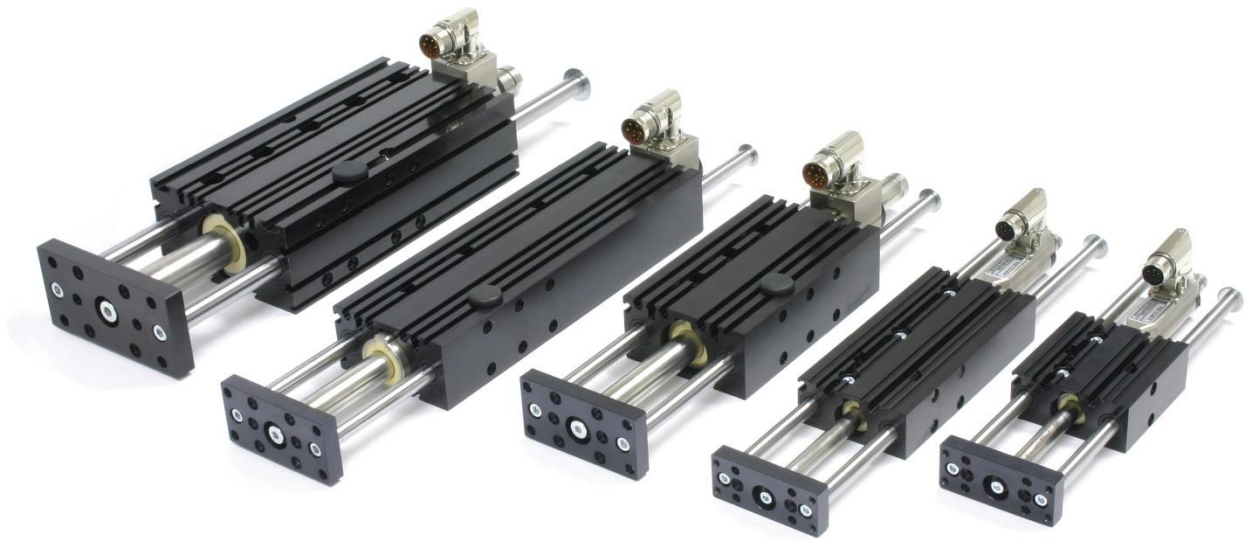


# Installation Guide Linear Guides

ENG

## H01-23 / 37 / 48



**Content**

1	General information .....	4
1.1	Introduction .....	4
1.2	Explanation of symbols .....	4
1.3	Qualified personnel .....	4
1.4	Liability .....	4
1.5	Copyright.....	4
2	Safety instructions .....	5
3	Product Overview .....	7
3.1	Parts List.....	7
3.2	Material data .....	10
3.3	Types of bearing .....	11
4	Installation instructions .....	11
4.1	Operating conditions.....	11
4.2	Mounting guide with stator.....	11
4.3	Mounting slider with guide .....	12
5	Load details .....	13
5.1	Maximum load .....	13
5.2	Vertical deflection .....	14
5.3	Angular deflection .....	14
6	Spare parts .....	15
6.1	Bearing.....	15
6.1.1	Replacing the bearing.....	15
7	Accessories .....	16
7.1	Pneumatic brake.....	16
7.1.1	Dimensions .....	17
7.1.2	Material data .....	17
7.1.3	Operating conditions.....	17
7.1.4	Mounting .....	17
7.2	Wiper.....	19
7.3	Fan.....	20
7.3.1	Technical Data.....	20
7.3.2	Dimensions .....	20
7.4	MagSpring.....	21
7.4.1	Ordering information .....	21
7.4.2	Mounting .....	23
7.5	Centering sleeve.....	25
7.6	Mounting clip.....	26
8	Maintenance and testing instructions .....	27
8.1	Inspection.....	27
8.1.1	Linear guide with ball bearings .....	27
8.1.2	Linear guide with plain bearings .....	27
8.1.3	Linear Motor.....	27

8.1.4 MagSpring..... 27

8.1.5 Pneumatic Brake ..... 28

8.2 Cleaning..... 28

8.2.1 Linear Guide ..... 28

8.2.2 Linear Motor/ MagSpring ..... 28

8.3 Lubrication ..... 28

8.3.1 Linear guide with ball bearing ..... 28

8.3.2 Linear guide with plain bearing ..... 28

8.3.3 Linear Motor / MagSpring ..... 28

8.3.4 Pneumatic Brake ..... 28

8.4 Cleaning agent / Lubricant..... 29

9 Storage, transport, installation altitude ..... 29

10 Dimensions & Weights..... 30

10.1 H01-23x86 ..... 30

10.2 H01-23x166 ..... 31

10.3 H01-37x166 ..... 32

10.4 H01-37x286 ..... 33

10.5 H01-48x250 ..... 34

10.6 H01-48x370 ..... 35

# 1 General information

## 1.1 Introduction

This manual includes instructions for the assembly, installation, maintenance, transport, and storage of linear guides. The document is intended for electricians, mechanics, service technicians, and warehouse staff. Be sure to observe the general safety instructions as well as those in each chapter at all times. Keep this manual accessible to the assigned staff.

## 1.2 Explanation of symbols



Triangular warning symbols warn against a danger.



Round command symbols tell what to do.

## 1.3 Qualified personnel

All work such as transport, installation, commissioning and service is only allowed to be carried out by qualified personnel. Qualified personnel in the sense of the safety instructions in this documentation are persons who are familiar with the transport, installation, assembly, commissioning and operation of the product and who have the appropriate qualifications.

This manual must be read carefully before transport, installation, commissioning, service and all safety-related information must be adhered to.

## 1.4 Liability

NTI AG (as manufacturer of LinMot linear motors and MagSpring products) excludes all liability for damages and expenses caused by incorrect use of the products. This also applies to false applications, which are caused by NTI AG's own data and notes, for example in the course of sales, support or application activities. It is the sole responsibility of the user to check the information and information provided by NTI AG regarding their safety-relevant correctness. In addition, the entire responsibility for safety-related product functionality lies exclusively with the user. Product warranties are void if products are used with stators, sliders, servo drives or cables not manufactured by NTI AG unless such use was specifically approved by NTI AG. NTI AG's warranty is limited to repair or replacement as stated in our standard warranty policy as described in our "terms and conditions" previously supplied to the purchaser of our equipment (please request copy of same if not otherwise available). Further reference is made to our general terms and conditions.

## 1.5 Copyright

This work is protected by copyright.

Under the copyright laws, this publication may not be reproduced or transmitted in any form, electronic or mechanical, including photocopying, recording, microfilm, storing in an information retrieval system, not even for training purposes, or translating, in whole or in part, without the prior written consent of NTI AG.

LinMot® is a registered trademark of NTI AG.

## 2 Safety instructions



### Contusions

Sliders contain neodymium magnets and have a strong attractive force. Careless handling could cause fingers or skin to become pinched between two sliders. This may lead to contusions, bruises, and bone fractures. When handling sliders, wear thick protective gloves and keep a minimum distance between sliders. Refer to the "Minimum distance from slider" section for minimum distance.

To reduce the risk of injury, never more than one slider should be held or transported by the same person without packaging.



### Pacemaker / Implanted heart defibrillator

Sliders could affect the functioning of pacemakers and implanted heart defibrillators. For the duration of a strong approach to a magnetic field, these devices switch into test mode and will not function properly.

- If you wear one of those devices keep the following minimum distances between the pacemaker / defibrillator and slider:
  - Min. 250 mm (10") for slider Ø 27 mm and 28 mm (PL01-27 / 28 / PL1028)
  - Min. 150 mm (6") for slider Ø 19 mm and 20 mm (PL01-19 / 20)
  - Min. 100 mm (4") for slider Ø 12 mm (PL01-12)
- Inform others who wear these devices to comply with these minimum distances!



