

UNIMOTION

MAINTENANCE AND ASSEMBLY INSTRUCTIONS

MGBS and MGTB

MINI LINEAR UNITS



General information		3
Available documents for the product	3	Recommended tightening torques
Used symbols	3	3
General safety instructions		4
Safe operation	4	Labels and notices
Modification of the product	4	Warranty
		4
Operating conditions		5
Product description		6
Structural design	6	Identification label
		8
Transport and storage		9
Transport	9	Storing the product
		9
Mounting		10
Mounting options	10	Connection plate
Orientation	12	Motor adapter with a coupling
Permissible loads	12	Motor side drive with a timing belt
Accessories – overview	13	Electrical connection of the system
Magnetic field sensor	16	20
Initial start-up		21
Operation		22
Maintenance		22
Lubrication	22	Protection strip
Cleaning	22	Toothed belt
		25
Repair		26
MGBS / MGTB	26	Motor and drive
		26
Disassembly and replacement		26
Disassembly	26	Replacement
		26
Disposal		30
Technical data		30

GENERAL INFORMATION






It is important to read this instruction manual before handling the product. Otherwise, the product might get damaged.

In this instruction manual, the mini linear unit (with or without the preassembled standard motor together with the cables and drive) is designated as product. There are also an abbreviations MGBS and MGTB used, by which the ball screw driven mini linear unit and toothed belt driven mini linear unit is defined, respectively.

AVAILABLE DOCUMENTS FOR THE PRODUCT

MGBS and MGTB (mini linear units)	Catalogue
Assembly instructions for VK MG (motor adapter with a coupling)	Assembly instructions
Assembly instructions for MSD MG (motor side drive with a timing belt)	Assembly instructions
Stepper systems (motors, drives, cables)	Catalogue
Closed loop stepping system manual (STDF EC – EtherCAT, STDF EN – Ethernet, STDF PD – Pulse-direction)	Manual

USED SYMBOLS

	Remark, note
	Warning!
	Danger! Risk of coming into contact with power conducting parts! The power supply must be disconnected!
	For more information, please refer to the specified documentation
	Use different tightening torque as it is presented in the section “Recommended tightening torques”

RECOMMENDED TIGHTENING TORQUES

Recommended tightening torques of the screws

Tightening torque (8.8)	Thread size						
	M2	M2,5	M3	M4	M5	M6	M8
$M_{A, \max}$ [Nm]	0,4	0,7	1,3	2,8	5,6	9,6	23,0

Table 1: Recommended tightening torques of the screws of strength class 8.8.

GENERAL SAFETY INSTRUCTIONS

To ensure the right functionality of the product, it must be handled with care. It is not allowed to put any tools or any other items which can cause damage to the product on the product. The product must be protected against any liquid that can cause damage to it.

For information on the conditions in which the product can operate, please see the section "Operating conditions" or contact us. If the product isn't in use, place it in a dry, clean environment and cover it to prevent any damage.

SAFE OPERATION

The product must not be put into service until the final machinery into which it is installed has been declared in conformity with the provisions of the machinery directives, where appropriate. Each operation of the product that is not in compliance with its intended use can lead to the product being damaged, or can cause accidents and at the same time stoppages in production. To ensure a safe operation, please refer to this instruction manual and the operating manual of other machinery, where the product is to be incorporated.

Requirements for personnel

The product may only be installed, operated, maintained, repaired or dismantled by appropriately qualified personnel. All qualified personnel must have read and understood this instruction manual.

Checking the product

In accordance with the safety directives, the operating company must subject the product to thorough checking prior to putting it into operation; after carrying out repairs, and after malfunctions have occurred.

MODIFICATION OF THE PRODUCT

The product must not be modified without our written consent. Any such unauthorized modification will make void our liability in respect of the product. The operating company may only carry out the maintenance and repair work detailed in this instruction manual.

LABELS AND NOTICES

All notices and labels attached to the product must be fully visible and must not be removed. They must ensure compliance with all the instructions contained on them. Damaged or illegible notices and labels must be replaced.

WARRANTY

The warranty conditions are laid down in the terms and conditions of delivery and payment issued at the time of order. Warranty cover will be annulled if:



- the product is not operated in accordance with the stipulated regulation use,
- the instructions set out in this operating manual are not followed,
- the product is modified without the consent of the manufacturers,
- the screws sealed by locking varnish are unlocked.

The manufacturer's warranty in respect of maintenance and repair work applies only if original replacement parts are used.

OPERATING CONDITIONS

Ambient temperature	0 °C ~ +50 °C
Ambient temperature without a preassembled standard motor	0 °C ~ +60 °C
Protection class	IP40
Duty cycle	100 %

Table 2: Operating conditions.

-  In case of special operating conditions, please contact us.
-  For the values of the maximum permissible axial load, lateral forces and moments, drive torque, travel and rotational speed and acceleration, please refer to the product catalogue MGBS and MGTB (mini linear units) and catalogue Stepper systems.

 **Overloading**

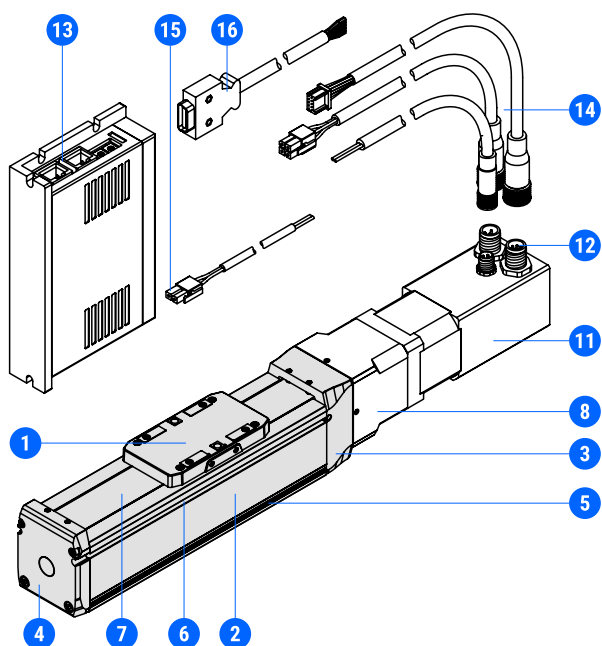
Overloading the product can lead to the product being damaged.

PRODUCT DESCRIPTION

STRUCTURAL DESIGN

MGBS

With a standard motor, motor adapter VK, drive and cables



- 1 – Carriage
- 2 – Aluminium profile
- 3 – Drive block
- 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
- 9 – Motor side drive with a timing belt
- 10 – Drive shaft of the precision ball screw drive
- 11 – Preassembled motor (with/without a brake)
- 12 – Standard connectors (motor, encoder and brake – optionally)
- 13 – Drive
- 14 – Drive-motor cables
- 15 – Power cable
- 16 – Signal cable

Figure 1: MGBS with a standard motor, motor adapter VK, drive and cables.

With a standard motor and motor side drive MSD

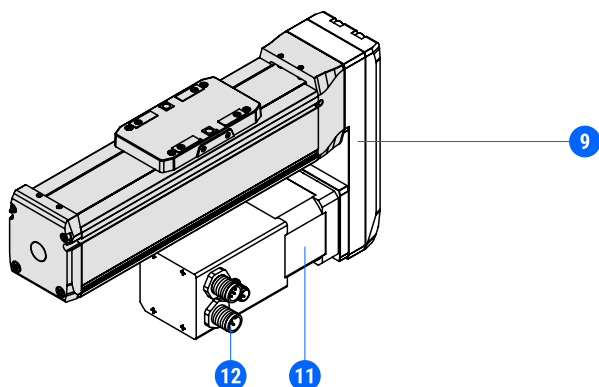


Figure 2: MGBS with a standard motor and motor side drive MSD.

Without a motor

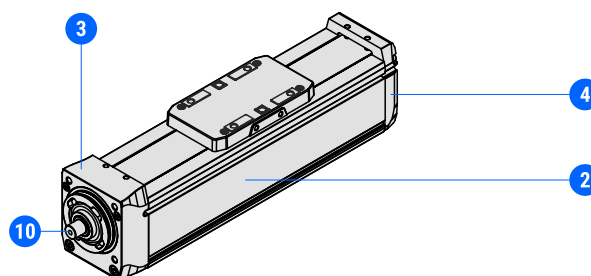
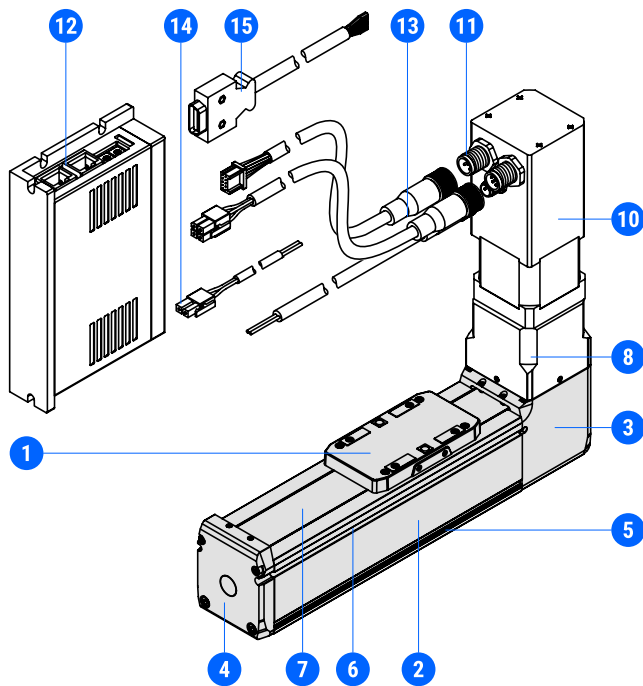


Figure 3: MGBS without a motor.

