

# UNIMOTION

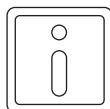
MAINTENANCE AND ASSEMBLY  
INSTRUCTIONS

**MTJ - MRJ SERIES**



NOTES

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GENERAL INFORMATION

USED SYMBOLS



Remark, note



For more information see the catalogue



Warning!



Do not use glue in current step



Danger!

Risk of coming into contact with power conducting parts! Cut off power supply!



Use dedicated tools for the current step



Caution!

Keep Linear Unit clean!  
Cover it, if necessary!



Use different tightening torque than in the table on page 1.005.0

TIGHTENING TORQUES

The following tightening torques are recommended for screws of strength class 8.8

8.8	M2	M2,5	M3	M4	M5	M6	M8	M10	M12
M <sub>max</sub> [Nm]	0.4	0.7	1.3	2.8	5.6	9.6	23	45	74



Screw



Tightening torque

GENERAL SAFETY INSTRUCTIONS

To ensure the right functionality of the MTJ Linear Unit, it must be handled with care. It is not allowed to put any tools or any other items which can cause damage to the linear unit on the linear unit.

The linear Unit must be protected against any liquid that can cause damage to it.

The MTJ Linear unit must be placed in a dry, clean environment. For information on conditions in which the linear module can operate please contact us.

If the Linear Unit isn't in use, place it in a dry, clean environment and cover it to prevent any damage.

SAFE OPERATION

The linear unit 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 Directive, where appropriate.

Each operation of the Linear Unit that is not in compliance with its intended use can lead to the product being damaged, 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 Linear Unit is to be incorporated.

Linear unit satisfies the requirements of EC Machinery Directive 2006/42/EC according to European or national standards of Safety of machinery:

- EN ISO12100-1
- EN ISO 12100-2



Checking the linear unit

In accordance with the EU Health and Safety Directive 89/655/EEC article 4a, the operating company must subject the unit to thorough checking prior to putting it into operation, after carrying out repairs, and after malfunctions have occurred.



Requirements for personnel

The linear units may only be installed, operated, maintained, repaired or dismantled by appropriately qualified personnel in accordance with the specification used in this manual use. All qualified personnel must have read and understood this Instruction manual.

## MODIFICATION OF THE LINEAR UNIT

The linear unit must not be modified without our written consent. Any such unauthorised modification will void our liability in respect of the unit. 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 on the linear unit must be fully visible and are not allowed to be removed. They must ensure compliance with all instructions contained on them. Damaged or illegible notices and labels must be replaced.

## WARRANTY

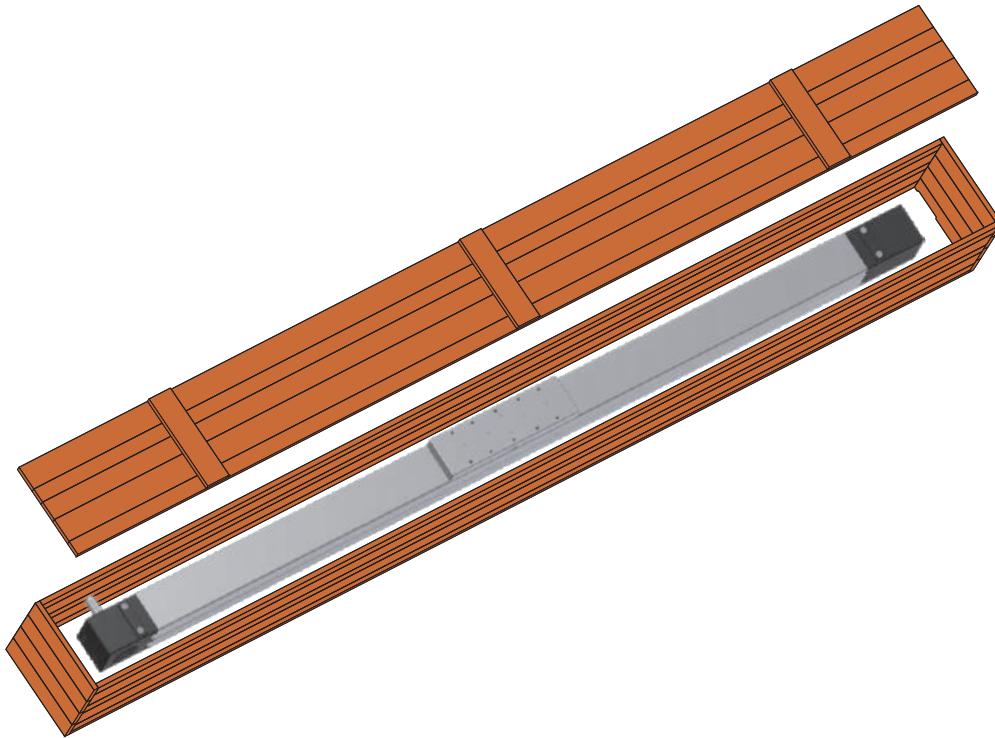
The warranty conditions are laid down in the terms and conditions of delivery and payment issued at the time of the order. Warranty cover will be voided if:

- the unit is not operated in accordance with the stipulated regulation use;
- the instructions set out in this operating manual are not followed;
- the unit 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.

## HANDLING THE LINEAR UNIT

The Linear units are carefully packed in a HARD WOODEN BOX for a safe transportation.



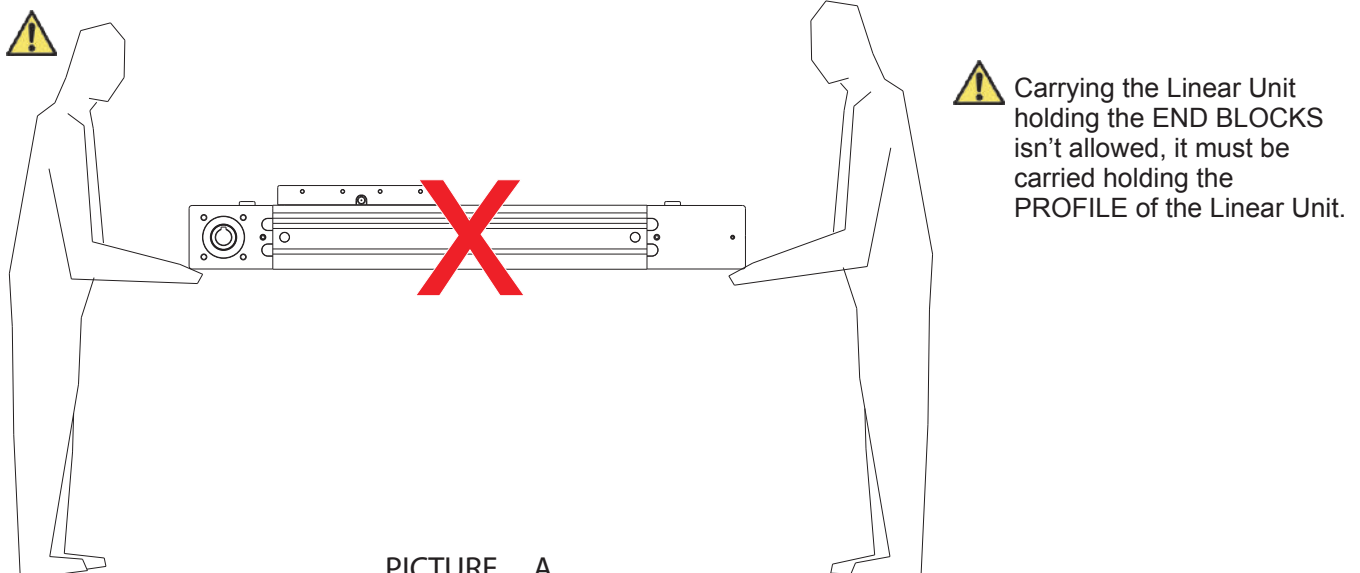
To take the Linear Unit out of the box, please consider the following handling instructions:

- Never lift the Linear Unit by the END BLOCKS - see PICTURE A
- Never grab by the TIMING BELT of the Linear Unit
- Never grab by the CARRIAGE
- Never grab by the PROTECTION STRIP

To take the Linear Unit out of the box, a suitable lifting tool is needed. Always lift and carry the Linear Unit by the main profile.

The Linear Unit must be supported all the time during the handling until it is fixed - mounted on the place, where it is meant to be. For correct handling please refer to page number 1.020.0

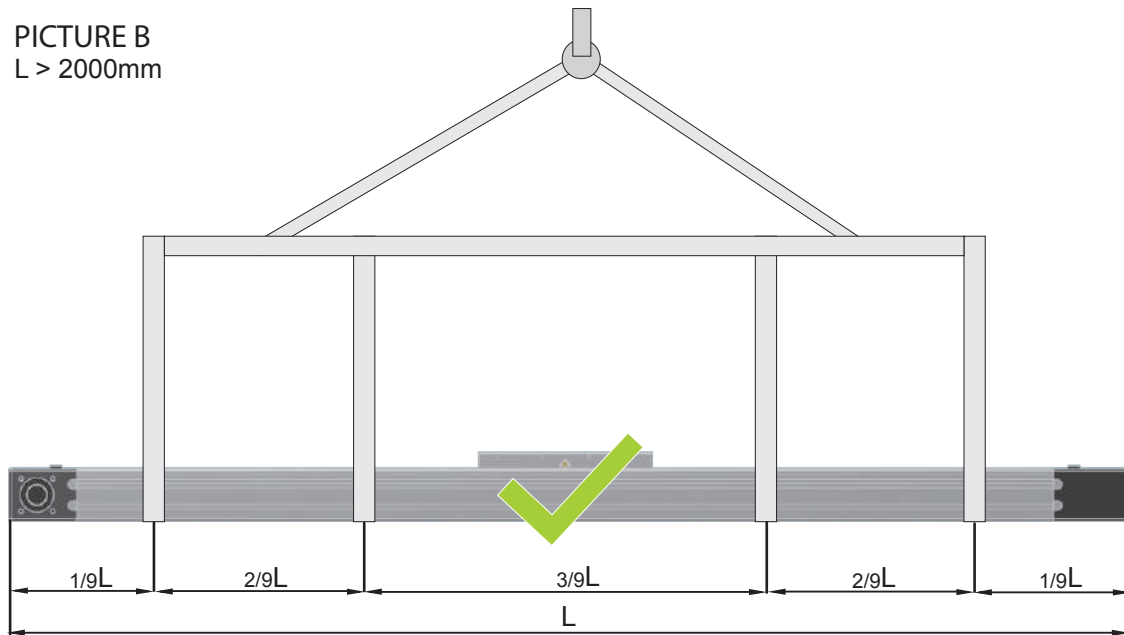
PICTURE A is showing, that handling with the Linear Unit in this position is wrong, because the profile, guides and other components might get deflected or damaged.



PICTURE A

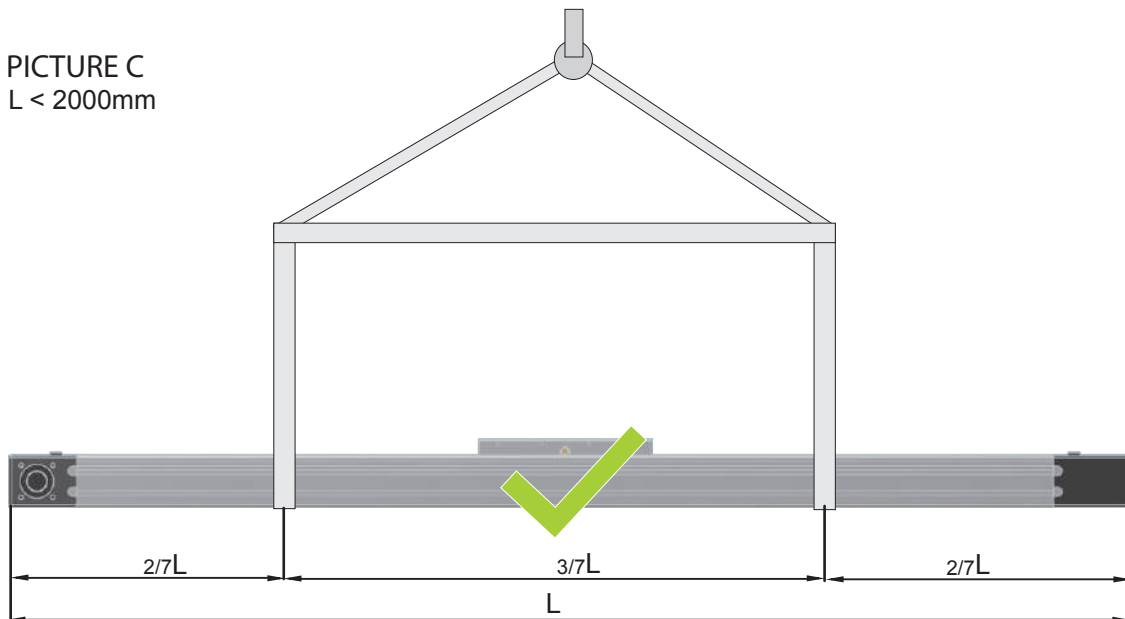
PICTURE B is showing correct handling of the Linear Unit.

PICTURE B  
 $L > 2000\text{mm}$



PICTURE C is showing correct handling of the Linear Unit.

PICTURE C  
 $L < 2000\text{mm}$



**WARNING**

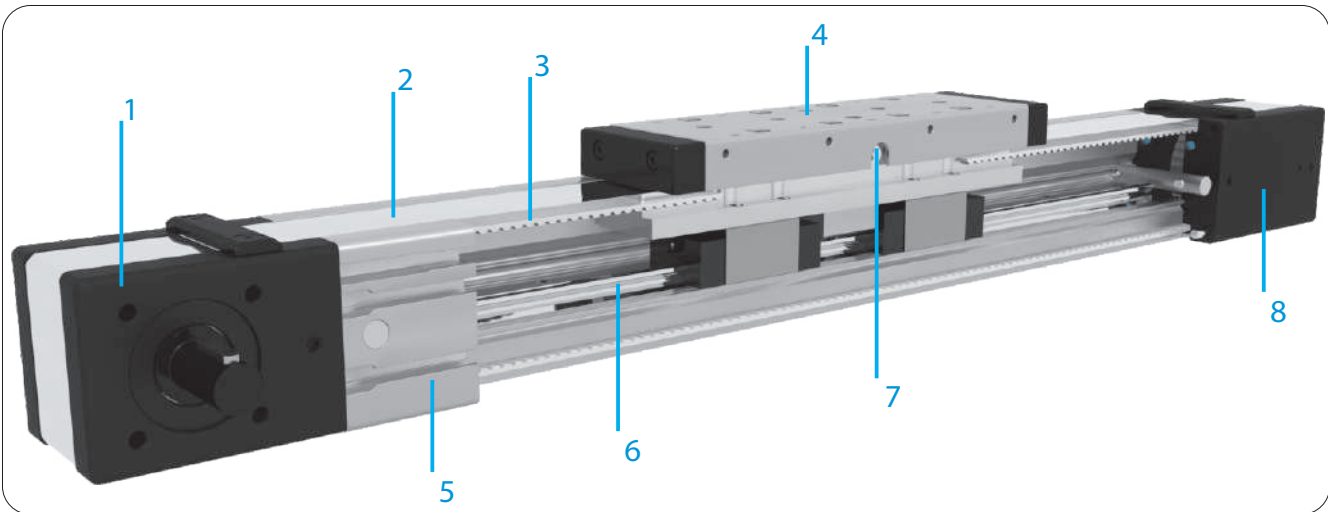
Calculate the weight of the linear unit in order to choose the suitable lifting tool for the transportation of the Linear Unit.

