

## Linear Unit MTJ ECO 40

The MTJ ECO series linear unit is a powerful and cost-effective linear unit with toothed belt drive and a zero-backlash ball rail guide system for easy and accurate linear movements.

The linear unit MTJ ECO uses 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.

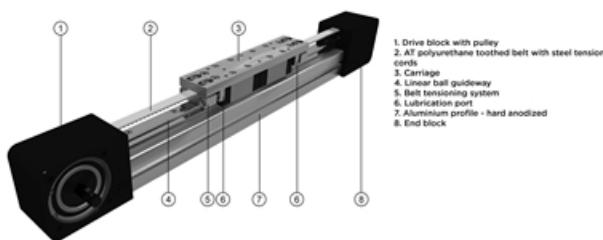
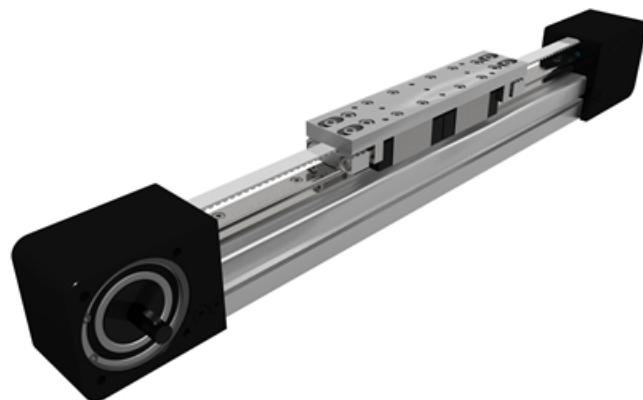
**Modulus of Elasticity:**  $E = 70000 \text{ N/mm}^2$

**Operating Temperature (°C):**  $0 \sim +60$  For operating temperature out of the presented range, please contact Rollco.

**Duty Cycle:** 100%

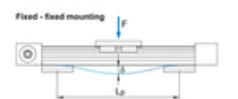
**Max. Acceleration (m/s<sup>2</sup>):** 70

**Max. Travel Speed (m/s):** 3

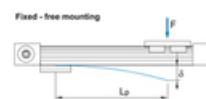


### Deflection of the linear unit

#### MTJ ECO 40



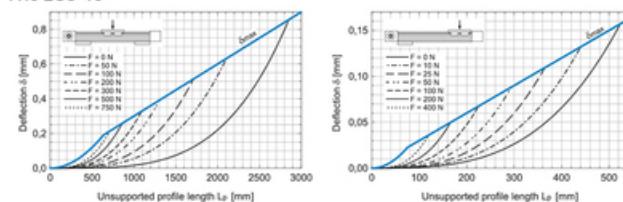
Δ Maximum deflection of the linear unit [mm]  
 $\delta_{\max}$  Maximum permissible deflection of the linear unit [mm]  
F Applied force [N]  
Lp Unsupported profile length [mm]



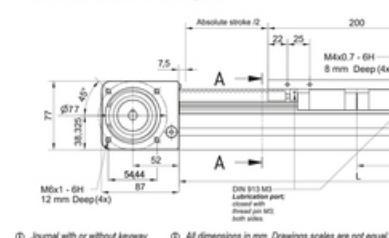
The maximum permissible deflection  $\delta_{\max}$  must not be exceeded. In the case that maximum deflection  $\delta$  exceeds the maximum permissible deflection  $\delta_{\max}$  additional profile supports are needed.

### Deflection of the linear unit

#### MTJ ECO 40

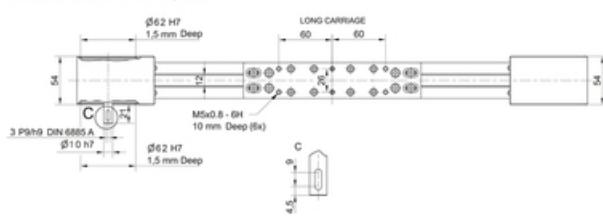


④ The linear units do not include any safety stroke.  
Absolute stroke = Effective stroke + 2 x safety stroke.



