible loads |           |            |            |            |
|-------------|------------------------|-----------|------------|------------|------------|
|             | Forces                 |           | Moments    |            |            |
|             | Fpy [ N ]              | Fpz [ N ] | Mpx [ Nm ] | Mpy [ Nm ] | Mpz [ Nm ] |
| MTJZ 65     | 6540                   | 5870      | 60         | 305        | 340        |

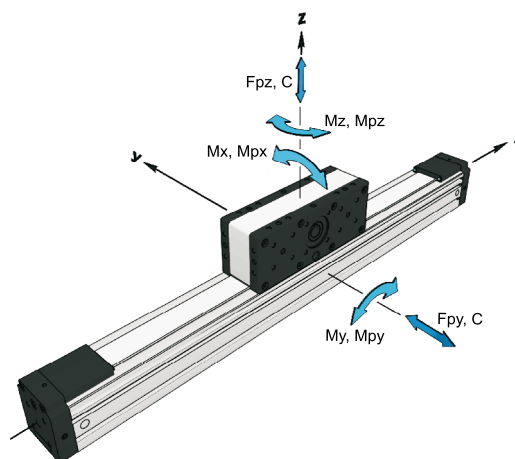
| Operating conditions |             |
|----------------------|-------------|
| Operating temp.      | 0°C ~ +60°C |
| Duty cycle           | 100%        |

For operating temperature out of the presented range, please contact us.

#### **i** Recommended values of loads

All the data of dynamic moments and load capacities stated in the upper table are theoretical without considering any safety factor. The safety factor depends on the application and its requested safety. We recommend a minimum safety factor (fs = 5.0)

Modulus of elasticity:  $E = 70000 \text{ N / mm}^2$



### Drive and belt data

| Linear Unit | * Max. travel speed<br>[ m / s ] | Max. drive torque<br>[ Nm ] | No load torque of drive block<br>[ Nm ] | Puley drive ratio<br>[ mm / rev ] | Pulley diameter<br>[ mm ] | Belt type | Belt width<br>[ mm ] | Max. force transmitted by belt<br>[ N ] | Specific spring constant<br>Cspec [ N ] | * Max. acceleration<br>[ m/s <sup>2</sup> ] |
|-------------|----------------------------------|-----------------------------|-----------------------------------------|-----------------------------------|---------------------------|-----------|----------------------|-----------------------------------------|-----------------------------------------|---------------------------------------------|
| MTJZ 65     | 5                                | 13,1                        | 0,9                                     | 165                               | 52,52                     | AT5       | 32                   | 500                                     | 600000                                  | 70                                          |

\* For travel speed and acceleration over the stated value in the table above please contact us.

### Mass and planar moment of inertia

| Linear Unit | * Mass of linear unit<br>[ kg ]                                                                    | Planar moment of inertia |                        |
|-------------|----------------------------------------------------------------------------------------------------|--------------------------|------------------------|
|             |                                                                                                    | Iy [ cm <sup>4</sup> ]   | Iz [ cm <sup>4</sup> ] |
| MTJZ 65     | $5,7 + 0,0054 \times (\text{Abs. stroke} + (\text{nb} - 1) \times A) + 3,2 \times (\text{nb} - 1)$ | 59,7                     | 74,4                   |

\* Absolute stroke [mm]

A - Distance between two drive blocks [mm]  
nb - Number of drive blocks



Mass calculation doesn't include mass of motor, reduction gear, switches and clamps.

TECHNICAL DATA

Mass moment of inertia

| Linear Unit | *<br>Mass moment of inertia<br>(Version 1)<br>[ 10 <sup>-4</sup> kg m <sup>2</sup> ]                | Mass moment of inertia of drive block<br>(Version 2)<br>[ 10 <sup>-4</sup> kg m <sup>2</sup> ] |
|-------------|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| MTJZ 65     | $18,9 + 0,0374 \times (\text{Abs. stroke} + (\text{nb} - 1) \times A) + 1,7 \times (\text{nb} - 1)$ | 23,8                                                                                           |

\*Absolute stroke [mm]  
A - Distance between two drive blocks [mm]  
nb - Number of drive blocks

Deflection of the linear unit

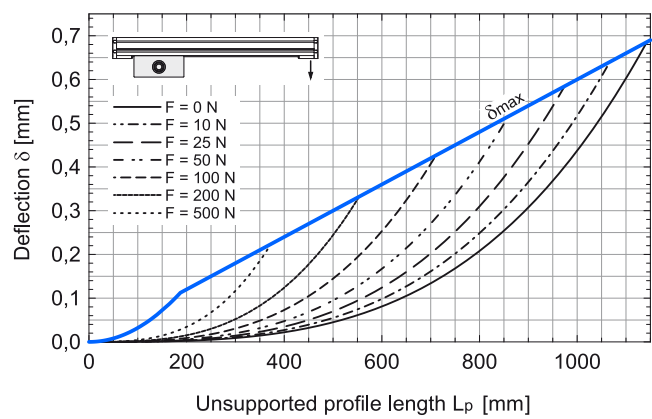
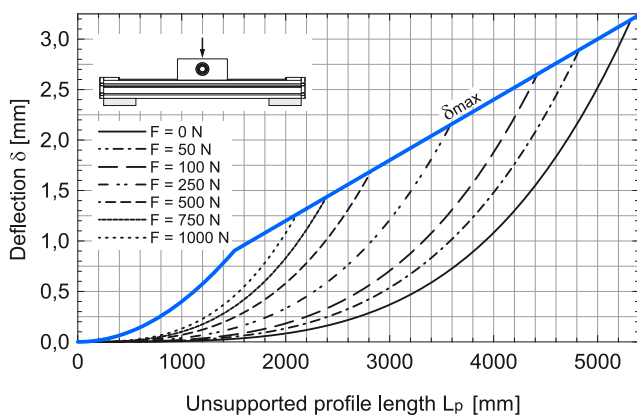
**Fixed - fixed mounting**

**Fixed - free mounting**

$\delta$  Maximum deflection of the linear unit [mm]  
 $\delta_{max}$  Maximum permissible deflection of the linear unit [mm]  
 F Applied force [N]  
 Lp Unsupported profile length [mm]