### Caution - Risk of Electric Shock !

Before working, make sure that there are no high voltages.



### Fast-moving machine parts

LinMot linear motors and linear guides are fast-moving machine parts. All necessary precautions must be taken to prevent access during operation (provide covers, guards, etc.).



### Automatic restart

The motors can start automatically under certain circumstances! If necessary, a corresponding warning symbol must be provided and protection against entering the hazardous area or a suitable safe electronic disconnection must be provided!



### Risk of injury due to a defect or fault

For areas where a defect or fault can result in substantial property damage or even serious personal injury, additional external precautions must be taken or devices must be installed to ensure safe operation even if a defect or fault occurs (eg. suitable safe electronic disconnection, mechanical interlocks, barriers, etc.).



### Magnetic field

Magnets integrated in the sliders produce a strong magnetic field. They could damage TVs, laptops, computer hard drives, credit and ATM cards, data storage media, mechanical watches, hearing aids, and speakers.

- Keep magnets away from devices and objects that could be damaged by strong magnetic fields.
- For the above mentioned objects, keep a minimum distance as described in the "Pacemaker / implanted defibrillator" section.
- For non-anti-magnetic watches, keep the double minimum distance.

**Combustibility**

When machining magnets, the drilling dust could easily ignite. Machining the sliders and the magnets they contain is not permitted.

**Burn hazard**

The sliders of LinMot motors can reach temperatures of 80 °C, which may cause burns upon contact.

**Grounding**

All metal parts that are exposed to contact during any user operation or servicing and likely to become energized shall be reliably connected to the means for grounding.

**Mechanical handling**

Neodymium magnets are brittle and heat-sensitive.

Machining the sliders and the magnets they contain is not permitted.

- Colliding magnets could crack. Sharp splinters could be catapulted for several meters and cause eye injury.
- By machining the sliders, heat would result which demagnetises the magnets.

**Slider**

Linear motor sliders consist of a high-precision, thin-walled stainless steel tube in which the neodymium magnets are housed. The LinMot sliders should be handled with care.

Avoid contact with other sliders or iron parts as this can damage the magnets and the slider surface. Do not grip the sliders with pliers, as this can also damage the surface. Do not use sliders which are already damaged on the surface (scratches, deformation, etc.). This can cause further damage to the stator.

**Effects on people**

According to the current level of knowledge, magnetic fields of permanent magnets do not have a measurable positive or negative effect on people. It is unlikely that permanent magnets constitute a health risk, but it cannot be ruled out entirely.

- For your own safety, avoid constant contact with magnets.
- Store large magnets at least one meter away from your body.

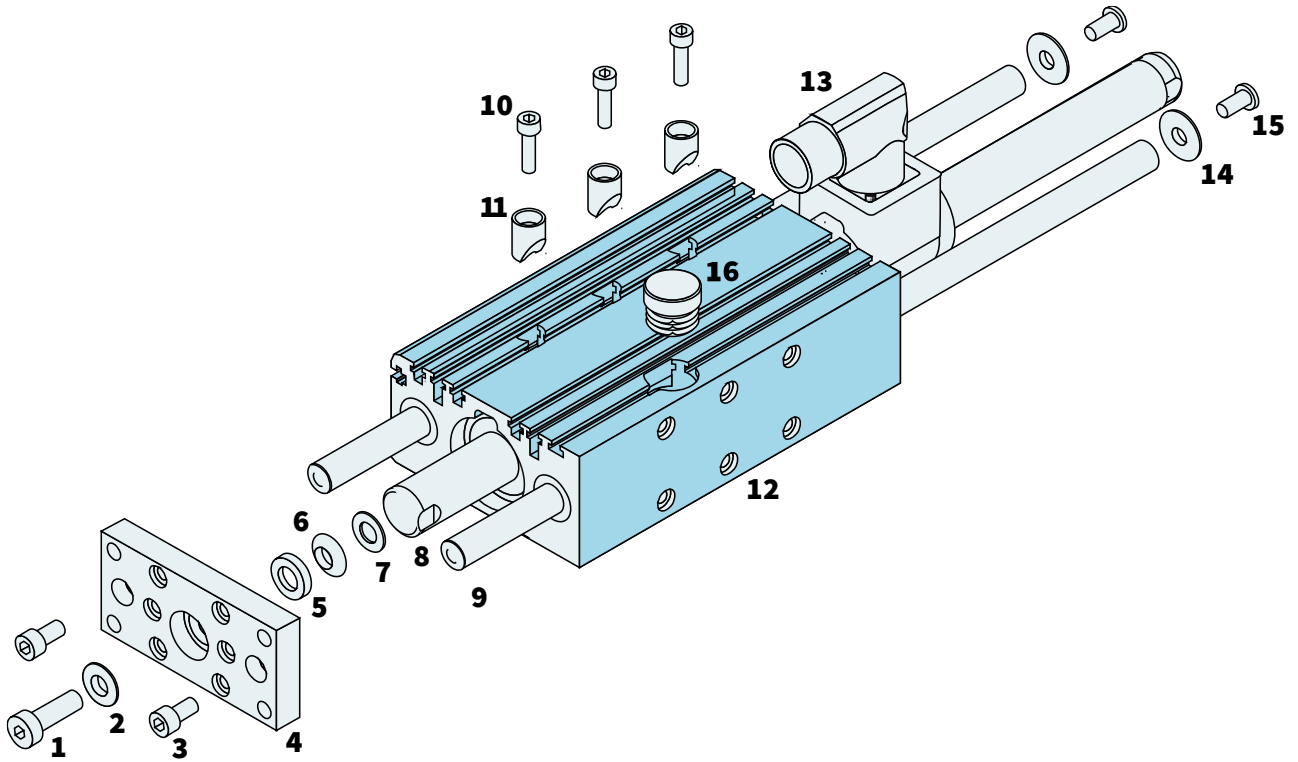
**Temperature resistance**

Keep slider away from unshielded flame or heat.

Temperature above 120°C will cause demagnetization.

### 3 Product Overview

#### 3.1 Parts List



## Linear Guides H01-23

No.	Component	H01-23x86		H01-23x166	
1	Slider screw	ISO 4762 M5x18		ISO 4762 M5x18	
2	Spherical washer	DIN 6319 c / M6		DIN 6319 c / M6	
3	Shaft screw	ISO 4762 M5x12		ISO 4762 M5x12	
4	Front plate	0150-5004		0150-5004	
5	Conical seat	DIN 6319 d / M5		DIN 6319 d / M5	
6	Spherical washer	DIN 6319 c / M5		DIN 6319 c / M5	
7	Dished washer	DIN 2093A 10/5,2/0,5		DIN 2093A 10/5,2/0,5	
8	Slider	<b>Type</b>	<b>Art-No.</b>	<b>Type</b>	<b>Art-No.</b>
		PL01-12x190/150-LC	0150-2582	PL01-12x290/250-LC	0150-2583
		PL01-12x200/160-HP	0150-1518	PL01-12x290/250-HP	0150-1521
		PL01-12x290/250-LC	0150-2583	PL01-12x420/380-LC	0150-2585
		PL01-12x290/250-HP	0150-1521	PL01-12x420/380-HP	0150-1523
		PL01-12x420/380-LC	0150-2585	PL01-12x480/440-LC	0150-2586
		PL01-12x420/380-HP	0150-1523	PL01-12x480/440-HP	0150-1524
9	Hardened steel shafts for ball bearings	<b>HL01-10x...</b>	<b>Art-No.</b>	<b>HL01-10x...</b>	<b>Art-No.</b>
		160	0150-5006	260	0150-5007
		260	0150-5007	360	0150-5008
	Stainless steel shafts for plain bushings GF	360	0150-5008	460	0150-5009
		160-GF	0150-5066	260-GF	0150-5067
		260-GF	0150-5067	360-GF	0150-5068
	360-GF	0150-5068	460-GF	0150-5069	
10	Clamping screw	ISO 4762 M5x18		ISO 4762 M5x18	
11	Clamping cylinder	0150-5053		0150-5053	
12	Guide block with ball bearings	0150-5000		0150-5001	
	Guide block with plain bushing GF	0150-5060		0150-5061	
13	Stator	<b>Type</b>	<b>Art-No.</b>	<b>Type</b>	<b>Art-No.</b>
		PS01-23x80-R	0150-1233	PS01-23x160-R	0150-1234
		PS01-23x80-R20	0150-1241	PS01-23x160F-R	0150-1235
		PS01-23x80	0150-1201	PS01-23x160-R20	0150-1242
		PS01-23x80F-HP-R	0150-1259	PS01-23x160F-R20	0150-1243
		PS01-23x80F-HP-R20	0150-1260	PS01-23x160	0150-1202
				PS01-23x160H-HP-R	0150-1254
				PS01-23x160H-HP-R20	0150-1255
14	Washer	5x20/1,5		5x20/1,5	
15	Shaft screw	ISO 7380 M5x12		ISO 7380 M5x12	
16	Brake hole cap	(-)		(-)	