MGTB

With a standard motor, motor adapter VK, drive and cables



- 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
- 9 – Drive shaft of the precision ball screw drive
- 10 – Preassembled motor (with/without a brake)
- 11 – Standard connectors (motor, encoder and brake – optionally)
- 12 – Drive
- 13 – Drive-motor cables
- 14 – Power cable
- 15 – Signal cable

Figure 4: MGTB with a standard motor, motor adapter VK, drive and cables

Without a motor

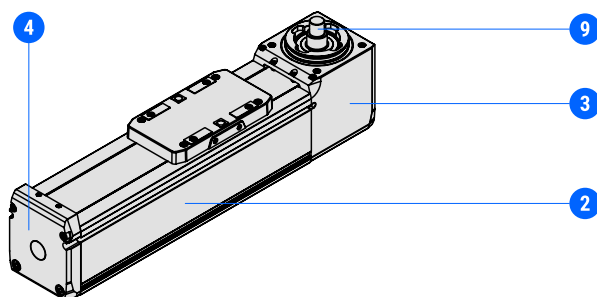
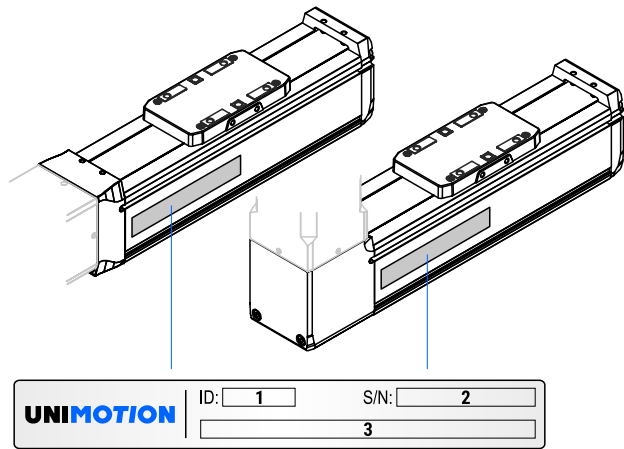


Figure 5: MGTB without a motor.

IDENTIFICATION LABEL



- 1 – ID number
- 2 – Serial number
- 3 – Product ordering code

i The label must be fully visible and must ensure compliance with all the instructions it contains. Damaged or illegible labels must be replaced.

Figure 6: Identification label of the product.

TRANSPORT AND STORAGE

TRANSPORT


The product is carefully packed for its safe transportation.

To correctly carry of the product, please take into consideration the following handling instructions:

- the MGBS or MGTB must only be lifted by the aluminium profile,
- the product must never be lifted by the carriage, since the ball screw drive (of the MGBS) and the toothed belt drive (of the MGTB) are not self-locking,
- for the case of vertical or inclined positioned product, the carriage (of the MGBS or MGTB) must be secured during transport,
- during carrying, the product must be prevented from swinging and dropping,
- if the standard motor is preassembled, during transporting the support of the motor must always be provided,
- the product weight must be taken into account.

 **Never stand under the product being carried**

Risk of serious injury or even death.

-  For the product weight calculations, please refer to the product catalogue MGBS and MGTB (mini linear units) and catalogue Stepper systems.

STORING THE PRODUCT


The product needs to be stored in a dry and roofed place and protected against corrosion and humidity. Make sure that there is no danger of the product getting damaged.


Short storage time should be ensured.


MOUNTING


MOUNTING OPTIONS

Mounting the product


 For the mounting accessories, please refer to the product catalogue MGBS and MGTB (mini linear units).

 Mounting accessories are not pre-assembled to the product in the factory before shipment.

 **Never use other mounting points as it is presented**
The product can be mounted only by the presented points (see Figure 7), otherwise the product may be damaged.

 **Avoid from collision of the mounting screws and the product**

There must never be any collision of the mounting screws and the product, otherwise the product may be damaged. The length of the mounting screws must be selected properly.

 For the mounting holes dimensions of the product and accessories, please refer to the product catalogue MGBS and MGTB (mini linear units).

MGBS and MGTB

The product can be mounted as follows (see Figure 7):

- 1 – by the aluminium profile (by using the clamping fixtures, which are placed in the slot on the side of the profile*)
- 2 – by the carriage (by using the mounting screws)

*Clamping fixture is a part of the product accessories.

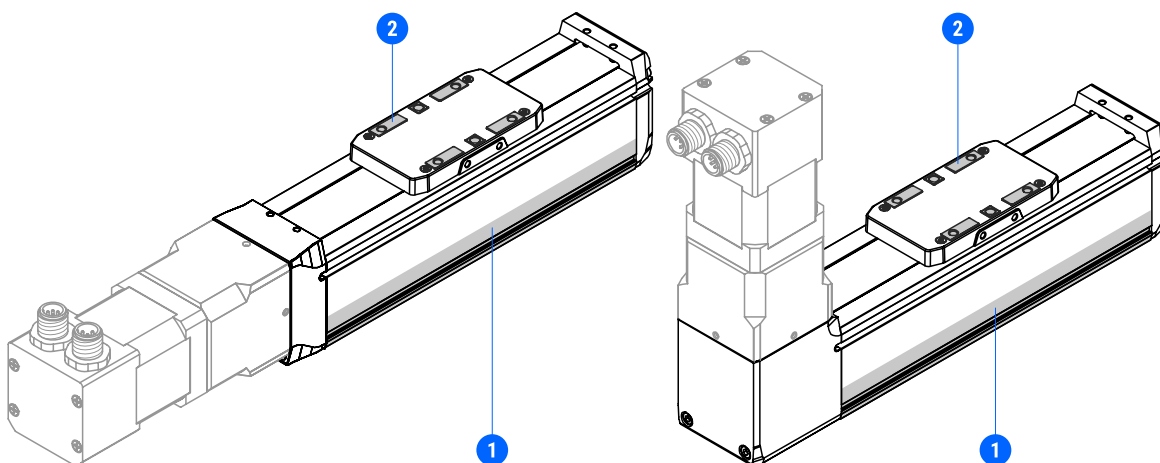



Figure 7: Mounting the MGBS and MGTB.

-  Flatness of the mounting surface:
- below the aluminium profile: 0,02 % of the product stroke,
 - above the carriage: maximum 0,01 mm.

Mounting the attachment

⚠ Never use other attachment points as it is presented
The attachments can be mounted only on the presented points (see Figure 8), otherwise the product may be damaged.

⚠ Avoid from collision of the mounting screws and the product
There must never be any collision of the mounting screws and the product, otherwise the product may be damaged. The length of the mounting screws must be selected properly.

⚠ Avoid from collision of the attachment and the product
There must never be any collision of the mounted attachment and the product, otherwise the product may be damaged.

📖 For the mounting holes dimensions of the product and accessories, please refer to the product catalogue MGBS and MGTB (mini linear units).

MGBS and MGTB

The attachments can be mounted as follows (see Figure 8):

- 1 – on the aluminium profile (by using the clamping fixtures, which are placed in the slot on the side of the profile *)
- 2 – on the carriage (by using the mounting screws, clamping fixtures or connection plate *)

* Clamping fixture and connection plate are parts of the product accessories.