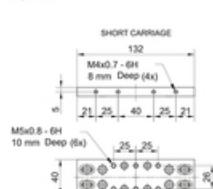
④ Journal with or without keyway. ④ All dimensions in mm. Drawings scales are not equal.

④ The linear units do not include any safety stroke.  
Absolute stroke = Effective stroke + 2 x safety stroke.



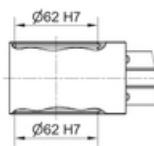
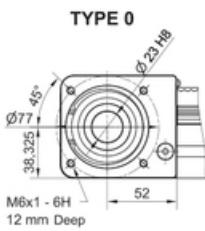
④ Journal with or without keyway. ④ All dimensions in mm. Drawings scales are not equal.

④ The linear units do not include any safety stroke.  
Absolute stroke = Effective stroke + 2 x safety stroke.

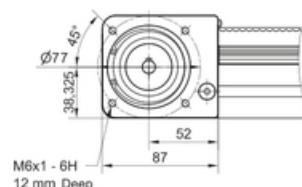


④ Journal with or without keyway. ④ All dimensions in mm. Drawings scales are not equal.

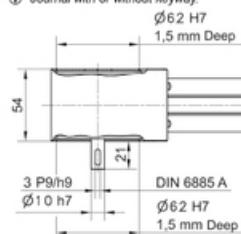
# Linear Unit MTJ ECO 40



## TYPE 1 L and 1 R

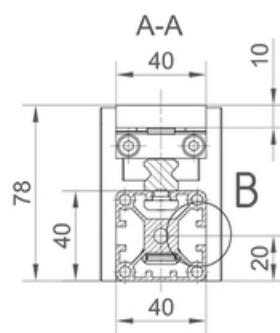
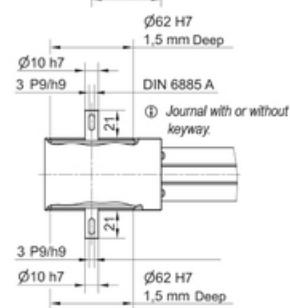
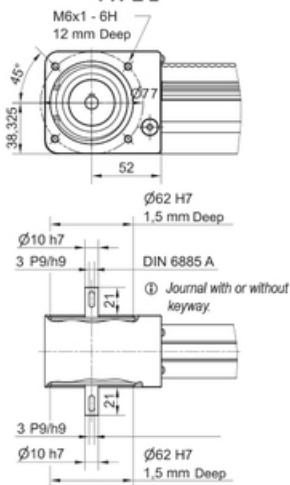


① Journal with or without keyway.

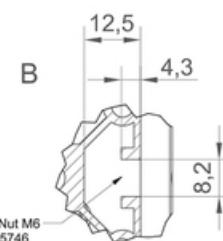


Ø62 H7  
1,5 mm Deep  
DIN 6885 A  
Ø10 h7  
3 P9/h9  
Ø62 H7  
1,5 mm Deep

## TYPE 2



① All dimensions in mm. Drawings scales are not equal.



B



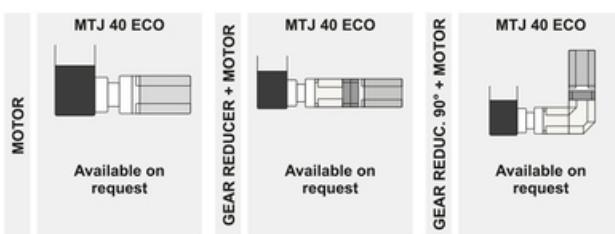
A-A



B



A-A



## Defining of the linear unit length

L = Effective stroke + 2 × Safety stroke + Lv + 15 mm

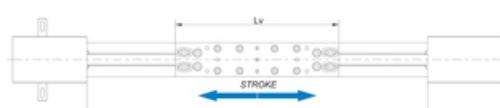
Ltotal = L + 174 mm

Left side (L)

Right side (R)