## Linear Guides H01-37

No.	Component	H01-37x166		H01-37x286	
1	Slider screw	DIN7984 M8x25		DIN7984 M8x25	
2	Spherical washer	DIN 6319 c / M8		DIN 6319 c / M8	
3	Shaft screw	ISO 4762 M6x12		ISO 4762 M6x12	
4	Front plate	0150-5005		0150-5005	
5	Conical seat	DIN 6319 d / M8		DIN 6319 d / M8	
6	Spherical washer	DIN 6319 c / M8		DIN 6319 c / M8	
7	Dished washer	DIN 2093A 16/8,2/0,9		DIN 2093A 16/8,2/0,9	
8	Slider	<b>Type</b>	<b>Art-No.</b>	<b>Type</b>	<b>Art-No.</b>
		PL01-20x300/240-LC	0150-2561	PL01-20x400/340-LC	0150-2562
		PL01-20x300/240-HP	0150-1506	PL01-20x400/340-LC	0150-2563
		PL01-20x400/340-LC	0150-2562	PL01-20x600/540-LC	0150-2564
		PL01-20x400/340-HP	0150-1508		
		PL01-20x500/440-LC	0150-2563		
		PL01-20x500/440-HP	0150-1509		
9	Hardened steel shafts for ball bearings	<b>HL01-12x...</b>	<b>Art-No.</b>	<b>HL01-12x...</b>	<b>Art-No.</b>
		260	0150-5010	360	0150-5011
		360	0150-5011	460	0150-5012
	Stainless steel shafts for plain bushings GF	460	0150-5012	560	0150-5013
		260-GF	0150-5070	360-GF	0150-5071
		360-GF	0150-5071	460-GF	0150-5072
	460-GF	0150-5072	560-GF	0150-5073	
10	Clamping screw	ISO 4762 M5x18		ISO 4762 M5x18	
11	Clamping cylinder	0150-5053		0150-5053	
12	Guide block with ball bearings	0150-5002		0150-5003	
	Guide block with plain bushing GF	0150-5062		0150-5063	
13	Stator	<b>Type</b>	<b>Art-No.</b>	<b>Type</b>	<b>Art-No.</b>
		PS01-37x120-C	0150-1223	PS01-37x240-C	0150-1224
		PS01-37x120-C20	0150-1237	PS01-37x240F-C	0150-1225
		PS01-37x120	0150-1204	PS01-37x240-C20	0150-1238
		PS01-37x120F-HP-C	0150-1251	PS01-37x240F-C20	0150-1239
		PS01-37x120F-HP-C20	0150-1252	PS01-37x240	0150-1203
				PS01-37x240F	0150-1256
14	Washer	6x20/1,5		6x20/1,5	
15	Shaft screw	ISO 7380 M6x12		ISO 7380 M6x12	
16	Brake hole cap	0160-0727		0160-0727	

## Linear Guides H01-48

No.	Component	H01-48x250		H01-48x370	
1	Slider screw	DIN7984 M10x35		DIN7984 M10x35	
2	Spherical washer	DIN 6319 c / M10		DIN 6319 c / M10	
3	Shaft screw	ISO 4762 M8x20		ISO 4762 M8x20	
4	Front plate	0150-5087		0150-5087	
5	Conical seat	DIN 6319 d / M10		DIN 6319 d / M10	
6	Spherical washer	DIN 6319 c / M10		DIN 6319 c / M10	
7	Dished washer	DIN 2093A 20/10,2/1,1		DIN 2093A 20/10,2/1,1	
8	Slider	<b>Type</b>	<b>Art-No.</b>	<b>Type</b>	<b>Art-No.</b>
		PL01-28x410/330	0150-1381	PL01-28x410/330	0150-1382
		PL01-28x500/420	0150-1382	PL01-28x620/540	0150-1383
		PL01-28x620/540	0150-1383	PL01-28x710/630	0150-1384
		PL01-28x710/630	0150-1384	PL01-28x920/840	0150-1386
9	Hardened steel shafts for ball bearings	<b>HL01-16x...</b>	<b>Art-No.</b>	<b>HL01-16x...</b>	<b>Art-No.</b>
		440	0150-5090	487	0150-5119
		530	0150-5091	607	0150-5120
		650	0150-5092	697	0150-5121
	Stainless steel shafts for plain bushings GF	740	0150-5093	920	0150-5234
		440-GF	0150-5094	487-GF	0150-5127
		530-GF	0150-5095	607-GF	0150-5128
		650-GF	0150-5096	697-GF	0150-5129
	740-GF	0150-5097	920-GF	auf Anfrage	
10	Clamping screw	ISO 4762 M6x25		ISO 4762 M6x25	
11	Clamping cylinder	0150-5086		0150-5086	
12	Guide block with ball bearings	0150-5088		0150-5194	
	Guide block (GF)	0150-5089		0150-5195	
13	Stator	<b>Type</b>	<b>Art-No.</b>	<b>Type</b>	<b>Art-No.</b>
		PS01-48x240-C	0150-1219	PS01-48x360F-C	0150-1269
		PS01-48x240F-C	0150-1220		
14	Washer	8x30/2,0		8x30/2,0	
15	Shaft screw	ISO 7380 M8x16		ISO 7380 M8x16	
16	Brake hole cap	0160-0728		0160-0728	

## 3.2 Material data

Component	Material
Front plate	Anodized aluminium
Shafts for ball bearings	Hardened steel
Shafts for plain bushings GF	Stainless steel
Guide block	Anodized aluminium
Ball bearing	Steel
Plain bushing	Sintered Bronze
MagSpring Flange / MagSpring Adapter	Anodized aluminium
Socket washer	Steel
Ball washer	Hardened steel
Dished washer	Spring steel, tempered

### 3.3 Types of bearing

The H01 linear guides are optionally available with shaft bearings in the form of ball bearings or sintered plain bearings (option -GF).

For standard applications under normal ambient conditions, the use of linear guides with ball bushings is recommended. Linear bearings with ball bushings have very good running characteristics and ensure virtually frictionless operation.

For applications in environments with heavy soiling, moisture or in wet areas, the use of linear guides with plain bearings and stainless shafts is recommended. Linear guides with plain bearings are also recommended for highly dynamic applications with accelerations above 50m/s<sup>2</sup>.

