

**UNIMOTION**



**UNIMOTION**  

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**LINEAR UNITS**

**MTJ** and **MRJ** Linear Units with toothed belt drive and compact dimensions provide high performance features such as, high speed, good accuracy and repeatability.

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.

For very high speeds, up to 10m/s, the Track Rollers ( journal Bearings) of the type MRJ are particularly suitable.

In the Linear Units MTJ and MRJ 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.

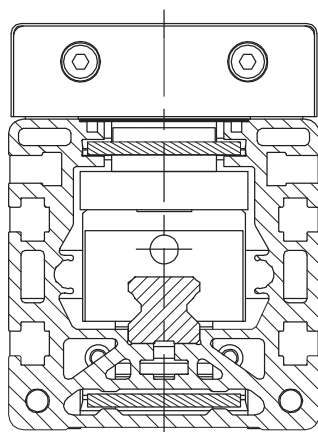
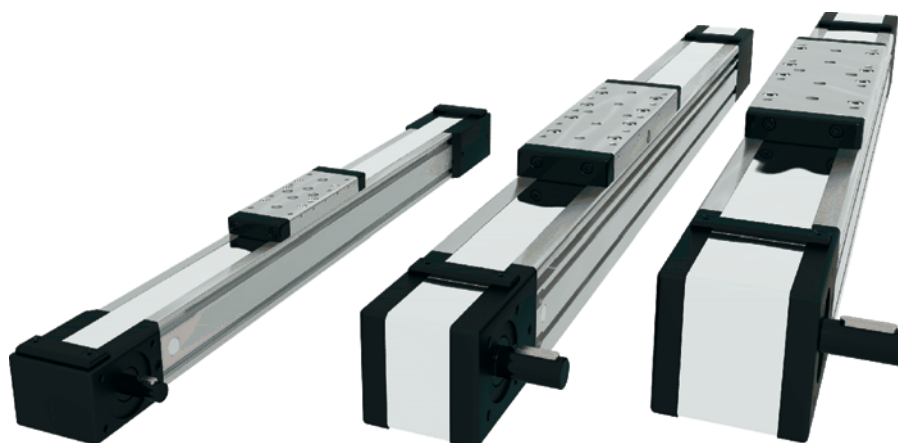
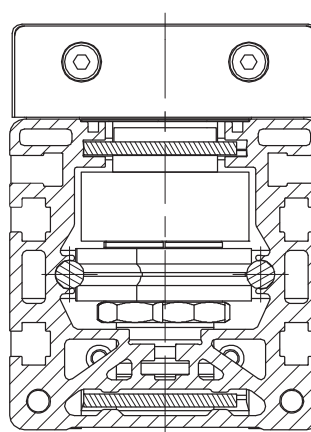
The in the Profile slot driving Polyurethane timing belt protects all the parts in the Profile from dust and other contaminations. As optional, a corrosion-resistant protection strip is available.

The aluminum profile includes T-slots for fixing the Linear Unit and for attaching sensors and switches.

Also, a Reed switch can be used here.

Different carriage lengths with central lubrication port, allow easy re-lubrication of the Linear Unit and allow the possibility to attach additional accessories on the side.

For the Linear Units MTJ and MRJ various adaptation options, for attaching (or redirecting), for Motors or Gearboxes are available.

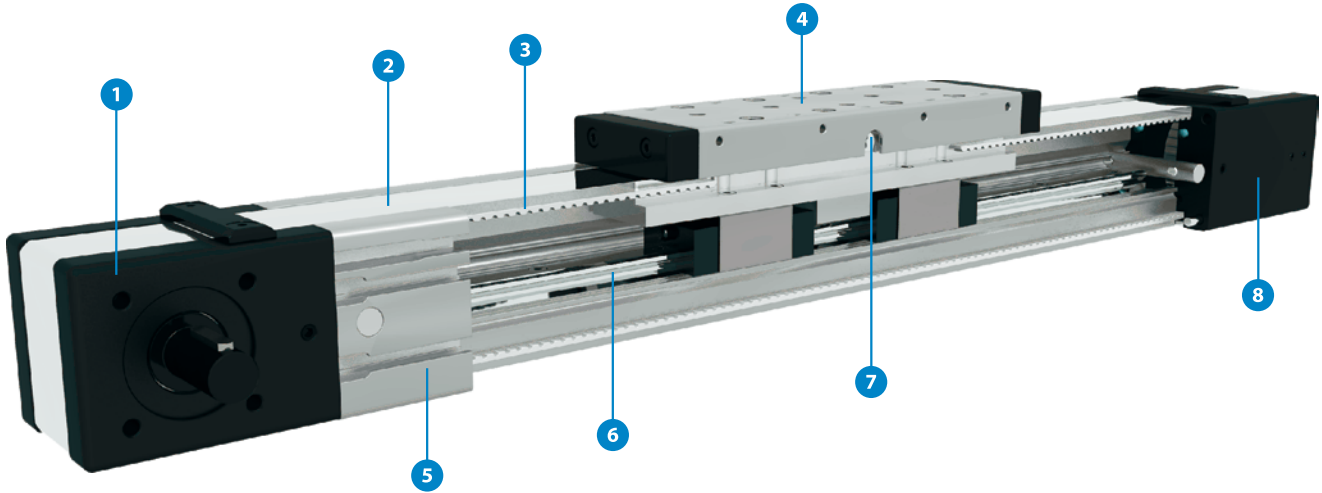
**MTJ**

**MRJ**


**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

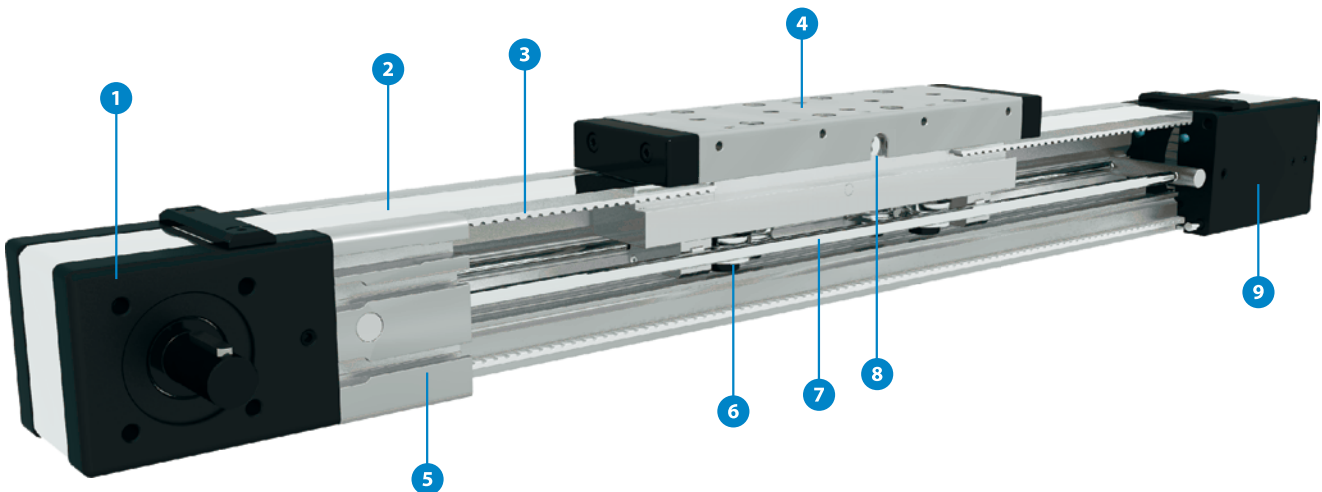
**STRUCTURAL DESIGN**

**MTJ Series**



- 1 - Drive block with pulley
- 2 - Corrosion-resistant protection strip (available also without protection strip)
- 3 - AT polyurethane toothed belt with steel tension cords
- 4 - Carriage; with built in Magnets
- 5 - Aluminium profile-Hard anodized
- 6 - Linear Ball Guideway
- 7 - Central lubrication port; both sides
- 8 - Tension End with integrated belt tensioning system

**MRJ Series**



- 1 - Drive block with pulley
- 2 - Corrosion-resistant protection strip (available also without protection strip)
- 3 - AT polyurethane toothed belt with steel tension cords
- 4 - Carriage; with build in Magnets
- 5 - Aluminium profile-Hard anodized
- 6 - Track Roller (journal Bearing)
- 7 - Two hardened steel Round guide (58/60 HRC)
- 8 - Central lubrication port; both sides
- 9 - Tension End with integrated belt tensioning system

**MTJ - 65 - 1000 - L - 1 - R - 1**

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

**MRJ**  
**MTJ**

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

**40**  
**65**  
**80**  
**110**

**Absolute stroke (mm) :** \_\_\_\_\_

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

**Carriage Version :** \_\_\_\_\_

**S :** Short (only for MTJ series)

**L :** Long

**Leave blank :** For MRJ 40, MTJ 40

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

- 0 :** Pulley with through hole
- 1 :** Pulley with journal (with Keyway)
- 10 :** Pulley with journal (without Keyway)
- 2 :** Pulley with journal on both sides (with Keyway)
- 20 :** Pulley with journal on both sides (without Keyway)
- 3 :** Without drive unit

**Drive journal position :** \_\_\_\_\_

**L :** Journal on left side

**R :** Journal on right side

**Leave blank :** For type of drive pulley 0, 2, 20 and 3

**Protection cover :** \_\_\_\_\_

- 0 :** In profile groove guided Polyurethane toothed belt
- 1 :** Corrosion-resistant protection strip

## TECHNICAL DATA

### General technical data

| Linear Unit | Carriage length<br>Lv [ mm ] | Dynamic load capacity |          |          | Dynamic moment |           |           | Max. permissible loads |           |            |            |            | Moved mass<br>[ kg ] | Max. Repeatability<br>[ mm ] | * Max. length<br>Lmax [ mm ] | * Max. stroke<br>[ mm ] | ** Min. stroke<br>[ mm ] |
|-------------|------------------------------|-----------------------|----------|----------|----------------|-----------|-----------|------------------------|-----------|------------|------------|------------|----------------------|------------------------------|------------------------------|-------------------------|--------------------------|
|             |                              | C [ N ]               | Cy [ N ] | Cz [ N ] | Mx [ Nm ]      | My [ Nm ] | Mz [ Nm ] | Forces                 |           | Moments    |            |            |                      |                              |                              |                         |                          |
|             |                              |                       |          |          |                |           |           | Fpy [ N ]              | Fpz [ N ] | Mpx [ Nm ] | Mpy [ Nm ] | Mpz [ Nm ] |                      |                              |                              |                         |                          |
| MTJ 40      | 92                           | 4610                  | /        | /        | 28             | 90        | 90        | 3850                   | 3850      | 14         | 75         | 75         | 0,28                 | ± 0,08                       | 3000                         | 2876                    | 25                       |
| MRJ 40      | 92                           | /                     | 3400     | 1700     | 20             | 21        | 25        | 1015                   | 1090      | 13         | 14         | 7,6        | 0,26                 | ± 0,08                       | 6000                         | 5876                    | 0                        |

\* For lengths / stroke over the stated value in the table above please contact us.  
 Values for max. stroke are not valid for double carriage  
 (equation of defining the linear unit length for particular size of the linear unit needs to be used).  
 \*\* For minimum stroke below the stated value in the table above please contact us.

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

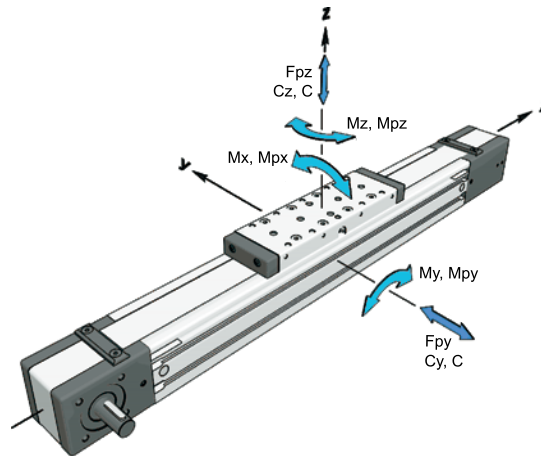
For operating temperature out of the presented range, please contact us.

### 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 :

$$E = 70000 \text{ N / mm}^2$$

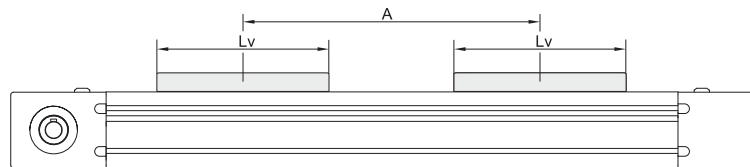


### General technical data for double carriage

| Linear Unit | Carriage version | Dynamic load capacity |          |          | * Dynamic moment |              |              | * Max. permissible loads |           |            |              |              |
|-------------|------------------|-----------------------|----------|----------|------------------|--------------|--------------|--------------------------|-----------|------------|--------------|--------------|
|             |                  | C [ N ]               | Cy [ N ] | Cz [ N ] | Mx [ Nm ]        | My [ Nm ]    | Mz [ Nm ]    | Forces                   |           | Moments    |              |              |
|             |                  |                       |          |          |                  |              |              | Fpy [ N ]                | Fpz [ N ] | Mpx [ Nm ] | Mpy [ Nm ]   | Mpz [ Nm ]   |
| MTJ 40      | 2                | 9220                  | /        | /        | 57               | 4,6 * A [mm] | 4,6 * A [mm] | 7690                     | 7690      | 28         | 3,8 * A [mm] | 3,8 * A [mm] |
| MRJ 40      | 2                | /                     | 6800     | 3400     | 40               | 1,7 * A [mm] | 3,4 * A [mm] | 2030                     | 2180      | 26         | 1,1 * A [mm] | 1,0 * A [mm] |

\* A - Distance between carriages. More info on following pages.

Presented values are for informational purposes only. Exact values can be calculated using our sizing selection tool on Unimotion web site.  
 For grater number of carriages please contact us.



### Drive and belt data

| Linear Unit | * Max. travel speed<br>[ m / s ] | Max. drive torque<br>Ma<br>[ Nm ] | ** No load torque    |                         | Puley drive ratio | Puley diameter<br>[ mm ] | Belt type | Belt width<br>[ mm ] | Max. force transmitted by belt<br>[ N ] | Specific spring constant<br>Cspec<br>[ N ] | * Max. acceleration<br>[ m/s <sup>2</sup> ] |
|-------------|----------------------------------|-----------------------------------|----------------------|-------------------------|-------------------|--------------------------|-----------|----------------------|---|--|---|
|             |                                  |                                   | With strip<br>[ Nm ] | Without strip<br>[ Nm ] |                   |                          |           |                      |   |  |   |
| MTJ 40      | 6                                | 3,7                               | 0,4                  | 0,2                     | 99                | 31,51                    | AT 3      | 20                   | 235                                     | 225000                                     | 70  |
| MRJ 40      | 10                               |                                   | 0,4                  | 0,2                     |                   |                          |           |                      |   |  |   |

\* Max. travel speed and max. acceleration of Linear unit with the Corrosion-resistant protection strip is 1,5 m/s and 50 m/s<sup>2</sup>, respectively.  
 For travel speed and acceleration over the stated value in the table above or diagrams please contact us.

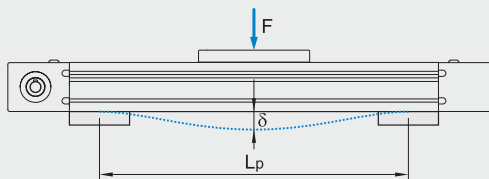
\*\* The stated values are for strokes up to 500mm. No Load Torque value increases with stroke elongation.

Mass and mass moment of inertia

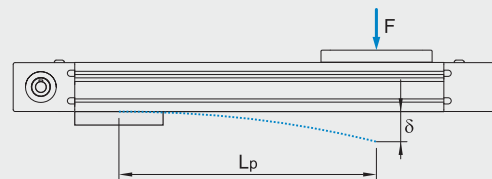
| Linear Unit | Carriage length<br>Lv [ mm ] | Mass of linear unit<br>[ kg ] | Mass moment of inertia<br>[ 10 <sup>-5</sup> kg * m <sup>2</sup> ] | Planar moment of inertia |                        |
|-------------|------------------------------|-------------------------------|--|--------------------------|------------------------|
|             |                              |                               |  | Iy [ cm <sup>4</sup> ]   | Iz [ cm <sup>4</sup> ] |
| MTJ 40      | 92                           | 1,3 + 0,0024 * Stroke [ mm ]  | 9,7 + 0,0035 * Stroke [ mm ]                                       | 9,8                      | 11,6                   |
| MRJ 40      | 92                           | 1,25 + 0,0022 * Stroke [ mm ] | 9,3 + 0,0035 * Stroke [ mm ]                                       |                          |                        |

Deflection of the linear unit

Fixed - fixed mounting



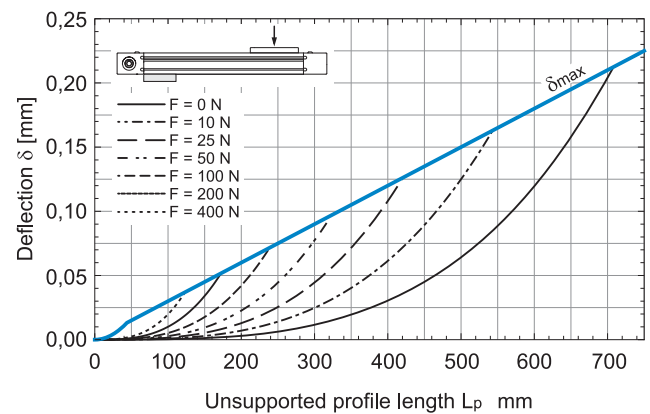
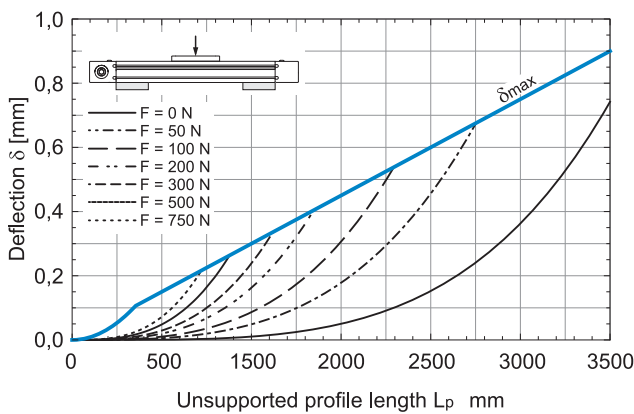
Fixed - free mounting



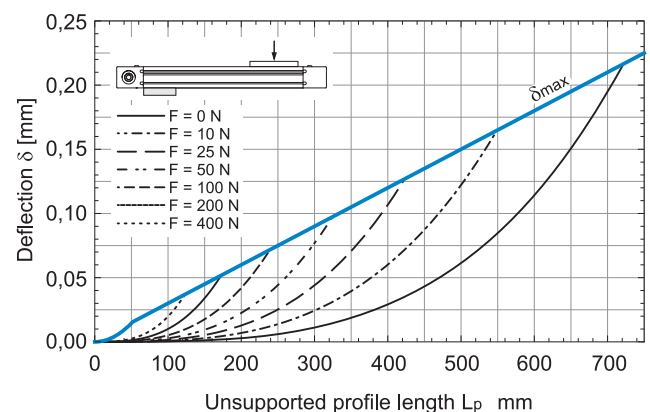
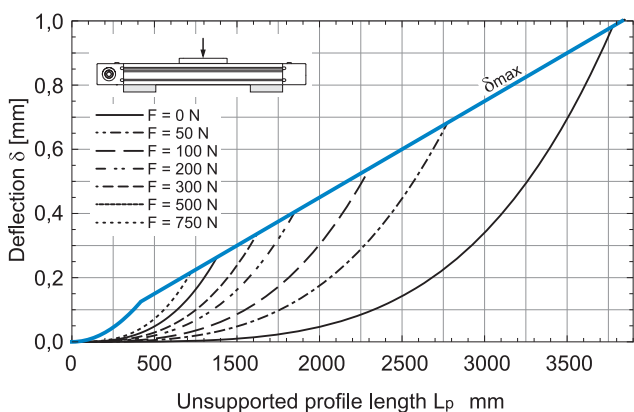
- δ Maximum deflection of the linear unit [mm]
- δmax Maximum permissible deflection of the linear unit [mm]
- F Applied force [N]
- Lp Unsupported profile length [mm]

**i** The maximum permissible deflection δmax must not be exceeded. In the case that maximum deflection δ exceeds the maximum permissible deflection δmax additional profile supports are needed.

