# MGTB

The MGTB is a toothed belt driven mini linear unit where the rotary motion (rotation) of the drive shaft is converted to the linear motion (translation) of the carriage with high mechanical efficiency and low internal friction.

High-performance features such as high speed, good positioning accuracy, and high repeatability are ensured through a zero-backlash toothed belt drive and a linear guiding system.

A preassembled standard motor (with a motor adapter and a coupling) together with the standard drive, makes the system plug and drive ready. Compact dimensions and optimally selected motor combinations cover a wide range of applications.

Options, such as different motor sizes, together with a wide range of accessories and possible multi-axis system combinations make this product highly flexible.

□ = Square cross section

Dimensions in mm.

For other CAD files, please contact Rollco.

**Ambient Temperature (°C):** 0 °C ~ +50 °C
**Ambient Temperature without a Motor (°C):** 0 °C ~ +60 °C
**Protection Class:** IP40
**Duty Cycle:** 100 %
**Maintenance:** Life-time pre-lubricated


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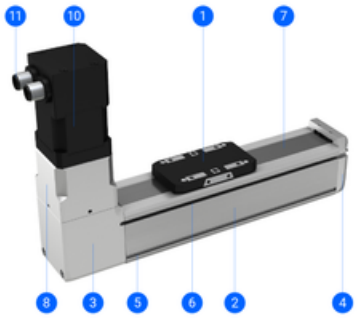
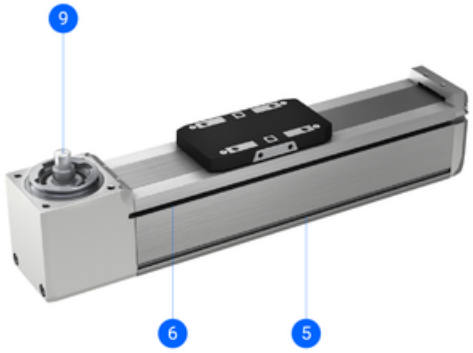
**MGTB with motor and motor adapter VK**



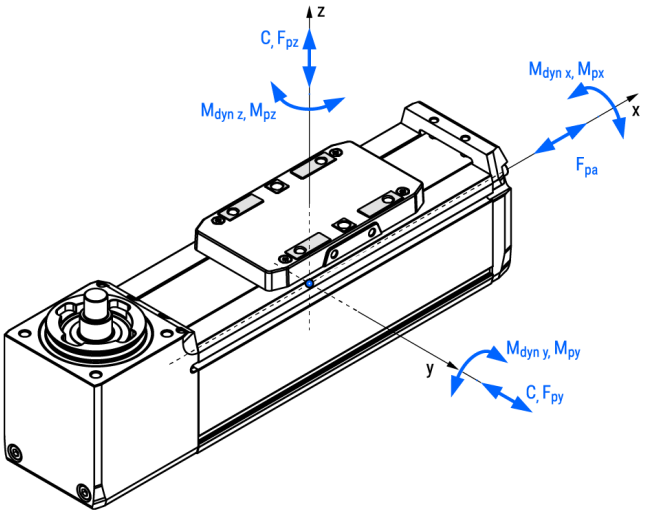

1. Carriage
2. Aluminium profile
3. Drive block with a pulley
4. End block
5. Mounting slots
6. Slot for the magnetic field sensors
7. Corrosion-resistance protection strip
8. Motor adapter VK with a coupling
10. Preassembled motor (with/without a brake)
11. Standard connectors (motor, encoder and brake – optionally)

**MGTB without motor**




5. Mounting slots
6. Slot for the magnetic field sensors
9. The drive shaft of the pulley

## General Data




The moved mass is already considered in the equation for calculating the mass of the linear unit $m_{MGTB}$ and the mass moment of inertia $J_{MGTB}$. The moved mass includes the mass of the carriage.