## 4 Installation instructions

In this section, the assembly of the stator with the guide and the coupling of the slider with the guide unit are considered. For the assembly of the linear guide itself, please refer to the exploded view in the "Parts List" section.

### 4.1 Operating conditions



Maximum ambient temperature limits:

- Standard Motors: -10 °C...80 °C
- HP Motors: -10 °C...110 °C

Internal temperature sensor error occurs at:

- Standard Motors: 90 °C
- HP Motors: 120 °C

### 4.2 Mounting guide with stator



Please attend to the safety instructions in chapter 2 during the assembling!

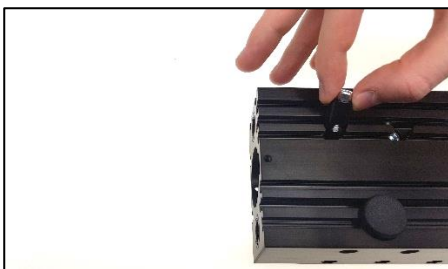


#### 1. Prepare the clamping material.

The following clamping material is required for fastening the stator with the linear guide:

- Clamping cylinder
- Screw

The specification and size of the components depend on the type of linear guide. See the "Parts List" section.



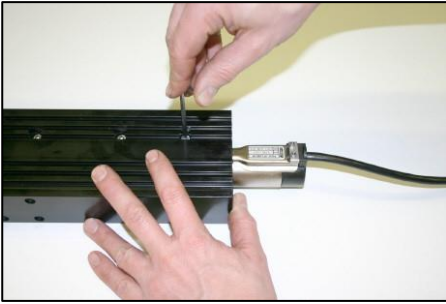
#### 2. Inserting the clamping elements into the guide block.



#### 3. Insert stator.

The stator is inserted on the opposite side of the mounting hole (see red area or image of step 2). Insert the stator until it is flush with the end of the guide block.

**Important!** Clamping elements must be aligned.



#### 4. Tighten the clamping screws to the specified torque.

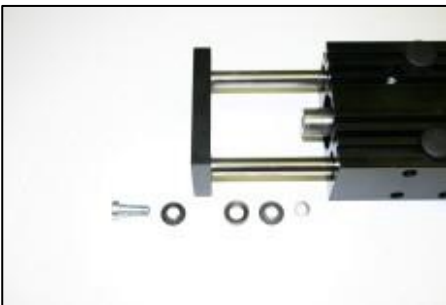
H01-23 -> 2 Nm  
 H01-37 -> 6 Nm  
 H01-48 -> 10 Nm

**Attention!** The stator must not be deformed by the clamping! Do not exceed the maximum tightening torques.

### 4.3 Mounting slider with guide



Please attend to the safety instructions in chapter 2 during the assembling!

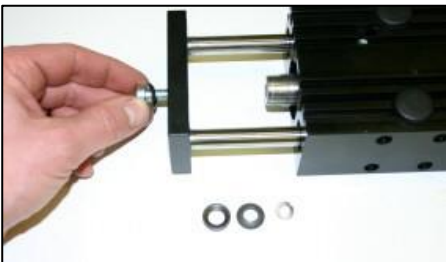


#### 1. Prepare mounting material

The following components are required to attach the slider to the front plate:

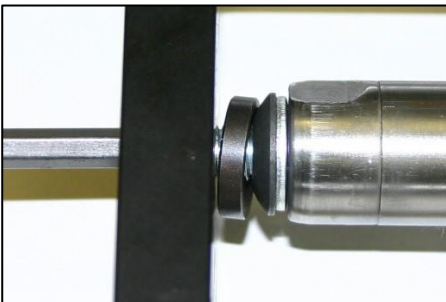
1 x Slider screw  
 1 x Spherical washer  
 2 x Conical seats  
 1 x Dished washer

The specification and size of the components depend on the type of linear guide. See section "Parts List".



#### 2. Place the spherical washer on the slider screw and insert it into the front plate.

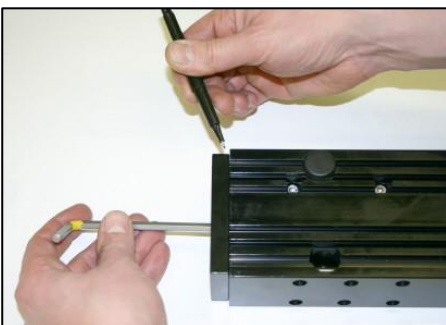
The conical seat is milled into the front plate.



#### 3. Place the conical seat, the spherical washer and the dished washer on the other side of the front plate onto the slider screw.

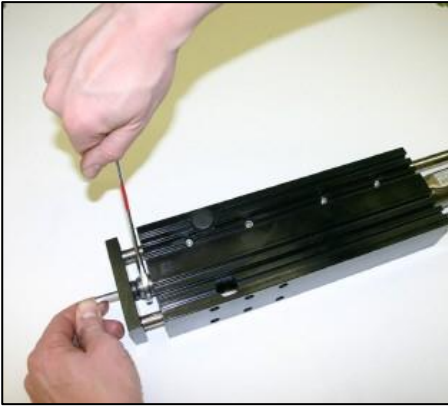
Insert Loctite 243 screw lock into the threaded hole of the slider.

**Important!** The slider screw is not yet firmly screwed to the slider.



#### 4. Completely retract the guide unit and then tighten the slider screw.

**Important!** The slider screw is not tightened firmly until the next step.



**5. Slightly extend the guide unit and tighten the screw with a spanner.**

The tightening torque of the slider screw is:

- 6 Nm with M5 screw
- 22 Nm with M8 screw
- 40 Nm with M10 screw

**Attention!** Tighten the slider screw as shown. The spanner must not be attached to the other end of the slider!

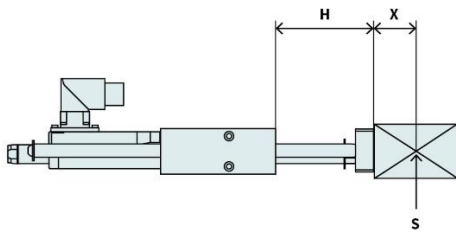
After assembly is complete, the friction should be even over the entire stroke.



After the installation of the slider a safety label must be placed close to the slider.

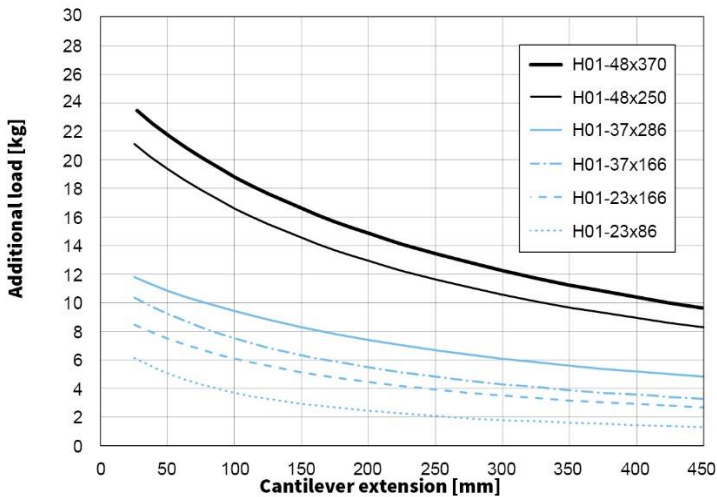
**5 Load details**

**5.1 Maximum load**

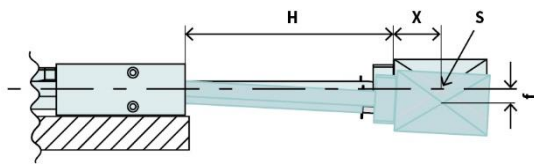


H = Stroke  
 X = Distance to center of gravity  
 S = Center of gravity  
 Cantilever extension = H + X

The maximum load depends on the cantilever extension (maximum stroke H plus distance X between the center of gravity of the working load and the mounting surface).