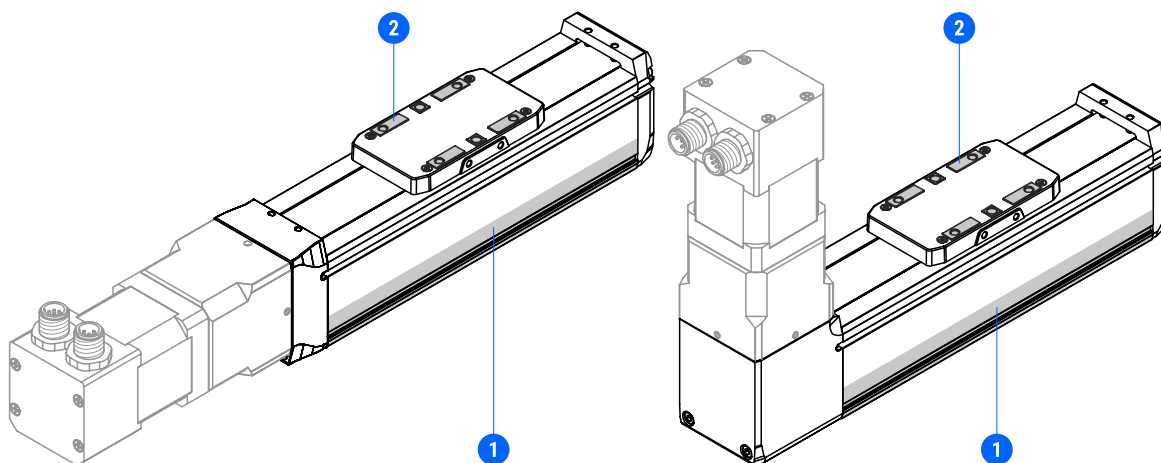


Figure 8: Mounting the attachments to the MGBS and MGTB.

📖 For the product accessories, please refer to the product catalogue MGBS and MGTB (mini linear units).

i Flatness of the attachment surface of maximum 0,01 mm.

ORIENTATION

The product can be mounted in any orientation using a suitable combination of the mounting attachments.

- For the mounting accessories, please refer to the product catalogue MGBS and MGTB (mini linear units).

⚠ Unexpected movement of the components

Risk of serious injury or even death.

When the product is mounted vertically or in an inclined position, prevent the carriage or the aluminium profile (for the case that the product is mounted by the carriage) from dropping due to the no self-locking effect of the ball screw drive (MGBS) or toothed belt drive (MGTB). To avoid dropping of the mentioned moving components it is recommended to install a suitable motor with a holding brake.

PERMISSIBLE LOADS

⚠ Overloading

Overloading the product can lead to the product being damaged.

⚠ The carriage or the aluminium profile must not be subjected to the loads causing its warping

The improper mounting of the attachment to the carriage or the aluminium profile can cause the carriage or the aluminium profile being warped (Figure 9), respectively. In such case, the service life of the product can be drastically decreased. The permissible flatness of the mounted or attached surface must be taken into consideration, please refer to the section regarding the mounting options.

- For the values of the maximum permissible axial load, lateral forces and moments, drive torque, travel and rotational speed and acceleration (of the product and the product accessories), please refer to the product catalogue MGBS and MGTB (mini linear units) and catalogue Stepper systems.

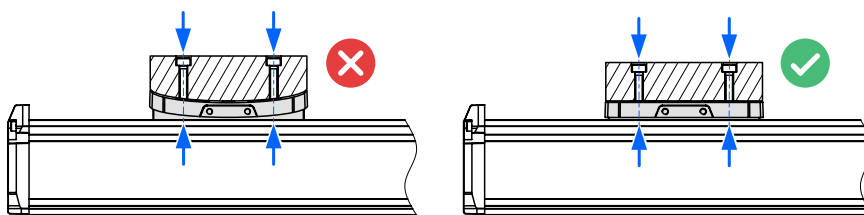


Figure 9: Warping of the carriage.

ACCESSORIES – OVERVIEW

i For information about materials, dimensions and the maximum permissible loads of the accessories, please refer to the product catalogue MGBS and MGTB (mini linear units).

i Accessories are not pre-assembled to the product in the factory before shipment.

MGBS

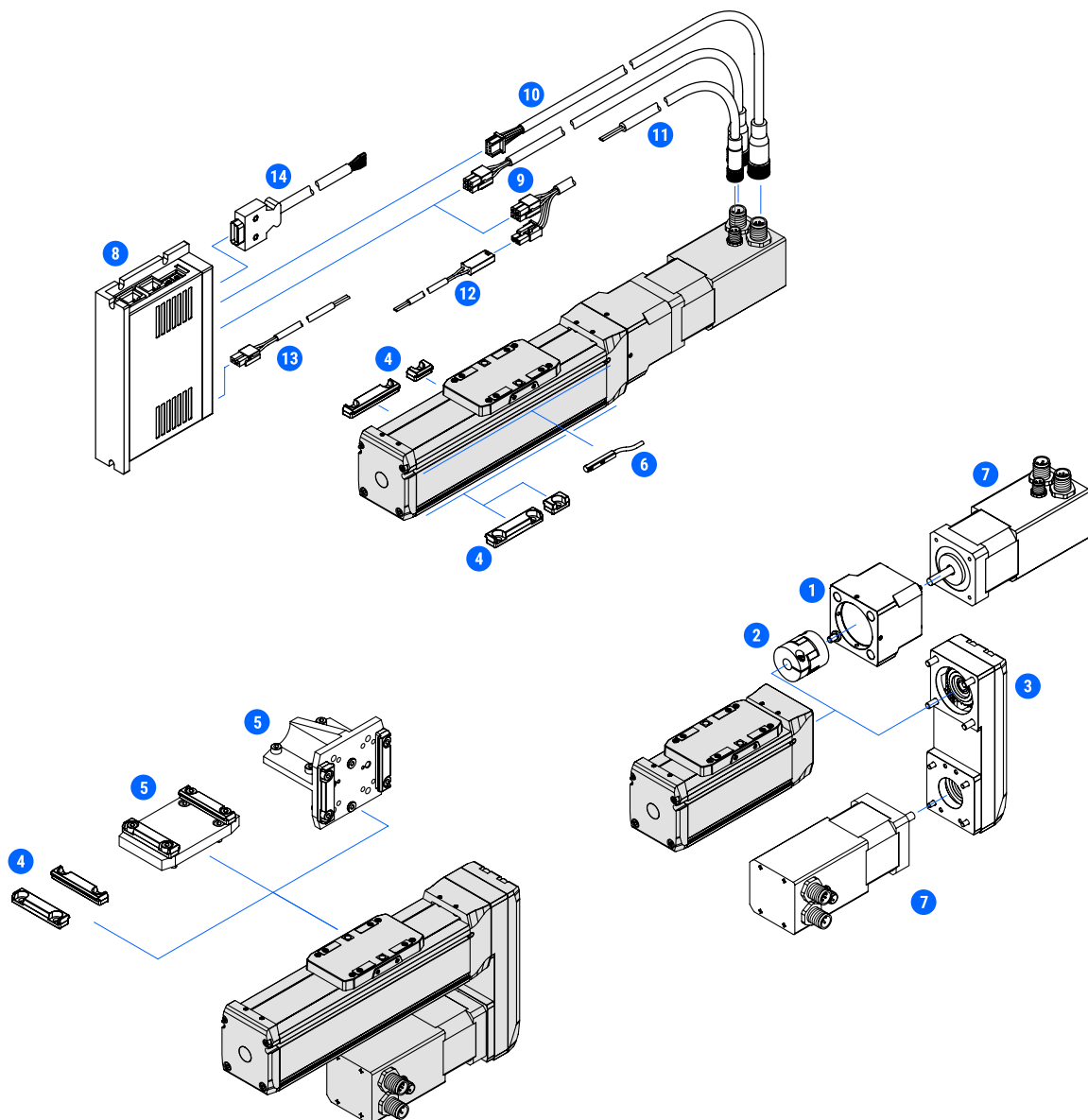


Figure 10: Overview of the MGBSs accessories.

#	Accessories	Compatible with MGBS size			
		32	45	60	
1	Motor adapter VK	•	•	•	Motor adapters
2	Coupling	•	•	•	Elastomer couplings
3	Motor side drive MSD	•	•	•	Motor side drives
4	Clamping fixture	•	•	•	Mounting attachment accessories
5	Connection plate	•	•	•	
6	Magnetic field sensor	•	•	•	Limit switches
7	Motor	•	•	•	Motors
8	Drive	•	•	•	Drives
9	Motor cable ¹	• ¹	•	•	Cables
10	Encoder cable	•	•	•	
11	Brake cable ¹	• ¹	•	•	
12	Brake to terminal cable ¹	•	—	—	
13	Power cable	•	•	•	
14	Signal cable	•	•	•	

¹ For the stepper motor size of 28, the motor and the brake cables are combined into one cable.
For connectivity between the brake and the terminal, an additional brake to terminal cable is used.

Table 3: Overview of the MGBSs accessories.