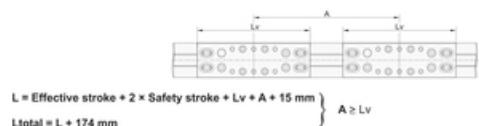
Lv - Long carriage = 200 mm

Lv - Short carriage = 132 mm

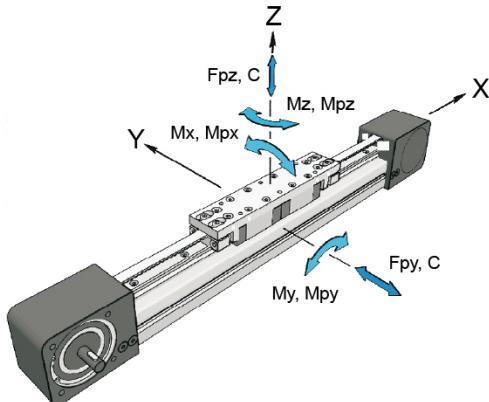


# Linear Unit MTJ ECO 40

## Double Carriage



## General data



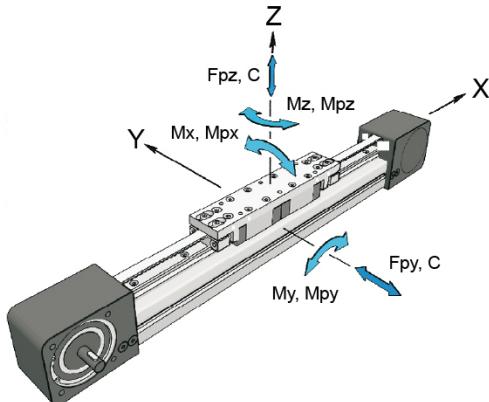
For length/stroke over the stated value, please contact Rollco.  
Values for max. stroke are not valid for double carriage (equation of defining the linear unit length for particular size of the linear unit needs to be used).  
For minimum stroke below the stated value, please contact Rollco.

### 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 ( $fs = 5.0$ ).

Designation	Carriage Length Lv (mm)	Dynamic Moment Mx (Nm)	Dynamic Moment My (Nm)	Dynamic Moment Mz (Nm)	Dynamic Load Capacity C (N)	
MTJ 40 ECO S	132	79	59	59	9900	
MTJ 40 ECO L	200	158	660	660	19800	
Designation	Static Load Capacity C0 (N)	Max. Permissible Loads Forces Fpy (N)	Max. Permissible Loads Forces Fpz (N)	Max. Permissible Loads Moments Mpx (Nm)	Max. Permissible Loads Moments Mpy (Nm)	Max. Permissible Loads Moments Mpz (Nm)
MTJ 40 ECO S	17500	3270	5100	34	34	34
MTJ 40 ECO L	35000	6540	10190	60	341	219
Designation	Moved Mass (kg)	Max. Repeatability (mm)	Max. Length Lmax (mm)	Max. Stroke (mm)	Min. Stroke (mm)	
MTJ 40 ECO S	0.45	± 0.1	5960	5813	40	
MTJ 40 ECO L	0.72	± 0.1	5960	5745	40	

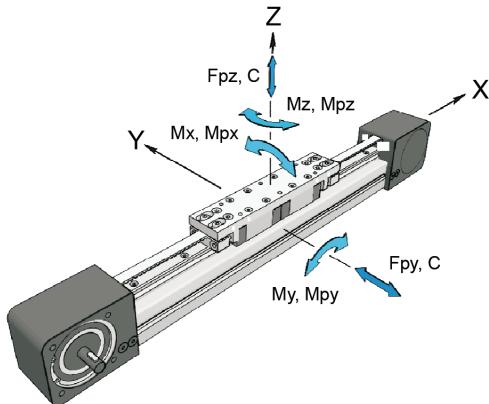
## General data double carriage



A - Distance between carriages.