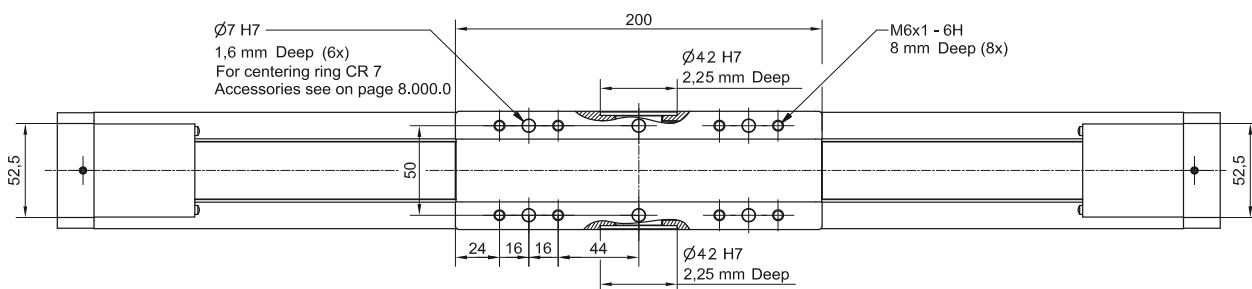
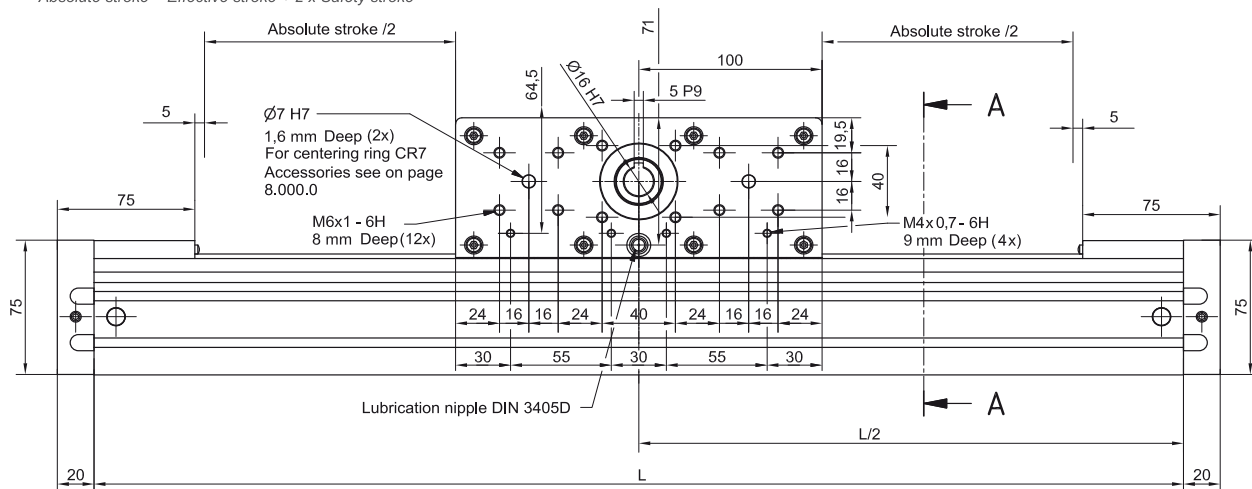
**i** The maximum permissible deflection  $\delta_{max}$  must not be exceeded. In the case that maximum deflection  $\delta$  exceeds the maximum permissible deflection  $\delta_{max}$  additional profile supports are needed.

MTJZ 65



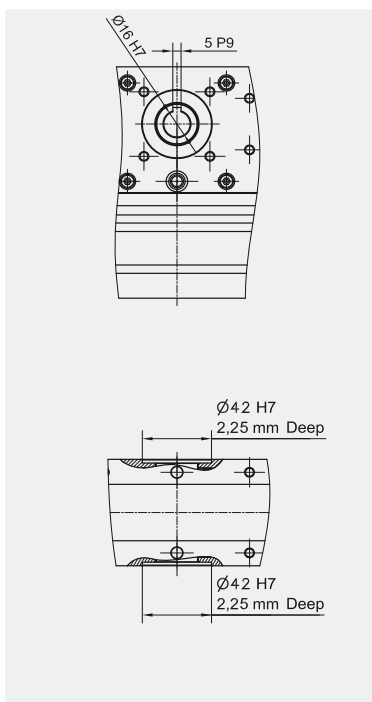
DIMENSIONS

**i** Linear Unit doesn't include any safety stroke.  
Absolute stroke = Effective stroke + 2 x Safety stroke

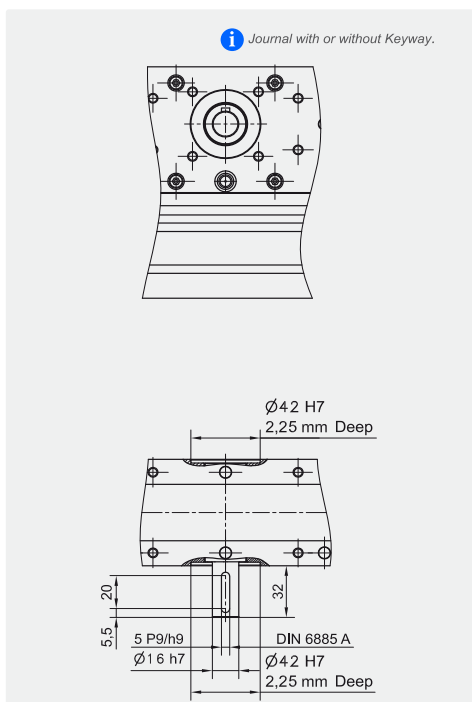


**i** All dimensions in mm; Drawings scales are not equal.

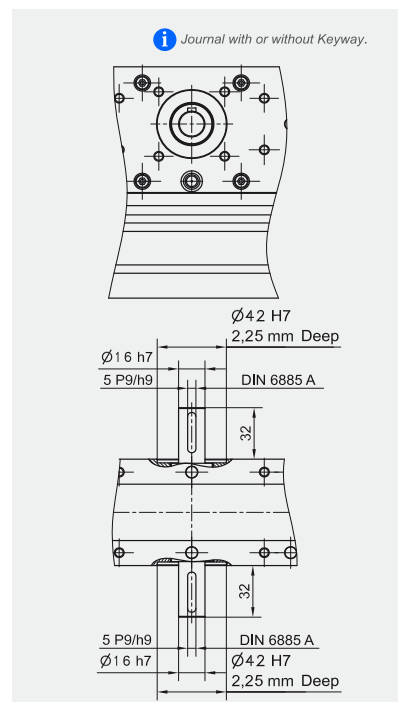
TYPE 0



TYPE 1



TYPE 2





## TECHNICAL DATA

### General technical data

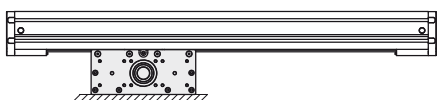
| Linear Unit | Drive block length<br>Lv [ mm ] | Dynamic load capacity<br>C [ N ] | Dynamic moment |           |           | Mass of drive block<br>[ kg ] | Maximum Repeatability<br>[ mm ] | Max. length<br><sup>2</sup> (Version 1)<br><sup>3</sup> Lmax [ mm ] | Max. length<br><sup>2</sup> (Version 2)<br><sup>3</sup> Lmax [ mm ] | Max. Stroke                  |                              | Min. Stroke<br><sup>1</sup> [ mm ] |
|-------------|---------------------------------|----------------------------------|----------------|-----------|-----------|-------------------------------|---------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|------------------------------|------------------------------|------------------------------------|
|             |                                 |                                  | Mx [ Nm ]      | My [ Nm ] | Mz [ Nm ] |                               |                                 |                                                                     |                                                                     | <sup>3</sup> (Ver. 1) [ mm ] | <sup>3</sup> (Ver. 2) [ mm ] |                                    |
| MTJZ 80     | 250                             | 34200                            | 370            | 2565      | 2565      | 4,9                           | ±0,08                           | 1500                                                                | 6000                                                                | 1118                         | 5618                         | 55                                 |

<sup>1</sup>For minimum stroke below the stated value in the table above please contact us.