MGTB

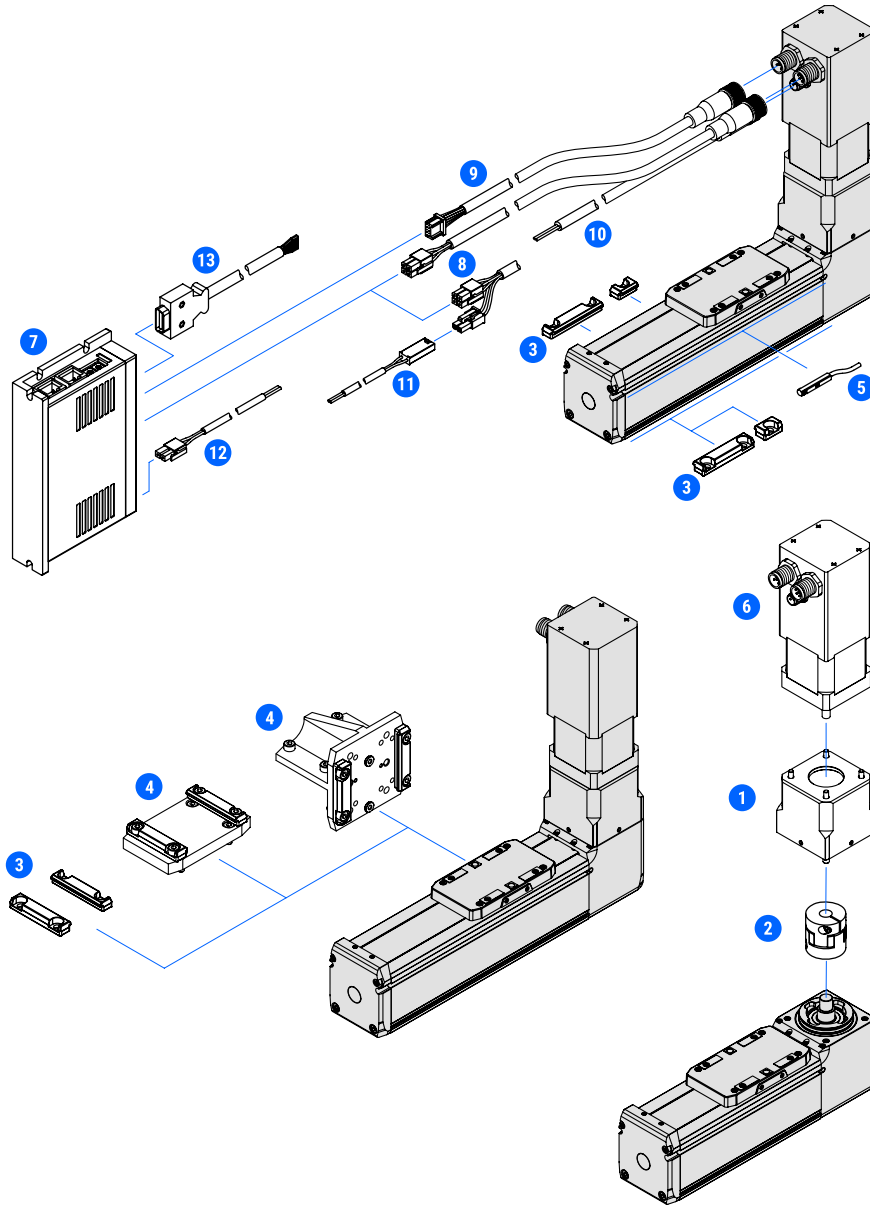


Figure 11: Overview of the MGTBs accessories.

#	Accessories	Compatible with MGBS size			
		32	45	60	
1	Motor adapter VK	•	•	•	Motor adapters
2	Coupling	•	•	•	Elastomer couplings
3	Clamping fixture	•	•	•	Mounting attachment accessories
4	Connection plate	•	•	•	
5	Magnetic field sensor	•	•	•	Limit switches
6	Motor	•	•	•	Motors
7	Drive	•	•	•	Drives
8	Motor cable ¹	• ¹	•	•	Cables
9	Encoder cable	•	•	•	
10	Brake cable ¹	• ¹	•	•	
11	Brake to terminal cable ¹	•	—	—	
12	Power cable	•	•	•	
13	Signal cable	•	•	•	

¹ For the stepper motor size of 28, the motor and the brake cables are combined into one cable. For connectivity between the brake and the terminal, an additional brake to terminal cable is used.

Table 4: Overview of the MGTBs accessories.

MAGNETIC FIELD SENSOR

Position of the magnets

- i** The position of the magnets can be calculated using the absolute position or distance LP, see Figure 12 and Table 5, where both MGBS and MGTB are taken into account.

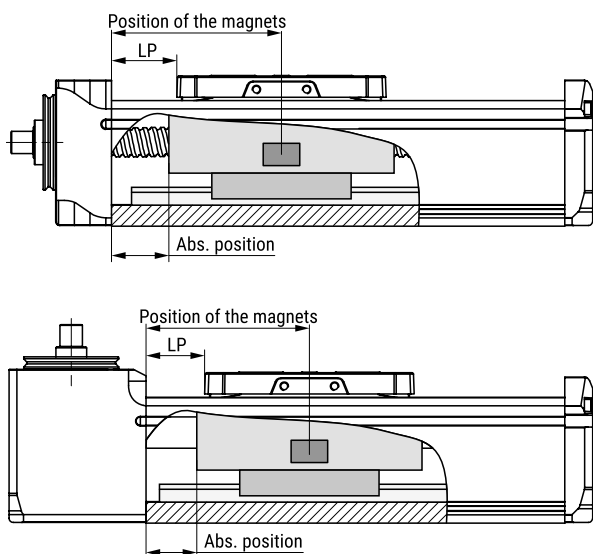


Figure 12: Position of the magnets for the MGBS and MGTB.

MGBS/MGTB	Position of the magnets [mm]		LP [mm]
32	Abs. position + 35,0	LP + 32,5	Abs. position + 2,5
45	Abs. position + 41,8	LP + 37,5	Abs. Position + 4,3
60	Abs. position + 48,2	LP + 45,0	Abs. position + 3,2

Table 5: Position of the magnets.

Abs. position	Absolute position	[mm]
LP	Distance LP	[mm]

- i** It should be noted that the following condition must be taken into consideration:
 $0 \leq \text{Absolute position} \leq \text{Absolute stroke}$

Assembly instructions

- i** Magnetic field sensor can be mounted by using the slot for the magnetic field sensor placed on the both sides of the MGBS/MGTB profile.
- i** For information about the profile slots and the magnetic field sensors, please refer to the product catalogue MGBS and MGTB (mini linear units).

⚠ Avoid from collision of the magnetic field sensors and the moving components

There must never be any collision of the mounted magnetic field sensors and the moving components of the product or structure, otherwise the product may be damaged.

⚠ Risk of coming into contact with power conducting parts!

The power supply should be disconnected and secured against reconnection!

STEP 1: The magnetic field sensor **1** must be placed in the the slot of the MGBS/MGTB profile (through the prepared slots on the end block).

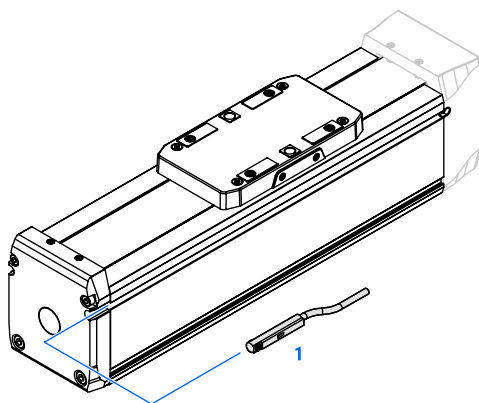


Figure 13: Mounting the sensor. step 1.

STEP 2: Adjust the magnetic field sensor **1** to the desired position. The position of the magnets can be found in Table 5.

STEP 3: Tighten the clamping screw of the magnetic field sensor **1**.

- Ⓜ** Tighten the clamping screw of the magnetic field sensor with a tightening torque of max. 0,6 Nm.

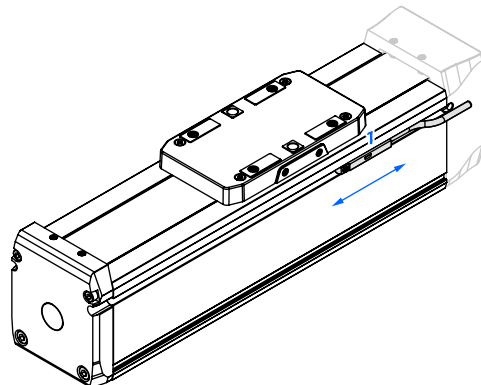


Figure 14: Mounting the sensor. step 2 and 3.

CONNECTION PLATE

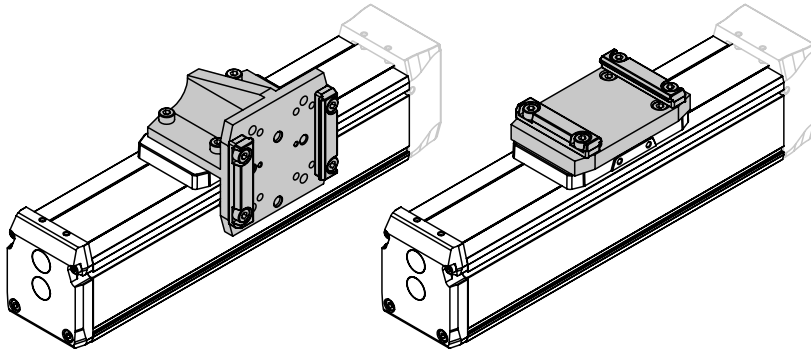


Figure 15: Mounting the connection plate.