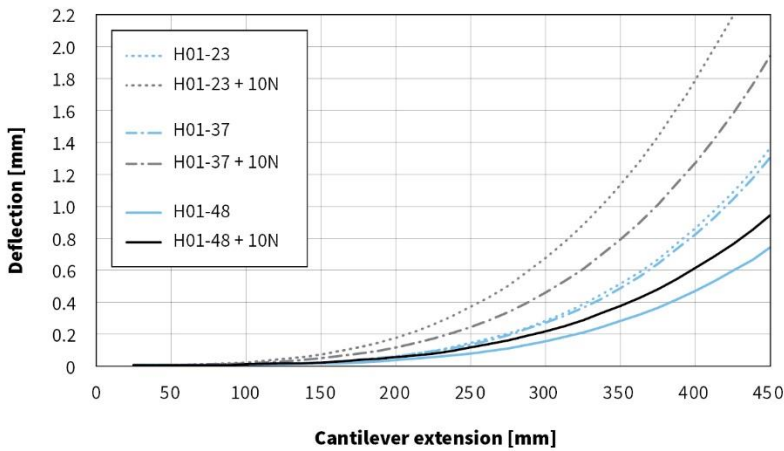
### 5.2 Vertical deflection



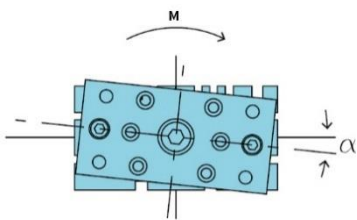
H = Stroke  
 S = Center of gravity  
 X = Distance to center of gravity  
 f = Deflection of theoretical axis

Total deflection = Static deflection + deflection under load  
 (Deflection measured at standstill, with 10N / 2.25lbf Load.)

Deflection for smaller or larger load masses can be linearly extrapolated using the data for 10 N / 2.25 lbf.

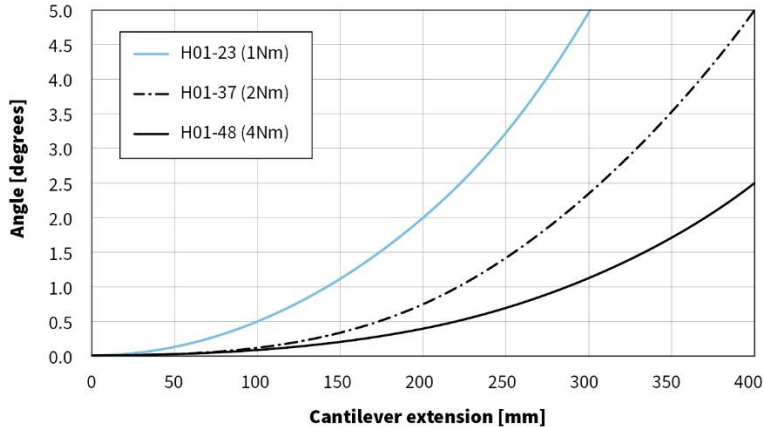


### 5.3 Angular deflection



Angular deflection (twist) of the mounting plate depends on the torque load to be absorbed and the cantilever extension.

The angular deflection for smaller or larger torques can be linearly extrapolated from the deflection in the diagram (up to maximum angular deflection of 10°).



## 6 Spare parts

### 6.1 Bearing

LinMot offers the respective replacement bearings for both types of linear guides. The replacement interval of the bearings results from the functional test of the linear guide. See chapter 8.1.

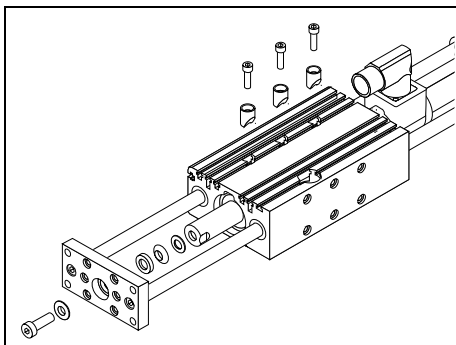
#### Ordering information

Item	Description	Item-No.
Linear Bearing Set for H01-23	Linear Bearings including seals	0150-3369
Linear Bearing Set for H01-37	Linear Bearings including seals	0150-3370
Linear Bearing Set for H01-48	Linear Bearings including seals	0150-1636
Linear Slider Bearing Set for H01-23	Linear Slider Bearings including seals	0150-3386
Linear Slider Bearing Set for H01-37	Linear Slider Bearings including seals	0150-3387
Linear Slider Bearing Set for H01-48	Linear Slider Bearings including seals	0150-3468

#### 6.1.1 Replacing the bearing



Please attend to the safety instructions in chapter 2 during the assembling!

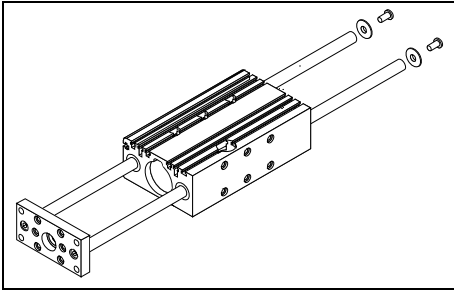


#### 1. Remove stator and slider from guide block.

Loosen the slider screw and clamping cylinder. Pull the stator together with the slider out of the guide block.

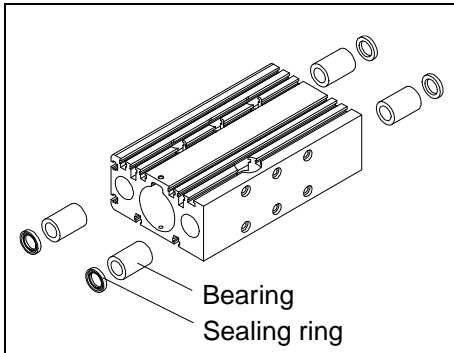
**Attention!** When handling with sliders, in some cases large magnetic forces of attraction are exerted.

Note warning notices on page 5 onwards! It may be necessary to cover nearby iron structures with non-magnetic material (e.g. wood).



## 2. Remove the guide unit.

Loosen screws and washers at the end of the guide rods and pull out the guide unit to the front.



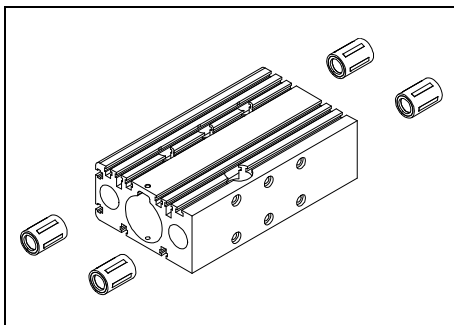
## 3. Option A: Replace plain bearing.

Disassemble the old bearings using a universal puller such as Kukko 27-A.

The new bearings can then be inserted using a hand press or a press pin.

After inserting the bearings leave 3 mm free to the outer edge.

Finally, the sealing rings are pressed in.



## 3. Option B: Replace ball bearings.

Disassemble the old bearings using a universal puller such as Kukko 27-A.

The new bearings can then be inserted using a hand press or a press pin.

Insert the bearings so that they are flush with the guiding block.

## 7 Accessories

### 7.1 Pneumatic brake



A brake can be fitted to the linear guides as an option. The pneumatic brake is controlled by the servo drive. A valve is also required to open and close the brake.