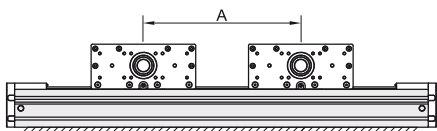
<sup>2</sup>For lengths / stroke over the stated value in the table above please contact us.  
Values for max. stroke are not valid for multiple drive blocks  
(equation of defining the linear unit length for particular size of the linear unit needs to be used).

#### <sup>3</sup>Mounting versions

Version 1: Mounting by the drive block, profile travels



Version 2: Mounting by the profile, drive blocks travel



Multiple drive blocks, which travel independently of each other, can be applied.

| Linear Unit | Max. permissible loads |           |            |            |            |
|-------------|------------------------|-----------|------------|------------|------------|
|             | Forces                 |           | Moments    |            |            |
|             | Fpy [ N ]              | Fpz [ N ] | Mpx [ Nm ] | Mpy [ Nm ] | Mpz [ Nm ] |
| MTJZ 80     | 8930                   | 7130      | 150        | 535        | 670        |

#### Operating conditions

Operating temp. 0°C ~ +60°C

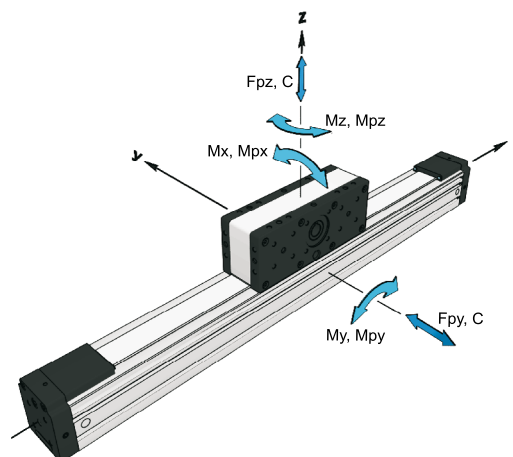
Duty cycle 100%

For operating temperature out of the presented range, please contact us.

#### **i** Recommended values of loads

All the data of dynamic moments and load capacities stated in the upper table are theoretical without considering any safety factor. The safety factor depends on the application and its requested safety. We recommend a minimum safety factor (fs = 5.0)

Modulus of elasticity:  $E = 70000 \text{ N} / \text{mm}^2$



### Drive and belt data

| Linear Unit | * Max. travel speed<br>[ m / s ] | Max. drive torque<br>[ Nm ] | No load torque of drive block<br>[ Nm ] | Pulley drive ratio<br>[ mm / rev ] | Pulley diameter<br>[ mm ] | Belt type | Belt width<br>[ mm ] | Max. force transmitted by belt<br>[ N ] | Specific spring constant<br>Cspec [ N ] | * Max. acceleration<br>[ m/s <sup>2</sup> ] |
|-------------|----------------------------------|-----------------------------|-----------------------------------------|------------------------------------|---------------------------|-----------|----------------------|-----------------------------------------|-----------------------------------------|---------------------------------------------|
| MTJZ 80     | 5                                | 29,4                        | 1,4                                     | 210                                | 66,84                     | AT5       | 50                   | 880                                     | 960000                                  | 70                                          |

\*For travel speed and acceleration over the stated value in the table above please contact us.

### Mass and planar moment of inertia

| Linear Unit | * Mass of linear unit<br>[ kg ]                                                                    | Planar moment of inertia |                        |
|-------------|----------------------------------------------------------------------------------------------------|--------------------------|------------------------|
|             |                                                                                                    | Iy [ cm <sup>4</sup> ]   | Iz [ cm <sup>4</sup> ] |
| MTJZ 80     | $9,7 + 0,0083 \times (\text{Abs. stroke} + (\text{nb} - 1) \times A) + 4,9 \times (\text{nb} - 1)$ | 129,1                    | 173,4                  |

\*Absolute stroke [mm]

A - Distance between two drive blocks [mm]  
nb - Number of drive blocks



Mass calculation doesn't include mass of motor, reduction gear, switches and clamps.

TECHNICAL DATA

Mass moment of inertia

| Linear Unit | *<br>Mass moment of inertia<br>(Version 1)<br>[ 10 <sup>-4</sup> kg m <sup>2</sup> ]                | Mass moment of inertia of drive block<br>(Version 2)<br>[ 10 <sup>-4</sup> kg m <sup>2</sup> ] |
|-------------|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| MTJZ 80     | $60,0 + 0,0922 \times (\text{Abs. stroke} + (\text{nb} - 1) \times A) + 6,4 \times (\text{nb} - 1)$ | 61,1                                                                                           |

\*Absolute stroke [mm]  
A - Distance between two drive blocks [mm]  
nb - Number of drive blocks

Deflection of the linear unit

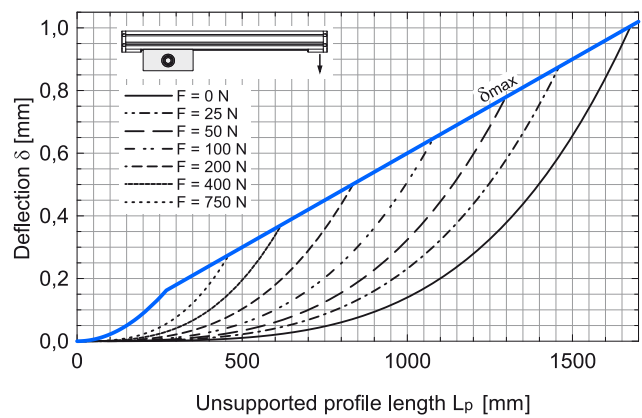
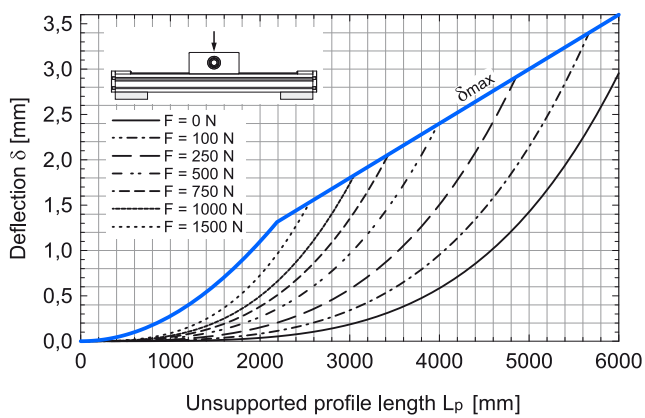
**Fixed - fixed mounting**

