

## CHARACTERISTICS

**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.*

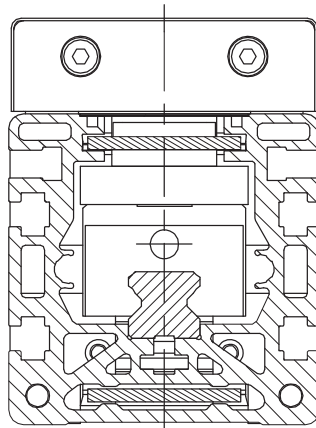
*The in the Profile slot driving Polyurethane timing belt protects all the parts in the Profile from dust and other contaminations. As optional, a corrosion-resistant protection strip is available.*

*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.*

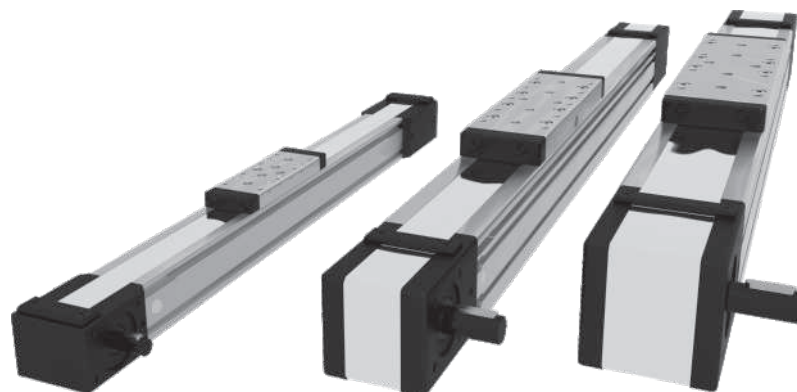
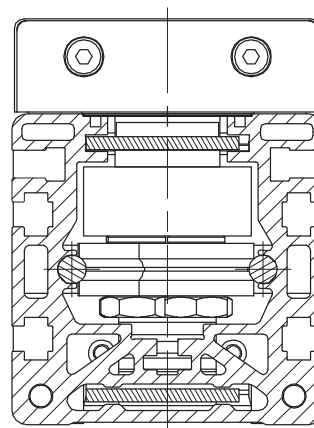
*Different carriage lengths with central lubrication port, allow easy re-lubrication of the Linear Unit and allow the possibility to attach additional accessories on the side.*

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

MTJ



MRJ

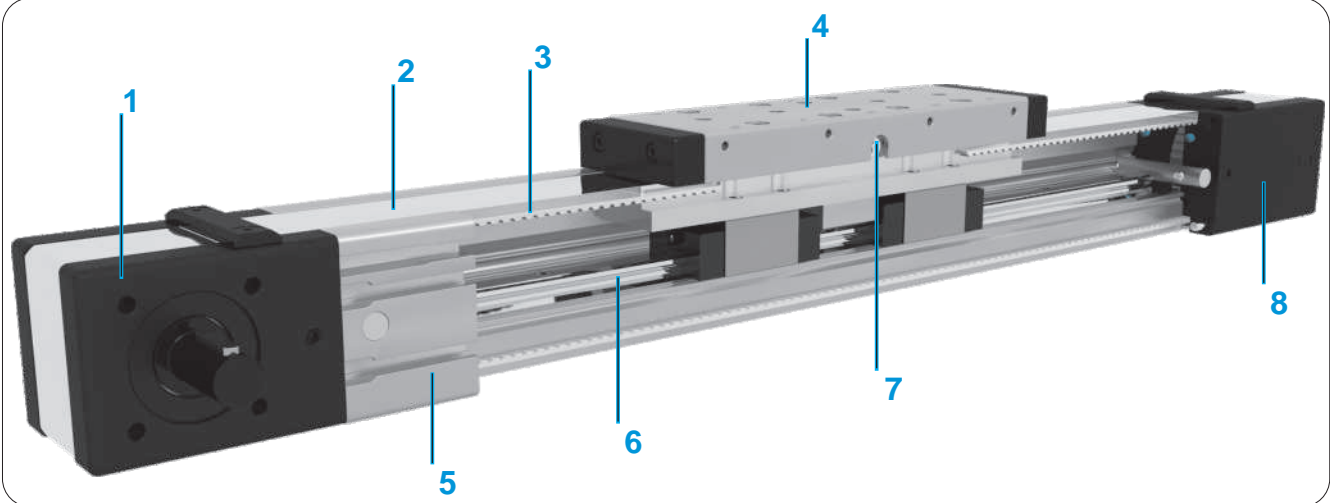


The aluminium profiles are manufactured according to the medium EN 12020-2 standard /