Assembly instructions

i Connection plate can be mounted on the MGBS/MGTB carriage.

STEP 1: Insert the centring pins **1** into the centring holes on the MGBS/MGTB carriage, see Figure 16.

STEP 2: Mount the connection plate **2** on the carriage using the connection plate mounting screws **3**, see Figure 16. Ensure that the centring pins **1** are fitted into the prepared holes in the connection plate **2**.

STEP 3: Tighten the mounting screws **3**.

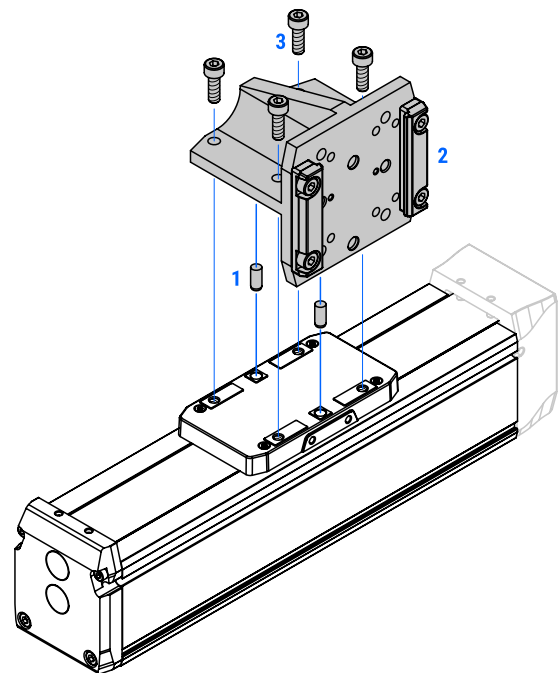


Figure 16: Mounting the connection plate: step 1 and 2.

MOTOR ADAPTER WITH A COUPLING

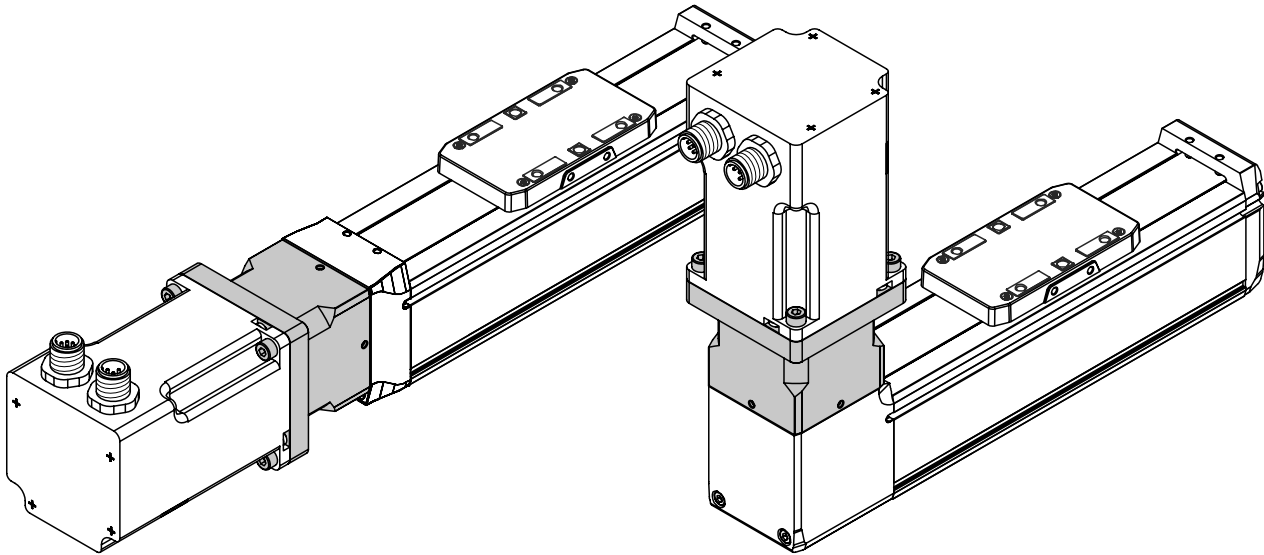


Figure 17: Mounting the motor on the MGBS/MGTB in-line with a motor adapter VK and a coupling.

- For assembly instructions for the motor adapter VK with a coupling, please refer to the assembly instructions for VK MG (motor adapter with a coupling).

MOTOR SIDE DRIVE WITH A TIMING BELT

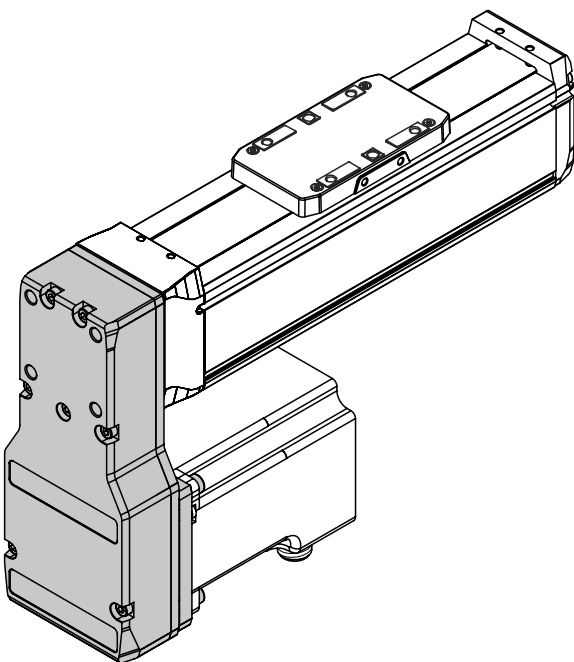


Figure 18: Mounting the motor on the MGBS in-parallel with a motor side drive MSD and a timing belt.

- Motor side drive is valid only for the MGBS mini linear units.
- For assembly instructions for the motor side drive MSD with a timing belt, please refer to the assembly instructions for MSD MG (motor side drive with a timing belt).

ELECTRICAL CONNECTION OF THE SYSTEM

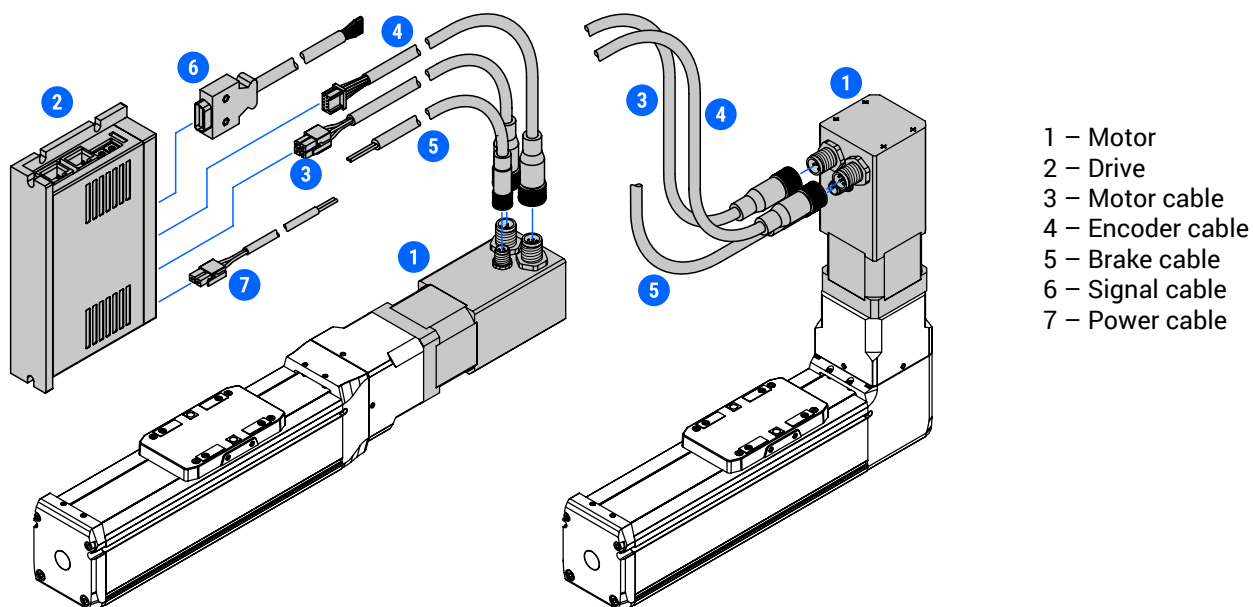


Figure 19: Electrical connection of the system (symbolic presentation).

⚠ Risk of coming into contact with power conducting parts!