The brake acts on the guide shaft of the linear guide and is released by compressed air. The brake is active without compressed air. The pneumatic brake is available for linear guides H01-37 and H01-48.



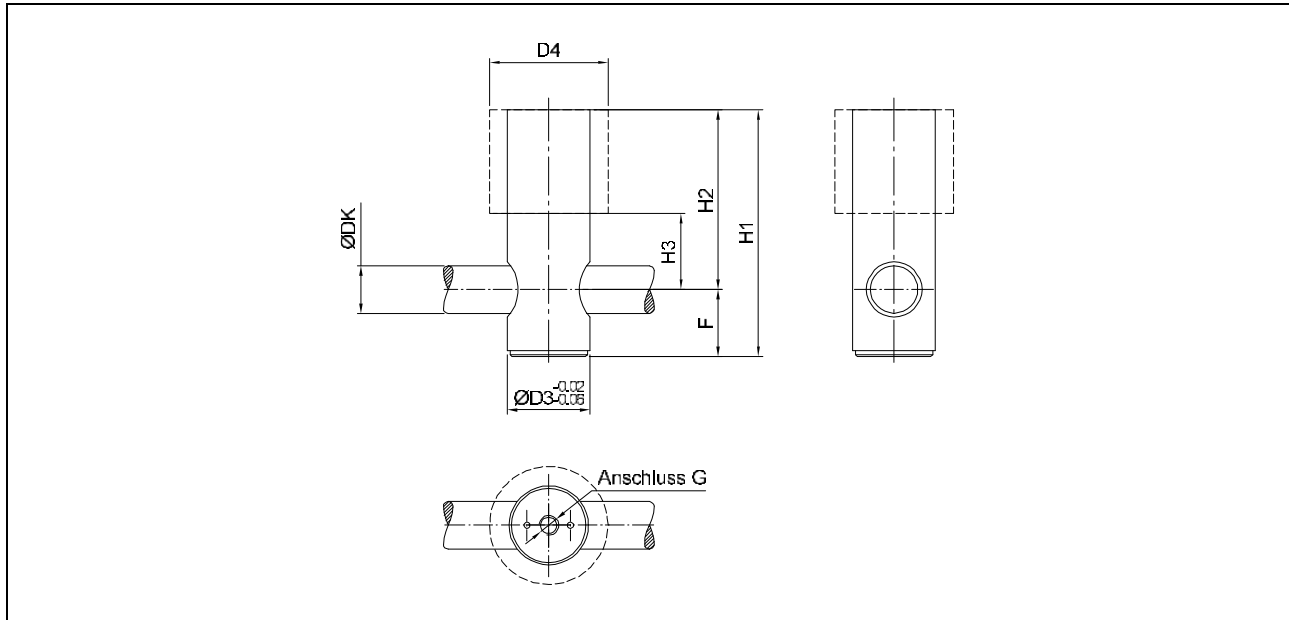
- The brake has only a holding function and is not designed to slow or stop dynamic movements.
- No use for safety devices!
- Not approved as safety element!



**Ordering information**

Item	Description	Item-No.
HB01-37	Pneumatic brake for H01-37 guides	0150-5052
HB01-48	Pneumatic brake for H01-48 guides	0150-5098

**7.1.1 Dimensions**



Brake	Retention Force [N]	Ø D3 [mm]	Ø D4 [mm]	F [mm]	G	H1 [mm]	H2 [mm]	H3 [mm]
HB01-37	600	20	25	17	G 1/8"	76	45.5	25.5
HB01-48	1000	24	-	19.5	G 1/8"	81	61.5	-

**7.1.2 Material data**

Component	Material
Housing	Anodized aluminium
Clamp jaws	High quality brass
Piston	POM
Spring	Spring steel
Seals	NBR/Ultrathan

**7.1.3 Operating conditions**

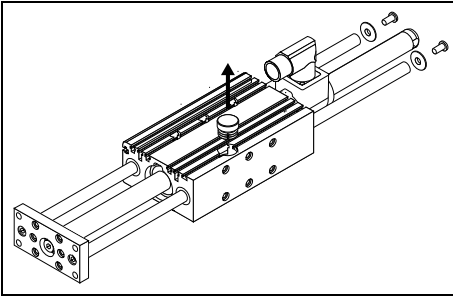


- Medium: Filtered compressed air (40 µm), unoiled or oiled
- Operating pressure: 4 - 6 bar
- Ambient temperature: 10 °C...80 °C

**7.1.4 Mounting**

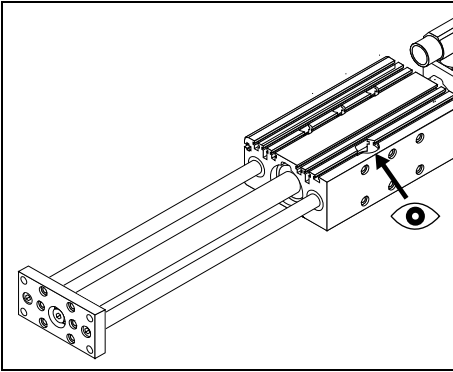


Please attend to the safety instructions in chapter 2 during the assembling!



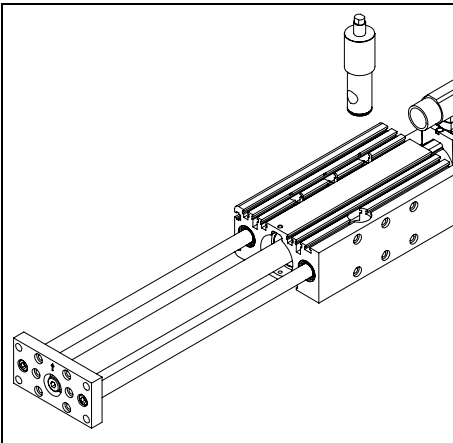
1. **Remove the end stop of the guide shafts and the brake hole cap.**

Loosen screws and washers at the end of the guide and remove the brake hole cap from the mounting hole.



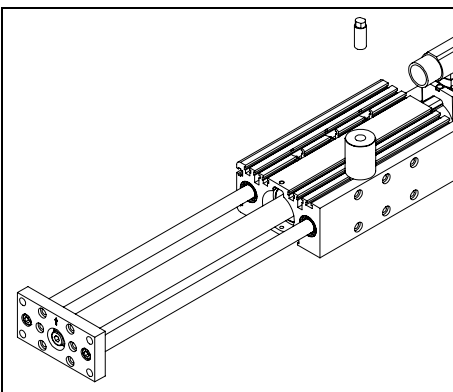
2. **Pull the guide shafts and slider forward until the mounting hole for the brake is free.**

**Attention!** Do not pull guide shafts and slider completely out of the guide block! Otherwise the shafts are attracted by the magnetic slider!



3. **Insert brake.**

Insert the brake into the mounting hole from above. Then push the guide shaft through the brake opening. Finally, reassemble the end stops of the guide shafts.



4. **Loosen the mounting screw on the air connection.**

If the guide shafts run smoothly, the mounting screw can be removed. The guide shaft is then clamped. Instead of the mounting screw, a compressed air connection is now established.