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

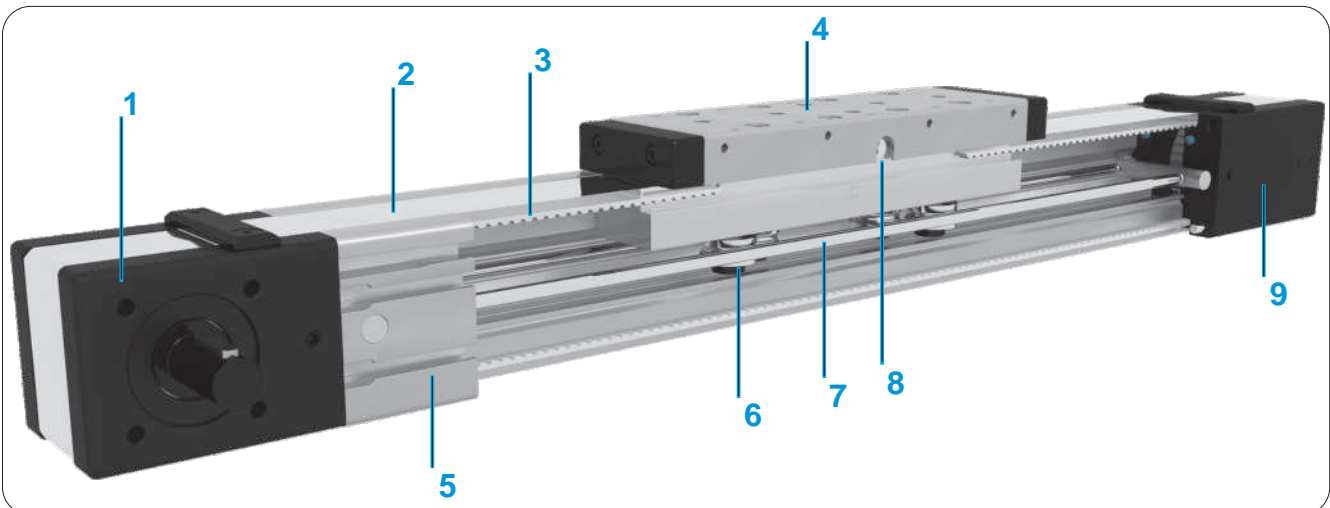
**STRUCTURAL DESIGN**

**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

HOW TO ORDER

**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

Without : 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

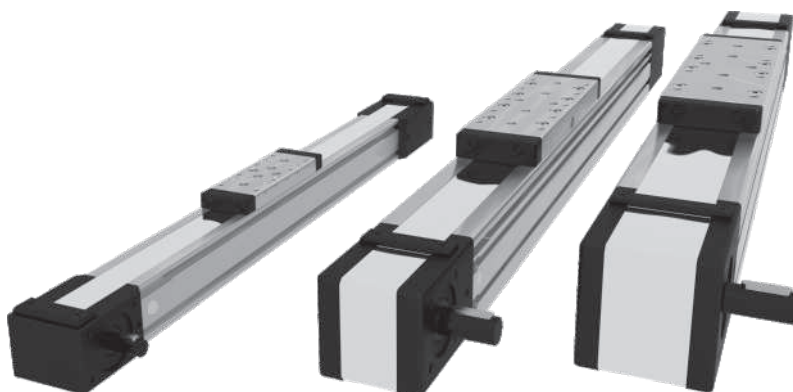
R : Journal on right side

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 for MTJ series

Linear Unit	Carriage length Lv [ mm ]	Load capacity		Dynamic moment			Moved mass [ kg ]	Maximum Repeatability [ mm ]	* Maximum length Lmax [ mm ]	Planar moment of inertia	
		Dynamic C [ N ]	Static C0 [ N ]	Mx [ Nm ]	My [ Nm ]	Mz [ Nm ]				ly [ cm <sup>4</sup> ]	lz [ cm <sup>4</sup> ]
MTJ 40	92	4610	6930	28	90	90	0,28	± 0,08	2000	9,83	11,57
MTJ 65 S	140	6840	9750	60	50	50	1,00	± 0,08	6000	59,1	73,8
MTJ 65 L	190	13690	19500	130	710	710	1,45	± 0,08			
MTJ 80 S	170	15330	21700	200	140	140	1,72	± 0,08	6000	132,3	175,2
MTJ 80 L	260	30670	43410	400	2300	2300	2,72	± 0,08			