MTJ 40

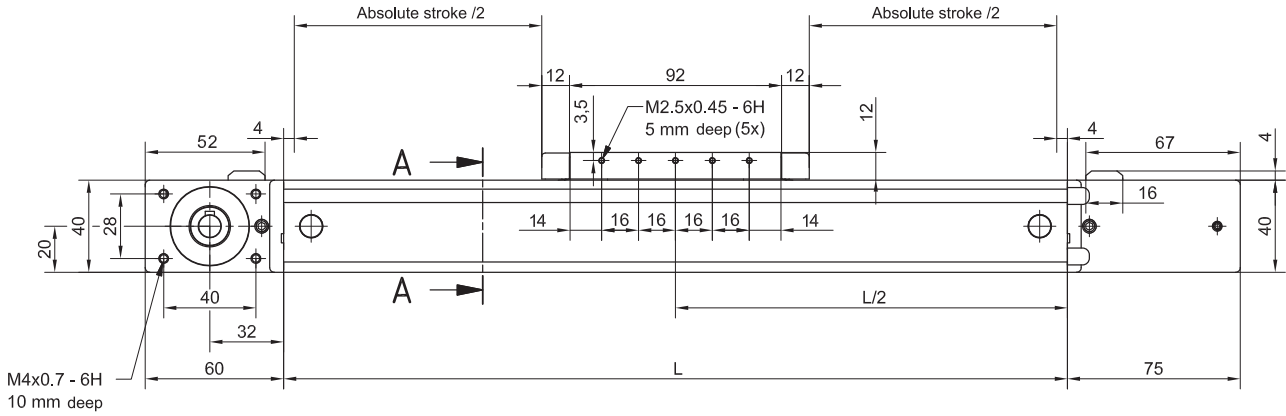


MRJ 40

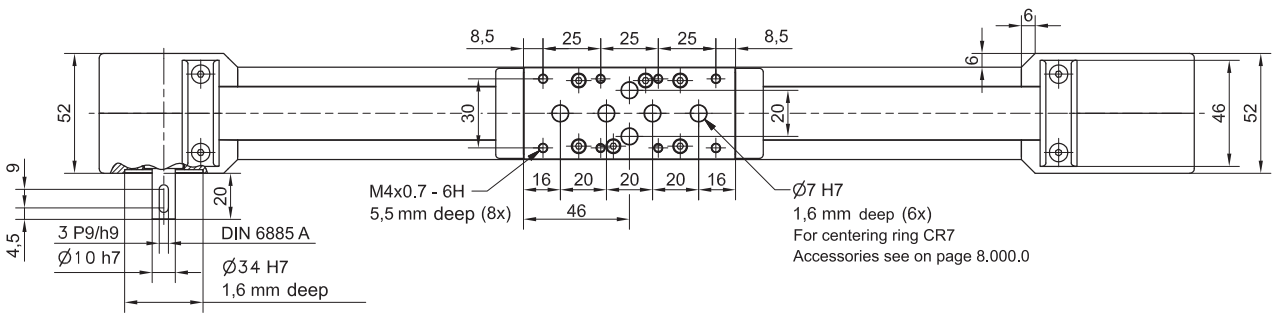


**DIMENSIONS**

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



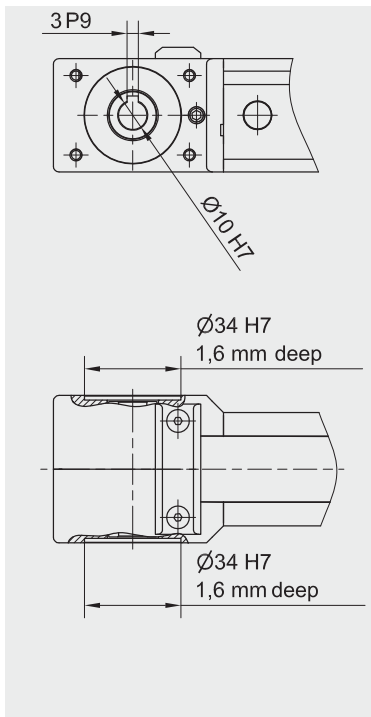
**i** Lifetime lubricated!



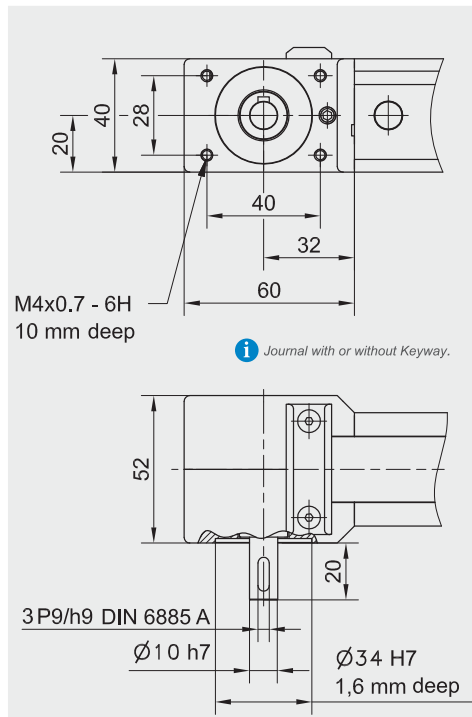
**i** Journal with or without Keyway.

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

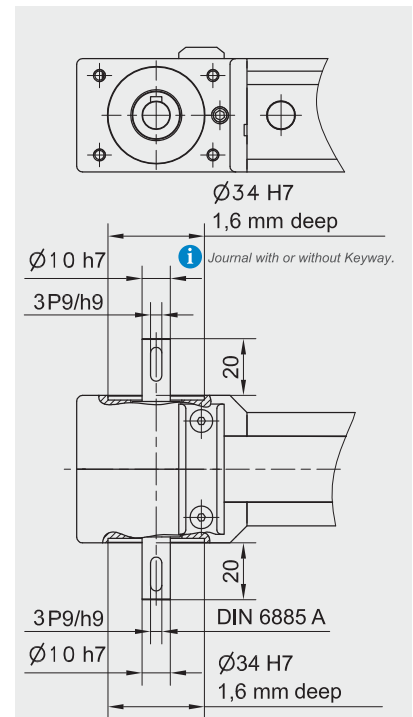
**TYPE 0**



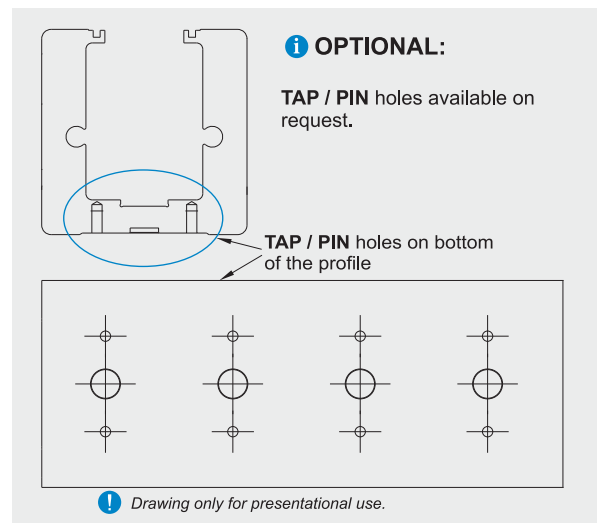
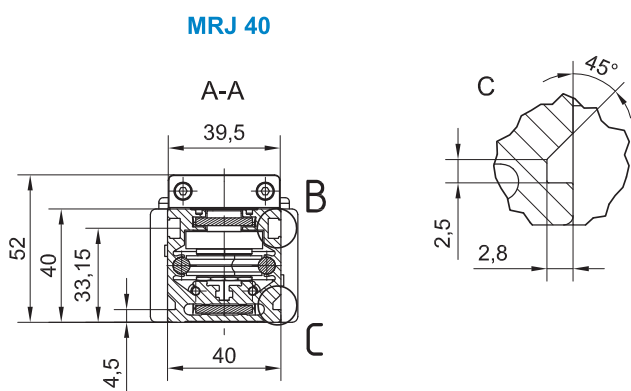
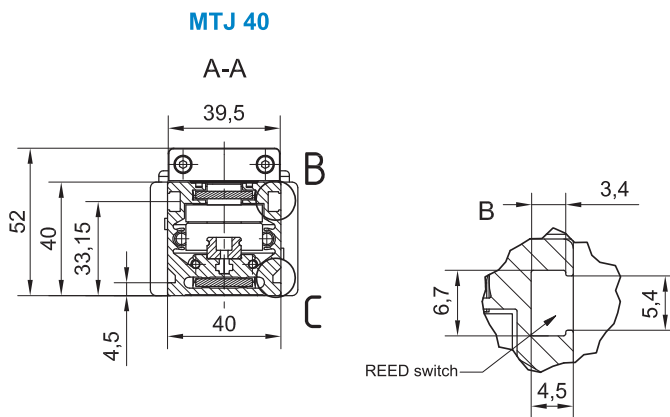
**TYPE 1 L and 1 R**



**TYPE 2**



**DIMENSIONS**



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

**Mounting the drive**

- by the **MOTOR ADAPTER WITH COUPLING** (Page 8.020.0)

**i** Available on request.

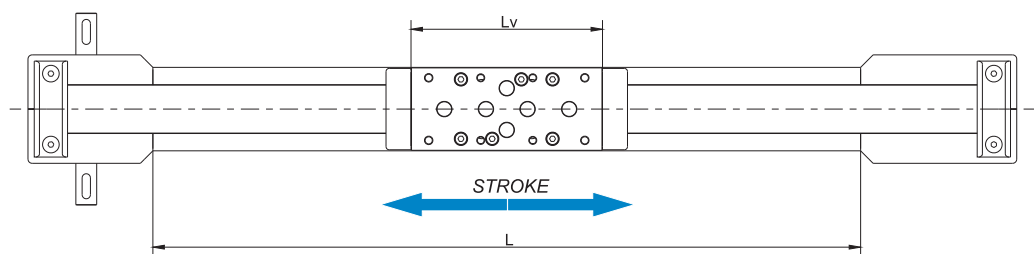
**Defining of the linear unit length**

**L = Effective stroke + 2 × Safety stroke + Lv + 32 mm**

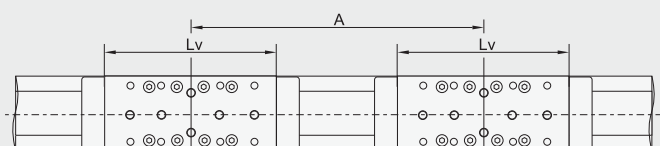
**Lv = 92 mm**

**Ltotal = L + 135 mm**

Left side (L)



**Double-Carriage**



**i** For ordering code please contact us.

**L = Effective stroke + 2 × Safety stroke + Lv + A + 32 mm**

**Ltotal = L + 135 mm**

**A ≥ Lv + 24 mm** **!**



## TECHNICAL DATA

### General technical data

| Linear Unit | Carriage length<br>Lv [ mm ] | Dynamic load capacity |          |          | Dynamic moment |           |           | Max. permissible loads |           |            |            |            | Moved mass<br>[ kg ] | Max. Repeatability<br>[ mm ] | * Max. length<br>Lmax [ mm ] | * Max. stroke<br>[ mm ] | ** Min. stroke<br>[ mm ] |
|-------------|------------------------------|-----------------------|----------|----------|----------------|-----------|-----------|------------------------|-----------|------------|------------|------------|----------------------|------------------------------|------------------------------|-------------------------|--------------------------|
|             |                              | C [ N ]               | Cy [ N ] | Cz [ N ] | Mx [ Nm ]      | My [ Nm ] | Mz [ Nm ] | Forces                 |           | Moments    |            |            |                      |                              |                              |                         |                          |
|             |                              |                       |          |          |                |           |           | Fpy [ N ]              | Fpz [ N ] | Mpx [ Nm ] | Mpy [ Nm ] | Mpz [ Nm ] |                      |                              |                              |                         |                          |
| MTJ 65 S    | 140                          | 9900                  | /        | /        | 79             | 59        | 59        | 3270                   | 5100      | 34         | 34         | 34         | 1,00                 | ± 0,08                       |                              | 5820                    | 40                       |
| MTJ 65 L    | 190                          | 19800                 | /        | /        | 158            | 1025      | 1025      | 6540                   | 10190     | 60         | 530        | 340        | 1,45                 | ± 0,08                       | 6000                         | 5770                    | 40                       |
| MRJ 65 L    | 190                          | /                     | 8600     | 4400     | 74             | 186       | 425       | 1920                   | 1470      | 25         | 62         | 95         | 1,31                 | ± 0,08                       |                              | 5770                    | 0                        |

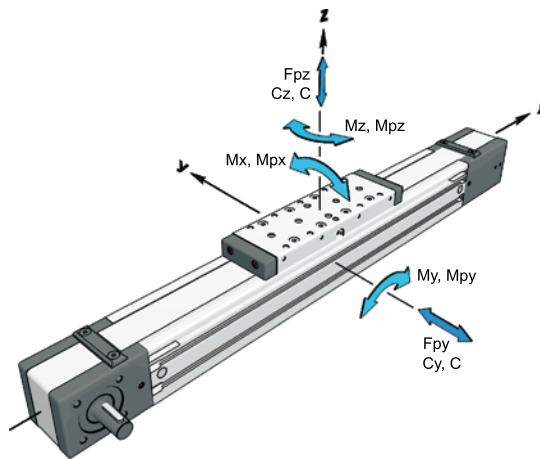
\* For lengths / stroke over the stated value in the table above please contact us.  
 Values for max. stroke are not valid for double carriage  
 (equation of defining the linear unit length for particular size of the linear unit needs to be used).  
 \*\* For minimum stroke below the stated value in the table above please contact us.

### 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 :

$$E = 70000 \text{ N / mm}^2$$



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

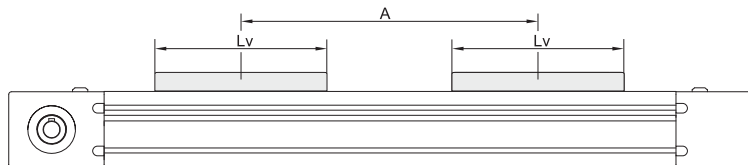
For operating temperature out of the presented range, please contact us.

### General technical data for double carriage

| Linear Unit | Carriage version | Dynamic load capacity |          |          | * Dynamic moment |               |               | * Max. permissible loads |           |            |               |              |
|-------------|------------------|-----------------------|----------|----------|------------------|---------------|---------------|--------------------------|-----------|------------|---------------|--------------|
|             |                  | C [ N ]               | Cy [ N ] | Cz [ N ] | Mx [ Nm ]        | My [ Nm ]     | Mz [ Nm ]     | Forces                   |           | Moments    |               |              |
|             |                  |                       |          |          |                  |               |               | Fpy [ N ]                | Fpz [ N ] | Mpx [ Nm ] | Mpy [ Nm ]    | Mpz [ Nm ]   |
| MTJ 65      | S2               | 19800                 | /        | /        | 158              | 9,9 * A [mm]  | 9,9 * A [mm]  | 6540                     | 10190     | 68         | 5,1 * A [mm]  | 3,3 * A [mm] |
| MTJ 65      | L2               | 39600                 | /        | /        | 316              | 19,8 * A [mm] | 19,8 * A [mm] | 13080                    | 20380     | 120        | 10,2 * A [mm] | 6,5 * A [mm] |
| MRJ 65      | L2               | /                     | 17200    | 8800     | 148              | 4,4 * A [mm]  | 8,6 * A [mm]  | 3850                     | 2940      | 50         | 1,5 * A [mm]  | 1,9 * A [mm] |

\* A - Distance between carriages. More info on following pages.

Presented values are for informational purposes only. Exact values can be calculated using our sizing selection tool on Unimotion web site.  
 For greater number of carriages please contact us.



### Drive and belt data

| Linear Unit | * Max. travel speed<br>[ m / s ] | Max. drive torque<br>Ma<br>[ Nm ] | ** No load torque    |                         | 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<br>[ N ] | * Max. acceleration<br>[ m/s <sup>2</sup> ] |
|-------------|----------------------------------|-----------------------------------|----------------------|-------------------------|------------------------------------|---------------------------|-----------|----------------------|---|--|---|
|             |                                  |                                   | With strip<br>[ Nm ] | Without strip<br>[ Nm ] |                                    |                           |           |                      |   |  |   |
| MTJ 65 S    | 6                                | 13,1                              | 1,1                  | 0,8                     | 165                                | 52,52                     | AT 5      | 32                   | 500                                     | 600000                                     | 70  |
| MTJ 65 L    |                                  |                                   | 1,2                  | 0,9                     |                                    |                           |           |                      |   |  |   |
| MRJ 65 L    | 10                               |                                   | 1                    | 0,7                     |                                    |                           |           |                      |   |  |   |

\* Max. travel speed and max. acceleration of Linear unit with the Corrosion-resistant protection strip is 1,5 m/s and 50 m/s<sup>2</sup>, respectively.  
 For travel speed and acceleration over the stated value in the table above or diagrams please contact us.

\*\* The stated values are for strokes up to 500mm. No Load Torque value increases with stroke elongation.