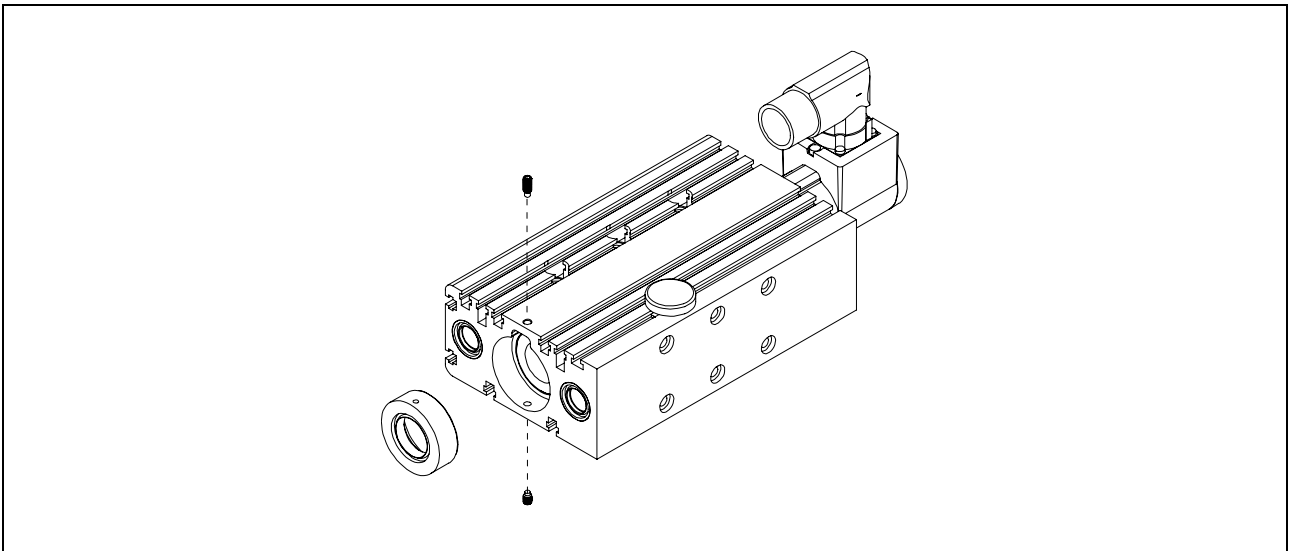
When pressure is applied, the brake is released and the guide can be moved again.

The air pressure for the brake can be controlled using the LinMot Servo Drives and a valve.

## 7.2 Wiper



If the stators are equipped with wipers, maintenance is simplified and maintenance cycles can be extended. Since the lubricant remains in the stator through the wipers, it is dispensed in metered quantities and at the same time is less contaminated. In addition, the slider remains free of lubricant outside the stator.



The wiper is fixed on the front side of the guide using 2 set screws (top / bottom). On the opposite side, a wiper is mounted at the end of the stator. This wiper is an accessory for linear motors.

### Ordering information

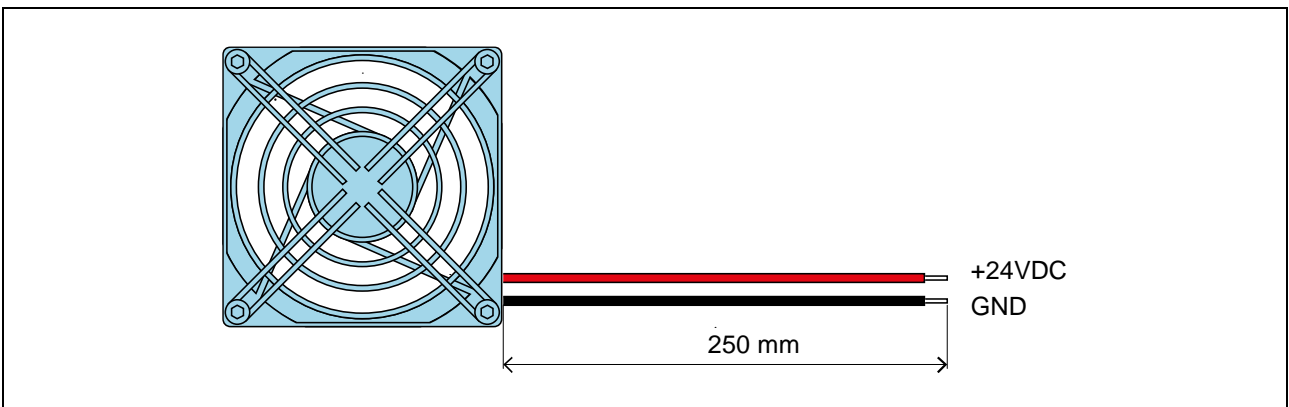
Item	Description	Item-No.
HA01-37/20-F	Wiper for H01-37 guides, front side	0150-5108
HA01-48/28-F	Wiper for H01-48 guides, front side	0150-5109
PA01-37/20-R	Seal back side for PS01-37x...-C	0150-3201
PA01-37/20-R cable	Seal back side for PS01-37-cable type	0150-3221
PA01-48/28-R	Seal back side for PS01-48x...-C	0150-3202
PAW01-20	Wiper for PL01-20	0150-3112
PAW01-28	Wiper for PL01-28	0150-3133

### 7.3 Fan



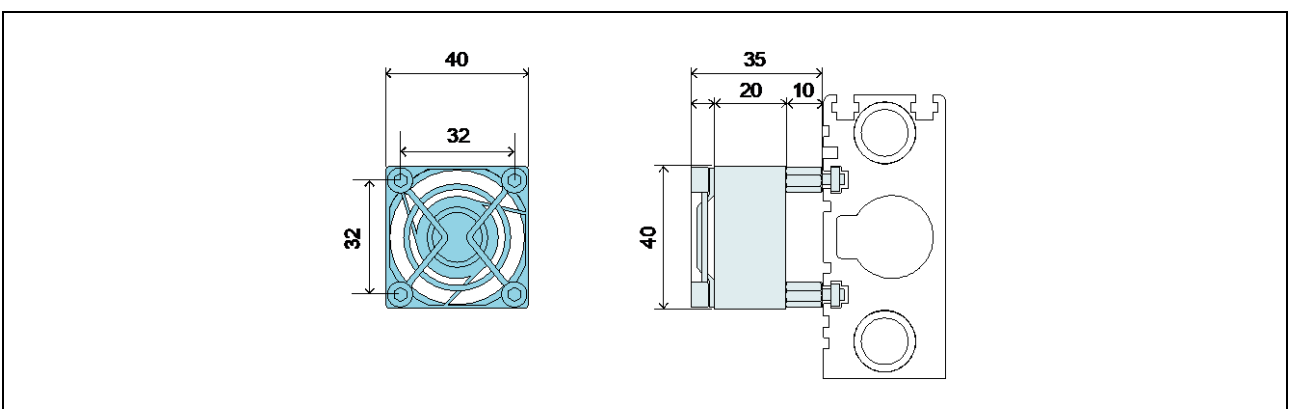
A LinMot fan can be mounted on the guiding block for forced cooling and to increase the continuous force.