**Fixed - free mounting**

$\delta$  Maximum deflection of the linear unit [mm]  
 $\delta_{max}$  Maximum permissible deflection of the linear unit [mm]  
 F Applied force [N]  
 Lp Unsupported profile length [mm]

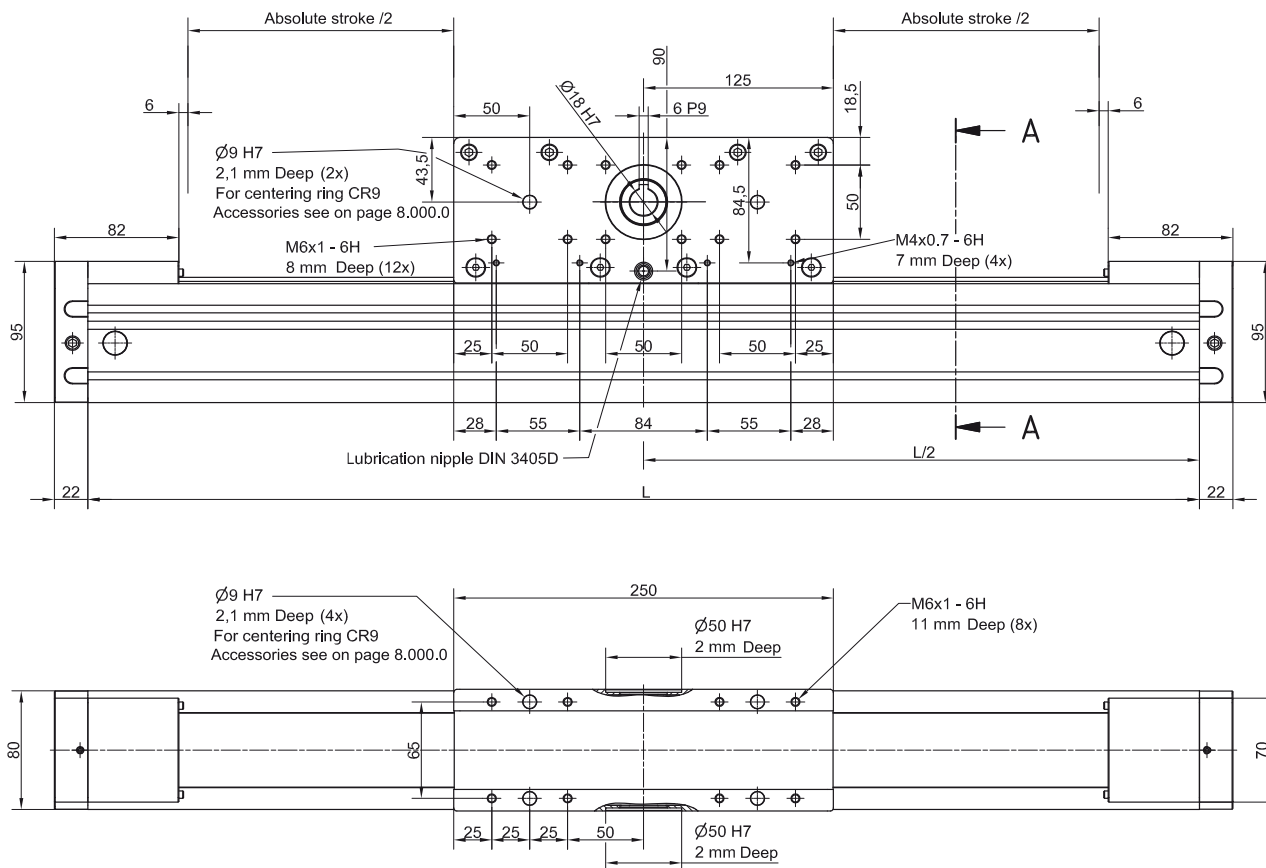
**i** The maximum permissible deflection  $\delta_{max}$  must not be exceeded. In the case that maximum deflection  $\delta$  exceeds the maximum permissible deflection  $\delta_{max}$  additional profile supports are needed.

MTJZ 80

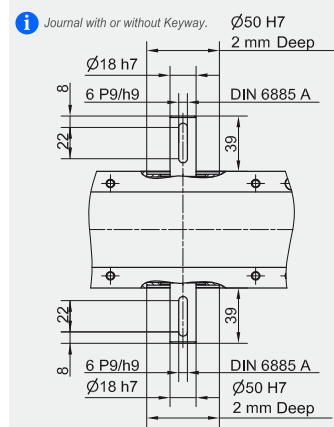
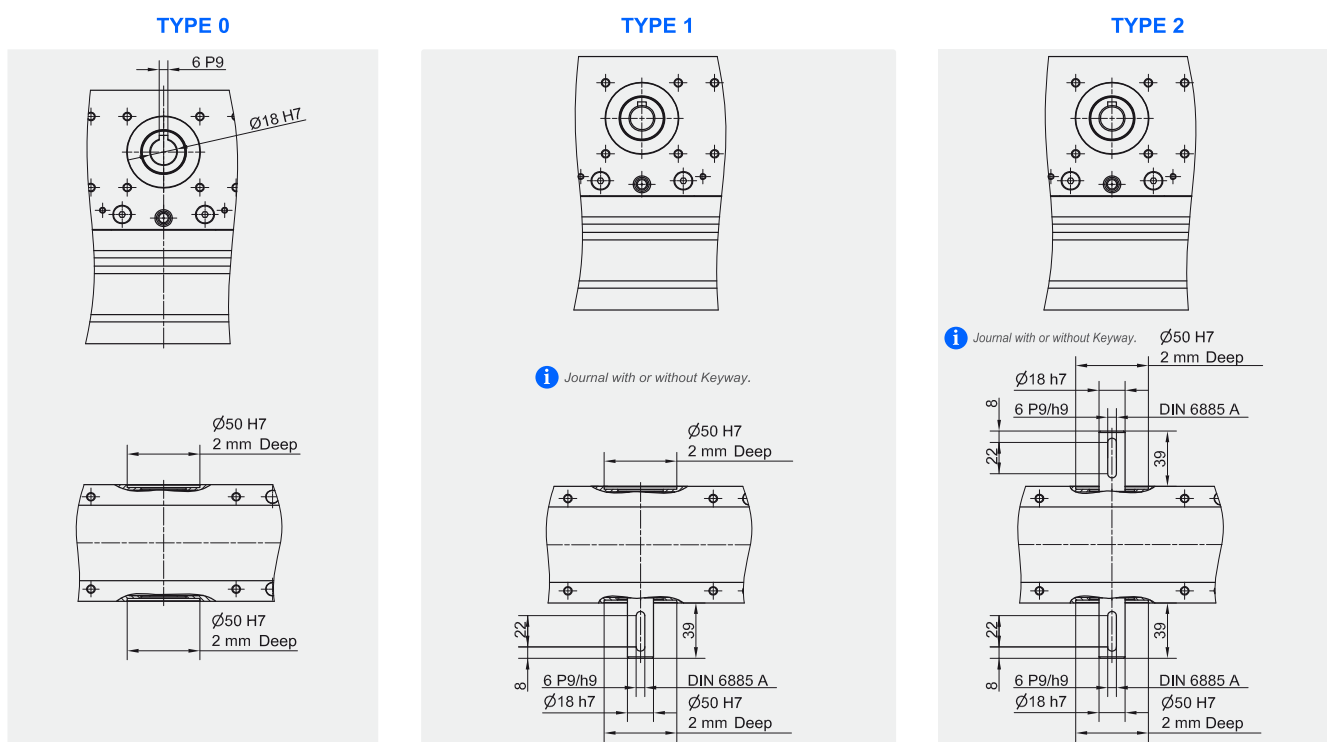