Please refer to the catalogue UNIMOTION - LINEAR UNITS for weight calculations.

Linear Unit needs to be stored in dry place and protected against corrosion. Make sure that there is no danger for the Linear Unit to get damaged.

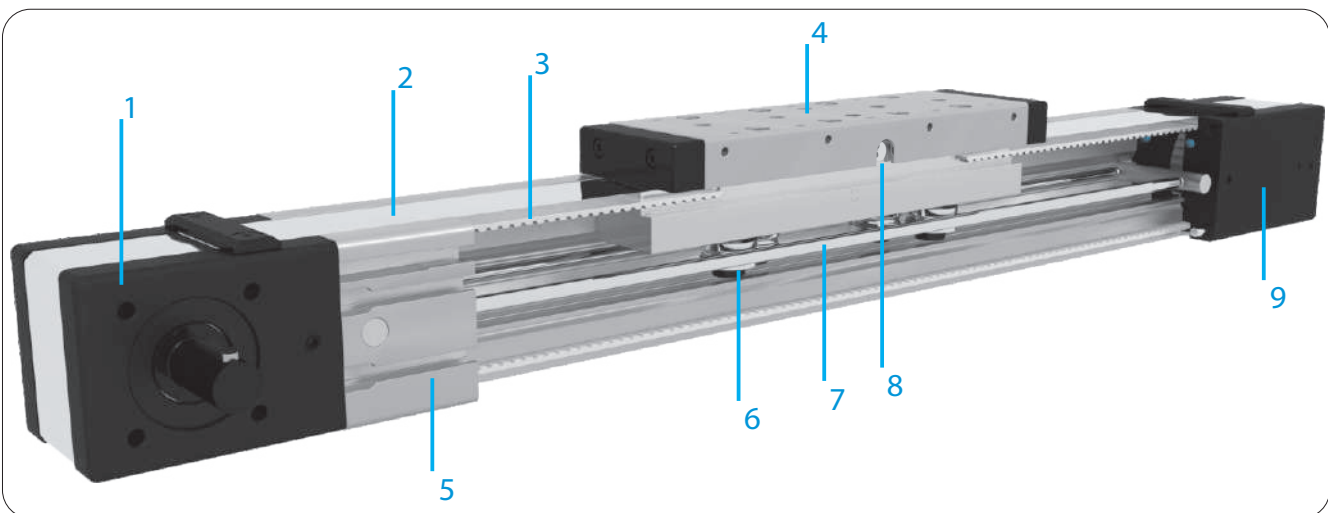
## PRODUCT DESCRIPTION

## 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

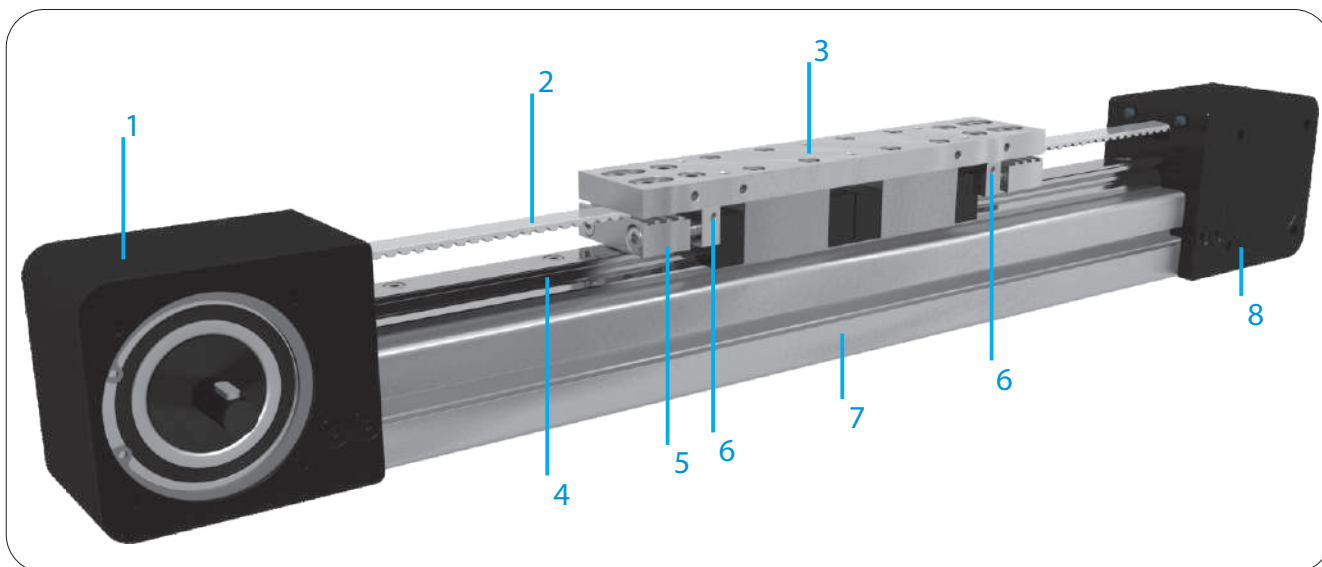
## MRJ Series



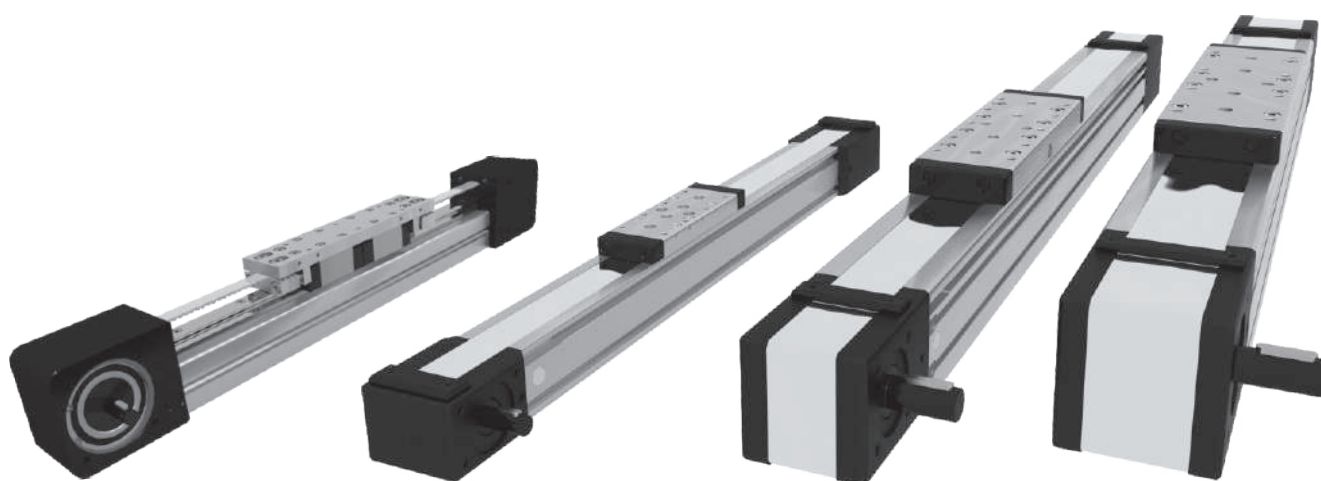
- 1 - Drive block with pulley
- 2 - Corrosion-resistant protection strip (available also without protection strip)
- 3 - AT polyurethane toothed belt with steel tension cords.
- 4 - Carriage; with built in Magnets
- 5 - Aluminium profile-Hard anodized
- 6 - Track Roller (journal Bearing)
- 7 - Two hardened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



MTJ ECO series



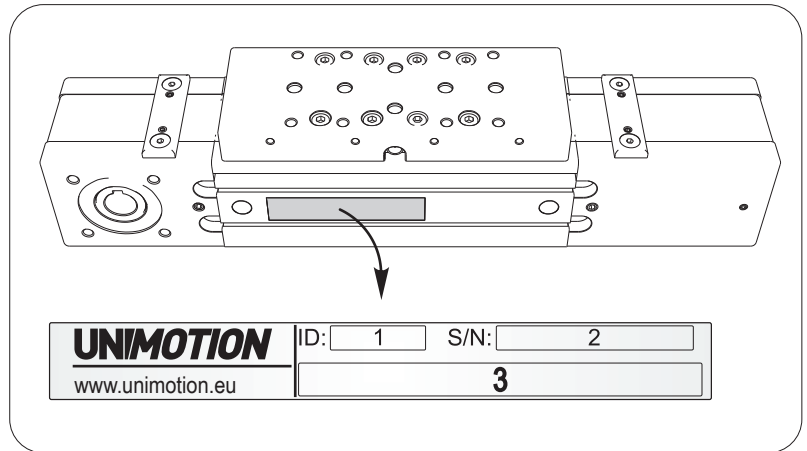
- 1 - Drive block with pulley
- 2 - AT polyurethane toothed belt with steel tension cords
- 3 - Carriage
- 4 - Linear Ball Guideway
- 5 - Belt Tensioning system
- 6 - Lubrication port
- 7 - Aluminium profile-Hard anodized
- 8 - End block





OVERVIEW

Identification label and additional or replacement parts of the Linear Unit

- 1 - ID number
- 2 - Serial number
- 3 - Type of Linear Unit (ordering code)




 In the case of ordering additional or replacement parts for the Linear Unit all data from the identification label must be given.

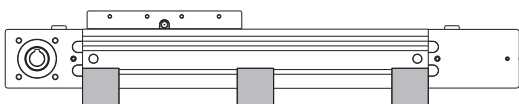
 The label must be fully visible (in particular details of the serial number) and must ensure compliance with all the instructions contained on it. Damaged or illegible label must be replaced.


MOUNTING

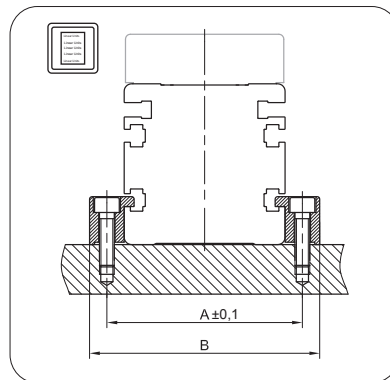
Fixing system



 The linear Unit must be mounted by the aluminium profile with evenly distributed clamping fixtures along the entire length!



 Number of clamping fixtures:  
Please refer to our catalogue UNIMOTION Linear Units on page 7.000.0

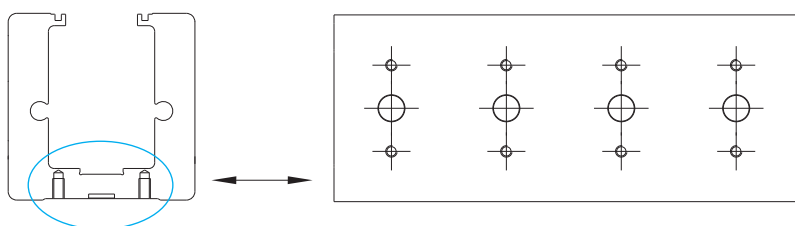



The modules are mounted by using fixtures which are placed in the slot on the side of the profile.

MTJ MRJ	A [mm]	B [mm]
40	50	64,4
65	78	93
80	93	108
110	130	150
ECO		
40	52	66

Fixing system - T AP/PIN Holes

Fixing the Linear Unit can also be done by the bottom of profile using TAP / PIN holes, which can be made on request.

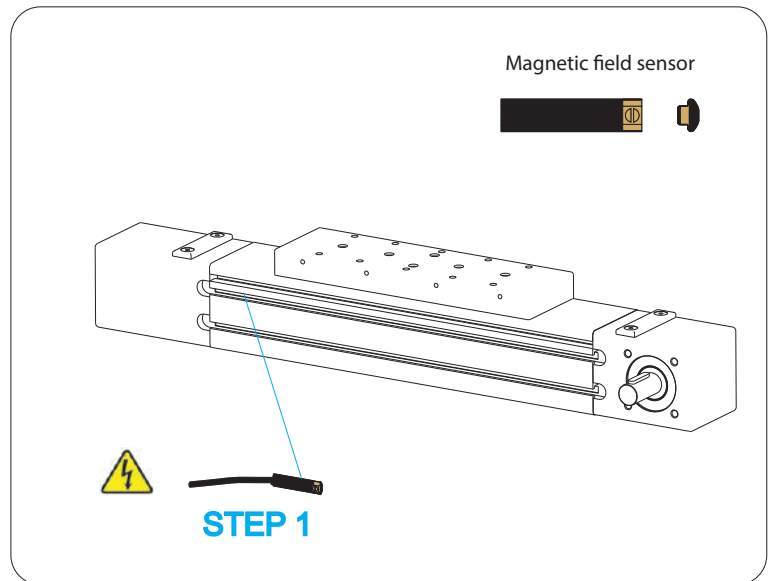


 TAP / PIN holes can only be made based on the manufacturer's drawing of the position and depth of the TAP / PIN holes. For the drawings showing position and depth of TAP/PIN holes, please contact us.