Mass and mass moment of inertia

| Linear Unit | Carriage length | Mass of linear unit<br>[ kg ]             | Mass moment of inertia<br>[ $10^{-5} \text{ kg} \cdot \text{m}^2$ ] | Planar moment of inertia |                        |
|-------------|-----------------|---|---|--------------------------|------------------------|
|             | Lv [ mm ]       |   |   | ly [ cm <sup>4</sup> ]   | lz [ cm <sup>4</sup> ] |
| MTJ 65 S    | 140             | $4 + 0,0055 \cdot \text{Stroke [ mm ]}$   | $98,4 + 0,0154 \cdot \text{Stroke [ mm ]}$                          | 59,7                     | 74,4                   |
| MTJ 65 L    | 190             | $4,6 + 0,0055 \cdot \text{Stroke [ mm ]}$ | $130,1 + 0,0154 \cdot \text{Stroke [ mm ]}$                         |                          |                        |
| MRJ 65 L    | 190             | $4,3 + 0,0047 \cdot \text{Stroke [ mm ]}$ | $120,4 + 0,0154 \cdot \text{Stroke [ mm ]}$                         |                          |                        |

Deflection of the linear unit

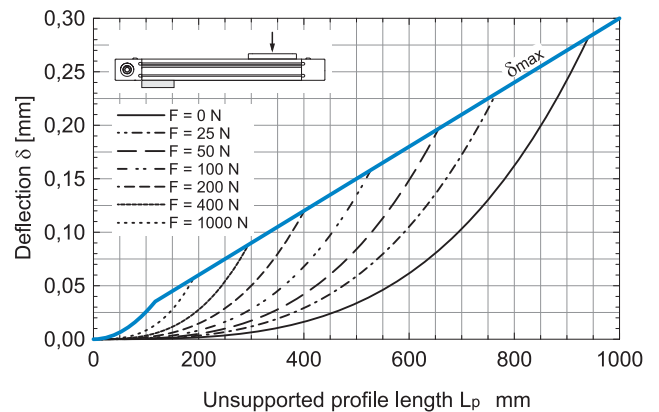
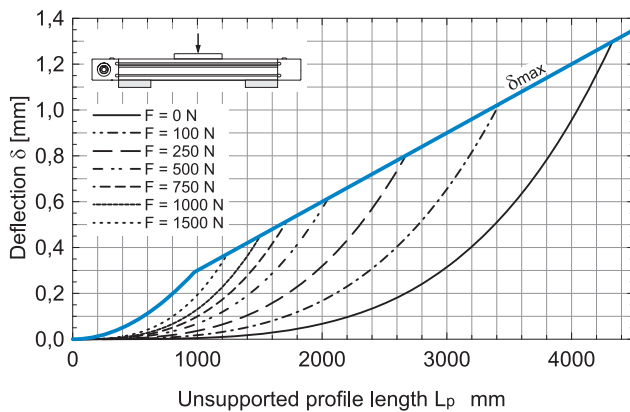
**Fixed - fixed mounting**

**Fixed - free mounting**

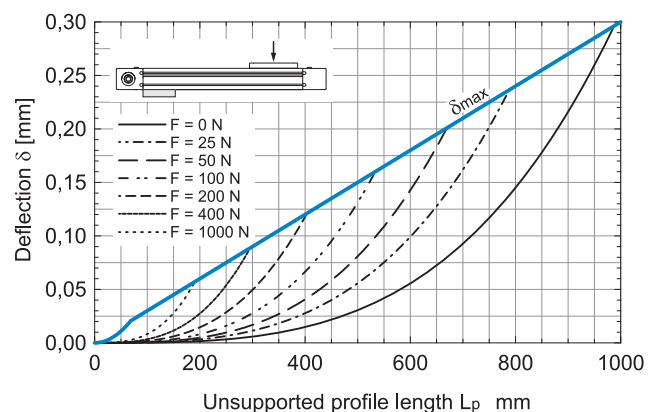
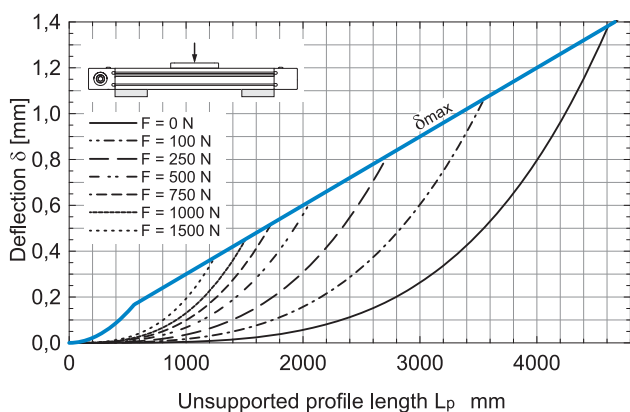
$\delta$  Maximum deflection of the linear unit [mm]  
 $\delta_{max}$  Maximum permissible deflection of the linear unit [mm]  
 F Applied force [N]  
 Lp Unsupported profile length [mm]

**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.

MTJ 65

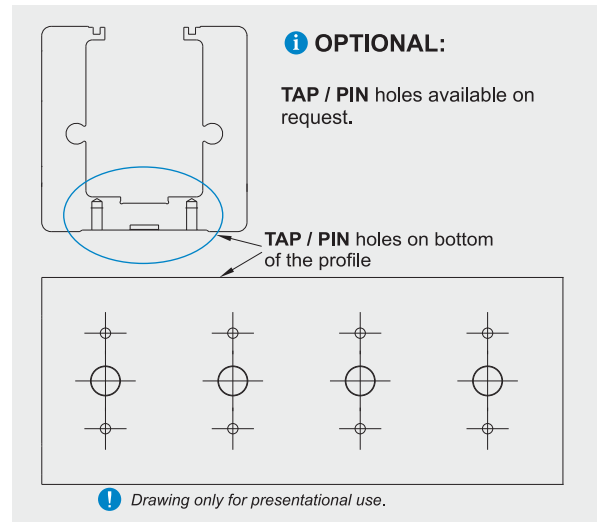
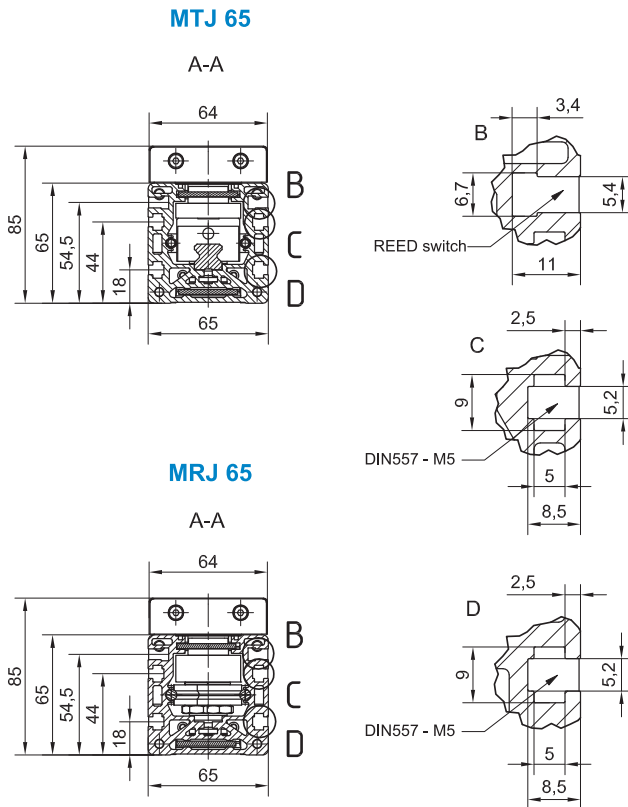


MRJ 65





**DIMENSIONS**



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

**Mounting the drive**

- by the **MOTOR ADAPTER WITH COUPLING** (Page 8.020.0)

**i** Available on request.

**Defining of the linear unit length**

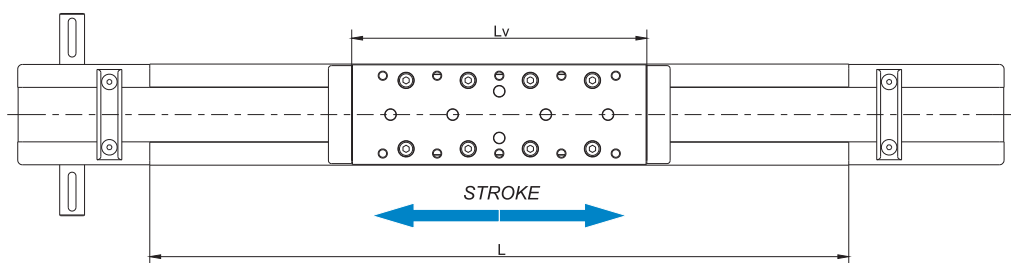
**L = Effective stroke + 2 × Safety stroke + Lv + 40 mm**

**Lv - Long carriage = 190 mm**

**Ltotal = L + 185 mm**

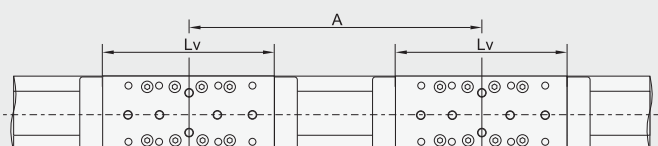
**Lv - Short carriage = 140 mm**

Left side (L)



Right side (R)

**Double-Carriage**



**i** For ordering code please contact us.

**L = Effective stroke + 2 × Safety stroke + Lv + A + 40 mm**  
**Ltotal = L + 185 mm** } **A ≥ Lv + 30 mm** **!**

## TECHNICAL DATA

### General technical data

| Linear Unit | Carriage length<br>Lv [ mm ] | Dynamic load capacity |          |          | Dynamic moment |           |           | Max. permissible loads |           |            |            |            | Moved mass<br>[ kg ] | Max. Repeatability<br>[ mm ] | * Max. length<br>Lmax [ mm ] | * Max. stroke<br>[ mm ] | ** Min. stroke<br>[ mm ] |
|-------------|------------------------------|-----------------------|----------|----------|----------------|-----------|-----------|------------------------|-----------|------------|------------|------------|----------------------|------------------------------|------------------------------|-------------------------|--------------------------|
|             |                              | C [ N ]               | Cy [ N ] | Cz [ N ] | Mx [ Nm ]      | My [ Nm ] | Mz [ Nm ] | Forces                 |           | Moments    |            |            |                      |                              |                              |                         |                          |
|             |                              |                       |          |          |                |           |           | Fpy [ N ]              | Fpz [ N ] | Mpx [ Nm ] | Mpy [ Nm ] | Mpz [ Nm ] |                      |                              |                              |                         |                          |
| MTJ 80 S    | 170                          | 17100                 | /        | /        | 185            | 130       | 130       | 4470                   | 7530      | 110        | 122        | 100        | 1,72                 | ± 0,08                       |                              | 5788                    | 55                       |
| MTJ 80 L    | 260                          | 34200                 | /        | /        | 370            | 2565      | 2565      | 8930                   | 15060     | 150        | 1130       | 670        | 2,72                 | ± 0,08                       | 6000                         | 5698                    | 55                       |
| MRJ 80 L    | 260                          | /                     | 17100    | 9000     | 198            | 511       | 1145      | 3400                   | 1760      | 39         | 101        | 228        | 2,73                 | ± 0,08                       |                              | 5698                    | 0                        |

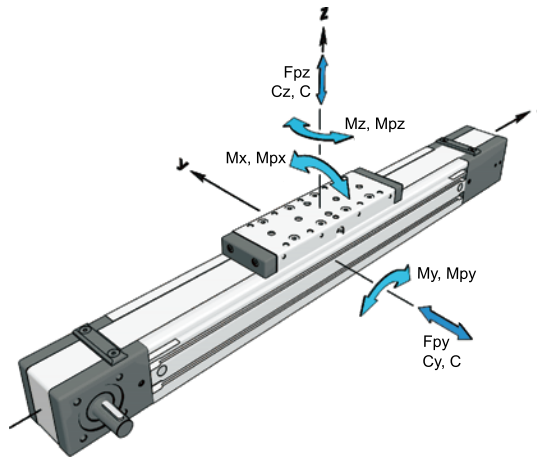
\* For lengths / stroke over the stated value in the table above please contact us.  
 Values for max. stroke are not valid for double carriage  
 (equation of defining the linear unit length for particular size of the linear unit needs to be used).  
 \*\* For minimum stroke below the stated value in the table above please contact us.

### 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 :

$$E = 70000 \text{ N / mm}^2$$



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

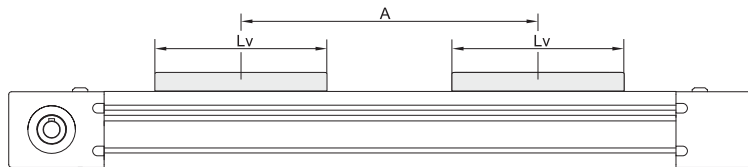
For operating temperature out of the presented range, please contact us.

### General technical data for double carriage

| Linear Unit | Carriage version | Dynamic load capacity |          |          | * Dynamic moment |               |               | * Max. permissible loads |           |            |               |              |
|-------------|------------------|-----------------------|----------|----------|------------------|---------------|---------------|--------------------------|-----------|------------|---------------|--------------|
|             |                  | C [ N ]               | Cy [ N ] | Cz [ N ] | Mx [ Nm ]        | My [ Nm ]     | Mz [ Nm ]     | Forces                   |           | Moments    |               |              |
|             |                  |                       |          |          |                  |               |               | Fpy [ N ]                | Fpz [ N ] | Mpx [ Nm ] | Mpy [ Nm ]    | Mpz [ Nm ]   |
| MTJ 80      | S2               | 34200                 | /        | /        | 370              | 17,1 * A [mm] | 17,1 * A [mm] | 8930                     | 15060     | 220        | 7,5 * A [mm]  | 4,5 * A [mm] |
| MTJ 80      | L2               | 68400                 | /        | /        | 740              | 34,2 * A [mm] | 34,2 * A [mm] | 17860                    | 30130     | 300        | 15,1 * A [mm] | 8,9 * A [mm] |
| MRJ 80      | L2               | /                     | 34200    | 18000    | 396              | 9,0 * A [mm]  | 17,1 * A [mm] | 6800                     | 3530      | 78         | 1,8 * A [mm]  | 3,4 * A [mm] |

\* A - Distance between carriages. More info on following pages.

Presented values are for informational purposes only. Exact values can be calculated using our sizing selection tool on Unimotion web site.  
 For greater number of carriages please contact us.



### Drive and belt data

| Linear Unit | * Max. travel speed<br>[ m / s ] | Max. drive torque<br>Ma<br>[ Nm ] | ** No load torque    |                         | 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<br>[ N ] | * Max. acceleration<br>[ m/s <sup>2</sup> ] |
|-------------|----------------------------------|-----------------------------------|----------------------|-------------------------|------------------------------------|---------------------------|-----------|----------------------|---|--|---|
|             |                                  |                                   | With strip<br>[ Nm ] | Without strip<br>[ Nm ] |                                    |                           |           |                      |   |  |   |
| MTJ 80 S    | 6                                | 29,4                              | 1,5                  | 1,2                     | 210                                | 66,84                     | AT 5      | 50                   | 880                                     | 960000                                     | 70  |
| MTJ 80 L    |                                  |                                   | 1,7                  | 1,4                     |                                    |                           |           |                      |   |  |   |
| MRJ 80 L    | 10                               |                                   | 1,4                  | 1,1                     |                                    |                           |           |                      |   |  |   |

\* Max. travel speed and max. acceleration of Linear unit with the Corrosion-resistant protection strip is 1,5 m/s and 50 m/s<sup>2</sup>, respectively.  
 For travel speed and acceleration over the stated value in the table above or diagrams please contact us.

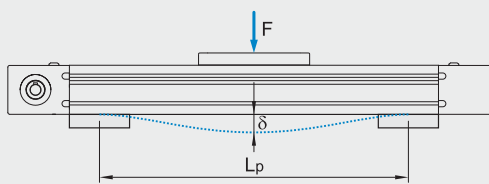
\*\* The stated values are for strokes up to 500mm. No Load Torque value increases with stroke elongation.

Mass and mass moment of inertia

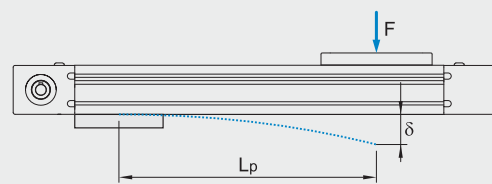
| Linear Unit | Carriage length<br>Lv [ mm ] | Mass of linear unit<br>[ kg ] | Mass moment of inertia<br>[ 10 <sup>-5</sup> kg * m <sup>2</sup> ] | Planar moment of inertia |                        |
|-------------|------------------------------|-------------------------------|--|--------------------------|------------------------|
|             |                              |                               |  | Iy [ cm <sup>4</sup> ]   | Iz [ cm <sup>4</sup> ] |
| MTJ 80 S    | 170                          | 6,8 + 0,0085 * Stroke [ mm ]  | 310,6 + 0,0391 * Stroke [ mm ]                                     | 129,1                    | 173,4                  |
| MTJ 80 L    | 260                          | 8,4 + 0,0085 * Stroke [ mm ]  | 423,3 + 0,0391 * Stroke [ mm ]                                     |                          |                        |
| MRJ 80 L    | 260                          | 8,2 + 0,0075 * Stroke [ mm ]  | 424,4 + 0,0391 * Stroke [ mm ]                                     |                          |                        |

Deflection of the linear unit

Fixed - fixed mounting



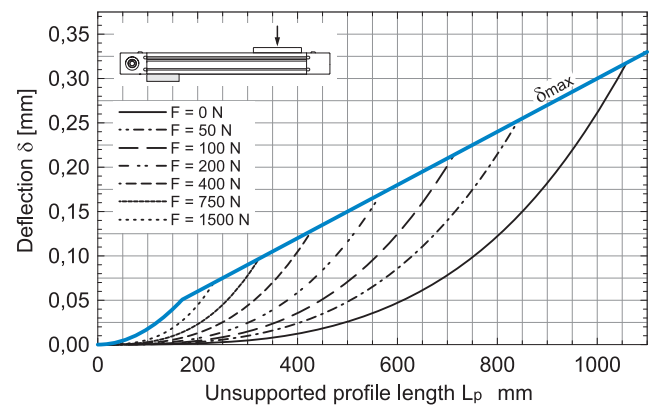
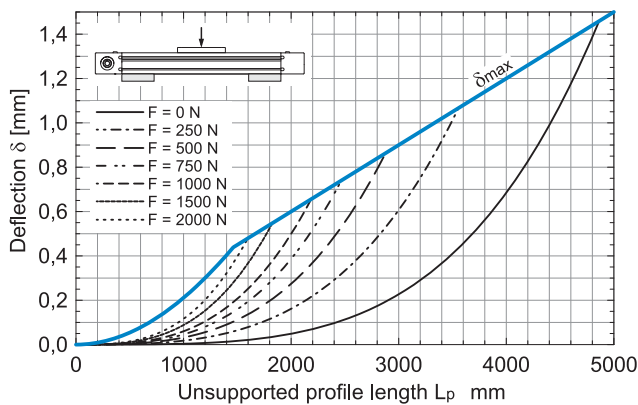
Fixed - free mounting



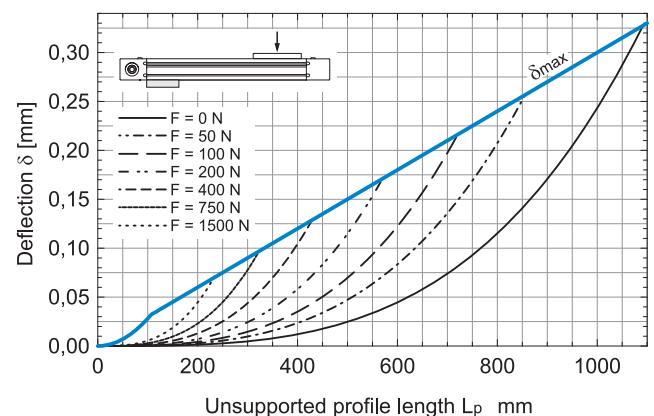
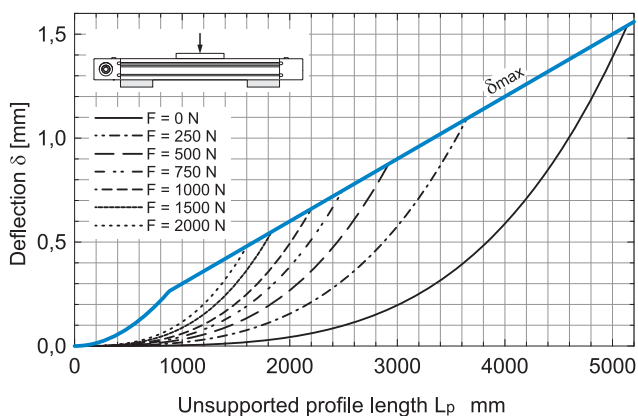
- δ Maximum deflection of the linear unit [mm]
- δ<sub>max</sub> Maximum permissible deflection of the linear unit [mm]
- F Applied force [N]
- L<sub>p</sub> Unsupported profile length [mm]

**i** The maximum permissible deflection δ<sub>max</sub> must not be exceeded. In the case that maximum deflection δ exceeds the maximum permissible deflection δ<sub>max</sub> additional profile supports are needed.