DIMENSIONS

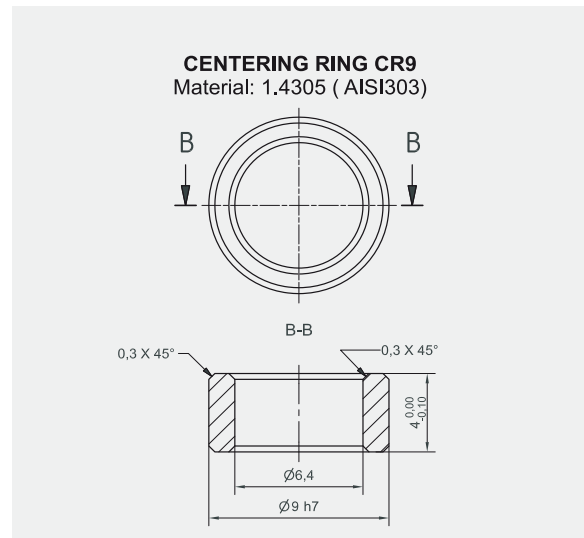
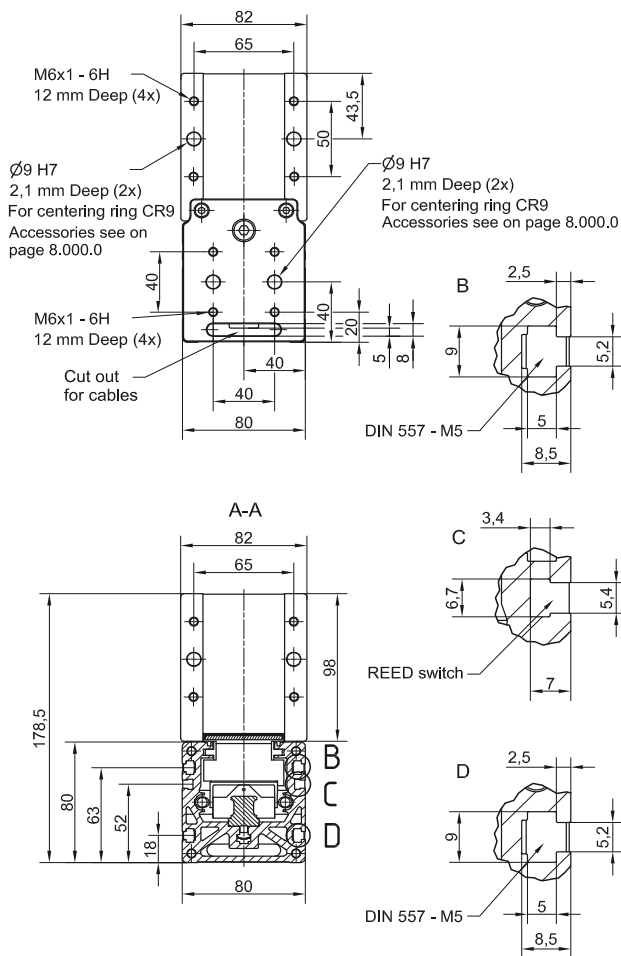
**i** Linear Unit doesn't include any safety stroke.  
Absolute stroke = Effective stroke + 2 x Safety stroke



**i** All dimensions in mm; Drawings scales are not equal.



DIMENSIONS

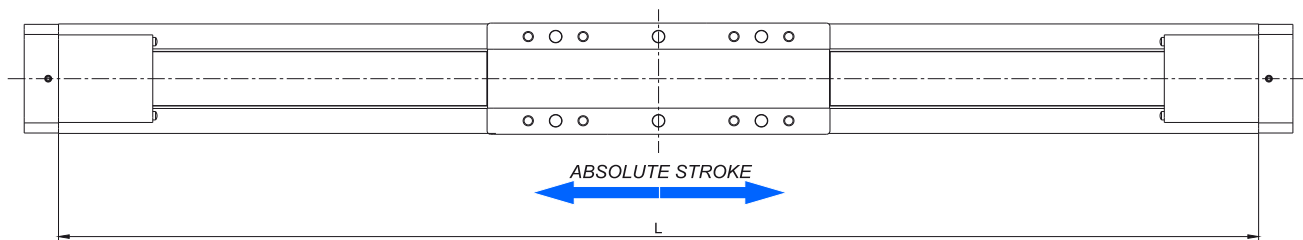


**i** All dimensions in mm; Drawings scales are not equal.

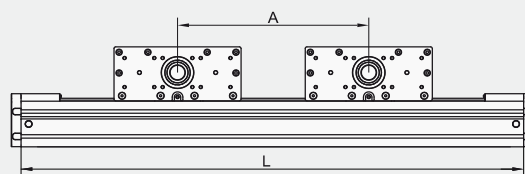
Defining of the linear unit length

$$L = \text{Effective stroke} + 2 \times \text{Safety stroke} + 382 \text{ mm}$$

$$L_{\text{total}} = L + 44 \text{ mm}$$



Multiple drive blocks



$$L = \text{Effective stroke} + 2 \times \text{Safety stroke} + A \times (n_b - 1) + 382 \text{ mm}$$