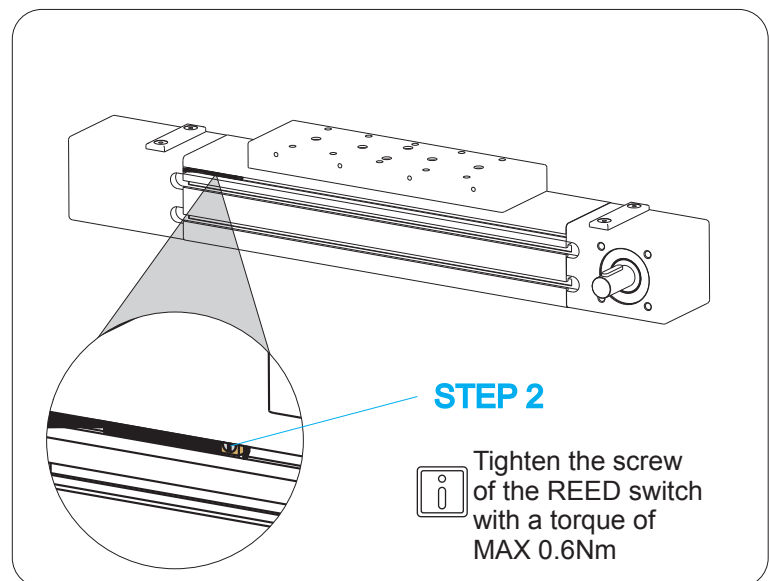
## MOUNTING

## Magnetic field sensor - REED SWITCH

STEP 1: Placing of the switch can be done on the left or right side of the profile of the Linear Unit.



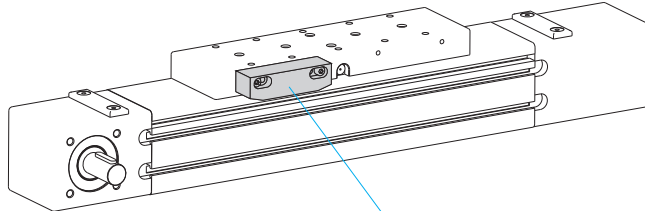
STEP 2: After the switch is placed into the groove, tighten the screw.



**MOUNTING**

Mechanical and Inductive switch with the mounting bracket

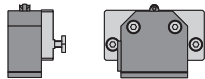
Activation block



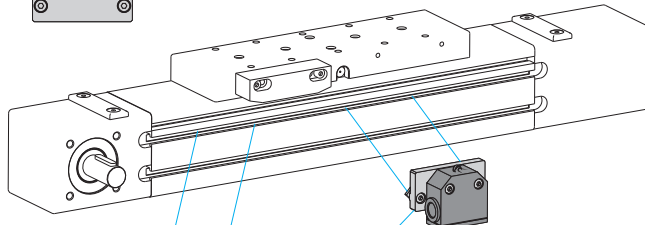
**STEP 1**

STEP 1: Mount the activation block on the connection plate in the desired location. The activation block can be mounted on the left or right side. After the activation block is placed in the desired location, tighten the screws.

Mechanical switch with the bracket

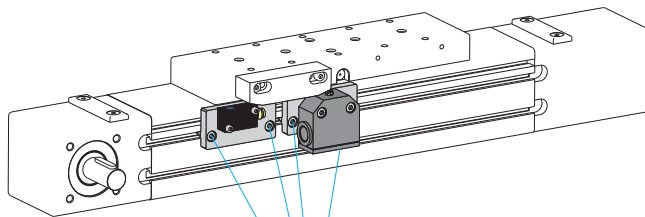


Inductive switch with the bracket



**STEP 2**

STEP 2: Place either the mechanical switch or inductive switch with brackets in the slots and position them on the desired location. The mechanical or inductive switch with brackets can be placed in the slots either on the left or right side of the profile of Linear Unit.



**STEP 3**

STEP 3: After the mechanical or inductive switch with the bracket is placed in the desired place in the slots, tighten the screws of the bracket.



For tightening torques for the screws please refer to page number 1.005.0

MOUNTING

Motor with coupling

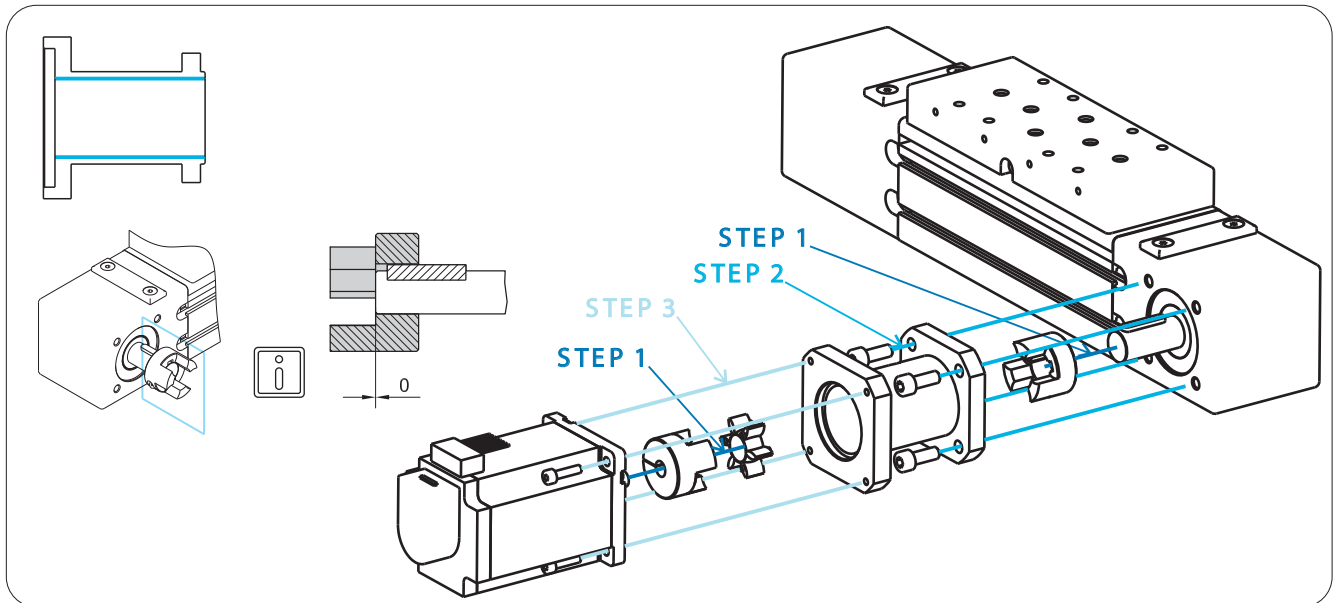
If motor adapter has inner through hole of the same size its entire length.

**STEP 1:** Attach one half of the coupling to the shaft of the linear unit and other to the shaft of the motor.

Insert coupling spider into one half of the coupling.

**STEP 2:** Attach motor adapter to the linear unit.

**STEP 3:** Attach motor to the motor adapter.

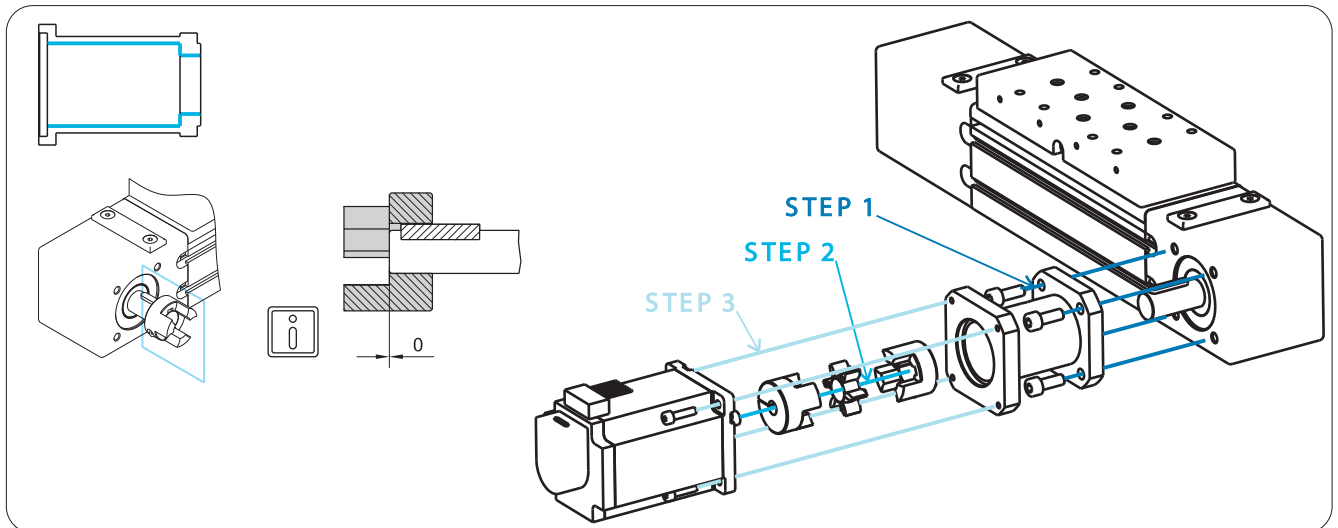



If motor adapter has inner through hole with the narrowing at one end.



**STEP 1:** Attach motor adapter to the side on which the through hole is narrower.

**STEP 2:** Attach complete coupling to the axle on the wider side of the hole.

**STEP 3:** Assemble two parts together and tighten the remaining screw on the coupling through appropriate hole in motor adapter.



Tighten the screws on the coupling halves with coupling tightening torque. 

 The maximum torque and maximum speed of the motor must never exceed the limits of the Linear Unit! 

 For tightening torques for the screws please refer to page number 1.005.0

**MAINTENANCE**



For each Linear Unit the basic lubrication is done in the factory before shipment. All bearings have been lubricated for life and do not require any additional lubrication under normal operating conditions.

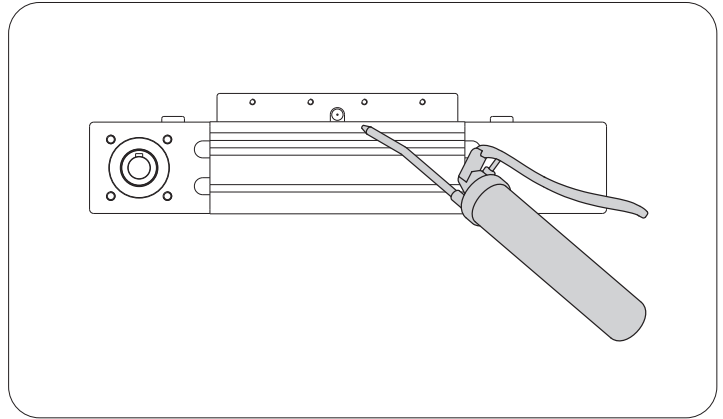
**Lubrication of the carriage**

Carriage lubrication is done via lubricating nipple DIN 3405 D at the center of the carriage.

**Lubrication of the cover strip**

Only applies for linear units with the steel cover strip!

Apply a thin oil film to the cover strip. Once the oil is applied equally on the cover strip move the carriage over the entire length. Please note that, if the linear unit is working in an area with many dust particles, the lubrication must be reapplied every once in a while.



**Lubricant**

Recommended grease for MTJ

Lubcon TURMOGREASE LC 802 EP

Recommended oil for MRJ

Lubcon TURMOFLUID 4800

Recommended oil for the steel cover strip

Lubcon TURMOFLUID ED 13



For lubrication and re-lubrication of the linear units grease lubricant must only be used! Do not use the grease which contains any solid parts!

**Lubricant quantities and intervals**

MTJ	Travel path [ km ]	Grease - relubricating quantity [ cm <sup>3</sup> ]	
		Carriage	2nd Carriage
65	5000	0.4	0.4
80	5000	0.7	0.7
110	10000	1.4	1.4
ECO			
40	5000	0.7	0.7

MRJ	Travel path [ km ]	Oil - relubricating quantity [ cm <sup>3</sup> ]
65	5000	6
80	5000	8
110	5000	12.5



The stated lubrication intervals in the table above are sufficient for the normal operating conditions. If you have special operating conditions please contact us.

Lubrication intervals are every 500 operating hours or after the specified travel path stated in the table above. Depends which value is first reached.

## MAINTENANCE

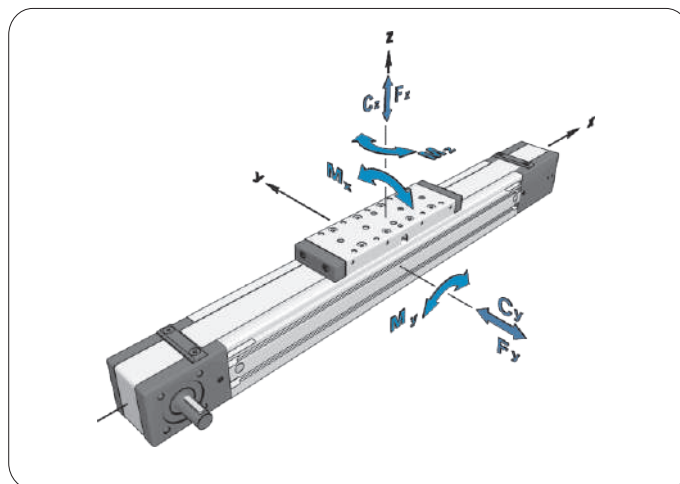
## Normal operating conditions

Temperature: 10 °C - 30 °C

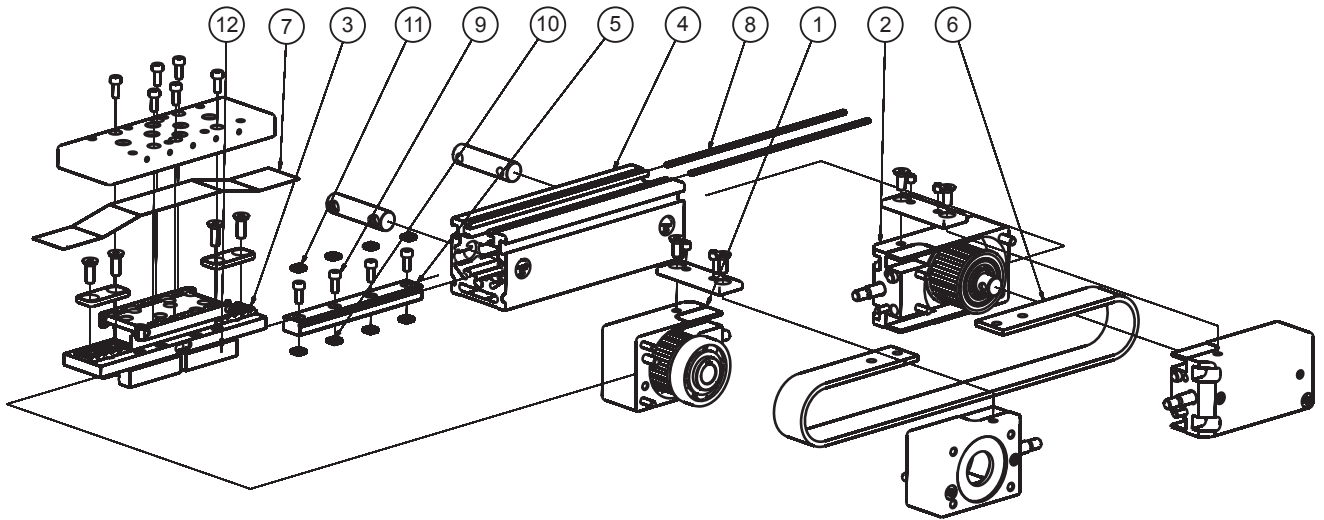
Travel speed: MRJ = 10 m/s  
MTJ ≤ 3 m/s