MTJ 80

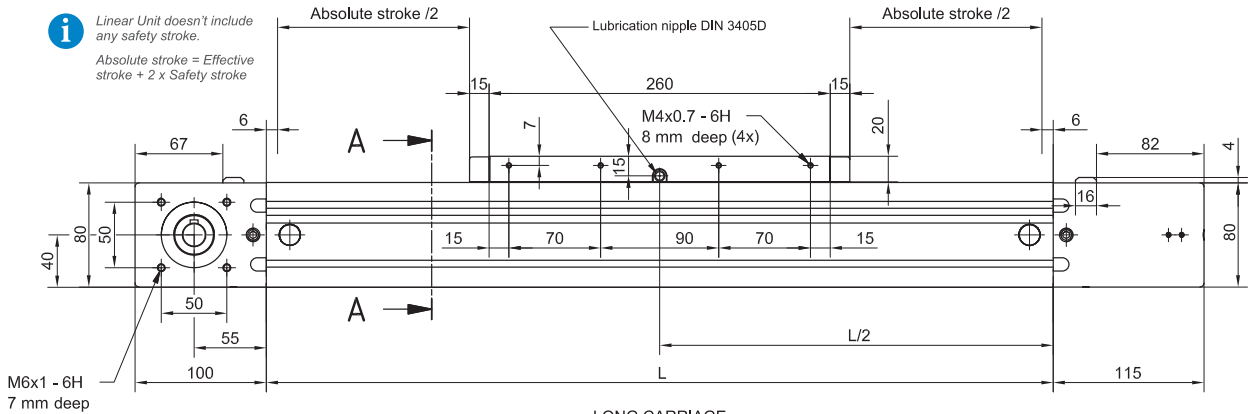


MRJ 80

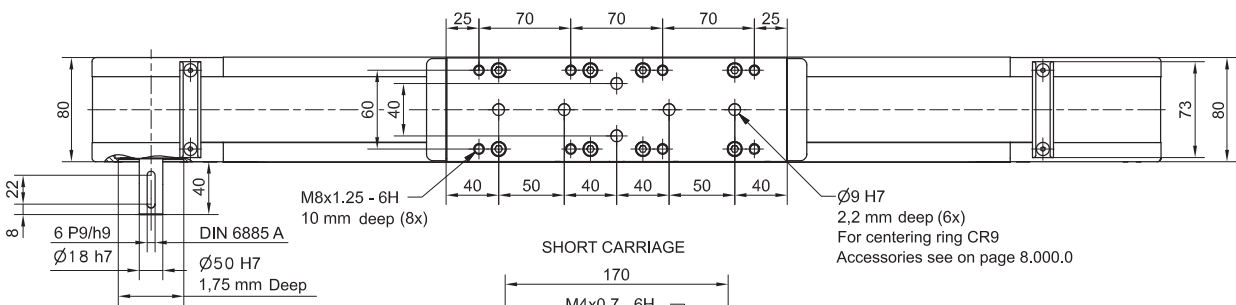


**DIMENSIONS**

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



LONG CARRIAGE



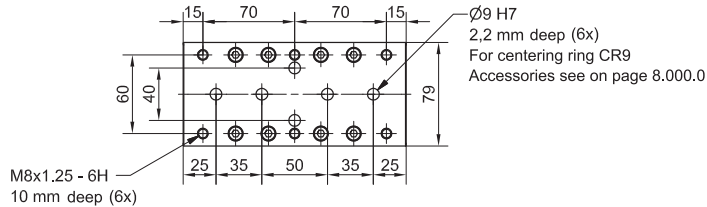
SHORT CARRIAGE

**i** Journal with or without Keyway.

**i** Short carriage only for MTJ series!

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

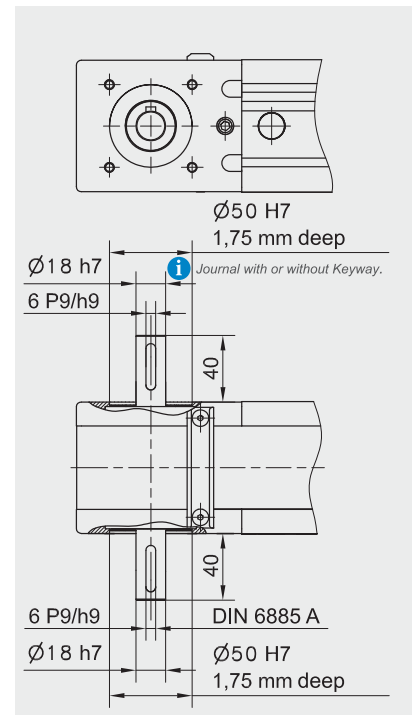
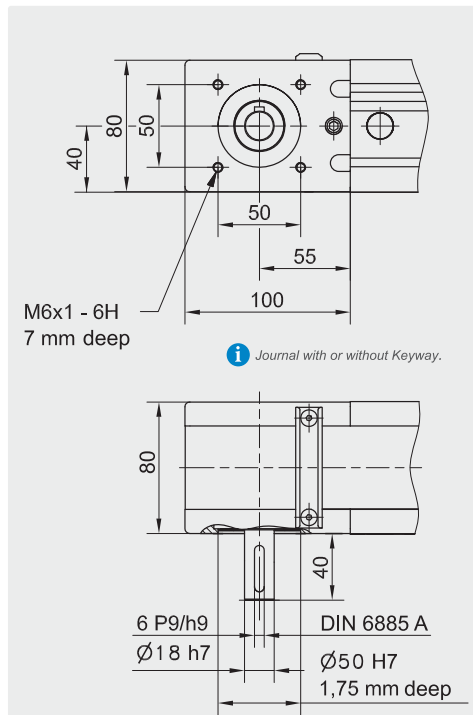
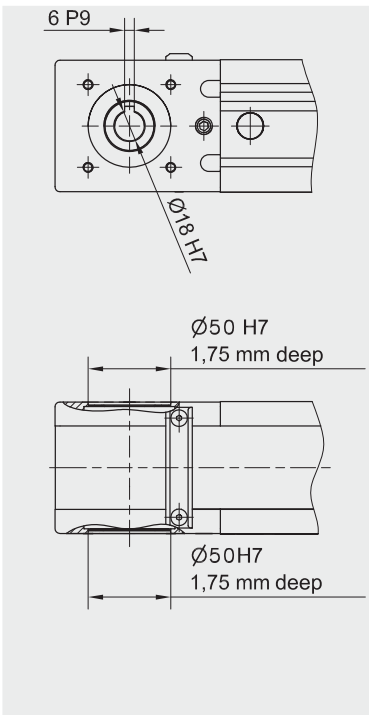
Lubrication nipple DIN 3405D



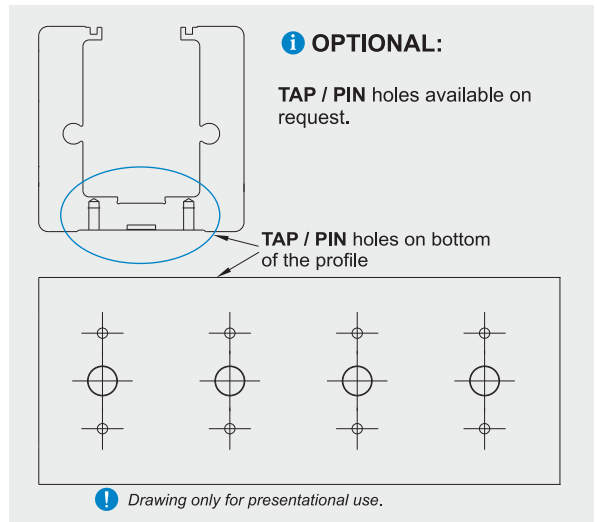
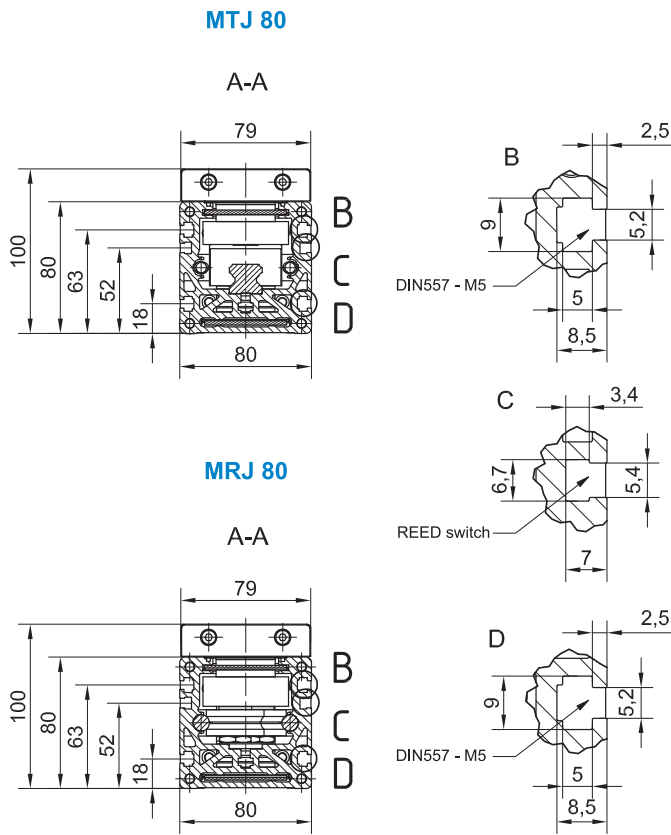
**TYPE 0**

**TYPE 1 L and 1 R**

**TYPE 2**



**DIMENSIONS**



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

**Mounting the drive**

- by the **MOTOR ADAPTER WITH COUPLING** (Page 8.020.0)

**i** Available on request.

**Defining of the linear unit length**

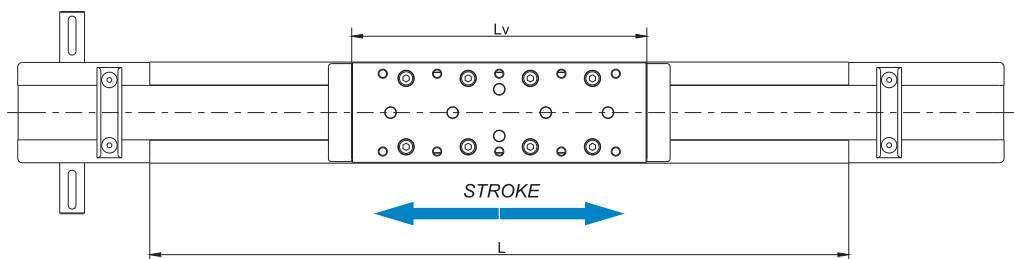
**L = Effective stroke + 2 × Safety stroke + Lv + 42 mm**

**Lv - Long carriage = 260 mm**

**Ltotal = L + 215 mm**

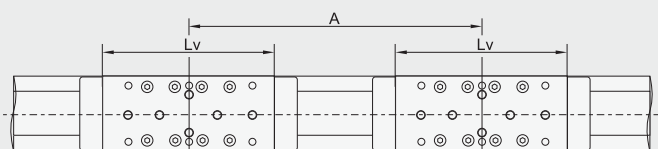
**Lv - Short carriage = 170 mm**

Left side (L)



Right side (R)

**Double-Carriage**



**i** For ordering code please contact us.

**L = Effective stroke + 2 × Safety stroke + Lv + A + 42 mm**  
**Ltotal = L + 215 mm** } **A ≥ Lv + 30 mm** **!**



## TECHNICAL DATA

### General technical data

| Linear Unit | Carriage length<br>Lv [ mm ] | Dynamic load capacity |          |          | Dynamic moment |           |           | Max. permissible loads |           |            |            |            | Moved mass<br>[ kg ] | Max. Repeatability<br>[ mm ] | * Max. length<br>Lmax [ mm ] | * Max. stroke<br>[ mm ] | ** Min. stroke<br>[ mm ] |
|-------------|------------------------------|-----------------------|----------|----------|----------------|-----------|-----------|------------------------|-----------|------------|------------|------------|----------------------|------------------------------|------------------------------|-------------------------|--------------------------|
|             |                              | C [ N ]               | Cy [ N ] | Cz [ N ] | Mx [ Nm ]      | My [ Nm ] | Mz [ Nm ] | Forces                 |           | Moments    |            |            |                      |                              |                              |                         |                          |
|             |                              |                       |          |          |                |           |           | Fpy [ N ]              | Fpz [ N ] | Mpx [ Nm ] | Mpy [ Nm ] | Mpz [ Nm ] |                      |                              |                              |                         |                          |
| MTJ 110 S   | 240                          | 24800                 | /        | /        | 315            | 220       | 220       | 5000                   | 10130     | 135        | 180        | 100        | 3,25                 | ± 0,08                       |                              | 5748                    | 65                       |
| MTJ 110 L   | 330                          | 49600                 | /        | /        | 630            | 3840      | 3840      | 10000                  | 20260     | 295        | 1570       | 775        | 4,61                 | ± 0,08                       | 6000                         | 5658                    | 65                       |
| MRJ 110 L   | 330                          | /                     | 31000    | 14000    | 406            | 877       | 2325      | 6200                   | 3410      | 99         | 214        | 465        | 4,78                 | ± 0,08                       |                              | 5658                    | 0                        |

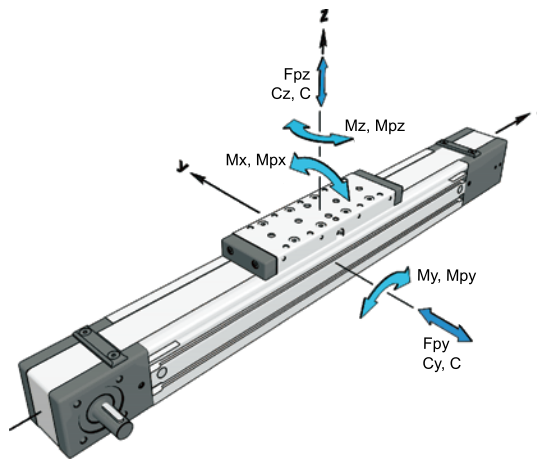
\* For lengths / stroke over the stated value in the table above please contact us.  
 Values for max. stroke are not valid for double carriage  
 (equation of defining the linear unit length for particular size of the linear unit needs to be used).  
 \*\* For minimum stroke below the stated value in the table above please contact us.

### 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 :

$$E = 70000 \text{ N / mm}^2$$



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

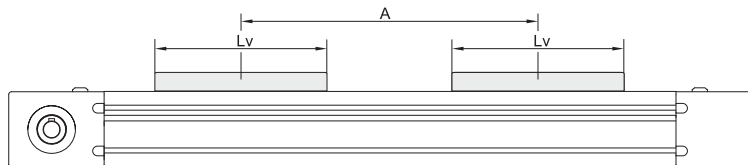
For operating temperature out of the presented range, please contact us.

### General technical data for double carriage

| Linear Unit | Carriage version | Dynamic load capacity |          |          | * Dynamic moment |               |               | * Max. permissible loads |           |            |               |               |
|-------------|------------------|-----------------------|----------|----------|------------------|---------------|---------------|--------------------------|-----------|------------|---------------|---------------|
|             |                  | C [ N ]               | Cy [ N ] | Cz [ N ] | Mx [ Nm ]        | My [ Nm ]     | Mz [ Nm ]     | Forces                   |           | Moments    |               |               |
|             |                  |                       |          |          |                  |               |               | Fpy [ N ]                | Fpz [ N ] | Mpx [ Nm ] | Mpy [ Nm ]    | Mpz [ Nm ]    |
| MTJ 110     | S2               | 49600                 | /        | /        | 630              | 24,8 * A [mm] | 24,8 * A [mm] | 10000                    | 20260     | 270        | 10,1 * A [mm] | 5,0 * A [mm]  |
| MTJ 110     | L2               | 99200                 | /        | /        | 1260             | 49,6 * A [mm] | 49,6 * A [mm] | 20000                    | 40520     | 590        | 20,3 * A [mm] | 10,0 * A [mm] |
| MRJ 110     | L2               | /                     | 62000    | 28000    | 812              | 14,0 * A [mm] | 31,0 * A [mm] | 12400                    | 6830      | 198        | 3,4 * A [mm]  | 6,2 * A [mm]  |

\* A - Distance between carriages. More info on following pages.

Presented values are for informational purposes only. Exact values can be calculated using our sizing selection tool on Unimotion web site.  
 For greater number of carriages please contact us.



### Drive and belt data

| Linear Unit | * Max. travel speed<br>[ m / s ] | Max. drive torque<br>Ma<br>[ Nm ]             | ** No load torque    |                         | 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<br>[ N ] | * Max. acceleration<br>[ m/s <sup>2</sup> ] |
|-------------|----------------------------------|---|----------------------|-------------------------|------------------------------------|---------------------------|-----------|----------------------|---|--|---|
|             |                                  |   | With strip<br>[ Nm ] | Without strip<br>[ Nm ] |                                    |                           |           |                      |   |  |   |
| MRJ 110 L   | 10                               | 68,5<br>with Keyway<br>82,6<br>without Keyway | 2,2                  | 2                       | 300                                | 95,49                     | AT 10     | 50                   | 1730                                    | 2145000                                    | 70  |
| MTJ 110 S   | 6                                |   | 2,2                  | 2                       |                                    |                           |           |                      |   |  |   |
| MTJ 110 L   |                                  |   | 2,7                  | 3                       |                                    |                           |           |                      |   |  |   |

\* Max. travel speed and max. acceleration of Linear unit with the Corrosion-resistant protection strip is 1,5 m/s and 50 m/s<sup>2</sup>, respectively.  
 For travel speed and acceleration over the stated value in the table above or diagrams please contact us.

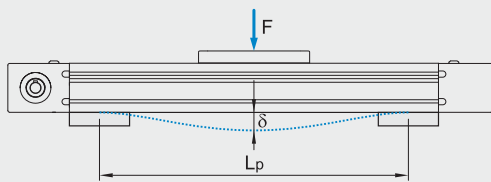
\*\* The stated values are for strokes up to 500mm. No Load Torque value increases with stroke elongation.