For the combination with a standard motor and motor adapter VK the mass $m_{MGTB}$ should be increased by $m_{VK+m}$.

| | |
|---|---|
| **Abs. stroke** | Absolute stroke [mm] |
| **$m_{load}$** | Applied mass to be moved [kg] |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| Designation | Description | Dynamic Load Capacity C (N) | Dynamic Moment Mx (Nm) | Dynamic Moment My (Nm) | Dynamic Moment Mz (Nm) |
|---|---|---|---|---|---|
| **MGTB 32** | Without a motor | 1310 | 4.8 | 4.1 | 4.1 |
| **MGTB 45** | Without a motor | 3240 | 20.1 | 17.4 | 17.4 |
| **MGTB 60** | Without a motor | 11190 | 77.4 | 79.8 | 79.8 |

| Designation | 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) | Max. Repeatability (mm) |
|---|---|---|---|---|---|---|
| **MGTB 32** | 200 | 300 | 2.0 | 1.8 | 1.3 | ± 0.08 |
| **MGTB 45** | 400 | 700 | 7.4 | 6.3 | 4.7 | ± 0.08 |
| **MGTB 60** | 850 | 2000 | 29.2 | 30.8 | 31.8 | ± 0.08 |

| Designation | Absolute Stroke | Pulley Drive Ratio (mm/rev) | Pulley Diameter (mm) | Max. Permissible Axial Load Fpa (N) | Max. Permissible Payload Horizontal mph (kg) | Max. Permissible Payload Vertical mpv (kg) |
|---|---|---|---|---|---|---|
| **MGTB 32** | 100, 200, 300, 400, 500, 600, 700, 800, 1000, 1200, 1400, 1600 | 66 | 21.00 | 65 | 31 | 5.4 |
| **MGTB 45** | 100, 200, 300, 400, 500, 600, 700, 800, 1000, 1200, 1400, 1600 | 63 | 20.05 | 85 | 42 | 7.1 |
| **MGTB 60** | 100, 200, 300, 400, 500, 600, 700, 800, 1000, 1200, 1400, 1600, 1800, 2000 | 78 | 24.83 | 130 | 65 | 11 |

| Designation | Max. Drive Torque $M_P$ (Nm) | No Load Torque $M_0$ (Nm) | Max. Permissible Radial Load on Shaft Fpr (N) | Max. Travel Speed Vmax (m/s) | Max. Rotational Speed (rev/min) | Max. Acceleration (m/s²) |
|---|---|---|---|---|---|---|
| **MGTB 32** | 0.68 | 0.07 | 50 | 1500 | 1365 | 20 |
| **MGTB 45** | 0.85 | 0.20 | 100 | 1500 | 1430 | 20 |
| **MGTB 60** | 1.61 | 0.40 | 200 | 1500 | 1155 | 20 |

| Designation | Moved Mass (kg) | Mass of Linear Unit (kg) | Mass Moment of Inertia JMGTB ($10^{-2}$ kg cm²) | Planar Moment of Inertia Iy (cm⁴) | Planar Moment of Inertia Iz (cm⁴) |
|---|---|---|---|---|---|
| **MGTB 32** | 0.06 | 0.37 + 0.0012 × Abs. Stroke | 9.19 + 0.0024 × Abs. Stroke + 110.339 × mload | 4.3 | 4.6 |
| **MGTB 45** | 0.15 | 0.92 + 0.0023 × Abs. Stroke | 18.80 + 0.0022 × Abs. Stroke + 100.536 × mload | 14.3 | 15.9 |
| **MGTB 60** | 0.45 | 2.12 + 0.0041 × Abs. Stroke | 81.72 + 0.0040 × Abs. Stroke + 154.110 × mload | 43.8 | 50.3 |