$$L_{\text{total}} = L + 44 \text{ mm}$$

}  $A \geq 250 \text{ mm}$  **!**



## TECHNICAL DATA

### General technical data

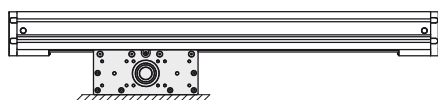
| Linear Unit | Drive block length<br>Lv [ mm ] | Dynamic load capacity<br>C [ N ] | Dynamic moment |           |           | Mass of drive block<br>[ kg ] | Maximum Repeatability<br>[ mm ] | Max. length<br><sup>2</sup> (Version 1)<br><sup>3</sup> Lmax [ mm ] | Max. length<br><sup>2</sup> (Version 2)<br><sup>3</sup> Lmax [ mm ] | Max. Stroke                  |                              | Min. Stroke<br>[ mm ] |
|-------------|---------------------------------|----------------------------------|----------------|-----------|-----------|-------------------------------|---------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|------------------------------|------------------------------|-----------------------|
|             |                                 |                                  | Mx [ Nm ]      | My [ Nm ] | Mz [ Nm ] |                               |                                 |                                                                     |                                                                     | <sup>3</sup> (Ver. 1) [ mm ] | <sup>3</sup> (Ver. 2) [ mm ] |                       |
| MTJZ 110    | 300                             | 49600                            | 630            | 3470      | 3470      | 11,3                          | ±0,08                           | 1800                                                                | 6000                                                                | 1304                         | 5504                         | 65                    |

<sup>1</sup> For minimum stroke below the stated value in the table above please contact us.

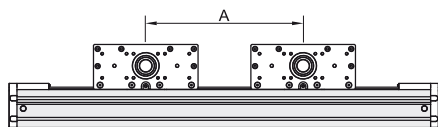
<sup>2</sup> For lengths / stroke over the stated value in the table above please contact us.  
Values for max. stroke are not valid for multiple drive blocks  
(equation of defining the linear unit length for particular size of the linear unit needs to be used).

#### <sup>3</sup> Mounting versions

**Version 1:** Mounting by the drive block, profile travels



**Version 2:** Mounting by the profile, drive blocks travel



Multiple drive blocks, which travel independently of each other, can be applied.

| Linear Unit | Max. permissible loads |           |            |            |            |
|-------------|------------------------|-----------|------------|------------|------------|
|             | Forces                 |           | Moments    |            |            |
|             | Fpy [ N ]              | Fpz [ N ] | Mpx [ Nm ] | Mpy [ Nm ] | Mpz [ Nm ] |
| MTJZ 110    | 10000                  | 14290     | 260        | 1000       | 700        |

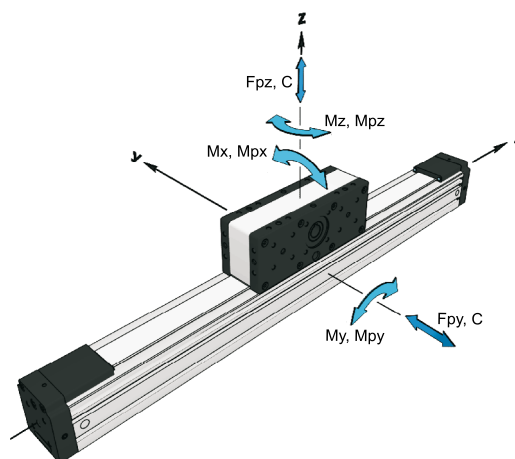
| Operating conditions |             |
|----------------------|-------------|
| Operating temp.      | 0°C ~ +60°C |
| Duty cycle           | 100%        |

For operating temperature out of the presented range, please contact us.

#### **i** Recommended values of loads

All the data of dynamic moments and load capacities stated in the upper table are theoretical without considering any safety factor. The safety factor depends on the application and its requested safety. We recommend a minimum safety factor (fs = 5.0)

**Modulus of elasticity:**  $E = 70000 \text{ N} / \text{mm}^2$



### Drive and belt data

| Linear Unit | * Max. travel speed<br>[ m / s ] | Max. drive torque<br>[ Nm ] | No load torque of drive block<br>[ Nm ] | Puley drive ratio<br>[ mm / rev ] | Pulley diameter<br>[ mm ] | Belt type | Belt width<br>[ mm ] | Max. force transmitted by belt<br>[ N ] | Specific spring constant<br>Cspec [ N ] | * Max. acceleration<br>[ m/s <sup>2</sup> ] |
|-------------|----------------------------------|-----------------------------|-----------------------------------------|-----------------------------------|---------------------------|-----------|----------------------|-----------------------------------------|-----------------------------------------|---------------------------------------------|
| MTJZ 110    | 5                                | 110,0                       | 2,6                                     | 300                               | 95,49                     | AT10      | 70                   | 2300                                    | 2450000                                 | 70                                          |

\* For travel speed and acceleration over the stated value in the table above please contact us.

### Mass and planar moment of inertia

| Linear Unit | * Mass of linear unit<br>[ kg ]                                                                      | Planar moment of inertia |                        |
|-------------|------------------------------------------------------------------------------------------------------|--------------------------|------------------------|
|             |                                                                                                      | Iy [ cm <sup>4</sup> ]   | Iz [ cm <sup>4</sup> ] |
| MTJZ 110    | $21,7 + 0,0147 \times (\text{Abs. stroke} + (\text{nb} - 1) \times A) + 11,3 \times (\text{nb} - 1)$ | 513,0                    | 620,0                  |

\* Absolute stroke [ mm ]

A - Distance between two drive blocks [ mm ]  
nb - Number of drive blocks



Mass calculation doesn't include mass of motor, reduction gear, switches and clamps.

TECHNICAL DATA

Mass moment of inertia

| Linear Unit | *<br>Mass moment of inertia<br>(Version 1)<br>[ 10 <sup>-4</sup> kg m <sup>2</sup> ] | Mass moment of inertia of drive block<br>(Version 2)<br>[ 10 <sup>-4</sup> kg m <sup>2</sup> ] |
|-------------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| MTJZ 110    | 282,4 + 0,3358 × (Abs. stroke + (nb - 1) × A) + 45,3 × (nb - 1)                      | 302,9                                                                                          |

\*Absolute stroke [mm]  
A - Distance between two drive blocks [mm]  
nb - Number of drive blocks