Mass and mass moment of inertia

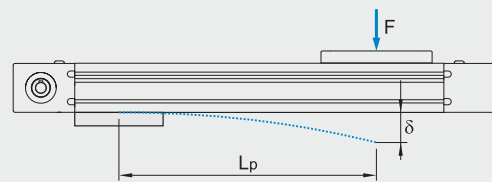
| Linear Unit | Carriage length<br>Lv [ mm ] | Mass of linear unit<br>[ kg ] | Mass moment of inertia<br>[ 10 <sup>-5</sup> kg * m <sup>2</sup> ] | Planar moment of inertia |                        |
|-------------|------------------------------|-------------------------------|--|--------------------------|------------------------|
|             |                              |                               |  | Iy [ cm <sup>4</sup> ]   | Iz [ cm <sup>4</sup> ] |
| MTJ 110 S   | 240                          | 15 + 0,015 * Stroke [ mm ]    | 1065,0 + 0,1370 * Stroke [ mm ]                                    | 513,0                    | 620,0                  |
| MTJ 110 L   | 330                          | 17,7 + 0,015 * Stroke [ mm ]  | 1381,0 + 0,1370 * Stroke [ mm ]                                    |                          |                        |
| MRJ 110 L   | 330                          | 16,3 + 0,0133 * Stroke [ mm ] | 1420,0 + 0,1370 * Stroke [ mm ]                                    |                          |                        |

Deflection of the linear unit

Fixed - fixed mounting



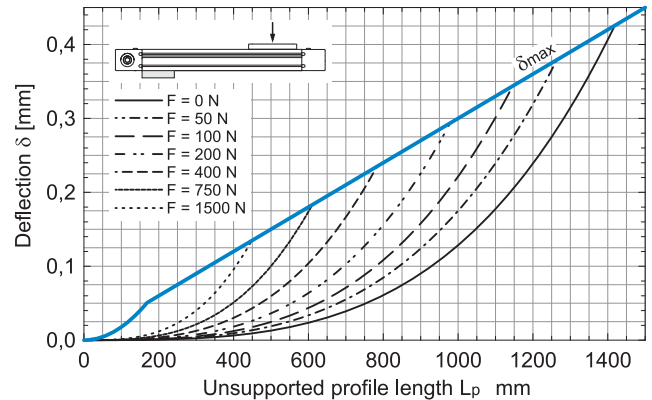
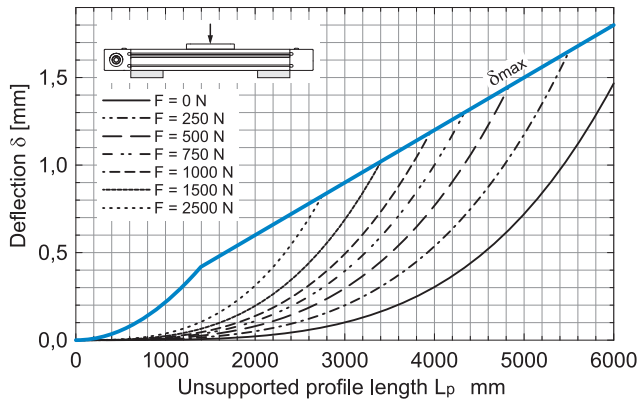
Fixed - free mounting



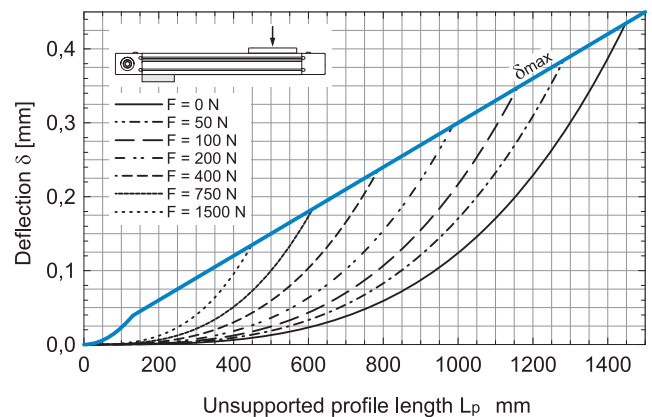
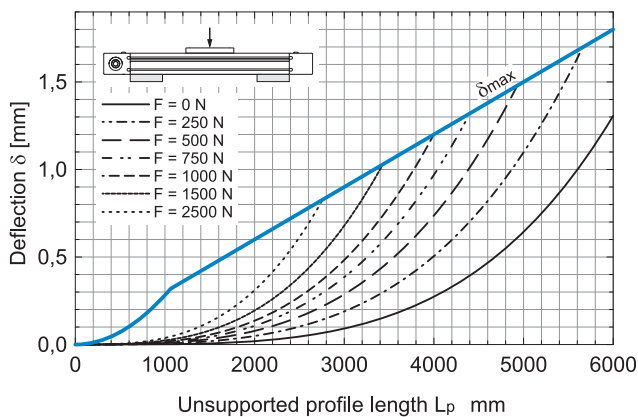
- δ Maximum deflection of the linear unit [mm]
- δmax Maximum permissible deflection of the linear unit [mm]
- F Applied force [N]
- Lp Unsupported profile length [mm]

**i** The maximum permissible deflection δmax must not be exceeded. In the case that maximum deflection δ exceeds the maximum permissible deflection δmax additional profile supports are needed.

MTJ 110

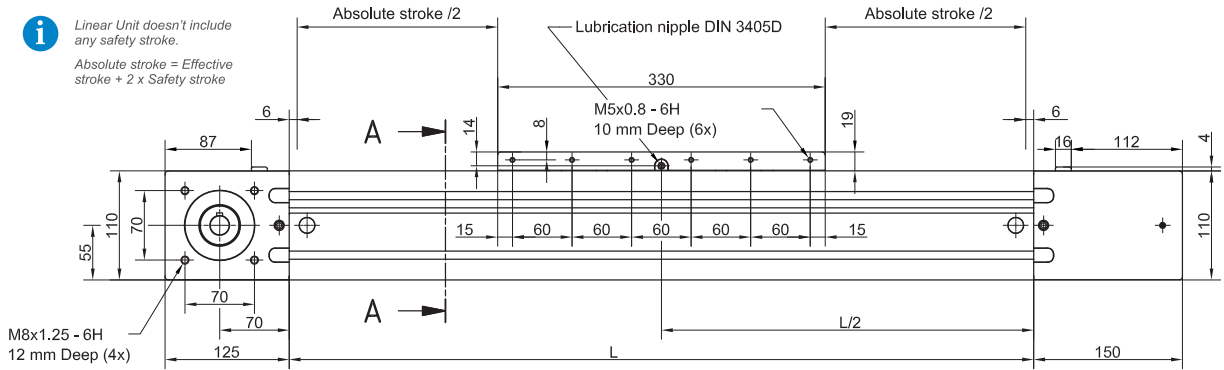


MRJ 110

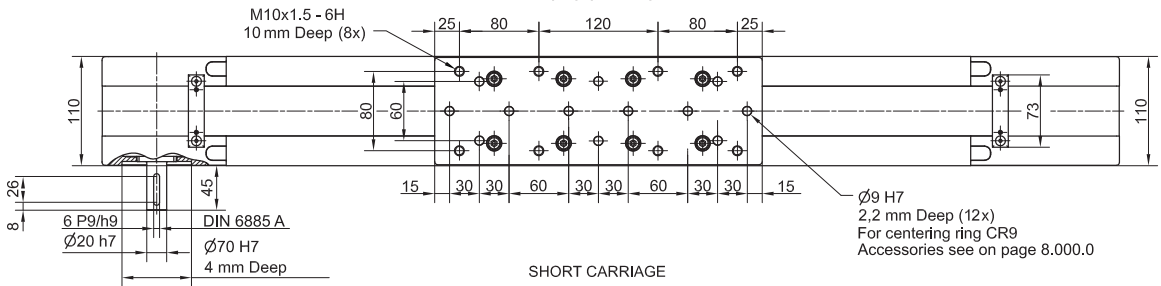


**DIMENSIONS**

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



LONG CARRIAGE



SHORT CARRIAGE

**i** Journal with or without Keyway.

**i** Short carriage only for MTJ series!

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

Lubrication nipple DIN 3405D

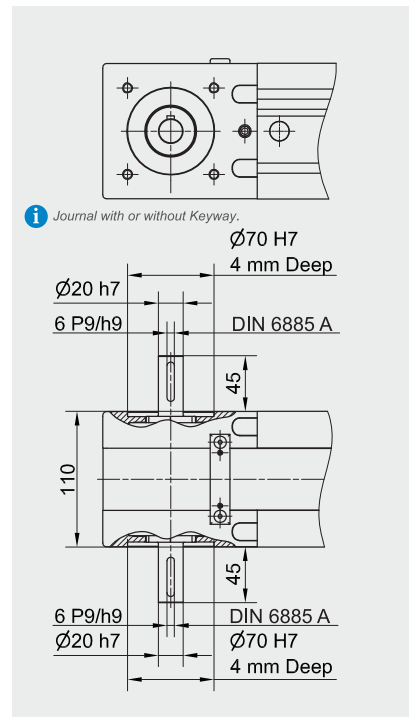
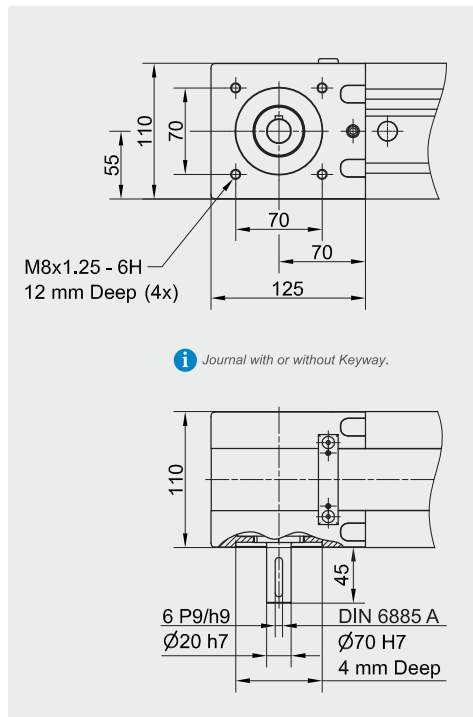
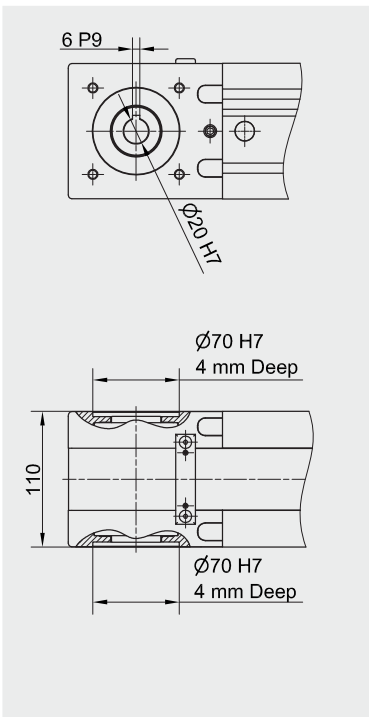
Ø9 H7  
2,2 mm Deep / Tief (6x)  
For centering ring CR9  
Accessories see on page 8.000.0

M10x1.5 - 6H  
10 mm Deep (8x)

**TYPE 0**

**TYPE 1 L and 1 R**

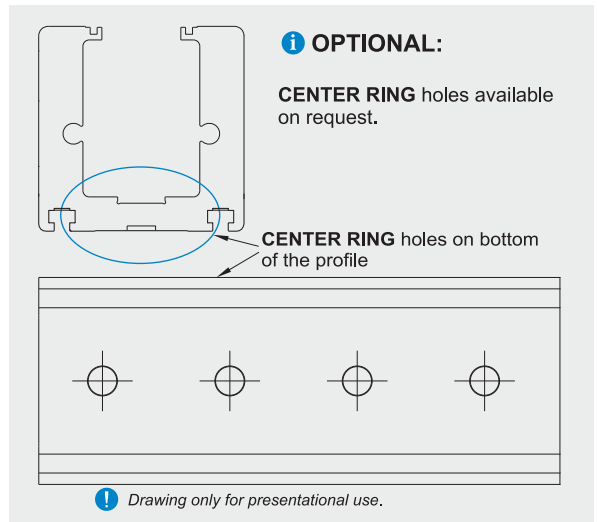
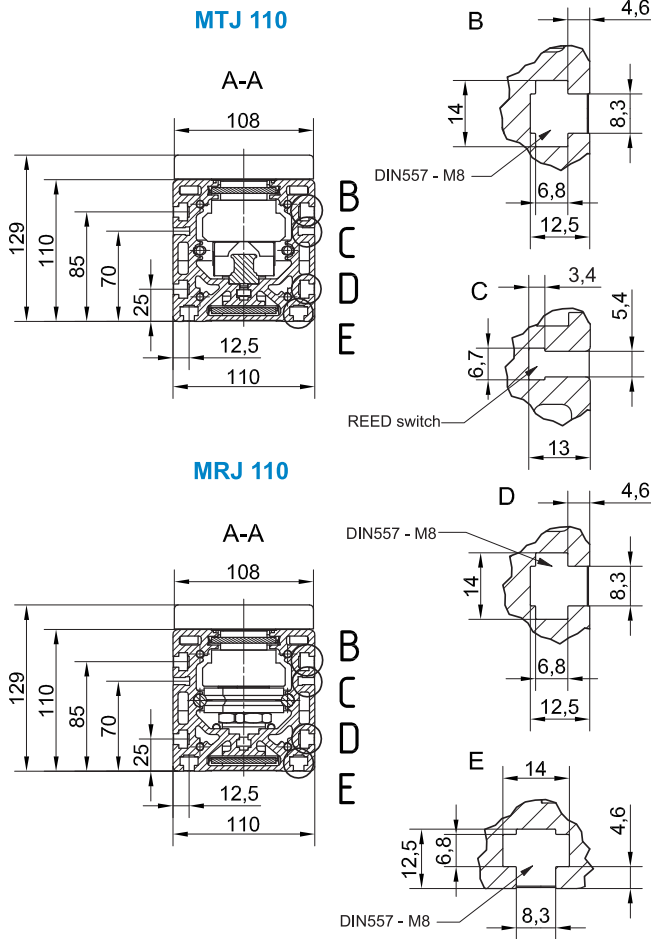
**TYPE 2**



**i** Journal with or without Keyway.

**i** Journal with or without Keyway.

**DIMENSIONS**



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

**Mounting the drive**

- by the **MOTOR ADAPTER WITH COUPLING** (Page 8.020.0)

**i** Available on request.

**Defining of the linear unit length**

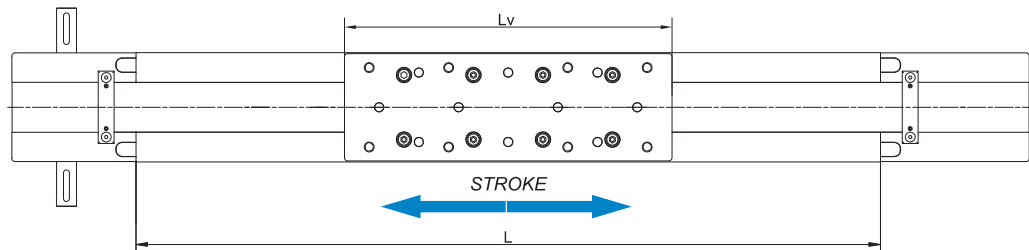
**L = Effective stroke + 2 × Safety stroke + Lv + 12 mm**

**Lv - Long carriage = 330 mm**

**Ltotal = L + 275 mm**

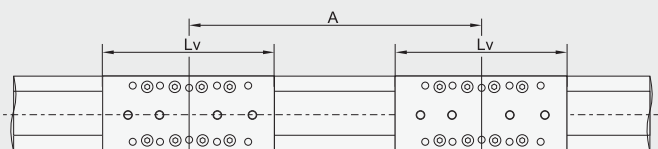
**Lv - Short carriage = 240 mm**

Left side (L)



Right side (R)

**Double Carriage**



**i** For ordering code please contact us.

**L = Effective stroke + 2 × Safety stroke + Lv + A + 12 mm**  
**Ltotal = L + 275 mm**

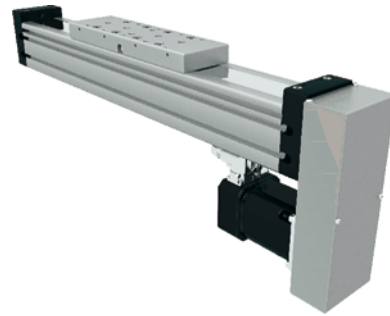
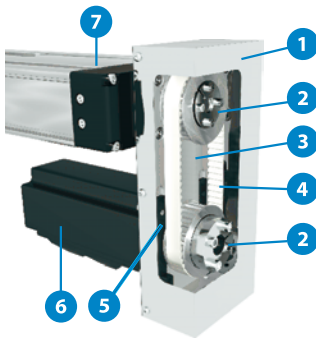
**A ≥ Lv** **!**



# CTV - MTV MOTOR SIDE DRIVE

## LINEAR UNITS

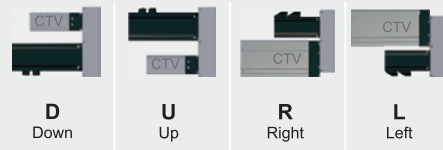
### STRUCTURAL DESIGN



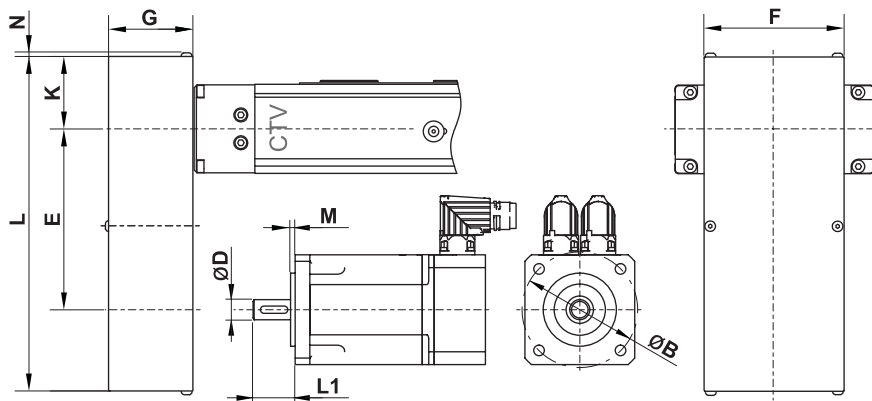
- 1 - Cover
- 2 - Attachment of pulley with clamping set
- 3 - Anodized aluminium housing
- 4 - Toothed belt
- 5 - Belt tensioning system (elongation and frequency of belt span provided with delivery of unit)
- 6 - Motor
- 7 - Linear unit - CTV / MTV

**i** The linear unit must be executed with drive journal without keyway, so that the MSD belt drive can be mounted on it.