MTJ 110 S	240	21850	30200	340	240	240	3,25	± 0,08	6000	513,0	620,0
MTJ 110 L	330	43700	60400	680	3390	3390	4,61	± 0,08			

\*For lengths over the stated value in the table above please contact us

General technical data for MRJ series

Linear Unit	Carriage length Lv [ mm ]	Dynamic load capacity		Dynamic moment			Moved mass [ kg ]	Maximum Repeatability [ mm ]	* Maximum length Lmax [ mm ]	Planar moment of inertia	
		Cy [ N ]	Cz [ N ]	Mx [ Nm ]	My [ Nm ]	Mz [ Nm ]				ly [ cm <sup>4</sup> ]	lz [ cm <sup>4</sup> ]
MRJ 40	92	3260	1910	20	50	50	0,26	± 0,08	6000	9,83	11,57
MRJ 65 L	190	8200	4820	80	230	230	1,31	± 0,08	6000	59,1	73,8
MRJ 80 L	260	16600	9760	210	760	760	2,73	± 0,08	6000	132,3	175,2
MRJ 110 L	330	29000	17060	490	1580	1580	4,78	± 0,08	6000	513,0	620,0

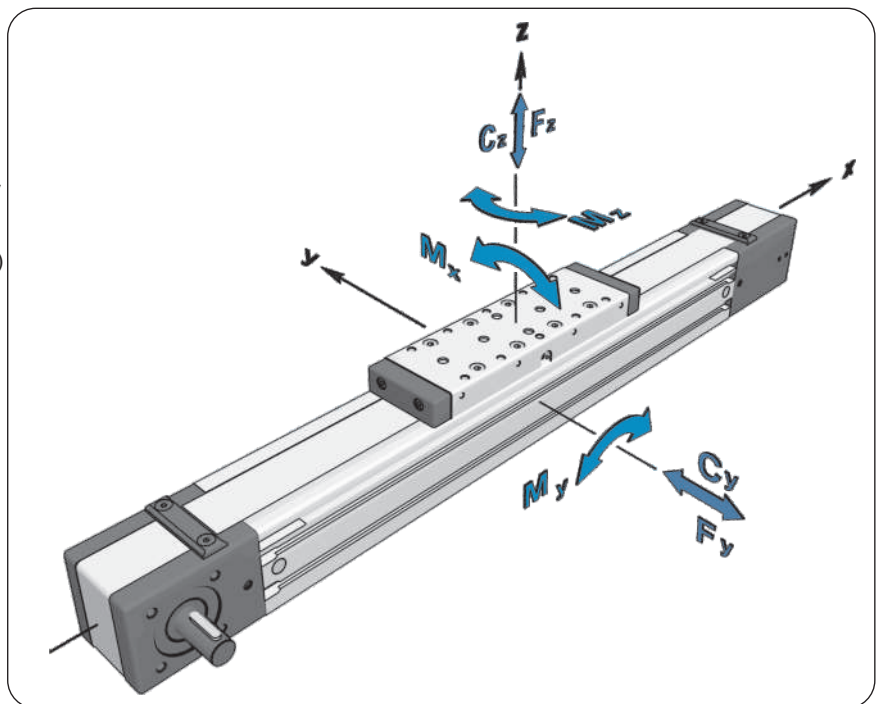
\*For lengths over the stated value in the table above please contact us

**Recommended values of loads**

All the data of static and 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 (fv =5.0)