Stroke: MTJ MRJ 40 > 50 mm  
MTJ MRJ 65, 80, 110 > 60 mm

Load: = 0.2 C



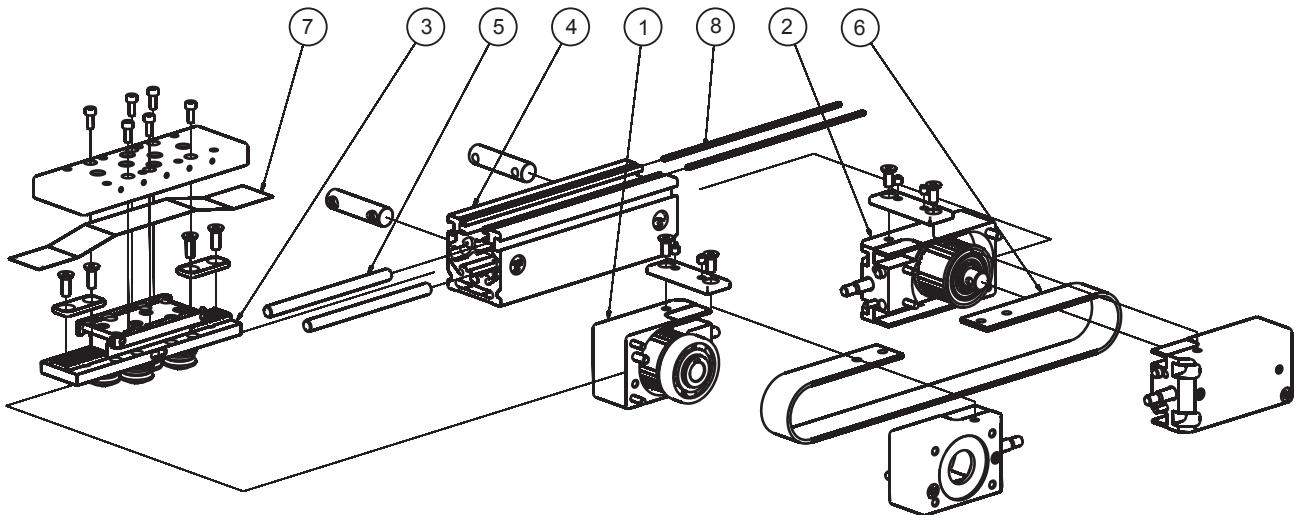
ASSEMBLY MTJ 40



ITEM	QTY	PART NAME	LENGTH / QTY	ID
1	1	DRIVE BLOCK MTJ / MRJ 40		
		TYPE 0		36543
		TYPE 1L		36644
		TYPE 1R		36772
		TYPE 2		36645
		TYPE 10L		53511
		TYPE 10R		53513
		TYPE 20		53512
2	1	TENSION BLOCK MTJ / MRJ 40		36541
3	1	CARRIAGE MTJ 40		36540
4	1	PROFILE MTJ / MRJ 40	STROKE + 124	36591
5	1	RAIL GUIDE MR 12 - M	STROKE + 85	8207
6	1	TOOTHED BELT AT3 X 20 FOR MTJ / MRJ 40	2 X STROKE + 425	43239
7	1	PROTECTION STRIP FOR MTJ / MRJ 40	STROKE + 165	41318
8	2	MAGNET FOR PROTECTION STRIP MTJ / MRJ 40	STROKE + 124	36932
9		ALLEN SCREW M3 x 8 DIN 912	$(\text{RAIL LENGTH}/25)+0,5$	52937
10		SQUARE NUT M3 DIN 562	$(\text{RAIL LENGTH}/25)+0,5$	37303
11		COVER FOR Mr12	$(\text{RAIL LENGTH}/25)+0,5$	-
12	2	CARRIAGE BLOCK MINI MR12 MNZZ VS-N		41478

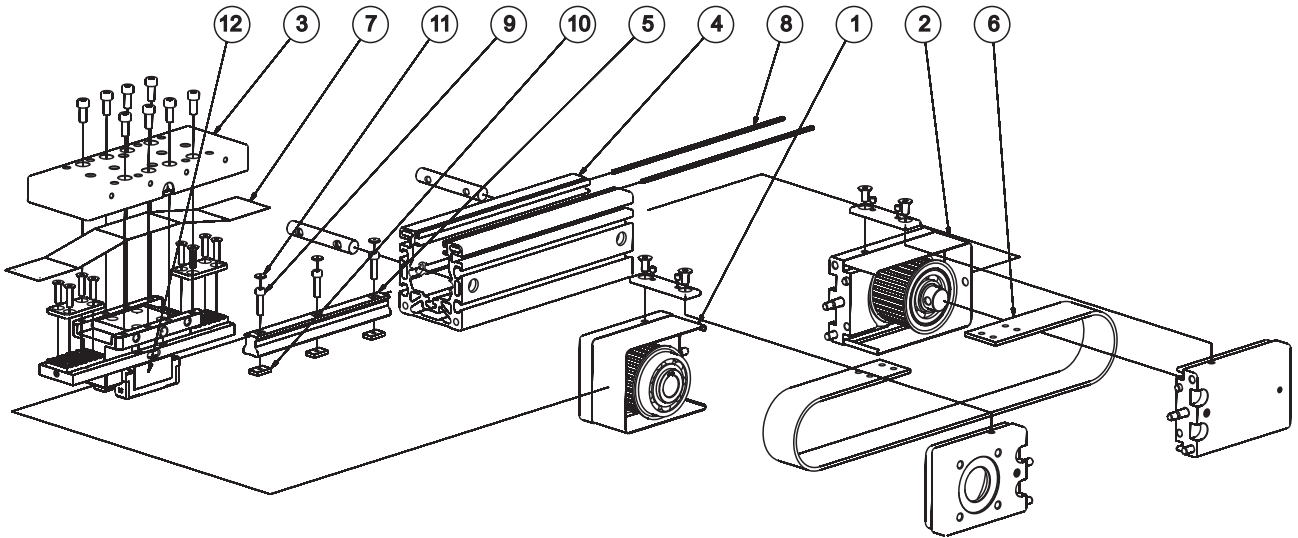


ASSEMBLY MRJ 40



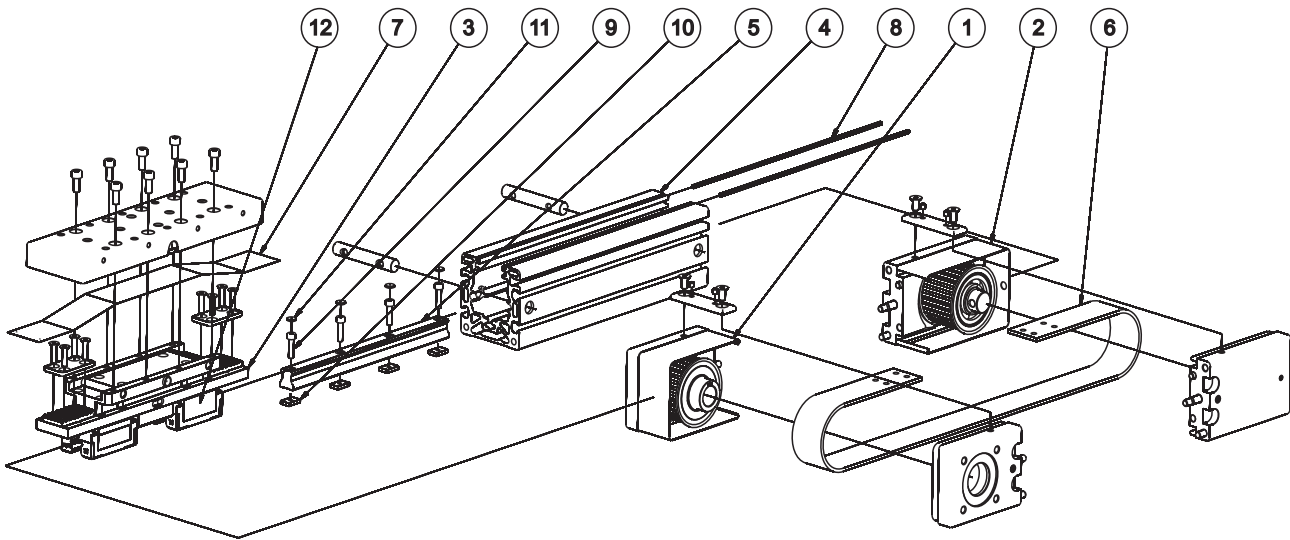
ITEM	QTY	PART NAME	LENGTH	ID
1	1	DRIVE BLOCK MTJ / MRJ 40		
		TYPE 0		36543
		TYPE 1L		36644
		TYPE 1R		36772
		TYPE 2		36645
		TYPE 10L		53511
		TYPE 10R		53513
		TYPE 20		53512
2	1	TENSION BLOCK MTJ / MRJ 40		36541
3	1	CARRIAGE MRJ 40		36555
4	1	PROFILE MTJ / MRJ 40	STROKE + 124	36591
5	2	ROUND GUIDE FI 6	STROKE + 85	13271
6	1	TOOTHED BELT AT3 X 20 FOR MTJ / MRJ 40	2 X STROKE + 425	43239
7	1	PROTECTION STRIP FOR MTJ / MRJ 40	STROKE + 165	41318
8	2	MAGNET FOR PROTECTION STRIP MTJ / MRJ 40	STROKE + 124	36932

ASSEMBLY MTJ 65 S



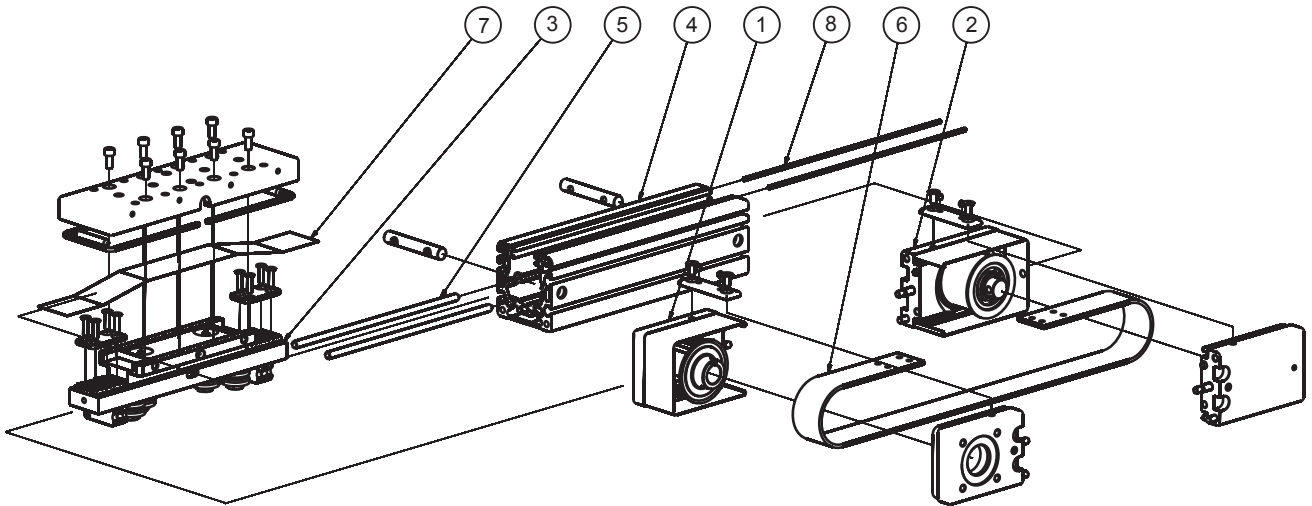
ITEM	QTY	PART NAME	LENGTH / QTY	ID
1	1	DRIVE BLOCK MTJ / MRJ 65		
		TYPE 0		36615
		TYPE 1L		37033
		TYPE 1R		37039
		TYPE 2		37040
		TYPE 10L		53568
		TYPE 10R		53569
		TYPE 20		53570
2	1	TENSION BLOCK MTJ / MRJ 65		36616
3	1	CARRIAGE MTJ 65 S		36617
4	1	PROFILE MTJ / MRJ 65	STROKE + 180	36620
5	1	RAIL GUIDE AR - HR 15	STROKE + 140	41518
6	1	TOOTHED BELT AT5 X 32 FOR MTJ / MRJ 65	2 X STROKE + 635	41388
7	1	PROTECTION STRIP FOR MTJ / MRJ 65	STROKE + 247	41317
8	2	MAGNET FOR PROTECTION STRIP MTJ / MRJ 65	STROKE + 180	36933
9		SCREW DIN 912 M4 X 16	(RAIL LENGTH/60)+0,5	47079
10		SLOT NUT 5 M4 FLAT	(RAIL LENGTH/60)+0,5	5779
11		COVER FOR AR - HR 15	(RAIL LENGTH/60)+0,5	-
12	1	CARRIAGE BLOCK HRC15MN S V1 N		41509