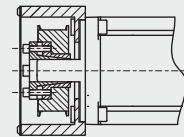
#### Possible installation positions of MSD



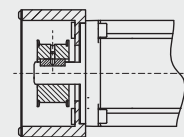
### DIMENSIONS AND TECHNICAL DATA



#### Clamping set



#### Keyway



| Linear Unit        | Type       | Gear ratio | Max. drive torque (linear unit) [Nm] | ** Max. radial load on shaft [N] | Mass moment of inertia [10 <sup>-6</sup> kg * m <sup>2</sup> ] | Mass [kg] | Motor size limits [mm] |         |                  |        |        |                  | Dimensions [mm] |     |     |    |    |     |     |
|--------------------|------------|------------|--------------------------------------|----------------------------------|--|-----------|------------------------|---------|------------------|--------|--------|------------------|-----------------|-----|-----|----|----|-----|-----|
|                    |            |            |                                      |                                  |  |           | ØB max                 | * M max | L1               |        | ØD max |                  | E               | F   | G   | K  | L  | N   |     |
|                    |            |            |                                      |                                  |  |           |                        |         | Clamping set min | Keyway | max    | Clamping set max | Keyway          |     |     |    |    |     |     |
| CTV 90             | T1         | i=1        | 2,7                                  | 90                               | 79   | 0,88      | 70                     | 4       | 22               | 25     | 39     | 14               | 22              | 100 | 70  | 41 | 31 | 179 | 2   |
|                    |            | i=1,5      | 2,7                                  | 90                               | 48   | 0,74      |                        |         | /                |        |        | 14               | 102             |     |     |    |    |     |     |
| CTV 110<br>MTV 65  | T1         | i=1        | 5                                    | 175                              | 72   | 0,90      | 70                     | 4       | 22               | 25     | 39     | 14               | 22              | 100 | 70  | 41 | 31 | 179 | 2   |
|                    |            | i=1,5      | 5                                    | 175                              | 41   | 0,80      |                        |         | /                |        |        | 14               | 112             |     |     |    |    |     |     |
| CTV 110<br>MTV 65  | T2         | i=1        | 9                                    | 245                              | 206  | 1,51      | 100                    | 4       | 24               | 30     | 49     | 18               | 30              | 145 | 90  | 51 | 43 | 250 | 2   |
|                    |            | i=1,5      | 11                                   | 235                              | 335  | 1,53      |                        |         | 14               |        |        | 139              |                 |     |     |    |    |     |     |
| CTV 145<br>MTV 80  | T1         | i=1        | 13                                   | 350                              | 207  | 1,52      | 100                    | 4       | 24               | 30     | 49     | 18               | 30              | 145 | 90  | 51 | 43 | 250 | 2   |
|                    |            | i=1,5      | 19                                   | 410                              | 335  | 1,64      |                        |         | 14               |        |        | 180              |                 |     |     |    |    |     |     |
| CTV 145<br>MTV 80  | T2         | i=1        | 19                                   | 410                              | 551  | 3,30      | 120                    | 4       | 30               | 35     | 59     | 22               | 40              | 160 | 120 | 61 | 56 | 297 | 2,5 |
|                    |            | i=2        | 24                                   | 375                              | 860  | 2,93      |                        |         | 14               |        |        | 32               | 158             |     |     |    |    |     |     |
| CTV 200<br>MTV 110 | ON REQUEST |            |                                      |                                  |  |           |                        |         |                  |        |        |                  |                 |     |     |    |    |     |     |

\*For a bigger value an additional adapter plate is used.

(max. drive speed: 3000 1/min; No load torque: approx. 0,5 Nm)

\*\*This is the load which is linearly dependent on the max. drive torque and is generated by the correct pretension of the belt. This load needs to be reduced in accordance with the capabilities of the motor.

### HOW TO ORDER

**MSD - CTV 110 - T2 - 1,5 - MSM040B**

Motor Side Drive:

Linear Unit series :

CTV / MTV

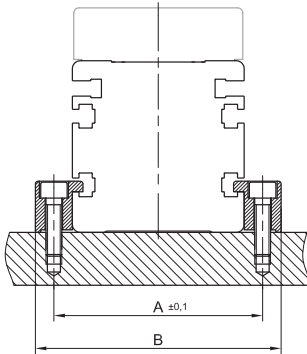
Type :

Motor type :

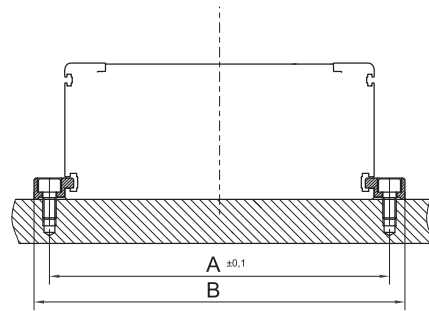
According to customer's drawing

Gear ratio :

**MTJ, MRJ, MTV  
MTJ ECO**



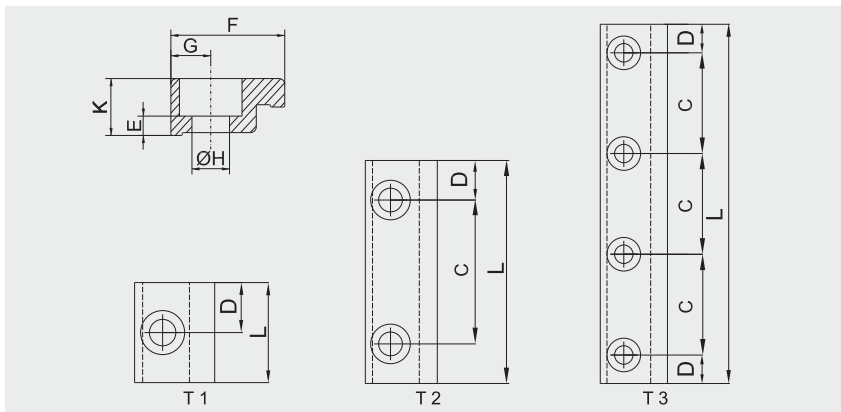
**CTV, CTJ**



**General**

The linear units are mounted by using fixtures which are placed in the slot on the side of the profile.

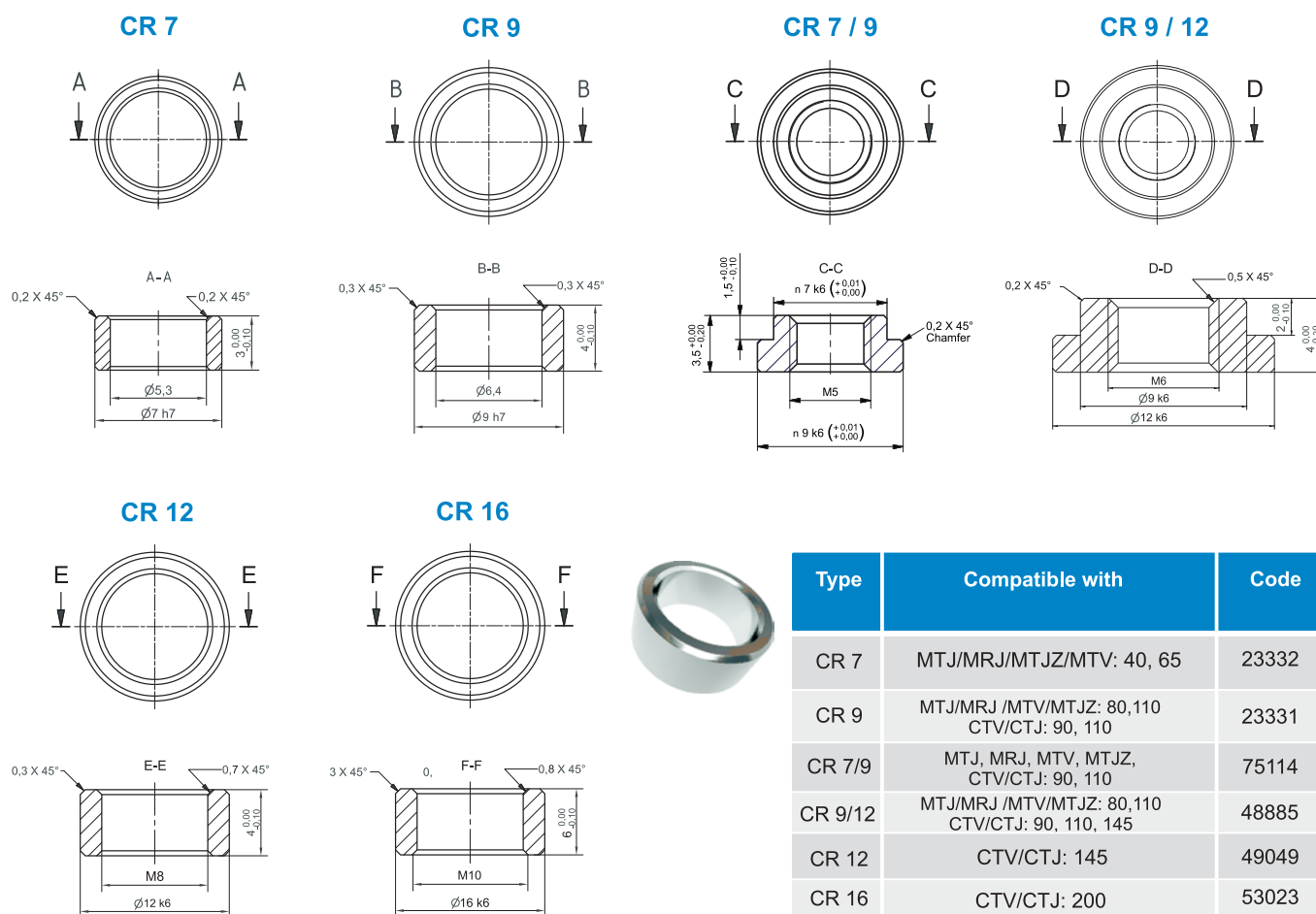
**i** Linear Unit must be mounted by the aluminium profile!



| Linear Unit       | Type | Dimensions [ mm ] |      |    |      |     |      |    |     |     |      | Screw | Countersink for | Weight [ kg ] | Code  |
|-------------------|------|-------------------|------|----|------|-----|------|----|-----|-----|------|-------|-----------------|---------------|-------|
|                   |      | A                 | B    | C  | D    | L   | E    | F  | G   | ØH  | K    |       |                 |               |       |
| MTJ, MRJ 40       | T 2  | 50                | 64,4 | 40 | 7,5  | 55  | 2,5  | 15 | 7,2 | 5,5 | 8    | M5    | DIN 912         | 0,014         | 37139 |
| MTJ, MRJ, MTV 65  | T 2  | 78                | 93   | 40 | 10   | 60  | 11,5 | 20 | 7,5 | 6,5 | 20   | M6    | DIN 912         | 0,054         | 37129 |
| MTJ, MRJ, MTV 80  | T 2  | 93                | 108  | 40 | 10   | 60  | 11,5 | 20 | 7,5 | 6,5 | 20   | M6    | DIN 912         | 0,054         | 37129 |
| MTJ, MRJ, MTV 110 | T 2  | 130               | 150  | 40 | 10   | 60  | 18   | 30 | 10  | 8,5 | 27   | M8    | DIN 912         | 0,082         | 44375 |
| MTJ ECO 40        | T 2  | 52                | 66   | 40 | 7,5  | 55  | 14,5 | 20 | 7   | 5,5 | 20   | M5    | DIN 912         | 0,035         | 40728 |
| CTV, CTJ 90       | T 1  | 102               | 112  | /  | 12,5 | 25  | 4,5  | 15 | 5   | 4,5 | 9    | M4    | DIN 912         | 0,01          | 46994 |
| CTV, CTJ 90       | T 2  | 102               | 112  | 40 | 11   | 62  | 4,5  | 15 | 5   | 4,5 | 9    | M4    | DIN 912         | 0,02          | 48636 |
| CTV, CTJ 90       | T 3  | 102               | 112  | 20 | 8,5  | 77  | 4,5  | 15 | 5   | 4,5 | 9    | M4    | DIN 912         | 0,025         | 47163 |
| CTV, CTJ 90       | T3   | 102               | 112  | 25 | 6    | 87  | 4,5  | 15 | 5   | 4,5 | 9    | M4    | DIN 912         | 0,028         | 55261 |
| CTV, CTJ 90       | T 3  | 102               | 112  | 30 | 8,5  | 107 | 4,5  | 15 | 5   | 4,5 | 9    | M4    | DIN 912         | 0,031         | 55638 |
| CTV, CTJ 110      | T 1  | 126               | 140  | /  | 12,5 | 25  | 3,4  | 20 | 7   | 6,6 | 10   | M6    | DIN 912         | 0,01          | 48642 |
| CTV, CTJ 110      | T 2  | 126               | 140  | 40 | 11   | 62  | 3,4  | 20 | 7   | 6,6 | 10   | M6    | DIN 912         | 0,03          | 48643 |
| CTV, CTJ 110      | T 3  | 126               | 140  | 20 | 8,5  | 77  | 4,5  | 20 | 7   | 5,5 | 10   | M5    | DIN 912         | 0,03          | 48640 |
| CTV, CTJ 110      | T 3  | 126               | 140  | 30 | 8,5  | 107 | 4,5  | 20 | 7   | 5,5 | 10   | M5    | DIN 912         | 0,045         | 46995 |
| CTV, CTJ 110      | T3   | 126               | 140  | 40 | 11   | 142 | 3,4  | 20 | 7   | 6,6 | 10   | M6    | DIN 912         | 0,056         | 55260 |
| CTV, CTJ 145      | T 1  | 161               | 175  | /  | 12,5 | 25  | 3,4  | 20 | 7   | 6,6 | 10   | M6    | DIN 912         | 0,01          | 48642 |
| CTV, CTJ 145      | T 2  | 161               | 175  | 40 | 11   | 62  | 3,4  | 20 | 7   | 6,6 | 10   | M6    | DIN 912         | 0,03          | 48643 |
| CTV, CTJ 145      | T 3  | 161               | 175  | 20 | 8,5  | 77  | 4,5  | 20 | 7   | 5,5 | 10   | M5    | DIN 912         | 0,03          | 48640 |
| CTV, CTJ 145      | T 3  | 161               | 175  | 30 | 8,5  | 107 | 4,5  | 20 | 7   | 5,5 | 10   | M5    | DIN 912         | 0,045         | 46995 |
| CTV, CTJ 145      | T 3  | 161               | 175  | 40 | 11   | 142 | 3,4  | 20 | 7   | 6,6 | 10   | M6    | DIN 912         | 0,056         | 55260 |
| CTV, CTJ 200      | T 2  | 222               | 240  | 40 | 19   | 78  | 14,8 | 29 | 9   | 8,5 | 27,5 | M8    | DIN 912         | 0,110         | 53049 |
| CTV, CTJ 200      | T 2  | 222               | 240  | 50 | 19   | 88  | 14,8 | 29 | 9   | 8,5 | 27,5 | M8    | DIN 912         | 0,120         | 53050 |
| CTV, CTJ 200      | T 2  | 222               | 240  | 70 | 19   | 108 | 16,3 | 29 | 9   | 8,5 | 27,5 | M8    | DIN 912         | 0,160         | 53051 |

**i** Recommended number of clamping fixtures: For T1 is recommended 6 pcs. per meter on each side, for T2 is recommended 3 pcs. per meter on each side and for T3 is recommended 3 pcs. per meter on each side.

## CENTERING RINGS



## SLOT NUTS



### LINEAR UNITS - PROFILE

DIN562

DIN557

Slot Nut

\* - deviating CODE

| CODE  | NUT TYPE             | MTJ/MRJ<br>40 | MTJ/MRJ/<br>MTV/MTJZ 65 | MTJ/MRJ/<br>MTV/MTJZ 80 | MTJ/MRJ/MTV<br>MTJZ 110 | MTJ 40<br>ECO | CTV 90<br>CTJ 90 | CTV 110<br>CTJ 110 | CTV 145<br>CTJ 145 | CTV 200<br>CTJ 200 |
|-------|----------------------|---------------|-------------------------|-------------------------|-------------------------|---------------|------------------|--------------------|--------------------|--------------------|
| 41609 | DIN562 - M2,5        |               |                         |                         |                         |               | X                | X                  | X                  |                    |
| 40682 | DIN562 - M4          | X - *57017    | X                       | X                       |                         |               | X                |                    |                    | X                  |
| 40768 | DIN562 - M5          |               |                         |                         |                         |               |                  | X                  | X                  |                    |
| 40769 | DIN557 - M5          |               | X                       | X                       |                         |               |                  |                    |                    |                    |
| 44451 | DIN557 - M8          |               |                         |                         | X                       |               |                  |                    |                    | X                  |
| 5746  | Slot Nut M6          |               |                         |                         |                         | X             |                  |                    |                    |                    |
| 5551  | Slot Nut T-10-M8     |               |                         |                         |                         |               |                  |                    |                    | X                  |
| 5552  | Slot Nut T-10-M6     |               |                         |                         |                         |               |                  |                    |                    | X                  |
| 5553  | Slot Nut T-10-M5     |               |                         |                         |                         |               |                  |                    |                    | X                  |
| 5570  | Slot N. T-10-M8 L=90 |               |                         |                         |                         |               |                  |                    |                    | X                  |

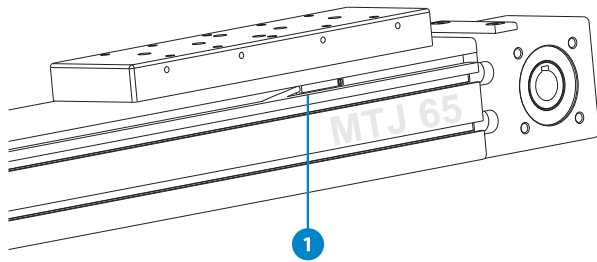
### LINEAR UNITS - CONNECTION PLATES

| CODE | NUT TYPE              | CTV 200<br>CTJ 200 | CODE | NUT TYPE      | CTV 145<br>CTJ 145 | CODE  | NUT TYPE      | CTV 110<br>CTJ 110 | CTV 90<br>CTJ 90 |
|------|-----------------------|--------------------|------|---------------|--------------------|-------|---------------|--------------------|------------------|
| 5551 | Slot Nut T-10-M8      | X                  | 5704 | Slot Nut 8LM4 | X                  | 48887 | Slot Nut 6LM4 | X                  | X                |
| 5552 | Slot Nut T-10-M6      | X                  | 5703 | Slot Nut 8LM5 | X                  | 48888 | Slot Nut 6LM5 | X                  | X                |
| 5553 | Slot Nut T-10-M5      | X                  | 5702 | Slot Nut 8LM6 | X                  |       |               |                    |                  |
| 5570 | Slot Nut T-10-M8 L=90 | X                  | 5701 | Slot Nut 8LM8 | X                  |       |               |                    |                  |

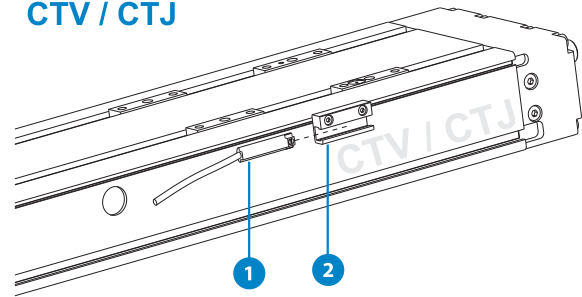


**MAGNETIC FIELD SENSORS**

**MTJ / MRJ / MTV**



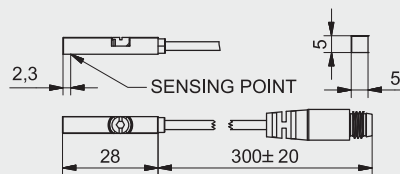
**CTV / CTJ**



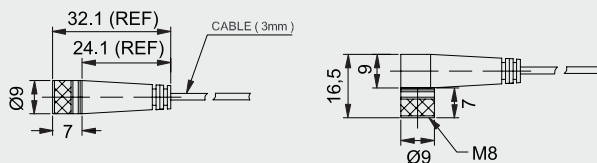
- 1 - Magnetic field sensor
- 2 - Sensor holder

**i** Mounting of Magnetic field sensor on **CTV** and **CTJ** series requires a HOM sensor holder. For CTV/CTJ 200 a HOM sensor holder is not needed.