During the mounting procedure, the power supply should be disconnected and secured against reconnection!

⚠ Safety and operating precautions of the close loop stepping system

It is important to read the safety and operating precautions of the close loop stepping system before connecting the whole system. Otherwise, the product might get damaged.

📖 For information about the electrical connection of the system together with all necessary precautions, please refer to the manual for used close loop stepping system.


i For the case of usage of the non-standard cables, the pin layout of the motor and drive connectors must be taken into consideration.

📖 For information about the pin layout, please refer to the manual for used close loop stepping system and catalogue Stepper systems.

INITIAL START-UP

Before the initial start-up, check the followings:

- electrical wiring and connection of the system,
- mounted elements,
- tightened mounting screws,
- there are no physical stop limits over the entire maximum permissible travel range,
- the limit switches are correctly adjusted,
- there is no overloading of the product,
- operating conditions,
- direction of the movement of the carriage (or profile, for the case of fixed carriage) depending on the motor shaft rotation,
- homing procedure (by the limit switch or physical end position, where the maximum permissible drive torque of the product and homing travel speed of 10 mm/s are not exceeded),
- application requirements.

 For the values of the maximum permissible axial load, lateral forces and moments, drive torque, travel and rotational speed and acceleration, please refer to the product catalogue MGBS and MGTB (mini linear units) and catalogue Stepper systems.

Overloading

Overloading the product can lead to the product being damaged.

Unexpected movement of the components

During the operation, prevent the moving components of the product getting into the contact (within the entire travel range) with foreign objects, machine structure or persons. Perform the initial operation of the product with low dynamic response (~ 10 mm/s). Due to the no self-locking effect of the ball screw drive (MGBS) and toothed belt drive (MGTB) the possible unexpected movement of the carriage must be taken into consideration.

Avoid from collision caused by the incorrectly adjusted limit switches

Observe the maximum travel range of the MGBS or MGTB. Make sure that over the entire travel range there are no physical stop limits, otherwise the product might get damaged.

Short circuiting caused by improper electrical connection of the system


All the cables connectors must be assigned and plugged in correctly, otherwise the product might get damaged.

Risk of burns from hot surfaces of the product

It should be noted, that during the operating process hot surfaces of the product may occur. Before handling the procedure, allow the product to cool down to the appropriate temperature.

Loss of the reference when removing the motor

In the case the motor is removed, the reference position may be lost. After the motor is remounted, it is important to perform a homing procedure.

 It should be noted that identical products can generate different running noises during the operation.


OPERATION

The product must not be put into operation until the final machinery into which it is installed has been declared in conformity with the provisions of the machinery directives, where appropriate.

The product is ready for operation process only after a successful test run was performed.

Overloading

Overloading the product can lead to the product being damaged.

 For the values of the maximum permissible axial load, lateral forces and moments, drive torque, travel and rotational speed and acceleration, please refer to the product catalogue MGBS and MGTB (mini linear units) and catalogue Stepper systems.

Unexpected movement of the components

During the operation, prevent the moving components of the product getting into the contact (within the entire travel range) with foreign objects, machine structure or persons. Due to the no self-locking effect of the ball screw drive (MGBS) and toothed belt drive (MGTB) the possible unexpected movement of the carriage must be taken into consideration.

MAINTENANCE

Unexpected movement of the components


During the maintenance procedure, due to the no self-locking effect of the ball screw drive (MGBS) and toothed belt drive (MGTB) the possible unexpected movement of the carriage must be taken into consideration.

Risk of coming into contact with power conducting parts!

During the maintenance procedure, the power supply should be disconnected and secured against reconnection!

LUBRICATION

The product is life-time pre-lubricated and does not require any maintenance.

 Each MGBS and MGTB is optimally pre-lubricated in the factory before shipment and ready for a maintenance-free operating process.

CLEANING

The product can be cleaned only with a clean, soft and dry (or slightly damp) cloth.

Risk of coming into contact with power conducting parts!

During the cleaning procedure, the power supply should be disconnected and secured against reconnection!

Do not use aggressive cleaning agents

Aggressive cleaning agents can lead to the product being damaged.

PROTECTION STRIP

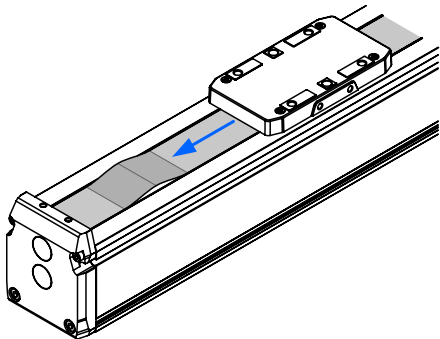


Figure 20: Wave formation.

- i** In the case of wave formation (during the operating process of the linear unit), the re-tensioning of the protection strip must be done.
- i** In the case of visible wear on the protection strip, the protection strip must be replaced, please refer to the section "Replacement".
- i** Recommended checking interval: every 2500 km.

Re-tensioning procedure

STEP 1: Move the carriage of the product to the middle position (to the half of the absolute stroke).

STEP 2: Untighten the screws of the carriage cover **1**, where the number of the untightening turns (of these screws **1**) must be taken into consideration, see table 6.

i Do not untighten the screws **1** entirely!

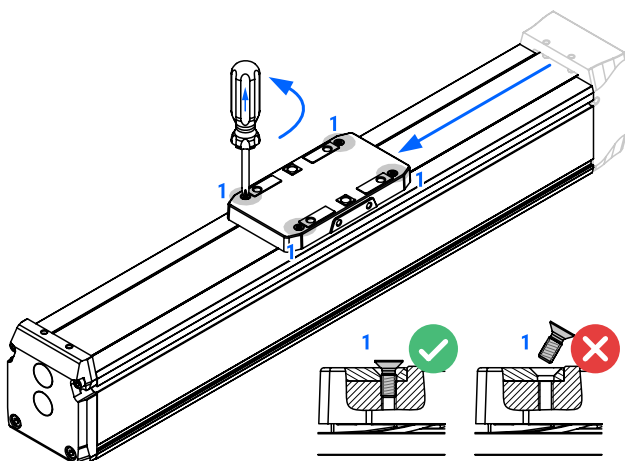


Figure 21: Protection strip re-tensioning process: step 1 and 2.

MGBS/MGTB	Number of the untightening turns
32	2,5 x
45	2,5 x
60	2,0 x

Table 6: Number of the untightening turns.

STEP 3: Lift the carriage cover 2 as far as the screws of the carriage cover 1 allow.

STEP 4: Untighten the set screws of the protection strip 3 placed in the end block 4.

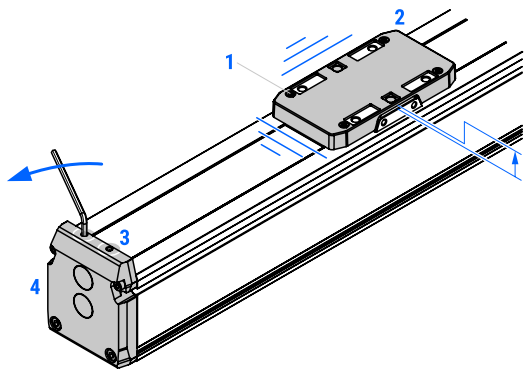


Figure 22: Protection strip re-tensioning process: step 3 and 4.

STEP 5: Move the carriage of the product 5 over the entire stroke two times.

STEP 6: Move the carriage of the product 5 to the end block 4.

STEP 7: Tighten the set screws of the protection strip 3 placed in the end block 4.

i Tighten the set screw of the protection strip 3 first as it is marked in the Figure 23, then tighten the other one.

MA Tighten the set screws of the of the protection strip 3 with a tightening torque of 0,5 Nm.

STEP 8: Untighten the set screws of the protection strip 6 placed in the drive block 7.

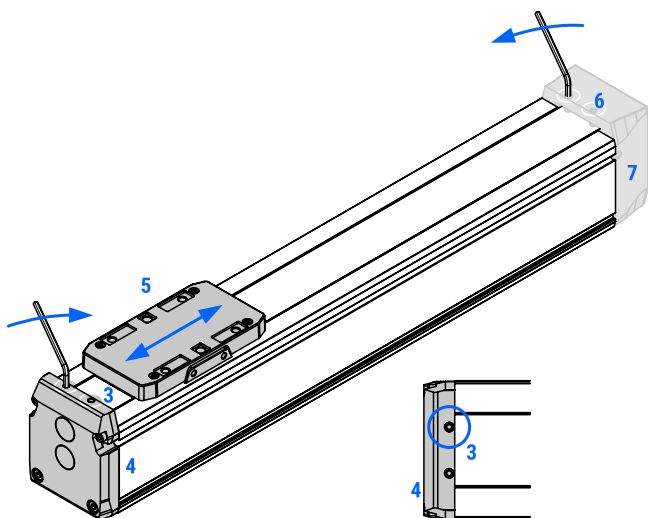


Figure 23: Protection strip re-tensioning process: step 5, 6, 7 and 8.