ASSEMBLY MTJ 65 L



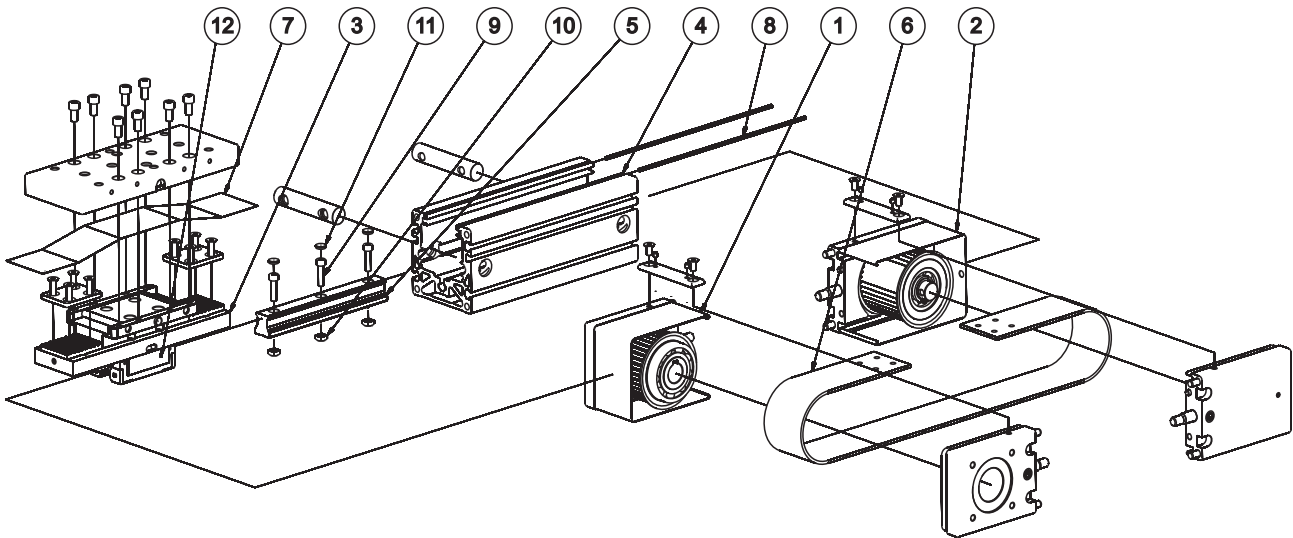
ITEM	QTY	PART NAME	LENGTH / QTY	ID
1	1	DRIVE BLOCK MTJ / MRJ 65		
		TYPE 0		36615
		TYPE 1L		37033
		TYPE 1R		37039
		TYPE 2		37040
		TYPE 10L		53568
		TYPE 10R		53569
		TYPE 20		53570
2	1	TENSION BLOCK MTJ / MRJ 65		36616
3	1	CARRIAGE MTJ 65 L		36618
4	1	PROFILE MTJ / MRJ 65	STROKE + 230	36620
5	1	RAIL GUIDE AR - HR 15	STROKE + 190	41518
6	1	TOOTHED BELT AT5 X 32 FOR MTJ / MRJ 65	2 X STROKE + 685	41388
7	1	PROTECTION STRIP FOR MTJ / MRJ 65	STROKE + 297	41317
8	2	MAGNET FOR PROTECTION STRIP MTJ / MRJ 65	STROKE + 230	36933
9		SCREW DIN 912 M4 X 16	(RAIL LENGTH/60)+0,5	47079
10		SLOT NUT 5 M4 FLAT	(RAIL LENGTH/60)+0,5	5779
11		COVER FOR AR - HR 15	(RAIL LENGTH/60)+0,5	-
12	2	CARRIAGE BLOCK HRC15MN S V1 N		41509

ASSEMBLY MRJ 65 L



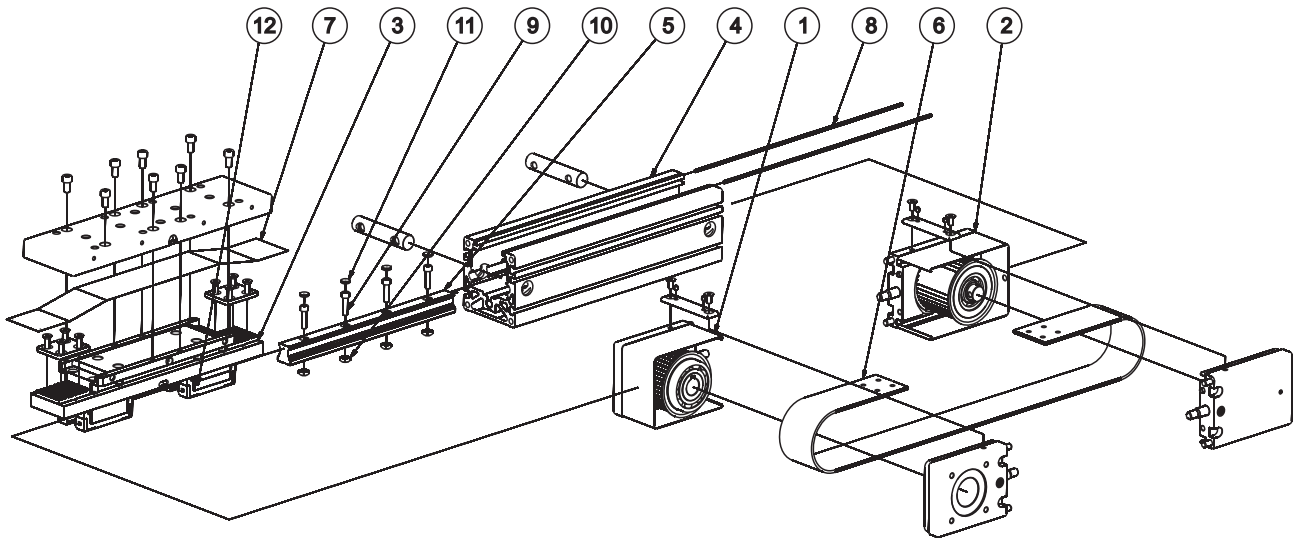
ITEM	QTY	PART NAME	LENGTH	ID
1	1	DRIVE BLOCK MTJ / MRJ 65		
		TYPE 0		36615
		TYPE 1 - L		37033
		TYPE 1 - R		37039
		TYPE 2		37040
		TYPE 10 - L		53568
		TYPE 10 - R		53569
		TYPE 20		53570
2	1	TENSION BLOCK MTJ / MRJ 65		36616
3	1	CARRIAGE MRJ 65		36619
4	1	PROFILE MTJ / MRJ 65	STROKE + 230	36620
5	2	ROUND GUIDE FI 6	STROKE + 190	13271
6	1	TOOTHED BELT AT5 X 32 FOR MTJ / MRJ 65	2 X STROKE + 685	41388
7	1	PROTECTION STRIP FOR MTJ / MRJ 65	STROKE + 297	36931
8	2	MAGNET FOR PROTECTION STRIP MTJ / MRJ 65	STROKE + 230	36933

ASSEMBLY MTJ 80 S



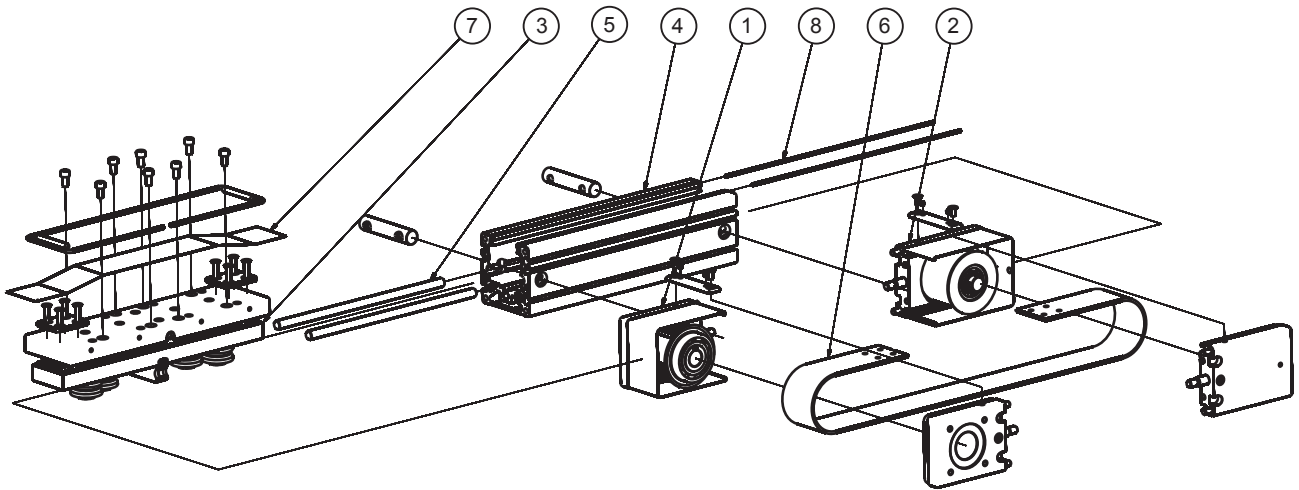
ITEM	QTY	PART NAME	LENGTH / QTY	ID
1	1	DRIVE BLOCK MTJ / MRJ 80		
		TYPE 0		36700
		TYPE 1L		36770
		TYPE 1R		36766
		TYPE 2		36767
		TYPE 10L		53679
		TYPE 10R		53114
		TYPE 20		53680
2	1	TENSION BLOCK MTJ / MRJ 80		36684
3	1	CARRIAGE MTJ 80 S		36722
4	1	PROFILE MTJ / MRJ 80	STROKE + 212	36889
5	1	RAIL GUIDE AR - HR 20	STROKE + 150	41515
6	1	TOOTHED BELT AT5 X 50 FOR MTJ / MRJ 80	2 X STROKE + 750	41389
7	1	PROTECTION STRIP FOR MTJ / MRJ 80	STROKE + 275	41319
8	2	MAGNET FOR PROTECTION STRIP MTJ / MRJ 80	STROKE + 212	36933
9		SCREW DIN 912 M5 X 22	(RAIL LENGTH/60)+0,5	47086
10		SQUARE NUT DIN 557 M5	(RAIL LENGTH/60)+0,5	40769
11		COVER FOR AR - HR 20	(RAIL LENGTH/60)+0,5	-
12	1	CARRIAGE BLOCK HRC20MN S V1 N		41512

ASSEMBLY MTJ 80 L



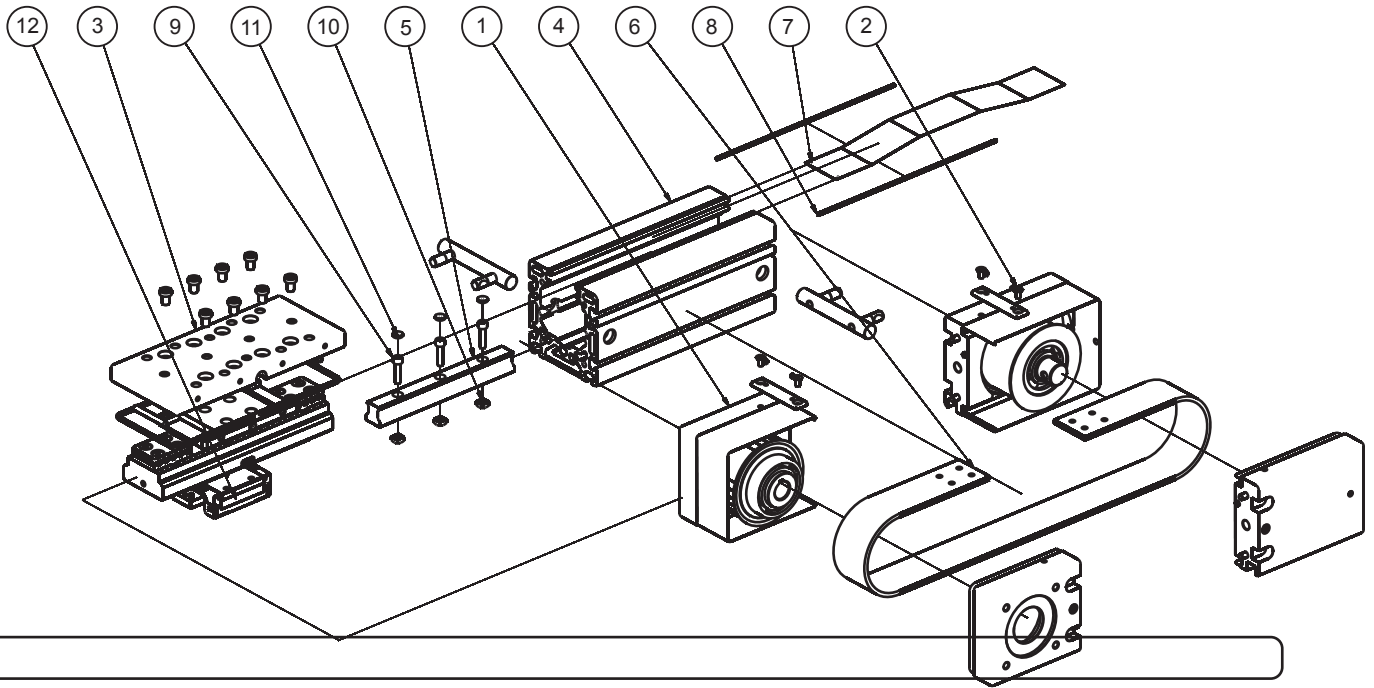
ITEM	QTY	PART NAME	LENGTH / QTY	ID
1	1	DRIVE BLOCK MTJ / MRJ 80		
		TYPE 0		36700
		TYPE 1L		36770
		TYPE 1R		36766
		TYPE 2		36767
		TYPE 10L		53679
		TYPE 10R		53114
		TYPE 20		53680
2	1	TENSION BLOCK MTJ / MRJ 80		36684
3	1	CARRIAGE MTJ 80 L		36743
4	1	PROFILE MTJ / MRJ 80	STROKE + 302	36889
5	1	RAIL GUIDE AR - HR 20	STROKE + 240	41515
6	1	TOOTHED BELT AT5 X 50 FOR MTJ / MRJ 80	2 X STROKE + 840	41389
7	1	PROTECTION STRIP FOR MTJ / MRJ 80	STROKE + 365	41319
8	2	MAGNET FOR PROTECTION STRIP MTJ / MRJ 80	STROKE + 302	36933
9		SCREW DIN 912 M5 X 22	(RAIL LENGTH/60)+0,5	47086
10		SQUARE NUT DIN 557 M5	(RAIL LENGTH/60)+0,5	40769
11		COVER FOR AR - HR 20	(RAIL LENGTH/60)+0,5	-
12	2	CARRIAGE BLOCK HRC20MN S V1 N		41512

ASSEMBLY MRJ 80 L



ITEM	QTY	PART NAME	LENGTH	ID
1	1	DRIVE BLOCK MTJ / MRJ 80		
		TYPE 0		36700
		TYPE 1 L		36770
		TYPE 1R		36766
		TYPE 2		36767
		TYPE 10L		53679
		TYPE 10R		53114
		TYPE 20		53680
2	1	TENSION BLOCK MTJ / MRJ 80		36684
3	1	CARRIAGE MRJ 80		36870
4	1	PROFILE MTJ / MRJ 80	STROKE + 302	36889
5	2	ROUND GUIDE FI 10	STROKE + 240	13273
6	1	TOOTHED BELT AT5 X 50 FOR MTJ / MRJ 80	2 X STROKE + 840	41389
7	1	PROTECTION STRIP FOR MTJ / MRJ 80	STROKE + 365	41319
8	2	MAGNET FOR PROTECTION STRIP MTJ / MRJ 80	STROKE + 302	36933