Designation	Carriage version	Dynamic Load Capacity C (N)	Static Load Capacity C0 (N)	Dynamic Moment Mx (Nm)	Dynamic Moment My (Nm)
<b>MTJ 40 ECO S</b>	S2	19800	35000	158	$9.9 \times A$ (mm)
Designation		Dynamic Moment Mz (Nm)	Max. Permissible Loads Forces Fpy (N)	Max. Permissible Loads Forces Fpz (N)	Max. Permissible Loads Moments Mpx (Nm)
<b>MTJ 40 ECO S</b>		$9.9 \times A$ (mm)	6540	10190	68
<b>MTJ 40 ECO L</b>	L2	$19.8 \times A$ (mm)	13080	20380	120
Designation		Max. Permissible Loads Moments Mpy (Nm)	Max. Permissible Loads Moments Mpz (Nm)		

## Drive data



The stated values are for strokes up to 500 mm.  
No load torque value increases with stroke elongation.

Max. acceleration ( $m/s^2$ ): 70

For acceleration over the stated value, please contact Rollco.

Mass calculation does not include mass of motor, reduction gear, switches and clamps.

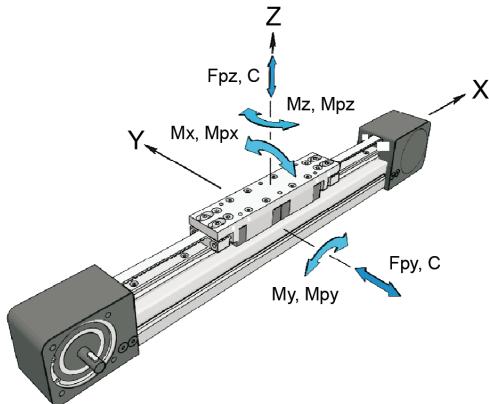
Abs. stroke	Absolute stroke [mm]
A	Distance between carriages [mm]
nc	Number of carriages

Designation	Max. Travel Speed (m/s)	No Load Torque (Nm)	Pulley Drive Ratio (mm/rev)	Pulley Diameter	Belt Type
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<b>MTJ 40 ECO S</b>	3	$1.0 \times nc$	180	57.31	AT5
<b>MTJ 40 ECO L</b>	3	$1.1 \times nc$	180	57.31	AT5

Designation	Belt Width	Max. Force Transmitted by Belt (N)	Specific Spring Constant Cspec (N)	Max. Drive Torque (Nm)	Planar Moment of Inertia ly (cm <sup>4</sup> )	Planar Moment of Inertia lz (cm <sup>4</sup> )
<b>MTJ 40 ECO S</b>	12	262	235000	7.5	9.53	9.21
<b>MTJ 40 ECO L</b>	12	262	235000	7.5	9.53	9.21

## Mass and Mass moment



The stated values are for strokes up to 500 mm.  
No load torque value increases with stroke elongation.

Max. acceleration ( $\text{m/s}^2$ ): 70

For acceleration over the stated value, please contact Rollco.

Mass calculation does not include mass of motor, reduction gear, switches and clamps.

Abs. stroke	Absolute stroke [mm]
A	Distance between carriages [mm]
nc	Number of carriages

Designation	Mass of Linear Unit (kg)	Mass Moment of Inertia ( $10^{-5} \text{ kg m}^2$ )	Planar Moment of Inertia ly ( $\text{cm}^4$ )	Planar Moment of Inertia lz ( $\text{cm}^4$ )	Moved Mass (kg)
MTJ 40 ECO S	$3.1 + 0.003 \times (\text{Abs. Stroke} + (nc - 1) \times A) + 0.45 \times (nc - 1)$	$70.1 + 0.007 \times (\text{Abs. Stroke} + (nc - 1) \times A) + 36.9 \times (nc - 1)$	9.53	9.21	0.45
MTJ 40 ECO L	$3.55 + 0.003 \times (\text{Abs. Stroke} + (nc - 1) \times A) + 0.72 \times (nc - 1)$	$92.3 + 0.007 \times (\text{Abs. Stroke} + (nc - 1) \times A) + 59.1 \times (nc - 1)$	9.53	9.21	0.72

Designation	No Load Torque (Nm)
MTJ 40 ECO S	$1.0 \times nc$
MTJ 40 ECO L	$1.1 \times nc$