Deflection of the linear unit

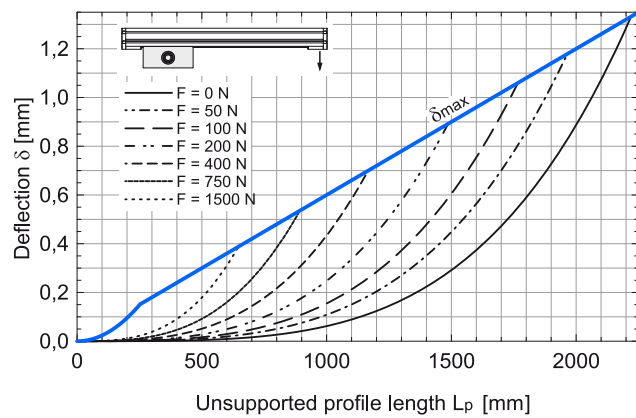
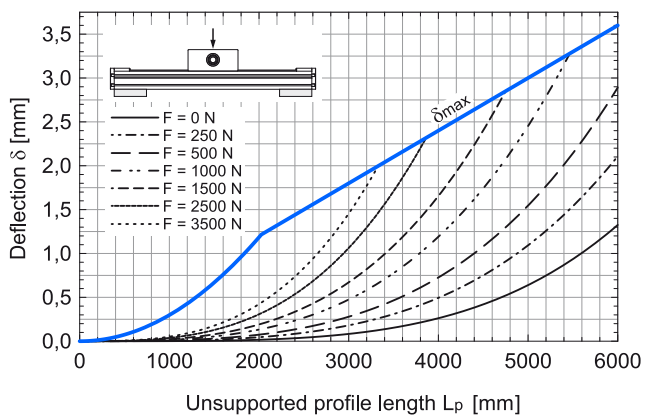
**Fixed - fixed mounting**

**Fixed - free mounting**

$\delta$  Maximum deflection of the linear unit [mm]  
 $\delta_{max}$  Maximum permissible deflection of the linear unit [mm]  
 F Applied force [N]  
 Lp Unsupported profile length [mm]

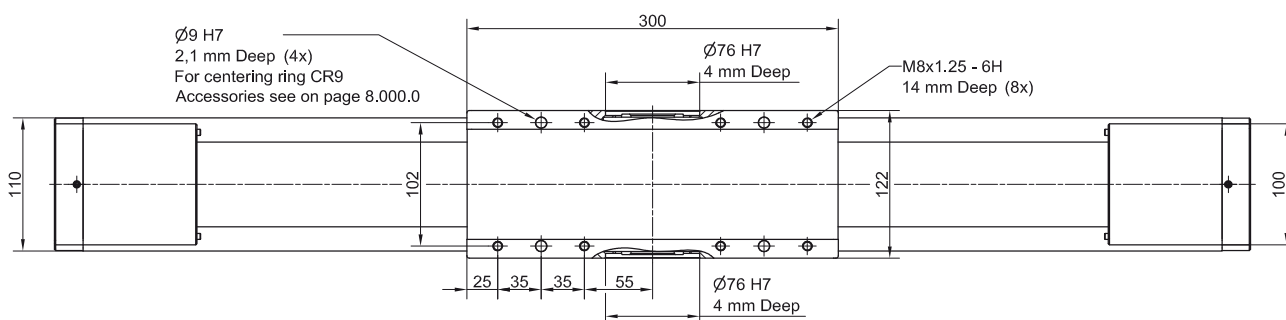
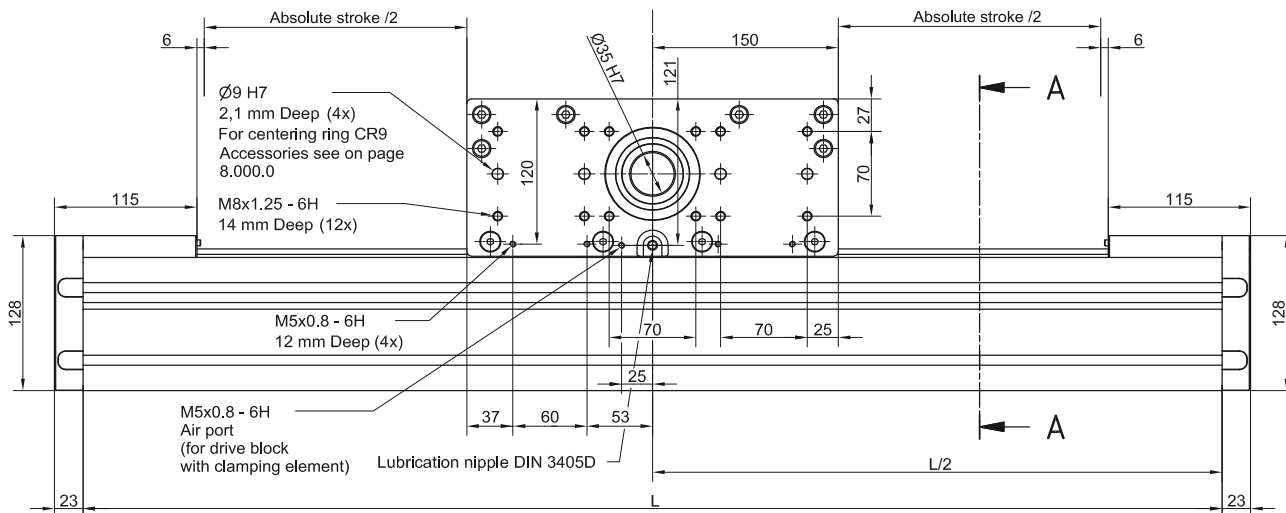
**i** The maximum permissible deflection  $\delta_{max}$  must not be exceeded. In the case that maximum deflection  $\delta$  exceeds the maximum permissible deflection  $\delta_{max}$  additional profile supports are needed.

MTJZ 110



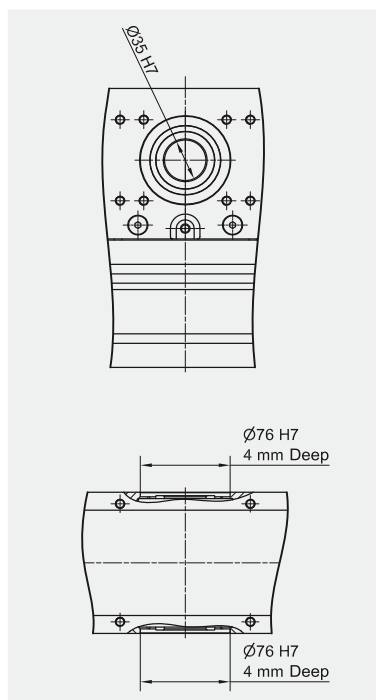
DIMENSIONS

**i** Linear Unit doesn't include any safety stroke.  
Absolute stroke = Effective stroke + 2 x Safety stroke



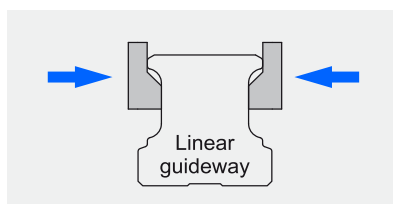
**i** All dimensions in mm; Drawings scales are not equal.