**Modulus of elasticity :**

E = 70000 N / mm



TECHNICAL DATA

Drive and belt data for MRJ and MTJ series

Linear Unit	* Maximum travel speed	Maximum drive torque Ma	** No load torque		Puley drive ratio	Pulley diameter	Belt type	Belt width	Max. force transmitted by belt	Specific spring constant Cspec
	[ m / s ]		[ Nm ]	With strip [ Nm ]						
MRJ 40	10	3,7	0,4	0,2	99	31,51	AT 3	20	235	225000
MTJ 40	6		0,4	0,2						
MRJ 65 L	10	13,1	1	0,7	165	52,52	AT 5	32	500	600000
MTJ 65 S	6		1,1	0,8						
MTJ 65 L			1,2	0,9						
MRJ 80 L	10	29,4	1,4	1,1	210	66,84	AT 5	50	880	960000
MTJ 80 S	6		1,5	1,2						
MTJ 80 L			1,7	1,4						
MRJ 110 L	10	68,5 with keyway 82,6 without keyway	1,8	1,5	300	95,49	AT 10	50	1730	2145000
MTJ 110 S	6		1,8	1,5						
MTJ 110 L			2	1,7						

\* Maximum travel speed of Linear unit with the Corrosion-resistant protection strip is 1,5 m/s

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

Mass and mass moment of inertia for MTJ series

Linear Unit	Carriage length Lv [ mm ]	Mass of linear unit [ kg ]	Mass moment of inertia [ 10 <sup>-5</sup> kg·m <sup>2</sup> ]
MTJ 40	92	1,3 + 0,0024 * Stroke [ mm ]	9,7 + 0,003 * Stroke [ mm ]
MTJ 65 S	140	4 + 0,0055 * Stroke [ mm ]	98,4 + 0,015 * Stroke [ mm ]
MTJ 65 L	190	4,6 + 0,0055 * Stroke [ mm ]	130,1 + 0,015 * Stroke [ mm ]
MTJ 80 S	170	6,8 + 0,0085 * Stroke [ mm ]	310,6 + 0,039 * Stroke [ mm ]
MTJ 80 L	260	8,4 + 0,0085 * Stroke [ mm ]	423,3 + 0,039 * Stroke [ mm ]
MTJ 110 S	240	15 + 0,015 * Stroke [ mm ]	1065,0 + 0,137 * Stroke [ mm ]
MTJ 110 L	330	17,7 + 0,015 * Stroke [ mm ]	1381,0 + 0,137 * Stroke [ mm ]

Mass and mass moment of inertia for MRJ series

Linear Unit	Carriage length Lv [ mm ]	Mass of linear unit [ kg ]	Mass moment of inertia [ 10 <sup>-5</sup> kg·m <sup>2</sup> ]
MRJ 40	92	1,25 + 0,0022 * Stroke [ mm ]	9,3 + 0,003 * Stroke [ mm ]
MRJ 65 L	190	4,3 + 0,0047 * Stroke [ mm ]	119,6 + 0,015 * Stroke [ mm ]
MRJ 80 L	260	8,2 + 0,0075 * Stroke [ mm ]	424,9 + 0,039 * Stroke [ mm ]
MRJ 110 L	330	16,3 + 0,0133 * Stroke [ mm ]	1420,0 + 0,137 * Stroke [ mm ]



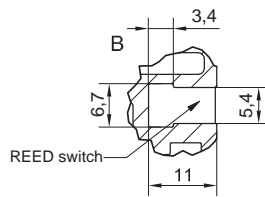
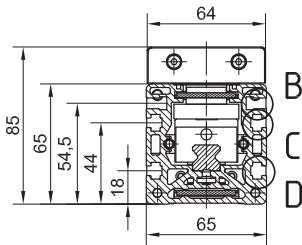
Mass calculation doesn't include mass of motor, reduction gear, switches and clamps.