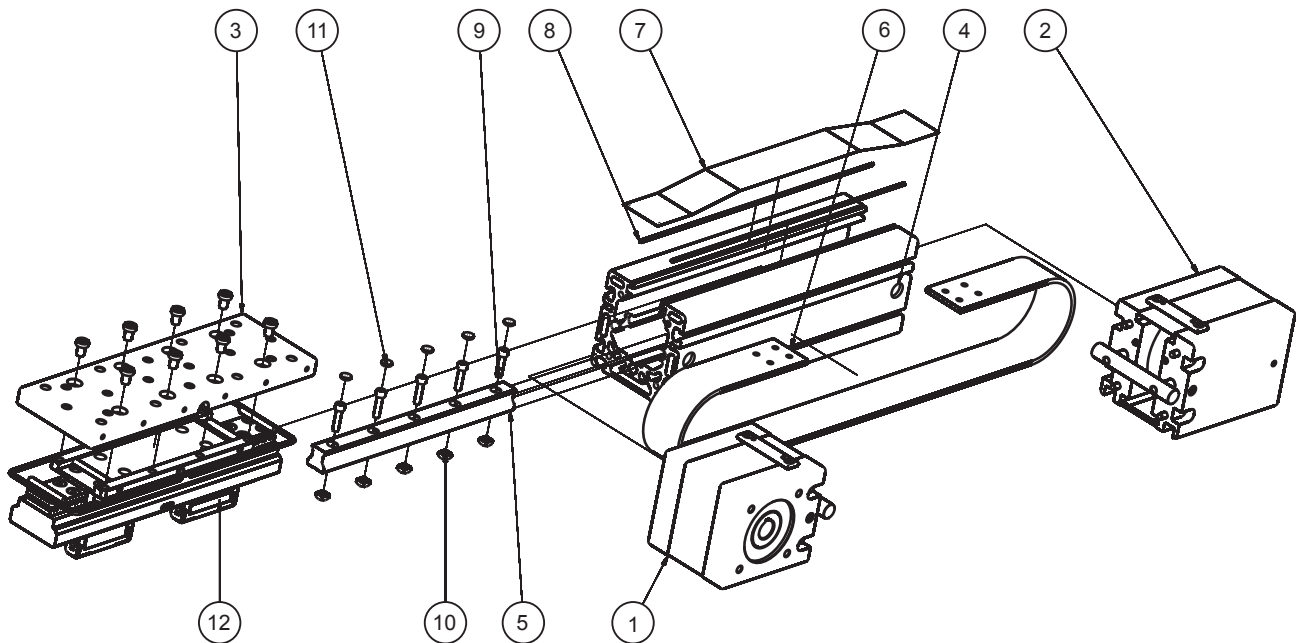
ASSEMBLY MTJ 110 S



ITEM	QTY	PART NAME	LENGTH / QTY	ID
1	1	DRIVE BLOCK MTJ / MRJ 110		
		TYPE 0		44553
		TYPE 1L		44554
		TYPE 1R		44555
		TYPE 2		44556
		TYPE 10L		53790
		TYPE 10R		53791
		TYPE 20		53792
2	1	TENSION BLOCK MTJ / MRJ 110		44535
3	1	CARRIAGE MTJ 110 S		44598
4	1	PROFILE MTJ / MRJ 110	STROKE + 252	43955
5	1	RAIL GUIDE AR - HR 25	STROKE + 190	42972
6	1	TOOTHED BELT AT10 X 50 FOR MTJ / MRJ 110	2 X STROKE + 1000	43884
7	1	PROTECTION STRIP FOR MTJ / MRJ 110	STROKE + 329	41319
8	2	MAGNET FOR PROTECTION STRIP MTJ / MRJ 110	STROKE + 252	36933
9		SCREW DIN 912 M6 X 25	(RAIL LENGTH/60)+0,5	47070
10		SQUARE NUT M6 DIN 557	(RAIL LENGTH/60)+0,5	44454
11		COVER FOR AR - HR 25	(RAIL LENGTH/60)+0,5	-
12	1	CARRIAGE BLOCK ARC25MN S V1 N		44932

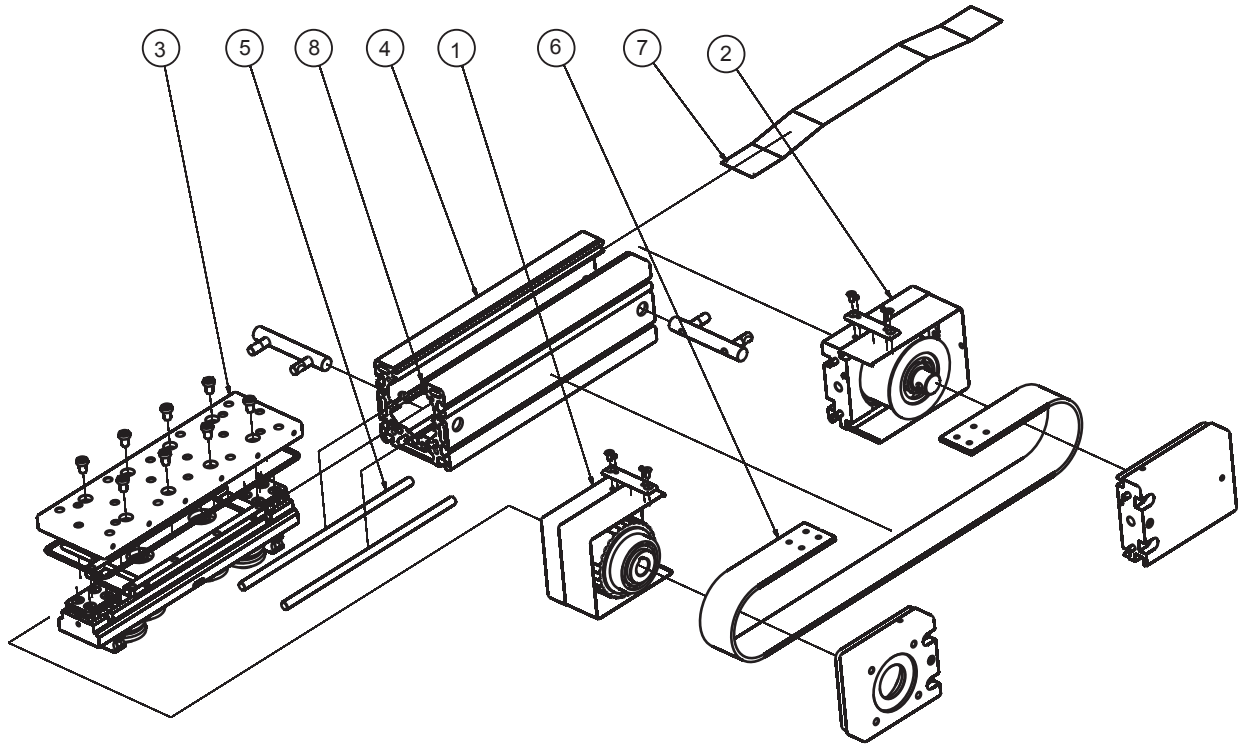


ASSEMBLY MTJ 110 L



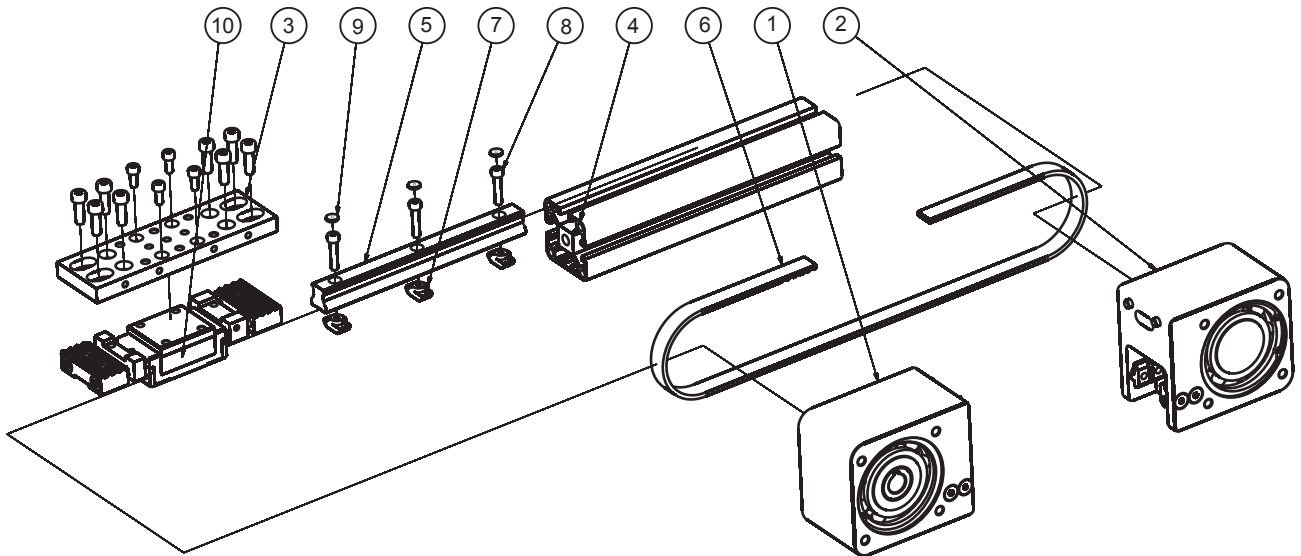
ITEM	QTY	PART NAME	LENGTH / QTY	ID
1	1	DRIVE BLOCK MTJ / MRJ 110		
		TYPE 0		44553
		TYPE 1L		44554
		TYPE 1R		44555
		TYPE 2		44556
		TYPE 10L		53790
		TYPE 10R		53791
		TYPE 20		53792
2	1	TENSION BLOCK MTJ / MRJ 110		44535
3	1	CARRIAGE MTJ 110 L		44599
4	1	PROFILE MTJ / MRJ 110	STROKE + 342	43955
5	1	RAIL GUIDE AR - HR 25	STROKE + 280	42972
6	1	TOOTHED BELT AT10 X 50 FOR MTJ / MRJ 110	2 X STROKE + 1090	44482
7	1	PROTECTION STRIP FOR MTJ / MRJ 110	STROKE + 420	41319
8	2	MAGNET FOR PROTECTION STRIP MTJ / MRJ 110	STROKE + 342	36933
9		SCREW DIN 912 M6 X 25	(RAIL LENGTH/60)+0,5	47070
10		SQUARE NUT M6 DIN 557	(RAIL LENGTH/60)+0,5	44454
11		COVER FOR AR - HR 25	(RAIL LENGTH/60)+0,5	-
12	2	CARRIAGE BLOCK ARC25MN S V1 N		44932

ASSEMBLY MRJ 110 L



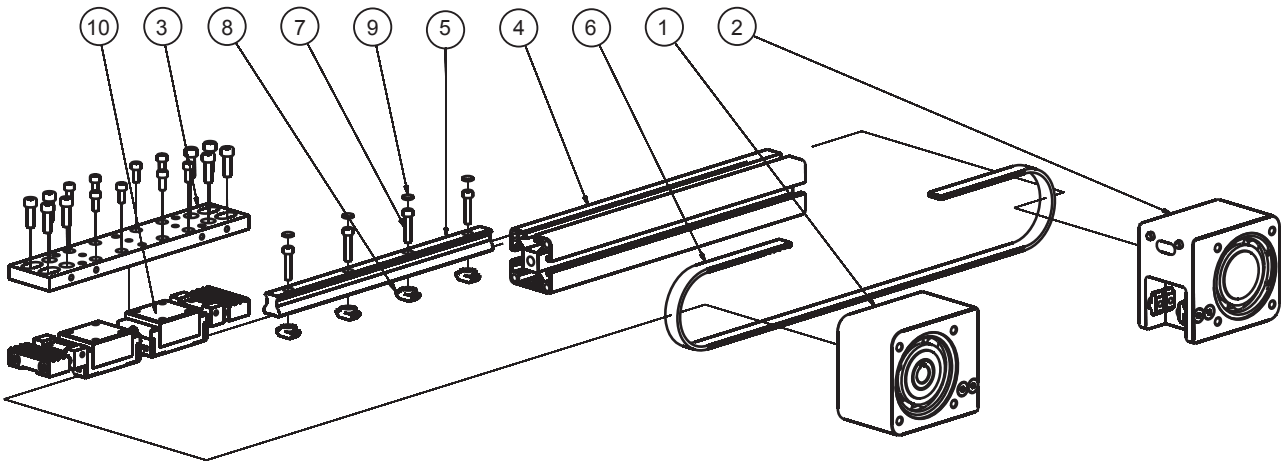
ITEM	QTY	PART NAME	LENGTH	ID
1	1	DRIVE BLOCK MTJ / MRJ 110		
		TYPE 0		44553
		TYPE 1L		44554
		TYPE 1R		44555
		TYPE 2		44556
		TYPE 10L		53790
		TYPE 10R		53791
		TYPE 20		53792
2	1	TENSION BLOCK MTJ / MRJ 110		44535
3	1	CARRIAGE MRJ 110		44642
4	1	PROFILE MTJ / MRJ 110	STROKE + 342	43955
5	2	ROUND GUIDE FI 10 FOR MRJ 110	STROKE + 280	13273
6	1	TOOTHED BELT AT10 X 50 FOR MTJ / MRJ 110	2 X STROKE + 1090	44482
7	1	PROTECTION STRIP FOR MTJ / MRJ 110	STROKE + 420	41319
8	2	MAGNET FOR PROTECTION STRIP MTJ / MRJ 110	STROKE + 342	36933

ASSEMBLY MTJ ECO 40 S



ITEM	QTY	PART NAME	LENGTH / QTY	ID
1	1	DRIVE BLOCK MTJ ECO 40		
		TYPE 0		37196
		TYPE 1L		37189
		TYPE 1R		41030
		TYPE 2		37190
		TYPE 10L		53517
		TYPE 10R		53516
		TYPE 20		53518
2	1	DRIVEN BLOCK MTJ ECO 40		37179
3	1	CARRIAGE MTJ ECO 40 S		37210
4	1	PROFILE MTJ ECO 40	STROKE + 187	36439
5	1	RAIL GUIDE AR - HR 15	STROKE + 146	41518
6	1	TOOTHED BELT AT5 X 12 FOR MTJ ECO 40	2 X STROKE + 605	37198
7		HAMMER NUT 8 - M4	(RAIL LENGTH/60)+0,5	5704
8		ALLEN SCREW M4 x 20 DIN 912	(RAIL LENGTH/60)+0,5	47078
9		COVER FOR AR - HR 15	(RAIL LENGTH/60)+0,5	-
10	1	CARRIAGE BLOCK HRC15MN S V1 N		41509