**SMT-65TP-K NO / NC**



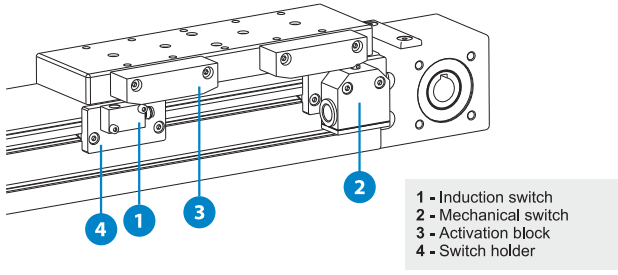
**Extension cable with connector**



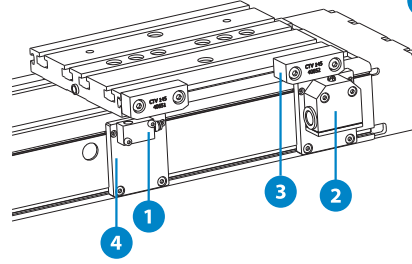
| Code  | Type   | Compatibility                                |  |
|-------|--|--|--|
| 43851 | HOM Sensor holder                              | CTV90, CTV110, CTV145, CTJ90, CTJ110, CTJ145 |  |
| 74073 | SMT-65TP-K NC                                  | MTJ/MRJ/MTV/MTJZ:40,65,80,110 CTV/CTJ: 200   |  |
| 77075 | SMT-65TP-K NC + HOM                            | CTV90, CTV110, CTV145 CTJ90, CTJ110, CTJ145  |  |
| 74074 | SMT-65TP-K NO                                  | MTJ/MRJ/MTV/MTJZ:40,65,80,110 CTV/CTJ: 200   |  |
| 77076 | SMT-65TP-K NO + HOM                            | CTV90, CTV110, CTV145 CTJ90, CTJ110, CTJ145  |  |
| 8146  | Extension Cable length 2m - Straight connector |  |  |
| 8147  | Extension Cable length 5m - Straight connector |  |  |
| 9017  | Extension Cable length 2m - Angeled connector  |  |  |
| 9019  | Extension Cable length 5m - Angeled connector  |  |  |

| TECHNICAL DATA               | SMT-65TP-K NC          | SMT-65TP-K NO          |
|------------------------------|------------------------|------------------------|
| <b>Sensor Type</b>           | GMR sensor             | GMR sensor             |
| <b>Switching function</b>    | NC                     | NO                     |
| <b>Output</b>                | PNP                    | PNP                    |
| <b>Operating voltage</b>     | 10 ~ 28 V DC           | 10 ~ 28 V DC           |
| <b>Switching Current</b>     | 200 mA max.            | 200 mA max.            |
| <b>Power rating</b>          | 5,5 W max.             | 5,5 W max.             |
| <b>Voltage Drop</b>          | 1,5 V / 200mA max.     | 1,5 V / 200 mA max.    |
| <b>Current Consumption</b>   | 10 mA / 24 V max.      | 10 mA / 24 V max.      |
| <b>Switching Frequency</b>   | 1000 Hz                | 1000 Hz                |
| <b>Ambient temperature</b>   | -10 ~ +70°C            | -10 ~ +70°C            |
| <b>Shock/Vibration</b>       | 50 G / 9 G             | 50 G / 9 G             |
| <b>Protection class</b>      | IP 67                  | IP 67                  |
| <b>LED indicator</b>         | yellow                 | Yellow                 |
| <b>Electrical connection</b> | M8, 3-pin              | M8, 3-pin              |
| <b>Cable material length</b> | PU - 0,3 m             | PU - 0,3 m             |
| <b>Extension cable</b>       | Energy chain compliant | Energy chain compliant |

**MTJ / MRJ / MTV**



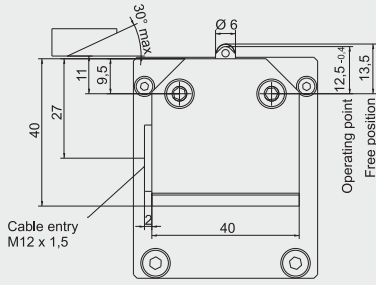
**CTV / CTJ**



**i** Mounting and using the Induction and Mechanical switch, can be done only if the CTV and CTJ series Linear Units are delivered with Connection plates.

**MS- Mechanical switch**

**TECHNICAL DATA**

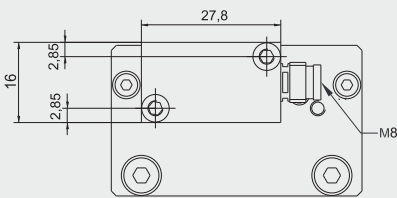


|                            |               |
|----------------------------|---------------|
| Protection class IEC 60529 | IP 67         |
| Ambient temperature        | -5°C ...+80°C |
| Operating point accuracy   | ± 0.05 mm     |
| Approach speed max.        | 45 m/min      |
| Approach speed min.        | 0,01 m/min    |
| Switching contact          | 1 changeover  |
| Switching principle        | Snap-action   |
| Rated voltage              | 250 V AC      |
| Switching current, min. at | 10 mA         |
| Switching voltage          | 24 V DC       |
| Cable entry                | M12 x 1,5     |

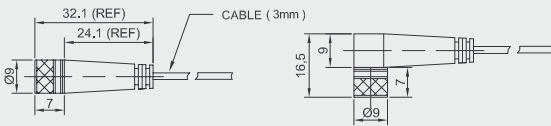
| ORDERING CODES                                     | MTJ/MRJ 40 | MTJZ 40 | MTJ/MRJ/MTV 65<br>MTJZ 65/80 | MTJ/MRJ/MTV 80 | MTJ/MRJ/MTV 110 | MTJZ 110 | MTJ ECO 40 | CTV/CTJ 90 | CTV/CTJ 110 | CTV/CTJ 145 | CTV/CTJ 200 |
|--|------------|---------|------------------------------|----------------|-----------------|----------|------------|------------|-------------|-------------|-------------|
| + 2x  Activation block with fixing screws          | 43243      | 52022   | 43247                        | 43256          | 47827           | 63702    | 49030      | 49032      | 49031       | 40652       | 40652       |
| Mechanical switch only                             | 47921      |         |                              |                |                 |          |            |            |             |             |             |
| 2x  + 2x  Mechanical switch with mounting elements | 40683      |         | 40687                        | 40689          | 47826           | 63703    | 49035      | 49034      | 49033       | 47939       | 53055       |

**IS- Inductive switch**

**TECHNICAL DATA**



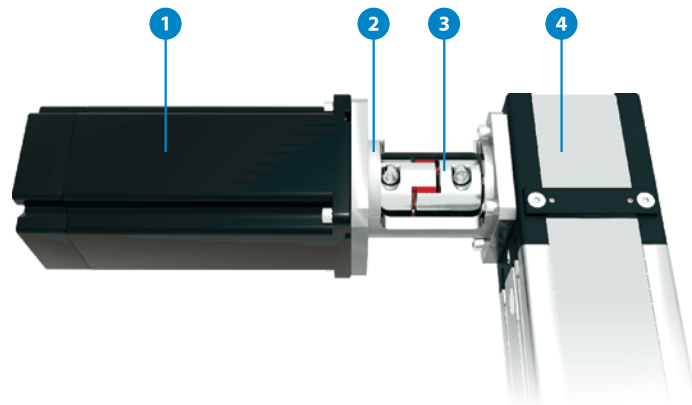
**Extension cable with connector**



|                       |   |
|-----------------------|---|
| Sensor Type           | PNP   |
| Switching function    | NC / NO                                       |
| Rated voltage         | 10 ~ 30 V DC                                  |
| Switching Current     | 150 mA max.                                   |
| Ambient temperature   | -25°C ...+70°C                                |
| Switching Frequency   | 800 Hz max.                                   |
| Voltage Drop          | 3,5 V   |
| Protection class      | IP 67   |
| Electrical connection | M8, 3-pin                                     |
| Extension cable       | Energy chain compliant - bending radius 75 mm |
| Cable material-length | PU  |
| Cable length          | 2m / 5m                                       |
| Cable length          | M8, 3-pin Straight or Angeled connector       |

| ORDERING CODES                                   | MTJ/MRJ 40 | MTJZ 40 | MTJ/MRJ/MTV 65<br>MTJZ 65/80 | MTJ/MRJ/MTV 80 | MTJ/MRJ/MTV 110 | MTJZ 110 | MTJ ECO 40 | CTV/CTJ 90 | CTV/CTJ 110 | CTV/CTJ 145 | CTV/CTJ 200 |
|--|------------|---------|------------------------------|----------------|-----------------|----------|------------|------------|-------------|-------------|-------------|
| + 2x  Activation block with fixing screws        | 43243      | 52022   | 43247                        | 43256          | 47827           | 63702    | 49030      | 49032      | 49031       | 40652       | 40652       |
| PNP NO Inductive switch only                     | 40671      |         |                              |                |                 |          |            |            |             |             |             |
| 2x  +  PNP NO Ind. switch with mounting elements | 40680      |         | 48026                        | 43233          | 48047           | 63705    | 45105      | 49039      | 49038       | 48058       | 53054       |
| PNP NC Inductive switch only                     | 43570      |         |                              |                |                 |          |            |            |             |             |             |
| 2x  +  PNP NC Ind. switch with mounting elements | 48851      |         | 40685                        | 47848          | 47989           | 63704    | 45103      | 49037      | 49036       | 47850       | 53052       |
| Extension Cable length 2m - Straight connector   |            |         |                              |                |                 |          |            |            |             | 8146        |             |
| Extension Cable length 5m - Straight connector   |            |         |                              |                |                 |          |            |            |             | 8147        |             |
| Extension Cable length 2m - Angeled connector    |            |         |                              |                |                 |          |            |            |             | 9017        |             |
| Extension Cable length 5m - Angeled connector    |            |         |                              |                |                 |          |            |            |             | 9019        |             |

**MOTOR ADAPTER WITH COUPLING**



- 1 - Motor
- 2 - Motor adapter
- 3 - Coupling
- 4 - Linear Unit



Motor adapter : \_\_\_\_\_

Linear Unit : \_\_\_\_\_

Motor type : \_\_\_\_\_

According to customer's specification

Coupling type : \_\_\_\_\_

See page 8.020.0 or According to customer's specification

**COUPLINGS**

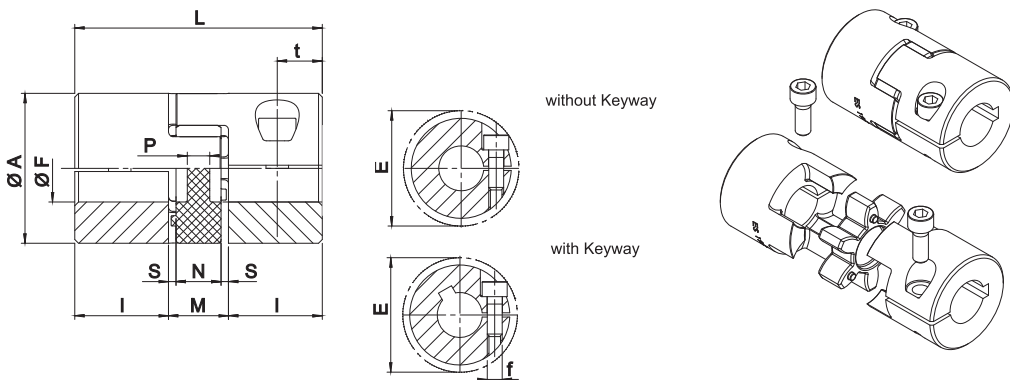


Coupling: \_\_\_\_\_

Coupling type / size: \_\_\_\_\_

7, 9, 14, 19/24, 24/28, 28/38, 38/45

Option:  
C: with keyway  
Leave blank: without keyway  
Hole diameter



**i** The maximum transmittable torque of the clamping hub depends on the bore diameter (see the upper table on page 8.025.0).

| Size  | * T <sub>KN</sub><br>Nominal<br>(Nm) | * T <sub>Kmax</sub><br>(Nm) | Ms<br>(Nm) | W (Kg) | Hub<br>J (Kg <sup>m2</sup> ) | n <sub>max</sub><br>(min <sup>-1</sup> ) | A<br>(mm) | F<br>(mm)<br>[min] | F<br>(mm)<br>[max] | f<br>(mm) | L<br>(mm) | I<br>(mm) | M<br>(mm) | N<br>(mm) | S<br>(mm) | P<br>(mm) | t<br>(mm) | E<br>(mm) |
|-------|--------------------------------------|-----------------------------|------------|--------|------------------------------|--|-----------|--------------------|--------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 7     | 2                                    | 4                           | 0,35       | 0,003  | 0,085 x 10                   | 40.000                                   | 14        | 3                  | 7                  | M2        | 22        | 7         | 8         | 6         | 1,0       | 6         | 4         | 15,0      |
| 9     | 5                                    | 10                          | 0,75       | 0,007  | 0,42 x 10                    | 28.000                                   | 20        | 4                  | 10                 | M2,5      | 30        | 10        | 10        | 8         | 1,0       | 2         | 5         | 23,4      |
| 14    | 12,5                                 | 25                          | 1,4        | 0,018  | 2,6 x 10                     | 19.000                                   | 30        | 6                  | 16                 | M3        | 35        | 11        | 13        | 10        | 1,5       | 2         | 5,5       | 32,2      |
| 19/24 | 17                                   | 34                          | 11         | 0,071  | 18,1 x 10                    | 14.000                                   | 40        | 10                 | 20                 | M6        | 66        | 25        | 16        | 12        | 2,0       | 3,5       | 12        | 45,7      |
| 24/28 | 60                                   | 120                         | 11         | 0,156  | 74,9 x 10                    | 10.600                                   | 55        | 10                 | 32                 | M6        | 78        | 30        | 18        | 14        | 2,0       | 4         | 12        | 56,4      |
| 28/38 | 160                                  | 320                         | 25         | 0,240  | 163,9 x 10                   | 8.500                                    | 65        | 14                 | 35                 | M8        | 90        | 35        | 20        | 15        | 2,5       | 5,2       | 13,5      | 72,6      |
| 38/45 | 325                                  | 650                         | 25         | 0,440  | 465,5 x 10                   | 7.100                                    | 80        | 19                 | 45                 | M8        | 114       | 45        | 24        | 18        | 3,0       | 5,6       | 16        | 83,3      |

\*The values of nominal T<sub>KN</sub>\*\* and max. T<sub>Kmax</sub>\*\* transmissible torque in the upper table are valid for coupling with Keyway!

\*\*for legend see page 8.025.0

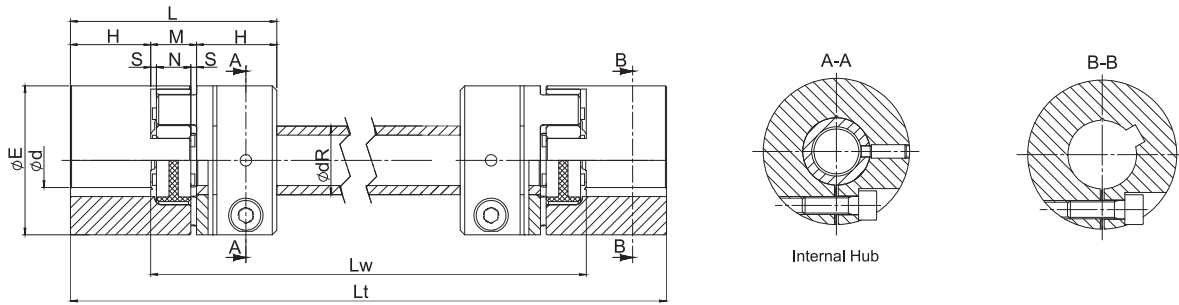
| Size  | Recommended coupling bore diam. and Transmissible Torque (Nm) - valid for shaft tolerances k6 without Keyway |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|       | Ø4   | Ø5  | Ø6  | Ø7  | Ø8  | Ø9  | Ø10 | Ø11 | Ø12 | Ø14 | Ø15 | Ø16 | Ø19 | Ø20 | Ø22 | Ø24 | Ø25 | Ø28 | Ø30 | Ø32 | Ø35 | Ø38 | Ø40 | Ø42 | Ø45 |
| 7     | 0,7  | 0,8 | 1   | 1,1 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 9     | 1,1  | 1,4 | 1,7 | 1,9 | 2,2 | 2,5 | 2,8 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 14    |  |     | 2,5 | 2,9 | 3,3 | 3,7 | 4,1 | 4,6 | 5   | 5,8 | 6,2 | 6,6 |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 19/24 |  |     |     |     |     |     | 23  | 25  | 27  | 32  | 34  | 36  | 43  | 45  |     |     |     |     |     |     |     |     |     |     |     |
| 24/28 |  |     |     |     |     |     | 23  | 25  | 27  | 32  | 34  | 36  | 43  | 45  | 50  | 54  | 57  | 63  |     |     |     |     |     |     |     |
| 28/38 |  |     |     |     |     |     |     |     |     | 58  | 62  | 66  | 79  | 83  | 91  | 100 | 104 | 116 | 124 | 133 | 145 |     |     |     |     |
| 38/45 |  |     |     |     |     |     |     |     |     |     |     |     | 79  | 83  | 91  | 100 | 104 | 116 | 124 | 133 | 145 | 158 | 166 | 174 | 187 |

|                         |                            |                   |
|-------------------------|----------------------------|-------------------|
| <b>Ms</b>               | Screw tightening torque    | Nm                |
| <b>W</b>                | Weight                     | Kg                |
| <b>J</b>                | Coupling moment of inertia | kgm <sup>2</sup>  |
| <b>n<sub>max</sub></b>  | Maximum rpm                | min <sup>-1</sup> |
| <b>T<sub>KN</sub></b>   | Coupling nominal torque    | Nm                |
| <b>T<sub>kmax</sub></b> | Coupling maximum torque    | Nm                |

The operating temperature range for the coupling is between -30 and +90°C

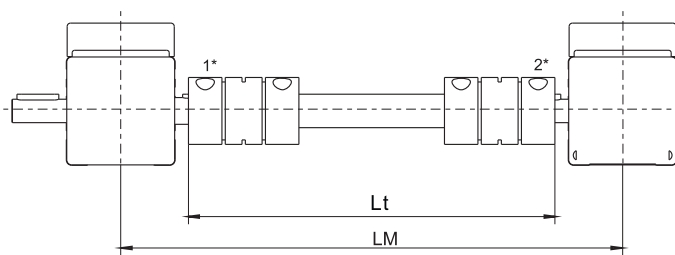
## SYNCHRONISATION SHAFT OSL

**i** The maximum transmissible torque of the clamping hub depends on the bore diameter (see the upper table on page 8.025.0).