TYPE 0



Drive block with clamping element

Clamping by spring-loaded energy

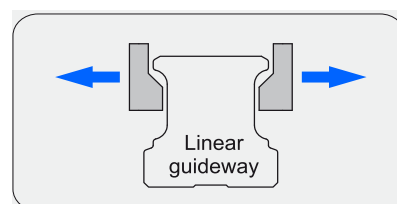


Air pressure = 0 bar

Holding force = 1400 N

Holding force is tested on clamping element using a slightly lubricated rail (ISO VG 68).

Opened by air pressure



Opening air pressure = 5,5 - 8 bar

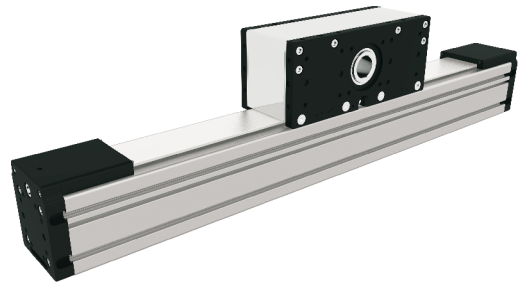
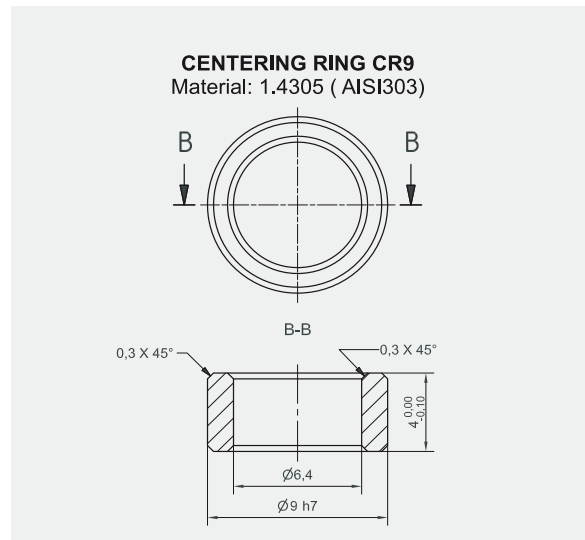
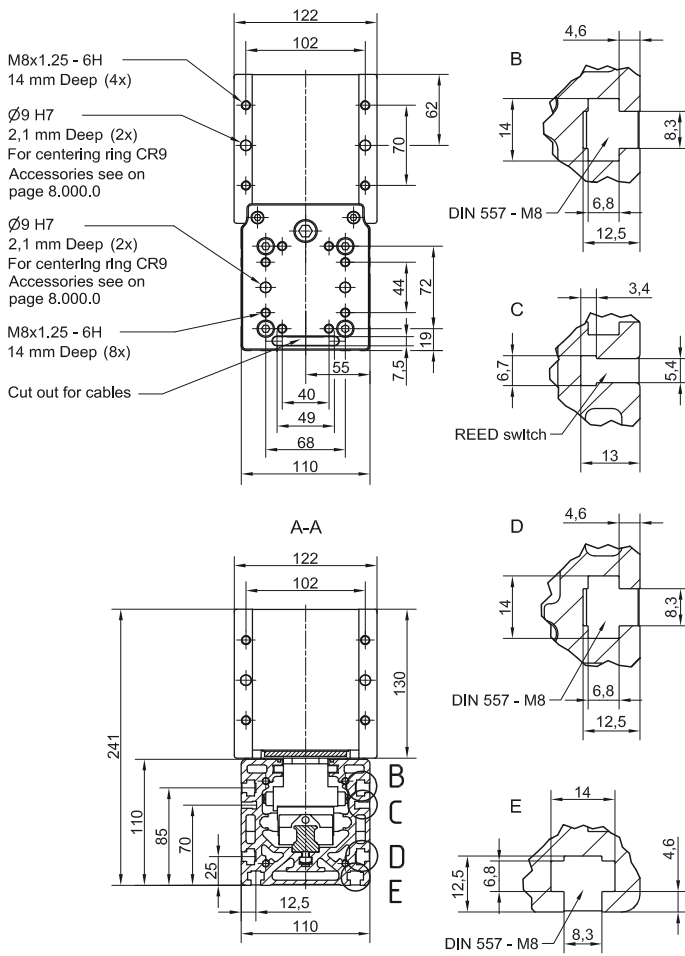
**i** The air pressure opens clamping pistons. Free movement is allowed.

Purified and oiled air shall be used (according to ISO 8573-1 Class 4). Recommended filter size is 25  $\mu$ m.

| Linear Unit | Mass of drive block [ kg ] | * Mass of linear unit [ kg ]                                                                         |
|-------------|----------------------------|------------------------------------------------------------------------------------------------------|
| MTJZ 110    | 12,9                       | $23,3 + 0,0147 \times (\text{Abs. stroke} + (\text{nb} - 1) \times A) + 12,9 \times (\text{nb} - 1)$ |

\* Absolute stroke [mm]  
A - Distance between two drive blocks [mm]  
nb - Number of drive blocks

DIMENSIONS

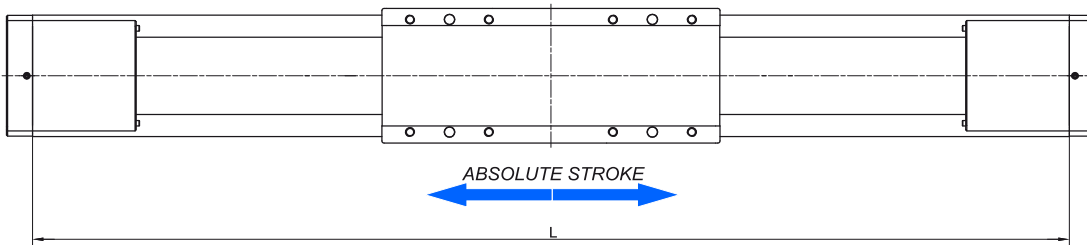


**i** All dimensions in mm; Drawings scales are not equal.

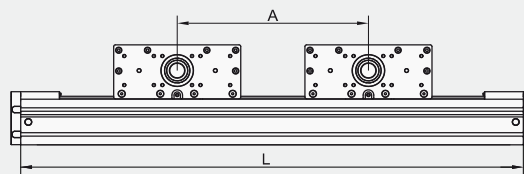
Defining of the linear unit length

$$L = \text{Effective stroke} + 2 \times \text{Safety stroke} + 496 \text{ mm}$$

$$L_{\text{total}} = L + 46 \text{ mm}$$



Multiple drive blocks



$$L = \text{Effective stroke} + 2 \times \text{Safety stroke} + A \times (n_b - 1) + 496 \text{ mm}$$

$$L_{\text{total}} = L + 46 \text{ mm}$$

$$A \geq 300 \text{ mm}$$

$$* A \geq 410 \text{ mm}$$

\* In case of using the drive blocks with clamping element