STEP 9: Move the carriage of the product 5 over the entire stroke two times.

STEP 10: Move the carriage of the product 5 to the drive block 7.

STEP 11: Tighten the set screws of the protection strip 6 placed in the drive block 7.

i Tighten the set screw of the protection strip 6 first as it is marked in the Figure 24, then tighten the other one.

MA Tighten the set screws of the of the protection strip 6 with a tightening torque of 0,5 Nm.

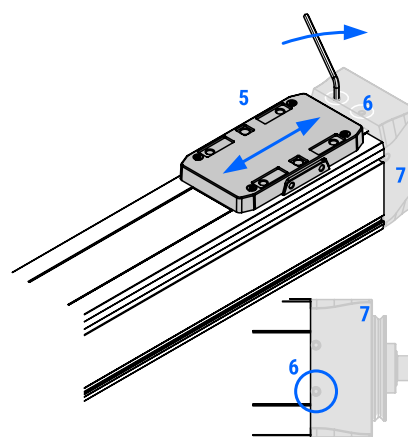


Figure 24: Protection strip re-tensioning process: step 9, 10 and 11.

STEP 12: Move the carriage of the product to the middle position (to the half of the absolute stroke).

STEP 13: Tighten the screws of the carriage cover 1 evenly.

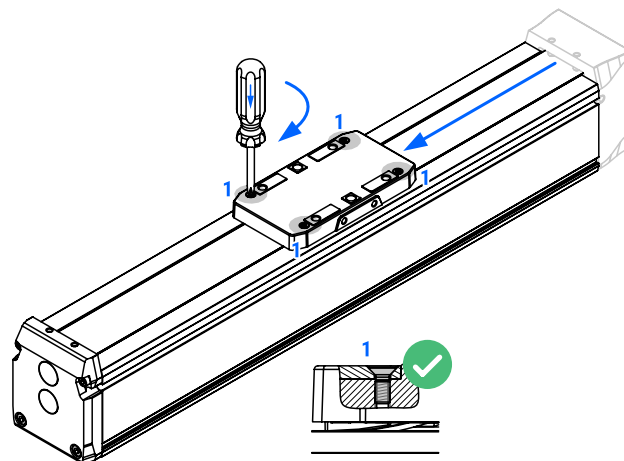


Figure 25: Protection strip re-tensioning process: step 12 and 13.

i If the wave formation still occurs, the re-tensioning procedure of the protection strip should be repeated again or the protection strip (together with the protection strip sliders) should be replaced, please refer to the replacement procedure of the protection strip.

TOOTHED BELT

- i** Valid for the MGTB linear units.
- i** Toothed belt of each MGTB linear unit is optimally pretensioned in the factory before shipment and ready for a maintenance-free operating process.
- ⚠** **Do not pretension the toothed belt additionally**
Unproper pretensioning of the toothed belt can lead to the product being damaged.
- i** In the case of visible wear on the toothed belt, the toothed belt must be replaced, please refer to the section "Replacement".
- i** Recommended checking interval: initially after 5000 km (then every 1500 km).

REPAIR

MGBS / MGTB

Mini linear unit can be repaired, please refer to the section "Replacement".

It can also be replaced with an identical MGBS or MGTB.

 For more information, please contact us.

MOTOR AND DRIVE

If the motor or drive require the repair, please contact us.

DISASSEMBLY AND REPLACEMENT

Risk of coming into contact with power conducting parts!

During the disassembly or replacing procedure, the power supply should be disconnected and secured against reconnection!

Unexpected movement of the components

Risk of serious injury or even death.

During the disassembly or replacing procedure, prevent the carriage of the product from dropping due to the no self-locking effect of the ball screw drive (MGBS) and toothed belt drive (MGTB).


Risk of burns from hot surfaces of the product


It should be noted, that during the operating process hot surfaces of the product may occur. Before the disassembly procedure, allow the product to cool down to the appropriate temperature.

DISASSEMBLY


Dismounting procedure:

- disconnect the drive from the power supply,
- disconnect all the electrical installation,
- dismount the attachments,
- dismount the mounting accessories,
- dismount the accessories (motor adapter, motor side drive, magnetic field sensors).

 For dismounting the product properly, please refer to the mounting procedure.

 For dismounting the motor adapter or motor side drive, please refer to the assembly instructions for VK MG (motor adapter with a coupling) or MSD MG (motor side drive with a timing belt), respectively.

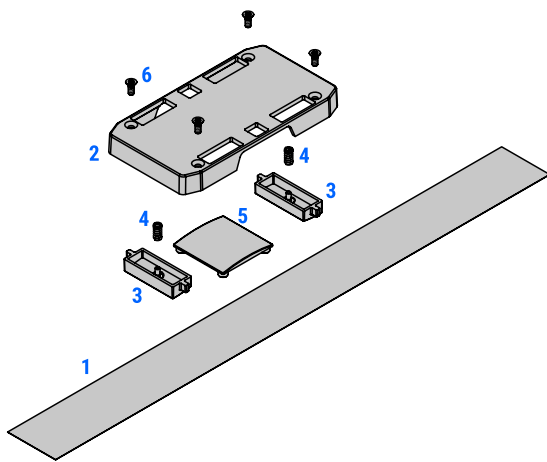
REPLACEMENT

 For replacement procedure, please refer to the dismounting and mounting procedure of the product first.

In the following spare parts of the product, which can be replaced, are presented. For more information, please contact us.

Protection strip

- Replacement of the protection strip includes replacement of the protection strip together with the protection strip sliders and carriage cover, see the following Figure.



- 1 – Protection strip
- 2 – Carriage cover
- 3 – Protection strip outer slider
- 4 – Outer slider spring
- 5 – Protection strip inner slider
- 6 – Screws of the carriage cover

- For the MGBS/MGTB size of 60, there are two springs 4 per one outer slider 3.

Figure 26: Protection strip replacement parts.

- For the case that the protection strip is replaced by the customer himself, the product warranty is annulled.

STEP 1: Move the carriage of the product to the middle position (to the half of the absolute stroke).

STEP 2: Untighten the set screws of the protection strip 7 and 9 placed in the end block 8 and in the drive block 10, respectively.

- Do not untighten the set screws 7 and 9 entirely (only the contact between the protection strip and the set screw must be released).

STEP 3: Untighten and remove the screws of the carriage cover 6. Dispose them properly.

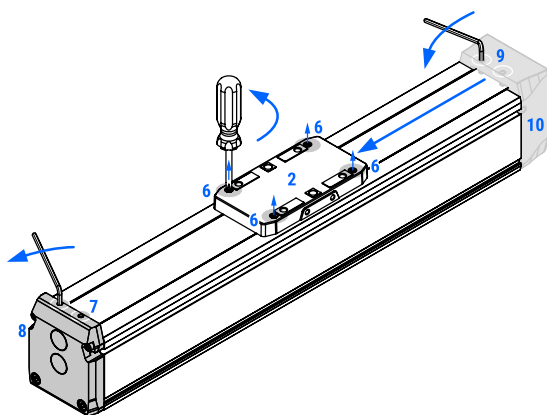


Figure 27: Protection strip replacement process: step 1, 2, 3.

STEP 4: Remove the carriage cover 2 and both outer sliders 5 together with the springs 4. Dispose them properly.

STEP 5: Remove the protection strip 1 out of the slots in the end and drive block (8 and 10). Then remove the inner slider 5 out of the carriage. Dispose them properly.

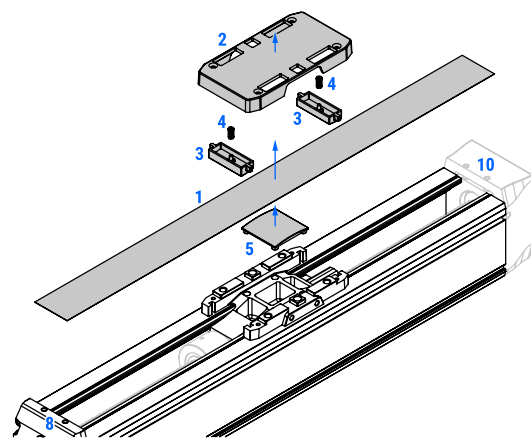


Figure 28: Protection strip replacement process: step 4 and 5.

STEP 6: Place the new protection strip inner slider **5** properly into the prepared mounting holes on the carriage, as it is presented in the Figure 29.

i Make sure that the inner slider **5** is oriented correctly.

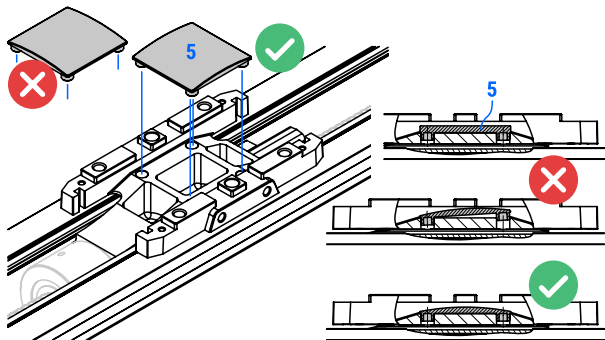


Figure 29: Protection strip replacement process: step 6.