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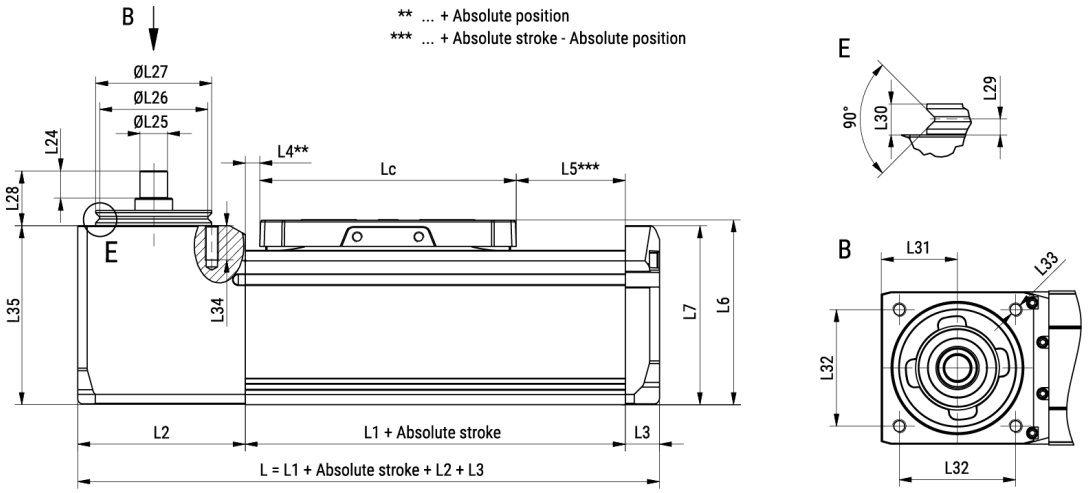
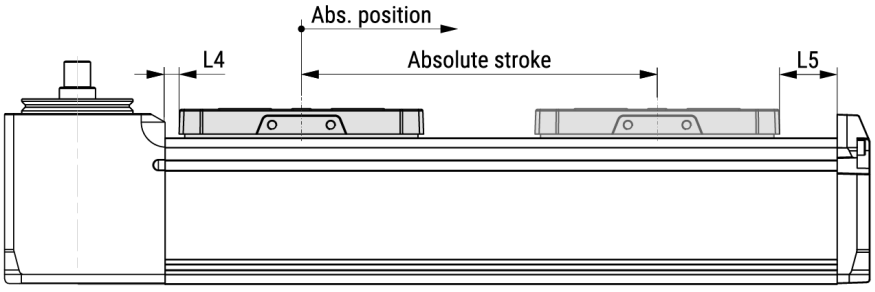
# Dimensions

## MGTB without motor




## Absolute stroke of the MGTB definition




| Designation | Lc | L1 | L2 | L3 | L4 | L5 | L6 | L7 | L8 |
|---|---|---|---|---|---|---|---|---|---|
| **MGTB 32** | 65 | 104 | 32.75 | 8 | 2.5 | 36.5 | 38.5 | 35.75 | 32 |
| **MGTB 45** | 75 | 124 | 49 | 10 | 4.3 | 44.7 | 54 | 52.25 | 45 |
| **MGTB 60** | 90 | 139 | 64 | 12 | 3.2 | 45.8 | 72 | 68.75 | 60 |

| Designation | L9 | L10 | L11 | L12 | L13 | L14 | L15 | L16 | L17 | L18 |
|---|---|---|---|---|---|---|---|---|---|---|
| **MGTB 32** | 4.4 | 23.7 | 4 | 5.9 | 18 | M2 | 4 | 14.6 | 18.4 | 22.5 |
| **MGTB 45** | 4.4 | 36.5 | 5 | 7.8 | 18 | M3 | 6 | 18.6 | 16.4 | 32 |
| **MGTB 60** | 4.4 | 45 | 6 | 11 | 30 | M4 | 6 | 25.4 | 38.4 | 45 |

| Designation | L19 | L20 | L21 | L22 | L23 | L24 | L25 | L26 | L27 | L28 |
|---|---|---|---|---|---|---|---|---|---|---|
| **MGTB 32** | 30 | 35 | M3 | 2 (H7) | 5 | 7 | 5 (h7) | 22.6 | 25 (h7) | 14 |
| **MGTB 45** | 42 | 42 | M4 | 4 (H7) | 6 | 8 | 8 (h7) | 31.6 | 34 (h7) | 16 |
| **MGTB 60** | 57 | 55 | M5 | 5 (H7) | 8 | 10 | 10 (h7) | 39.6 | 42 (h7) | 20 |

| Designation | L29 | L30 | L31 | L32 | L33 | L34 | L35 |
|---|---|---|---|---|---|---|---|
| **MGTB 32** | 2.3 | 4.5 | 15.75 | 24.5 | M3 | 3 | 37.75 |
| **MGTB 45** | 2.3 | 4.5 | 22.25 | 34 | M4 | 10 | 54.85 |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| Designation | L29 | L30 | L31 | L32 | L33 | L34 | L35 |
|---|---|---|---|---|---|---|---|
| **MGTB 60** | 2.3 | 4.5 | 29.75 | 48 | M5 | 10 | 72.50 |


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