ASSEMBLY MTJ ECO 40 L



ITEM	QTY	PART NAME	LENGTH / QTY	ID
1	1	DRIVE BLOCK MTJ ECO 40		
		TYPE 0		37196
		TYPE 1L		37189
		TYPE 1R		41030
		TYPE 2		37190
		TYPE 10L		53517
		TYPE 10R		53516
		TYPE 20		53518
2	1	DRIVEN BLOCK MTJ ECO 40		37179
3	1	CARRIAGE MTJ ECO 40 L		37183
4	1	PROFILE MTJ ECO 40	STROKE + 255	36439
5	1	RAIL GUIDE AR-HR 15	STROKE + 214	41518
6	1	TOOTHED BELT AT5 X 12 FOR MTJ ECO 40	2 X STROKE + 675	37198
7		ALLEN SCREW M4 x 20 DIN 912	(RAIL LENGTH/60)+0,5	47078
8		HAMMER NUT 8 - M4	(RAIL LENGTH/60)+0,5	5704
9		COVER FOR AR - HR 15	(RAIL LENGTH/60)+0,5	-
10	2	CARRIAGE BLOCK HRC15MN S V1 N		41509

## REPLACEMENT OF ASSEMBLIES - MTJ/MRJ SERIES



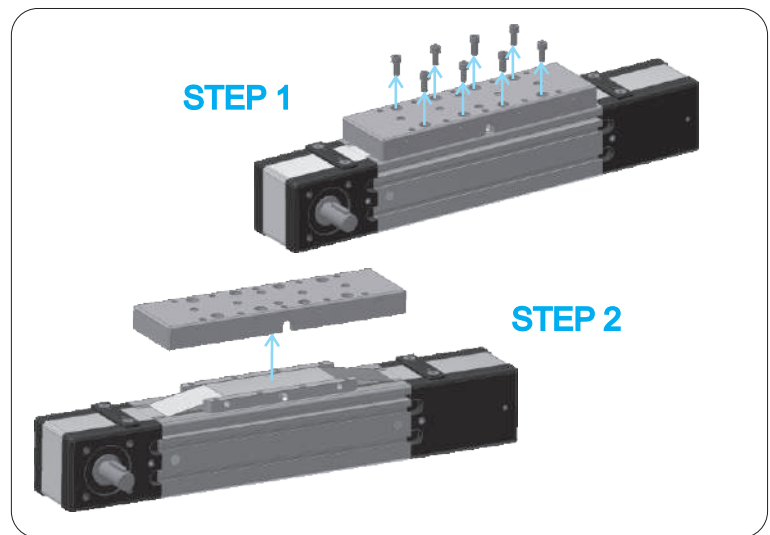
- any furthermentioned modifications, without our written consent, will void our liability in respect of the linear unit,
- before any operation make sure that the module is disconnected from the power grid to prevent possible injuries caused by the electrical current or moving parts,
- MTJ 40: due to the precise fit between railguide MR 12 and carriage block Mini MR 12 both need to be replaced at the same time even if only one of them fails.

## Removing the cover plate

STEP 1: remove the screws.

STEP 2: remove the cover plate.


Note: attaching the cover plate is conducted in the reverse order.




## Replacing the protection strip


STEP 1: remove the cover plate as described in chapter "Removing cover plate".

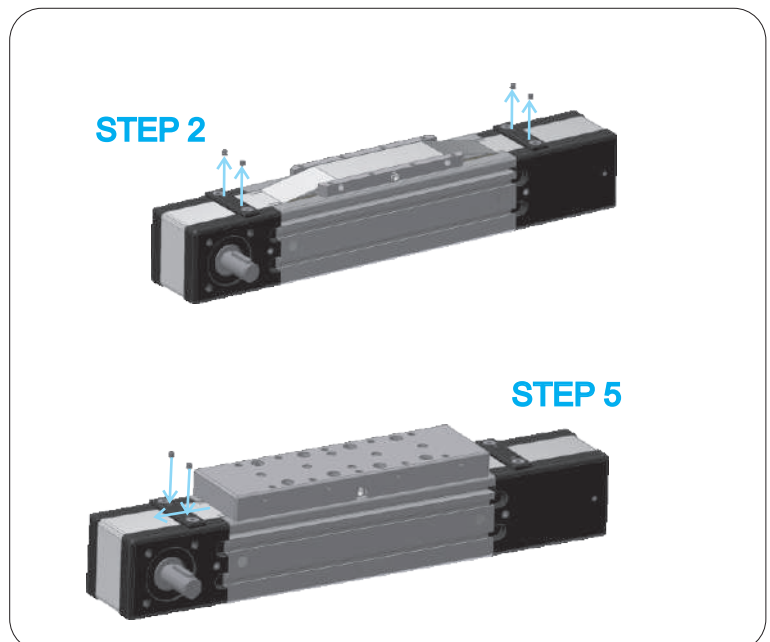
STEP 2: loosen the set screws that hold the protection strip and remove it.

 STEP 3: place new protection strip on top of the module and attach it to one end block.

 STEP 4: slide the carriage as close as possible to the end block to which protection strip is attached and screw the cover plate over the protection strip on the carriage.

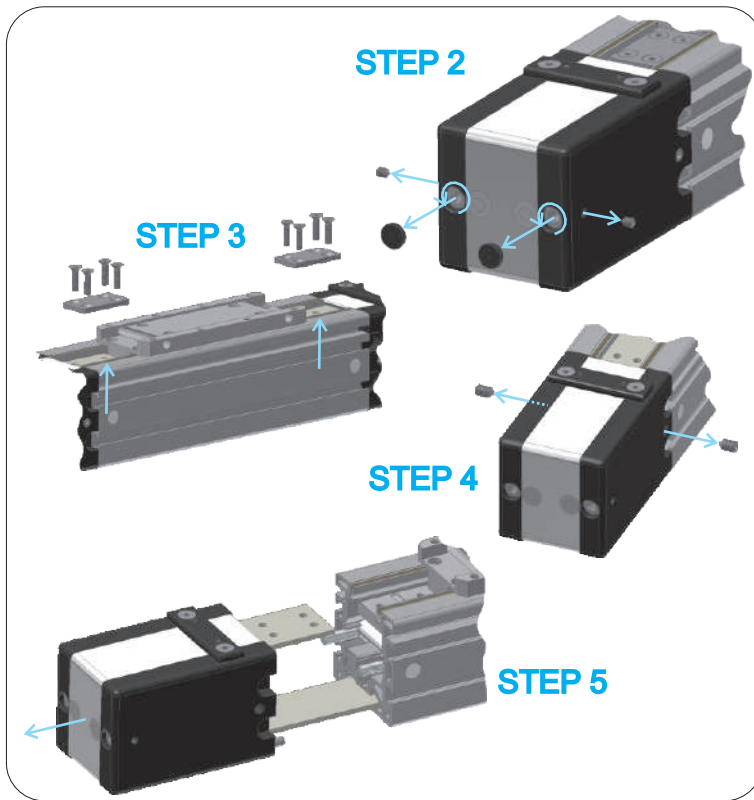
Note: when placing the cover plate back on the carriage watch for the lubrication nipple.

 STEP 5: slide with a hand over the protection strip towards the loosened end to tighten it. At the end block hold protection strip tensioned and tighten two set screws to fix the strip.



Note: all screws (except set screws) must be glued (Loctite 243) and screwed with the torque specified in the table on page 1.005.0 unless written otherwise at the individual steps.

Removing the end blocks



STEP 1: remove the protection strip and the cover plate as described in previous chapters.

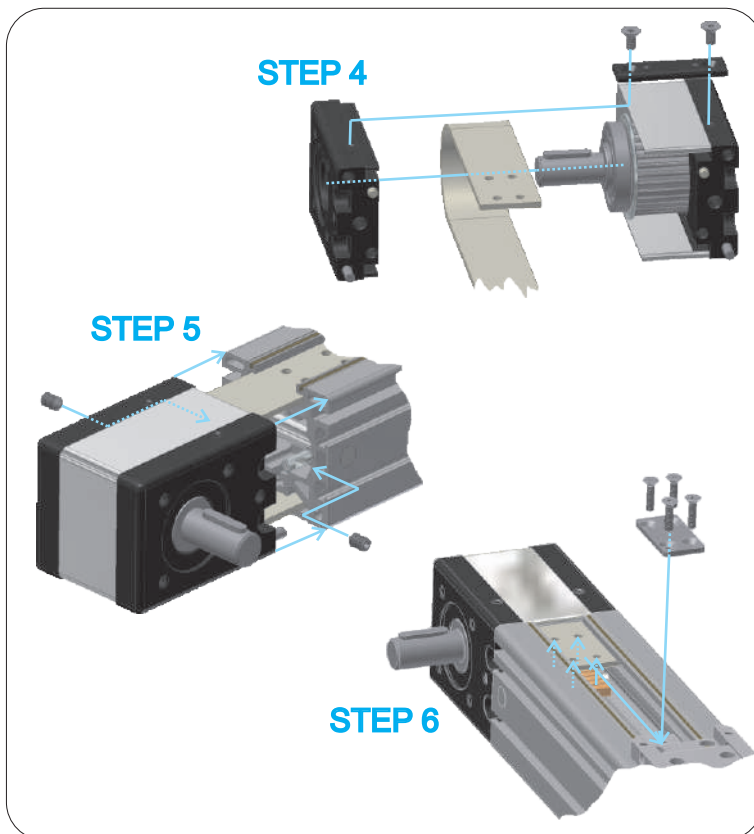
STEP 2: loosen the belt by unscrewing two set screws on the side of the tensioning end block and two tensioning screws under the plastic plugs. Count the number of turns that the tensioning screws are screwed in (as you will need it when tensioning the toothed belt).

STEP 3: detach toothed belt from the carriage by removing screws that hold belt.

STEP 4: remove set screws that hold end blocks on either of the two or both blocks depending on which of the blocks you wish to remove.

STEP 5: pull the end blocks away from the main profile to detach them from it.

Replacing the toothed belt



STEP 1: remove the cover plate and the protection strip from the module.

STEP 2: remove end blocks from the module.

STEP 3: remove toothed belt from the module.

STEP 4: put the belt through the end blocks by removing the protection strip holders and taking the end blocks apart. On tensioning block you also need to remove one tensioning screw.

STEP 5: attach the drive block to the profile



STEP 6: put the toothed bar (marked orange) under the end of the belt. Make sure that the holes are aligned. Hold it with pliers or hex key (Allen key). Pull it together with the belt until it lays in the slot.

Glue and tighten the screws to fix the belt in place. Tighten screws to:

MTJ40-1Nm	MTJ65-1Nm
MTJ80-1.5Nm	MTJ110-3.5Nm

STEP 7: repeat step 6 on the other side while pushing the tensioning block towards the profile. Once the belt is in place tighten the set screws to fix the end block to the profile.



STEP 8: reattach the protection strip, protection strip holders and cover.



Note: all screws (except set screws) must be glued (Loctite 243) and screwed with the torque specified in the table on page 1.005.0 unless written otherwise at the individual steps.

Tensioning the toothed belt

STEP 1: remove the stickers from the peeking holes.

**MA** STEP 2: tension the belt. Turn two tensioning screws on the tensioning block the same number of times as when loosening the belt.

Note: the shaft key can be set to any orientation. You can turn shaft prior to tensioning the belt in direction as if the carriage would be moving towards the drive end block.

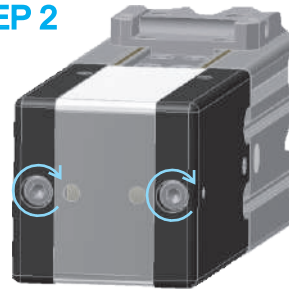
STEP 3: make sure that the belt is running at the middle of the pulley. Check by looking through the peeking holes and tighten or loosen one of the tensioning screws by small amount if needed.

Note: for this step the carriage needs to be moving up and down the length of the profile.

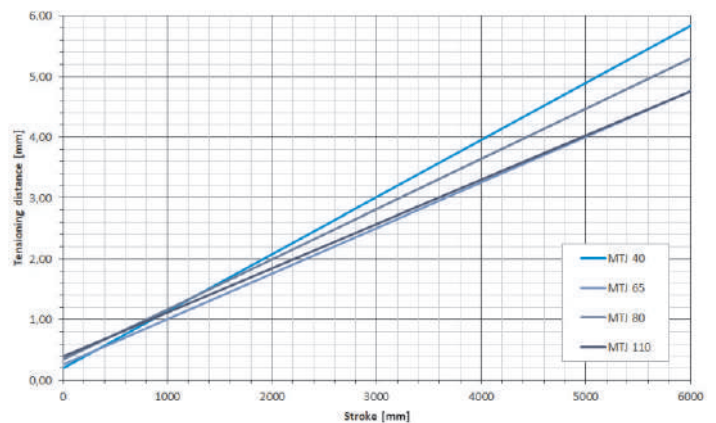
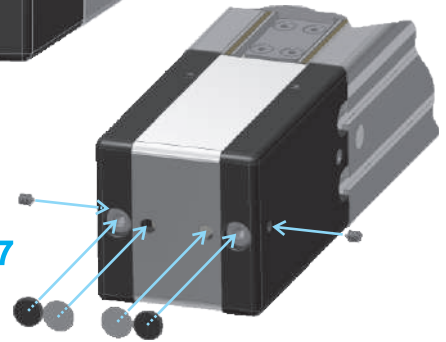
STEP 4: lock the tensioning screws by tightening two set screws on each side of the tensioning pulley. Plug the holes over the tensioning screws with the plastic plugs and peeking holes with the stickers.

Alternative option for step 2: turn the tensioning screws until the belt starts to tension. Check the tensioning distance from the chart and calculate number of turns the screws must be turned. Tension the belt by turning the screws.