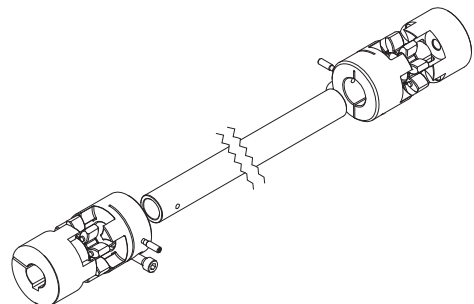


| Size  | Internal hub |                     | C <sub>T</sub> (Nm/rad) | E (mm) | H (mm) | Ød min (mm) | Ød max (mm) | M (mm) | N (mm) | S (mm) | L (mm) | Lw min (mm) | Lt (mm)    | dR x thickness (mm) | Weight (kg)          | Moment of inertia (10 <sup>-6</sup> kg * m <sup>2</sup> ) |
|-------|--------------|---------------------|-------------------------|--------|--------|-------------|-------------|--------|--------|--------|--------|-------------|------------|---------------------|----------------------|---|
|       | Ms (Nm)      | M <sub>T</sub> (Nm) |                         |        |        |             |             |        |        |        |        |             |            |                     |                      |   |
| 14    | 1,34         | 6                   | 59                      | 30     | 11     | 4           | 16          | 13     | 10     | 1,5    | 35     | 48          | on request | 14 x 2,0            | 0,072 + 0,00021 * Lw | 10,4 + 0,0076 * Lw  |
| 19/24 | 10           | 34                  | 314                     | 40     | 25     | 6           | 20          | 16     | 12     | 2      | 66     | 82          |            | 20 x 3,0            | 0,284 + 0,00044 * Lw | 72,4 + 0,0324 * Lw  |
| 24/28 | 10           | 45                  | 596                     | 55     | 30     | 8           | 28          | 18     | 14     | 2      | 78     | 96          |            | 25 x 2,5            | 0,624 + 0,00048 * Lw | 300 + 0,0614 * Lw   |
| 28/38 | 25           | 105                 | 2868                    | 65     | 35     | 10          | 38          | 20     | 15     | 2,5    | 90     | 110         |            | 35 x 5,0            | 0,960 + 0,00128 * Lw | 656 + 0,2954 * Lw   |
| 38/45 | 25           | 123                 | 4521                    | 80     | 45     | 12          | 45          | 24     | 18     | 3      | 114    | 138         |            | 40 x 5,0            | 1,760 + 0,00149 * Lw | 1862 + 0,4656 * Lw  |

|                      |                              |        |
|----------------------|------------------------------|--------|
| <b>Ms</b>            | Screw tightening torque      | Nm     |
| <b>M<sub>T</sub></b> | Maximum transmissible torque | Nm     |
| <b>C<sub>T</sub></b> | Torsional rigidity per meter | Nm/rad |

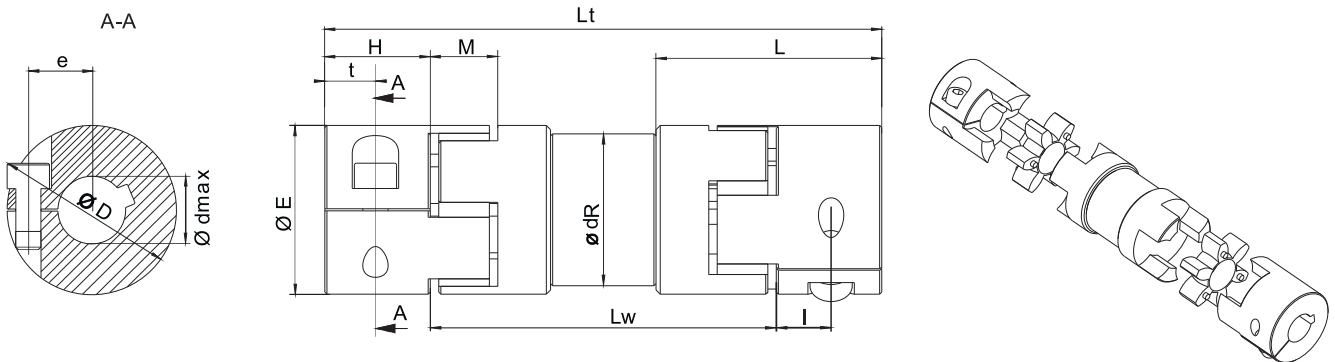


\* - see page 8.030.0 for more info



**i** For longer distances Bearing Supports needed. Please contact us.

**SYNCHRONISATION SHAFT OSR**



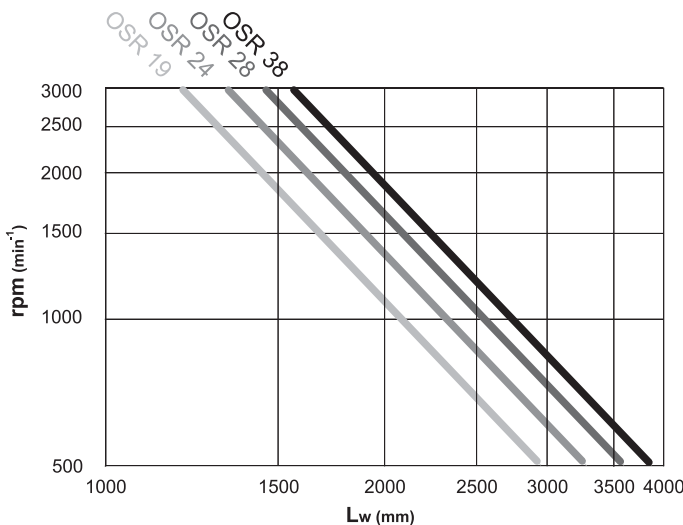
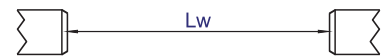
**i** The maximum transmittable torque of the clamping hub depends on the bore diameter (see the upper table on page 8.025.0).

| Size | d min (mm) | d max (mm) | Ms (Nm) | Mt (Nm) | Ct (Nm/rad) | E (mm) | H (mm) | I (mm) | L (mm) | M (mm) | Lw min (mm) | Lt (mm)    | D (mm) | t (mm) | e (mm) | dR (mm) | Weight (kg)         | Moment of inertia (10 <sup>-6</sup> kg * m <sup>2</sup> ) |
|------|------------|------------|---------|---------|-------------|--------|--------|--------|--------|--------|-------------|------------|--------|--------|--------|---------|---------------------|---|
| 19   | 10         | 20         | 10      | 39      | 1630        | 40     | 25     | 13     | 53,5   | 16     | 82          | on request | 47     | 12     | 15     | 36      | 0,30 + 0,00058 * Lw | 66,0 + 0,1679 * Lw  |
| 24   | 10         | 28         | 10      | 53      | 3980        | 55     | 30     | 16     | 63     | 18     | 96          |            | 57     | 14     | 20,8   | 45      | 0,62 + 0,00091 * Lw | 242 + 0,4099 * Lw   |
| 28   | 14         | 35         | 25      | 137     | 7494        | 65     | 35     | 20     | 67     | 20     | 110         |            | 73     | 15     | 25     | 55      | 0,98 + 0,00112 * Lw | 572 + 0,7717 * Lw   |
| 38   | 15         | 45         | 25      | 180     | 14540       | 80     | 45     | 25     | 83,5   | 24     | 138         |            | 84     | 20     | 30     | 68      | 1,75 + 0,00140 * Lw | 1522 + 1,4975 * Lw  |

**Ms** Screw tightening torque Nm  
**Mt** Maximum transmissible torque Nm  
**Ct** Torsional rigidity per meter Nm/rad

**INSTALLATION**

The overall length Lt is best determined as the distance between shaft ends - length Lw plus 2x dimension H.



**SELECTION DIAGRAM**

Ideal execution for long distance shaft connections. Torque transmission is zero backlash. Designed for lengths up to 4m without bearing support (depending on rotation speed).

Standard lengths available till 3m, for longer lengths please contact us.

**HOW TO ORDER**

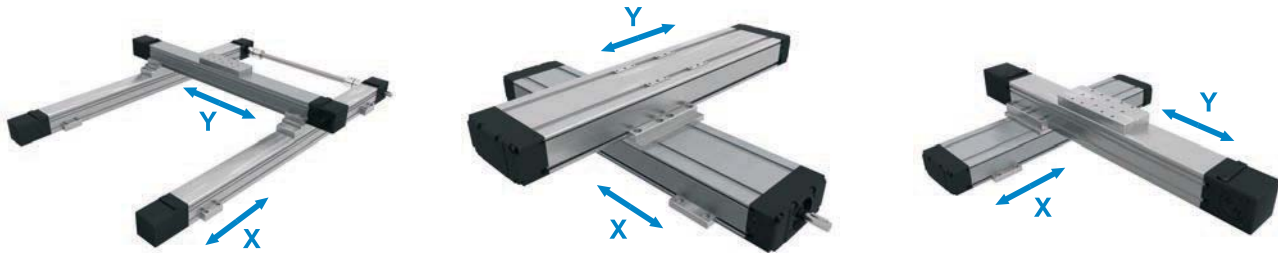
**OSR - 19 - MTJ65 - LM - 890 - F16C - F16C**

Type: OSR  
 Size: OSL: 14, 19/24, 24/28, 28/38, 38/45  
 OSR: 19, 24, 28, 38  
 Linear unit series: MTJ/MRJ/MTJ ECO: 40, 65, 80, 110  
 CTJ: 90, 110, 145, 200  
 Leave blank : not for linear unit  
 Length type: LM (Middle distance of the linear units)  
 Lt (Production length of the sync. shaft)

Option:  
**C:** with keyway  
**Leave blank:** w/o keyway  
**Hole diameter:**  
 — one side end hub<sup>1</sup><sub>2</sub>  
 --- other side end hub  
**Length [mm]**

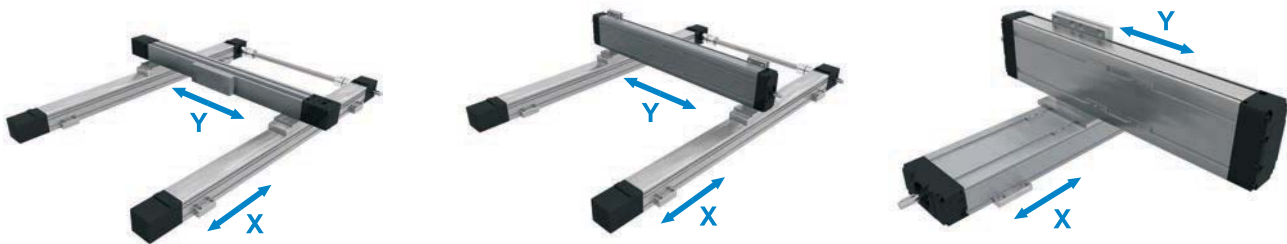
**X-Y CONNECTION ELEMENTS**

**X- Axis MTJ, MRJ, MTV, MTJ ECO, CTV = 0° → Y Axis = 0°**



| X-Axis           | Y-Axis          |                  |                  |                   |                |                 |                  |                  |                  |
|------------------|-----------------|------------------|------------------|-------------------|----------------|-----------------|------------------|------------------|------------------|
|                  | MTJ, MRJ 40     | MTJ, MRJ, MTV 65 | MTJ, MRJ, MTV 80 | MTJ, MRJ, MTV 110 | MTJ 40 ECO     | CTV, CTJ 90     | CTV, CTJ 110     | CTV, CTJ 145     | CTV, CTJ 200     |
| MTJ, MRJ 40      | CP M40 0 M40 0  | CP M40 0 M65 0   |                  |                   | CP M40 0 E40 0 | CP M40 0 C90 0  |                  |                  |                  |
| MTJ, MRJ, MTV 65 | CP M65 0 M40 0  | CP M65 0 M65 0   | CP M65 0 M80 0   |                   | CP M65 0 E40 0 | CP M65 0 C90 0  | CP M65 0 C110 0  |                  |                  |
| MTJ, MRJ, MTV 80 |                 | CP M80 0 M65 0   | CP M80 0 M80 0   | CP M80 0 M110 0   |                | CP M80 0 C90 0  | CP M80 0 C110 0  | CP M80 0 C145 0  |                  |
| MTJ, MRJ 110     |                 | CP M110 0 M65 0  | CP M110 0 M80 0  | CP M110 0 M110 0  |                |                 | CP M110 0 C110 0 | CP M110 0 C145 0 | CP M110 0 C200 0 |
| MTJ 40 ECO       | CP E40 0 M40 0  | CP E40 0 M65 0   | CP E40 0 M80 0   |                   | CP E40 0 E40 0 | CP E40 0 C90 0  | CP E40 0 C110 0  |                  |                  |
| CTV, CTJ 90      | CP C90 0 M40 0  | CP C90 0 M65 0   |                  |                   |                | CP C90 0 C90 0  | CP C90 0 C110 0  |                  |                  |
| CTV, CTJ 110     | CP C110 0 M40 0 | CP C110 0 M65 0  | CP C110 0 M80 0  |                   |                | CP C110 0 C90 0 | CP C110 0 C110 0 | CP C110 0 C145 0 |                  |
| CTV, CTJ 145     |                 | CP C145 0 M65 0  | CP C145 0 M80 0  | CP C145 0 M110 0  |                | CP C145 0 C90 0 | CP C145 0 C110 0 | CP C145 0 C145 0 |                  |
| CTV, CTJ 200     |                 |                  | CP C200 0 M80 0  | CP C200 0 M110 0  |                |                 | CP C200 0 C110 0 | CP C200 0 C145 0 | CP C200 0 C200 0 |

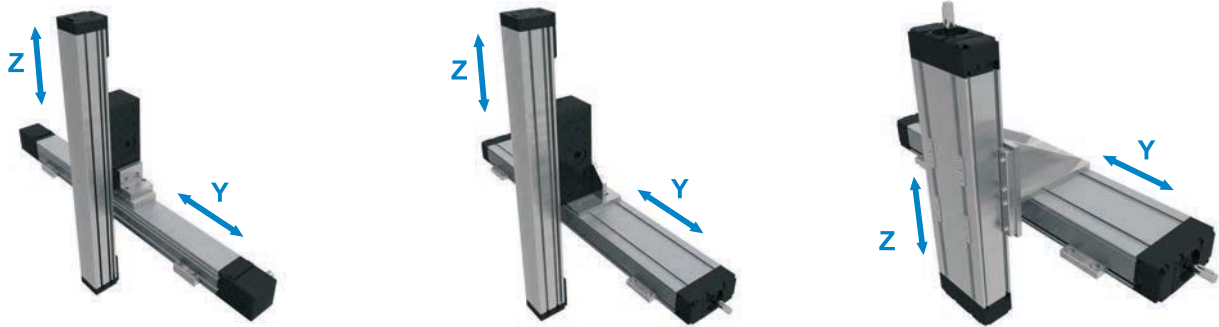
**X- Axis MTJ, MRJ, MTV, MTJ ECO, CTV = 0° → Y Axis = 90°**



| X-Axis           | Y-Axis           |                  |                  |                   |                 |                  |                   |                   |                   |
|------------------|------------------|------------------|------------------|-------------------|-----------------|------------------|-------------------|-------------------|-------------------|
|                  | MTJ, MRJ 40      | MTJ, MRJ, MTV 65 | MTJ, MRJ, MTV 80 | MTJ, MRJ, MTV 110 | MTJ 40 ECO      | CTV, CTJ 90      | CTV, CTJ 110      | CTV, CTJ 145      | CTV, CTJ 200      |
| MTJ, MRJ 40      | CP M40 0 M40 90  | CP M40 0 M65 90  |                  |                   | CP M40 0 E40 90 | CP M40 0 C90 90  |                   |                   |                   |
| MTJ, MRJ, MTV 65 | CP M65 0 M40 90  | CP M65 0 M65 90  | CP M65 0 M80 90  |                   |                 | CP M65 0 C90 90  | CP M65 0 C110 90  |                   |                   |
| MTJ, MRJ, MTV 80 |                  | CP M80 0 M65 90  | CP M80 0 M80 90  | CP M80 0 M110 90  |                 | CP M80 0 C90 90  | CP M80 0 C110 90  | CP M80 0 C145 90  |                   |
| MTJ, MRJ 110     |                  | CP M110 0 M65 90 | CP M110 0 M80 90 | CP M110 0 M110 90 |                 |                  | CP M110 0 C110 90 | CP M110 0 C145 90 | CP M110 0 C200 90 |
| MTJ 40 ECO       | CP E40 0 M40 90  | CP E40 0 M65 90  | CP E40 0 M80 90  |                   | CP E40 0 E40 90 | CP E40 0 C90 90  | CP E40 0 C110 90  |                   |                   |
| CTV, CTJ 90      | CP C90 0 M40 90  | CP C90 0 M65 90  |                  |                   |                 | CP C90 0 C90 90  |                   |                   |                   |
| CTV, CTJ 110     | CP C110 0 M40 90 | CP C110 0 M65 90 | CP C110 0 M80 90 |                   |                 | CP C110 0 C90 90 | CP C110 0 C110 90 |                   |                   |
| CTV, CTJ 145     |                  | CP C145 0 M65 90 | CP C145 0 M80 90 | CP C145 0 M110 90 |                 | CP C145 0 C90 90 | CP C145 0 C110 90 | CP C145 0 C145 90 |                   |
| CTV, CTJ 200     |                  |                  | CP C200 0 M80 90 | CP C200 0 M110 90 |                 |                  | CP C200 0 C110 90 | CP C200 0 C145 90 | CP C200 0 C200 90 |

Y-Z CONNECTION ELEMENTS

Y- Axis MTJ, MRJ, MTV, MTJ ECO, CTV, CTJ = 0° → Z-Axis = 90°



| Y-Axis            | Z-Axis        |               |               |                |                |                |                 |                |                 |                 |
|-------------------|---------------|---------------|---------------|----------------|----------------|----------------|-----------------|----------------|-----------------|-----------------|
|                   | MTJZ 40       | MTJZ 65       | MTJZ 80       | MTJZ 110       | MTV 65         | MTV 80         | MTV 110         | CTV 90         | CTV 110         | CTV 145         |
| MTJ, MRJ 40       | CP M40 0 Z40  |               |               |                |                |                |                 |                |                 |                 |
| MTJ, MRJ, MTV 65  | CP M65 0 Z40  | CP M65 0 Z65  |               |                | CP M65 0 ZM65  |                |                 |                |                 |                 |
| MTJ, MRJ, MTV 80  | CP M80 0 Z40  | CP M80 0 Z65  | CP M80 0 Z80  |                | CP M80 0 ZM65  | CP M80 0 ZM80  |                 |                |                 |                 |
| MTJ, MRJ, MTV 110 |               | CP M110 0 Z65 | CP M110 0 Z80 | CP M110 0 Z110 | CP M110 0 ZM65 | CP M110 0 ZM80 | CP M110 0 ZM110 |                |                 |                 |
| MTJ 40 ECO        | CP E40 0 Z40  |               |               |                |                |                |                 |                |                 |                 |
| CTV, CTJ 90       | CP C90 0 Z40  | CP C90 0 Z65  |               |                |                |                |                 | CP C90 0 ZC90  |                 |                 |
| CTV, CTJ 110      | CP C110 0 Z40 | CP C110 0 Z65 | CP C110 0 Z80 |                | CP C110 0 ZM65 | CP C110 0 ZM80 |                 | CP C110 0 ZC90 | CP C110 0 ZC110 |                 |
| CTV, CTJ 145      | CP C145 0 Z40 | CP C145 0 Z65 | CP C145 0 Z80 | CP C145 0 Z110 | CP C145 0 ZM65 | CP C145 0 ZM80 | CP C145 0 ZM110 | CP C145 0 ZC90 | CP C145 0 ZC110 | CP C145 0 ZC145 |
| CTV, CTJ 200      |               |               | CP C200 0 Z80 | CP C200 0 Z110 |                | CP C200 0 ZM80 | CP C200 0 ZM110 |                | CP C200 0 ZC110 | CP C200 0 ZC145 |

CONNECTION ELEMENTS FOR CUNSTRICIONS WITH ALU PROFILES



**i** Linear Unit must be mounted by the aluminium profile and not at the end blocks!

For more details about Alu profiles see **PROFILE TECHNIC** catalogue.



## MULTI AXIS SYSTEMS

We offer all necessary fittings including brackets, clamping fixtures and adapter plates in order to build multi-axis systems. Beside standard elements we supply also custom fixing and connection elements manufactured in our workshop.

1



2



3



4



5



6





MULTI AXIS SYSTEMS



7



8



9



10