DIMENSIONS

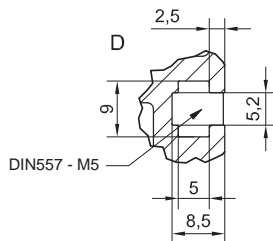
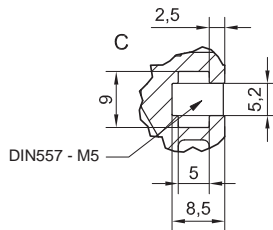
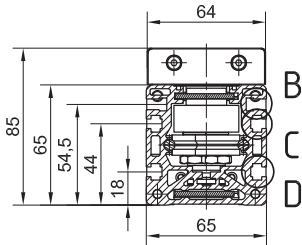
MTJ 65

A-A



MRJ 65

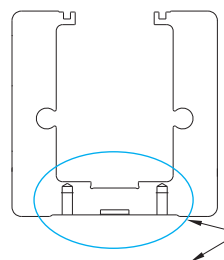
A-A



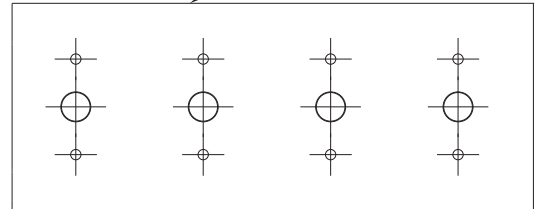
All dimensions in mm; Drawings scales are not equal.

OPTIONAL:

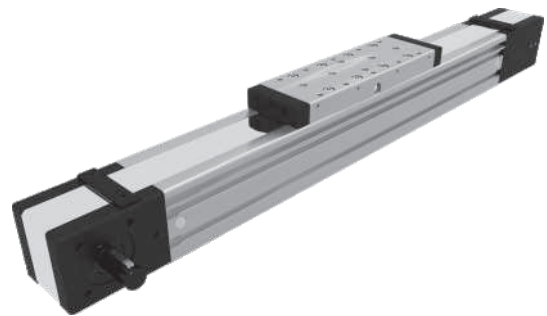
TAP / PIN holes available on request.



TAP / PIN holes on bottom of the profile



Drawing only for presentational use.



**MOTOR**

MTJ & MRJ 65

Available on request

**GEAR REDUCER + MOTOR**

MTJ & MRJ 65

Available on request

**GEAR RED. 90° + MOTOR**

MTJ & MRJ 65

Available on request

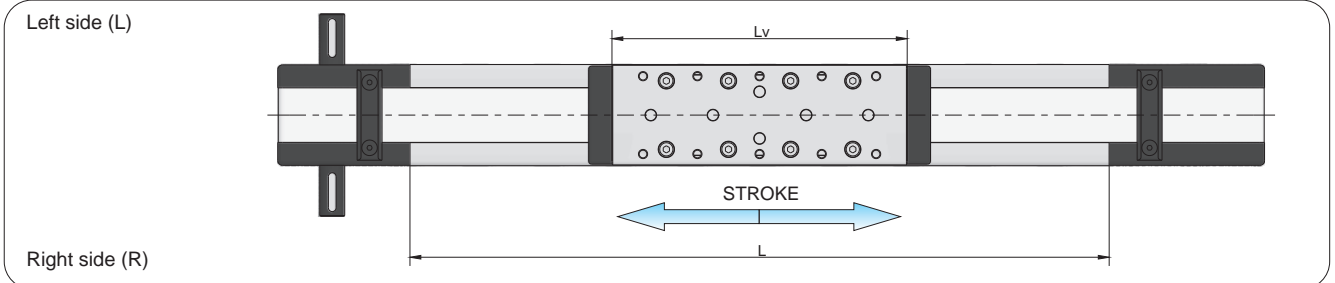
Defining of the linear module length

$L = \text{Effective stroke} + 2 \times \text{Safety stroke} + L_v + 40 \text{ mm}$

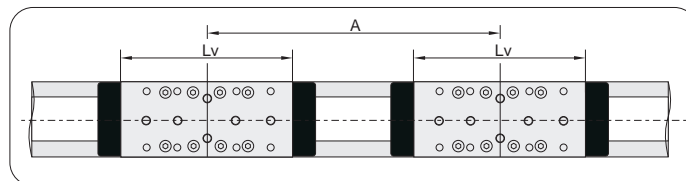
$L_v - \text{Long carriage} = 190 \text{ mm}$

$L_{\text{total}} = L + 185 \text{ mm}$

$L_v - \text{Short carriage} = 140 \text{ mm}$



Double-Carriage



For ordering code please contact us.

$L = \text{Effective stroke} + 2 \times \text{Safety stroke} + L_v + A + 40 \text{ mm}$

$A > L_v + 30 \text{ mm}$

$L_{\text{total}} = L + 185 \text{ mm}$