STEP 2



STEP 7




Module size	Screw lead [mm]
40	0.7
65	1
80	1
110	1.25

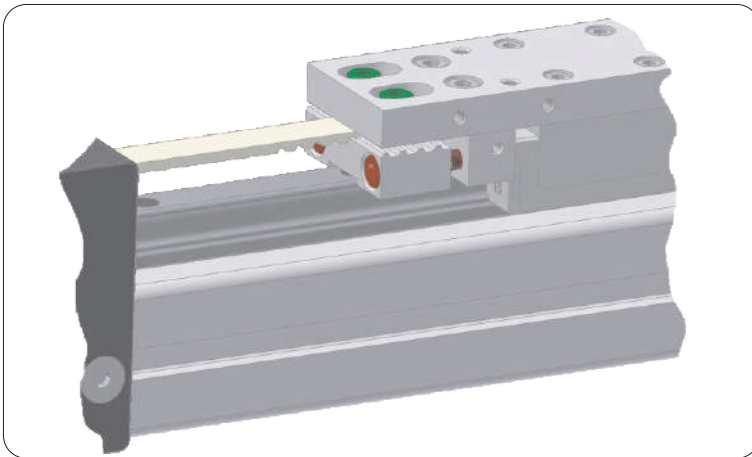
$$\text{Number of turns} = \frac{\text{Tensioning distance [mm]}}{\text{Screw lead [mm]}}$$

Note: all screws (except set screws) must be glued (Loctite 243) and screwed with the torque specified in the table on page 1.005.0 unless written otherwise at the individual steps.

REPLACEMENT OF ASSEMBLIES - MTJ 40 ECO SERIES

 Before any operation make sure that the module is disconnected from the power grid to prevent possible injuries caused by the electrical current or moving parts.

Loosening the toothed belt

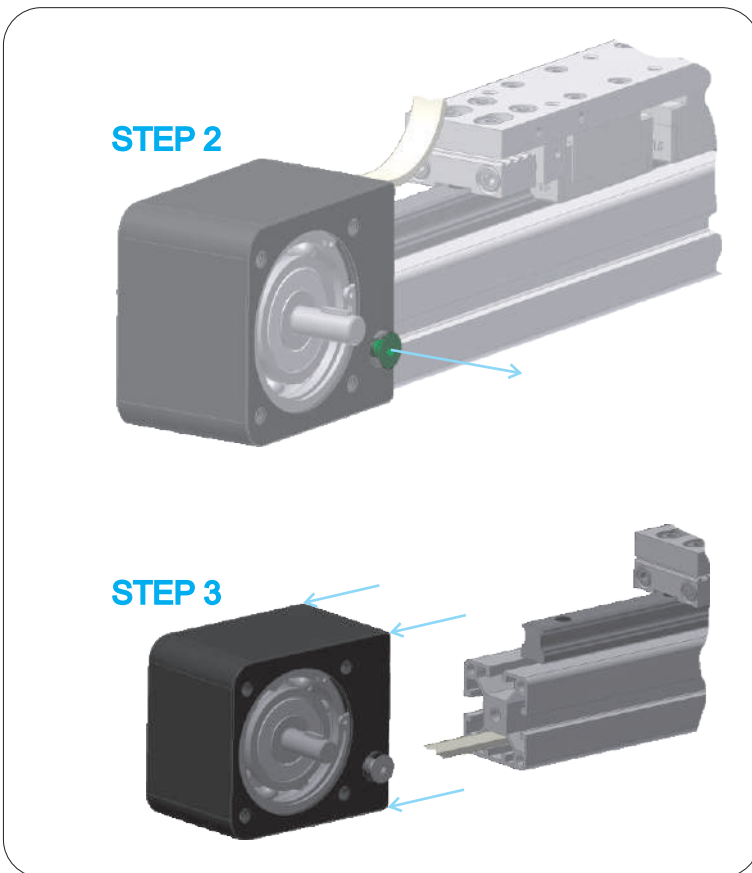


STEP 1: loosen the screws (highlighted in green).

STEP 2: loosen the belt by unscrewing two screws (highlighted in red) on each side. Count number of turns the screws are screwed in (you will need it when tensioning the belt).

Note: if you wish to remove the belt completely unscrew all eight screws.

Removing the end blocks



STEP 1: loosen and detach the toothed belt from carriage

STEP 2: loosen the screws attaching the end block(s) to the profile.

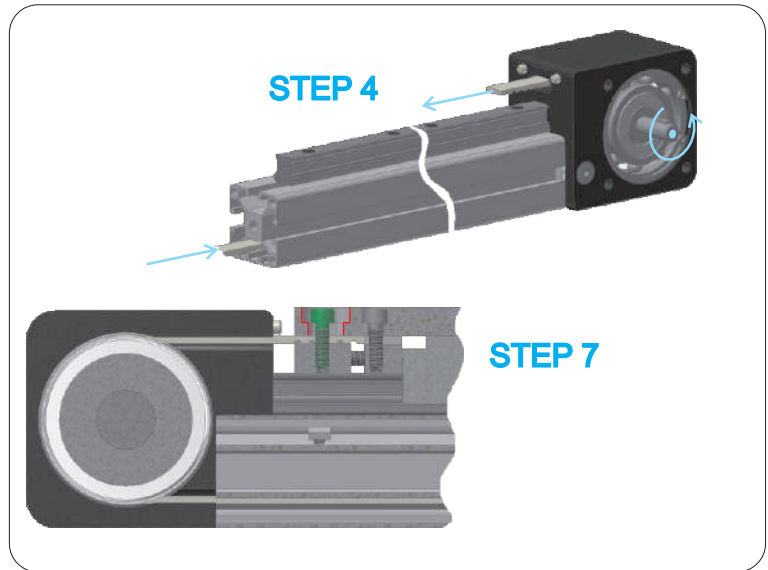
STEP 3: remove the end block(s).

Note: all screws (except set screws) must be glued (Loctite 243) and screwed with the torque specified in the table on page 1.005.0 unless written otherwise at the individual steps.



Replacing the toothed belt

- STEP 1: loosen the toothed belt.
- STEP 2: remove driven end block from the profile.
- STEP 3: remove the toothed belt.
- STEP 4: slide new belt into the hole in the profile. Keep pushing until the belt emerges from the hole above the profile. Help with turning the drive axle.
- STEP 5: slide the other end of the belt into the hole near the bottom of the driven end block and push it until it emerges from the hole above.
- STEP 6: attach driven end block to the profile.
- STEP 7: attach ends of the belt to the carriage in a way that the attachment screws lie in the groove towards the outer part of the carriage and the belt is straight but not tensioned.



Tensioning the toothed belt

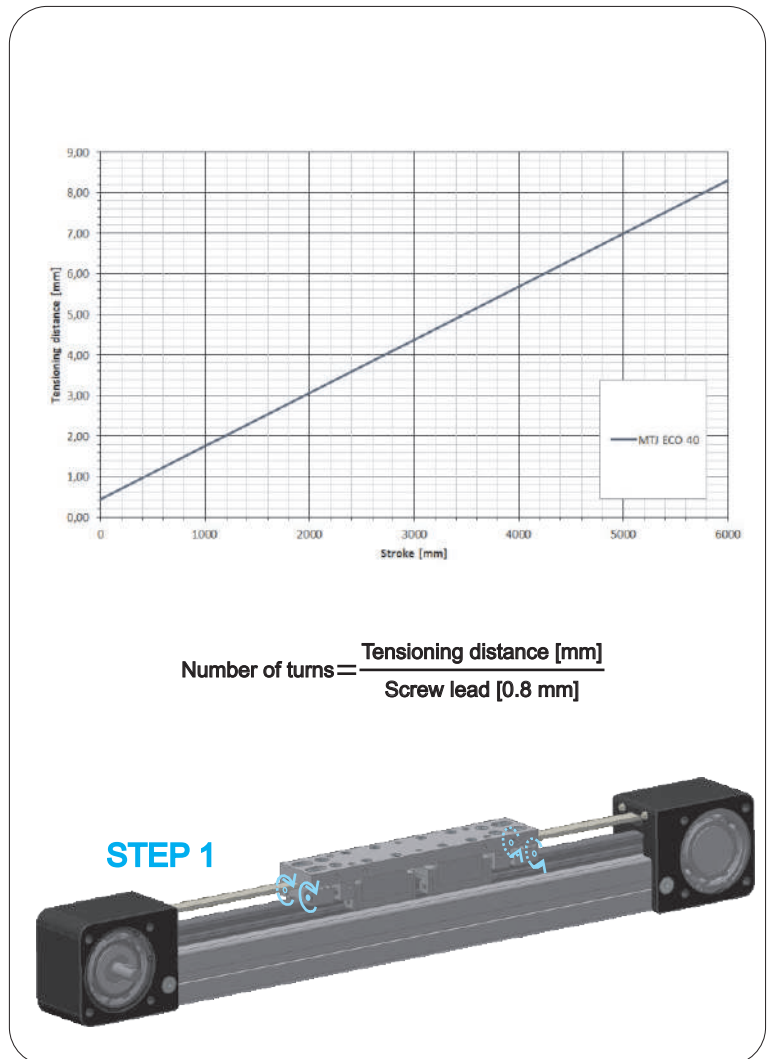
**MA** STEP 1: Tension the belt by screwing in the tensioning screws same number of turns as when unscrewing them (See chapter - Loosening toothed belt).

Note: the shaft key can be set to any orientation. You can turn the shaft prior to tensioning the belt in direction as if the carriage would be moving towards the drive end block.

STEP 2: make sure that the belt is leaving the carriage as parallel to the longitudinal axis of the module as possible.

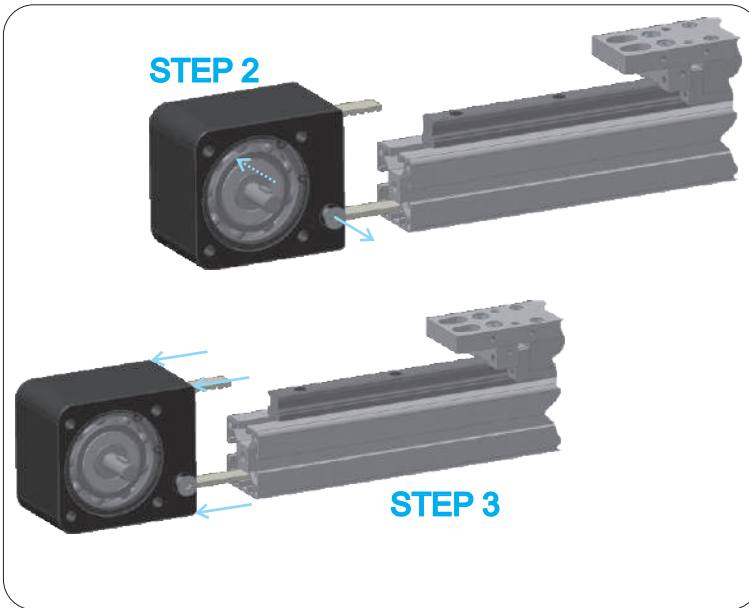
**MA** STEP 3: glue and tighten attachment screws (one at a time with 2 Nm of torque). After attachment screws are tightened glue also the tightening screws. Screw them in the hole just far enough that the screw head touches the toothed bar.

Alternative option for step 1: turn the tensioning screws until the belt starts to tension. Check the tensioning distance from the chart and calculate number of turns the screws must be turned. Tension the belt by turning the screws.



Note: all screws (except set screws) must be glued (Loctite 243) and screwed with the torque specified in the table on page 1.005.0 unless written otherwise at the individual steps.

Replacing the end blocks



STEP 1: loosen the belt and detach it from the carriage.

STEP 2: loosen two screws that are attaching end block to the profile.

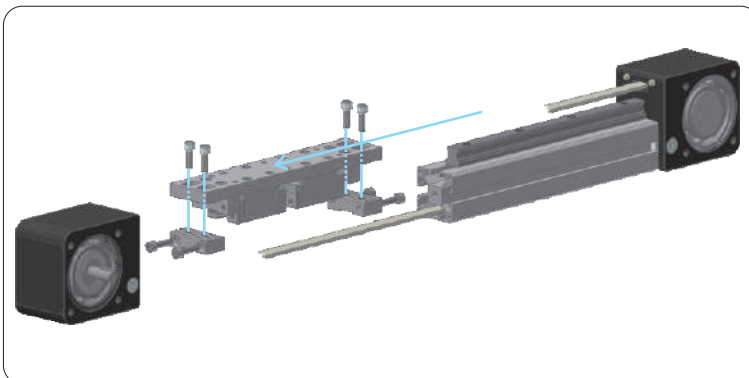
STEP 3: remove end block and replace it with the new one.

Note: insert the toothed belt through the new end block before attaching it to the profile. If you are inserting belt into the drive block, turn axle in addition to pushing the belt.

STEP 4: reattach the toothed belt to the carriage and tension it as described in the previous steps.

Note: the procedure for replacing the end blocks is the same regardless of which end block is being replaced.

Replacing the carriage



STEP 1: detach the toothed belt from the carriage.

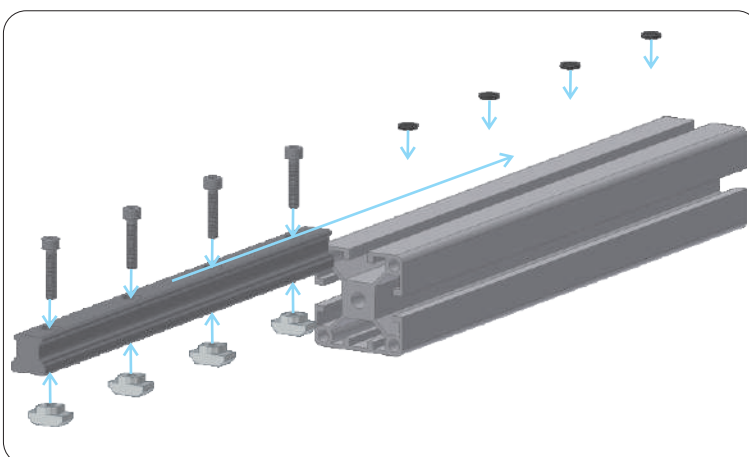
STEP 2: detach one end block (the toothed belt does not need to be removed from the end block).

STEP 3: replace the carriage

STEP 4: reattach end block and the toothed belt and tension the toothed belt as described in the previous steps.

Note: if the carriage is replaced we recommend that the rail is also replaced.

Replacing the profile / the rail



STEP 1: remove end blocks and the carriage as described in the previous steps.

STEP 2: remove the rail from the profile.

STEP 3: Change rail / profile.

STEP 4: attach the rail to the profile. Make sure that the profile is turned the right way. Center the rail on the profile with a caliper.

STEP 5: insert the carriage, attach the end blocks and the toothed belt and tension the belt as described in the previous steps.

Note: all screws (except set screws) must be glued (Loctite 243) and screwed with the torque specified in the table on page 1.005.0 unless written otherwise at the individual steps.

# UNIMOTION



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