STEP 7: Place both ends of the new protection strip **1** into the slots of the end and drive block (**8** and **10**).

i Leave the set screws of the end and drive block untightened.

STEP 8: Place new protection strip outer sliders **3** into the carriage slots and then press both of them (**3**) down at the same time as far as the protection strip **1** it allows (to ensure the optimal deformation of the protection strip **1** along the carriage).

i Make sure that both outer sliders **3** are oriented correctly, as it is presented in the Figure 30.

STEP 9: Put new outer slider springs **4** into both outer sliders **3**, see Figure 30.

i For the MGBS/MGTB size of 60, there are two springs **4** per one outer slider **3**.

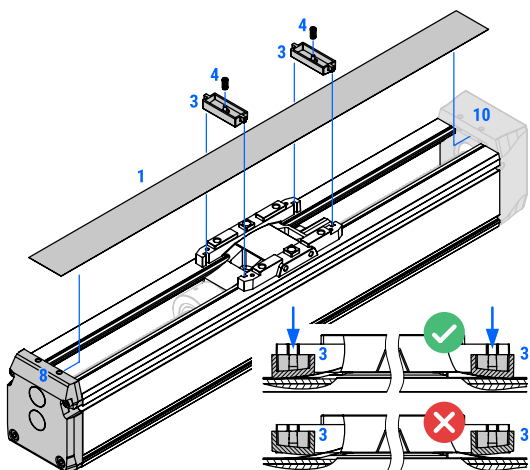


Figure 30: Protection strip replacement process: step 7, 8 and 9.

STEP 10: Mount new carriage cover **2** on the carriage. While pressing the carriage cover **2** down to the carriage, tighten new screws of the carriage cover **6** evenly.

i A thread-locking adhesive must be used to secure the screws of the carriage cover **6** to prevent loosening of them due to the shocks and vibrations.

i During the mounting procedure of the carriage cover **2**, make sure that the outer slider springs **4** are fitted into the prepared holes in the carriage cover **2**.

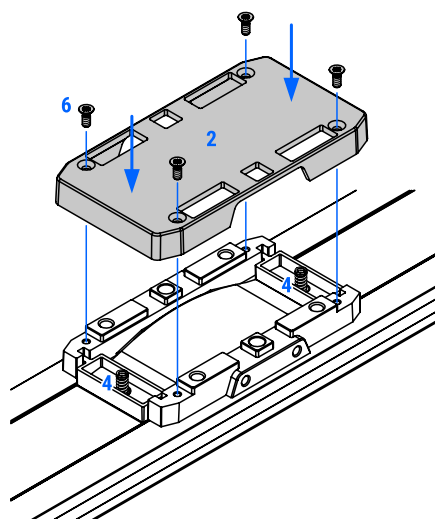


Figure 31: Protection strip replacement process: step 10.

STEP 11: Untighten the screws of the carriage cover **6**, where the number of the untightening turns (of these screws **6**) must be taken into consideration, see table 6 (section "Maintenance").

i Do not untighten the screws **6** entirely, see Figure 32!

STEP 12: Lift the carriage cover **2** as far as the screws of the carriage cover **6** allow.

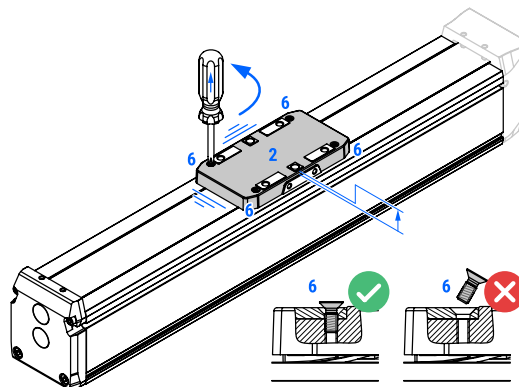


Figure 32: Protection strip replacement process: step 11 and 12.

STEP 13: Move the carriage of the product **2** to the end block **8**. Then tighten the set screws of the protection strip **7** placed in the end block **8**.

i Tighten the set screw of the protection strip **7** first as it is marked in the Figure 33, then tighten the other one.

⚠ Tighten the set screws of the of the protection strip **7** with a tightening torque of 0,5 Nm.

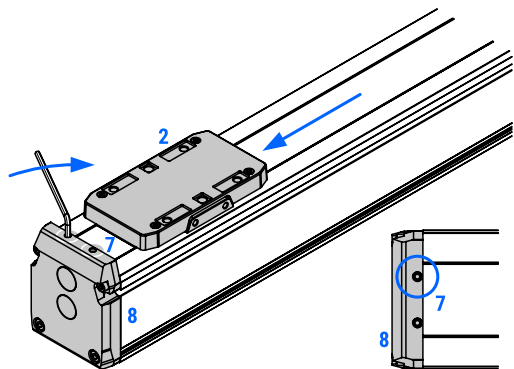


Figure 33: Protection strip replacement process: step 13.

STEP 14: Move the carriage of the product **2** over the entire stroke two times.

STEP 15: Move the carriage of the product **2** to the drive block **10**. Then tighten the set screws of the protection strip **9** placed in the drive block **10**.

i Tighten the set screw of the protection strip **9** first as it is marked in the Figure 34, then tighten the other one.

⚠ Tighten the set screws of the of the protection strip **9** with a tightening torque of 0,5 Nm.

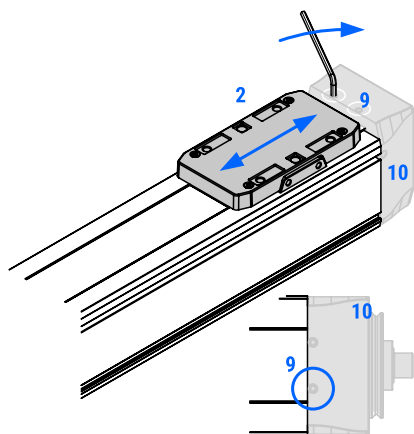


Figure 34: Protection strip replacement process: step 14 and 15.

STEP 16: Move the carriage of the product to the middle position (to the half of the absolute stroke). Then tighten the screws of the carriage cover **6** evenly.

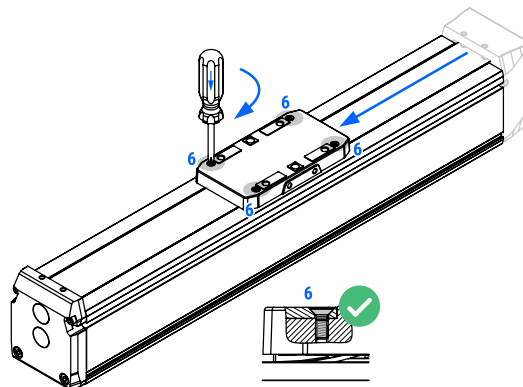


Figure 35: Protection strip replacement process: step 16.

STEP 17: Move the carriage of the product **2** over the entire stroke several times. If the wave formation of the protection strip **1** occurs (see the following Figure), the re-tensioning procedure of the protection strip **1** must be carried out.

i For the re-tensioning procedure of the protection strip, please refer to the section "Maintenance".

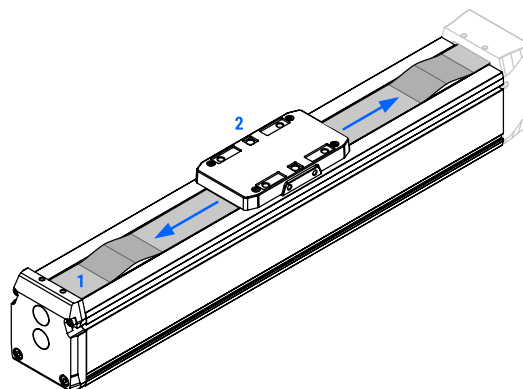


Figure 36: Protection strip replacement process: step 17.

Toothed belt

- i** Valid for the MGTB linear units.
- i** For the case that the toothed belt is replaced by the customer himself, the product warranty is annulled.
- i** For replacement procedure of the toothed belt of the MGTB linear unit, please contact us.

DISPOSAL

At the end of the product service life the product and its components must be disposed in accordance with the applicable national and international directives.

The product is in general assembled from different materials such as aluminium, steel, plastic, grease and optionally also from electronic components.

- i** For more information about the materials, please contact us.

TECHNICAL DATA

Technical data together with the characteristic curves can be found in the product catalogue.

- i** For information about the technical data, please refer to the product catalogue MGBS and MGTB (mini linear units) and catalogue Stepper systems.

UNIMOTION



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