#### 7.3.1 Technical Data

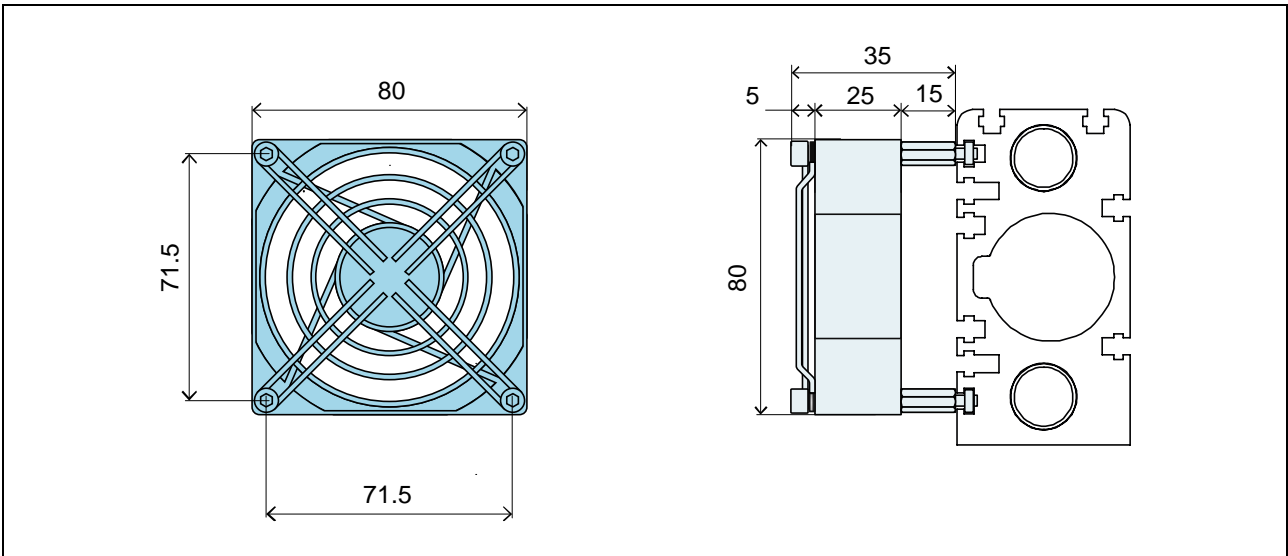


Item	Supply Voltage	Current	Air flow
HV01-23	24 VDC	70 mA	15m³/h
HV01-37/48	24 VDC	120 mA	80m³/h

#### 7.3.2 Dimensions



Item	Description	Item-No.
HV01-23	Fan cooling for H01-23	0150-5050



Item	Description	Item-No.
HV01-37/48	Fan cooling for H01-37/48 & PF02-37/48	0150-5051

**7.4 MagSpring**



With a MagSpring installed parallel to the linear motor, the weight force can be compensated passively. In the de-energized state, this prevents the axis from lowering. Other possible applications are, for example, the generation of a contact force independent of position or the one-sided force assistance in drive tasks.

**7.4.1 Ordering information**

**MagSpring M01-20 with 50 mm stroke**

Item	Description	Item-No.
MS01-20x60	MagSpring Stator 20x60 mm	0250-2200

ML01-12x130/80-10	Slider for MagSpring M01-20x60/50, Force 11N	0250-2300
ML01-12x130/80-15	Slider for MagSpring M01-20x60/50, Force 17N	0250-2308
ML01-12x130/80-20	Slider for MagSpring M01-20x60/50, Force 22N	0250-2301

**MagSpring M01-20 with 130 mm stroke**

Item	Description	Item-No.
MS01-20x140	MagSpring Stator 20x140 mm	0250-2201

ML01-12x210/160-10	Slider for MagSpring M01-20x140/130, Force 11N	0250-2302
ML01-12x210/160-15	Slider for MagSpring M01-20x140/130, Force 17N	0250-2309
ML01-12x210/160-20	Slider for MagSpring M01-20x140/130, Force 22N	0250-2303

**MagSpring M01-20 with 210 mm stroke**

Item	Description	Item-No.
MS01-20x220	MagSpring Stator 20x220 mm	0250-2202

ML01-12x290/240-10	Slider for MagSpring M01-20x220/210, Force 11N	0250-2304
ML01-12x290/240-15	Slider for MagSpring M01-20x220/210, Force 17N	0250-2310
ML01-12x290/240-20	Slider for MagSpring M01-20x220/210, Force 22N	0250-2305

**MagSpring M01-20 with 290 mm stroke**

Item	Description	Item-No.
MS01-20x300	MagSpring Stator 20x300 mm	0250-2207

ML01-12x370/320-10	Slider for MagSpring M01-20x300/290, Force 11N	0250-2311
ML01-12x370/320-15	Slider for MagSpring M01-20x300/290, Force 17N	0250-2312
ML01-12x370/320-20	Slider for MagSpring M01-20x300/290, Force 22N	0250-2313

**MagSpring M01-37 with 50 mm stroke**

Item	Description	Item-No.
MS01-37x80	MagSpring Stator 37x80mm	0250-2203

ML01-12x130/80-10	Slider for MagSpring M01-37x80/50, Force 40N	0250-2300
ML01-12x130/80-15	Slider for MagSpring M01-37x80/50, Force 50N	0250-2308
ML01-12x130/80-20	Slider for MagSpring M01-37x80/50, Force 60N	0250-2301

**MagSpring M01-37 with 125 mm stroke**

Item	Description	Item-No.
MS01-37x155	MagSpring Stator 37x155mm	0250-2204

ML01-12x210/160-10	Slider for MagSpring M01-37x155/125, Force 40N	0250-2302
ML01-12x210/160-15	Slider for MagSpring M01-37x155/125, Force 50N	0250-2309
ML01-12x210/160-20	Slider for MagSpring M01-37x155/125, Force 60N	0250-2303

**MagSprings M01-37 with 200 mm stroke**

Item	Description	Item-No.
MS01-37x230	MagSpring Stator 37x230mm	0250-2205

ML01-12x290/240-10	Slider for MagSpring M01-37x230/200, Force 40N	0250-2304
ML01-12x290/240-15	Slider for MagSpring M01-37x230/200, Force 50N	0250-2310
ML01-12x290/240-20	Slider for MagSpring M01-37x230/200, Force 60N	0250-2305

**MagSprings M01-37 with 275 mm stroke**

Item	Description	Item-No.
MS01-37x305	MagSpring Stator 37x305mm	0250-2206
ML01-12x370/320-10	Slider for MagSpring M01-37x305/275, Force 40N	0250-2311
ML01-12x370/320-15	Slider for MagSpring M01-37x305/275, Force 50N	0250-2312
ML01-12x370/320-20	Slider for MagSpring M01-37x305/275, Force 60N	0250-2313

**MagSpring M01-37 with 350 mm stroke**

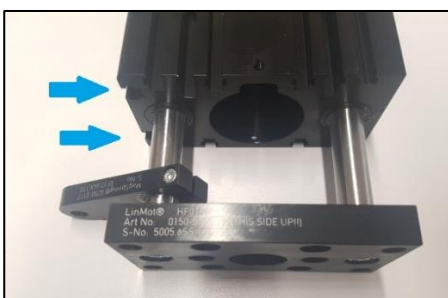
Item	Description	Item-No.
MS01-37x380	MagSpring Stator 37x380mm	0250-2209
ML01-12x450/400-20	Slider for MagSpring M01-37x380/350, Force 60N	0250-2332

**MagSpring Flange**

Item	Description	Item-No.
MF01-20/H23	Flange MagSpring M01-20 - suitable for the guide H01-23	0250-2306
MF01-20/H37	Flange MagSpring M01-20 - suitable for the guide H01-37	0250-2315
MF01-37/H37	Flange MagSpring M01-37 - suitable for the guide H01-23 - suitable for the guide H01-37 and B01-37 - suitable for the guide H01-48 and B01-48	0250-2307

**MagSpring Adapter**

Item	Description	Item-No.
MA01-20/H23	Adapter MagSpring M01-20 / Guides H01-23	0250-0116
MA01-37/H23	Adapter MagSpring M01-37 / Guides H01-23	0250-0122
MA01-37/H37	Adapter MagSpring M01-20 / 37 / Guides H01-37 and B01-37	0250-0117
MA01-37/H48	Adapter MagSpring M01-37 / Guides H01-48 and B01-48	0250-0118

**7.4.2 Mounting****1. Mounting the MagSpring Adapter**

Mount the MagSpring adapter on the guide shaft. This is the guide shaft, which is located on the block side with the T-slots. See illustration.

**Important!** Do not yet tighten the clamping screw.

**2. Place the flange on the guide block and tighten the screws slightly.**

**Important!** The flange should still be displaceable.



### 3. Insert MagSpring slider into stator.

**Important!** The slider has a square on one side. This side must protrude from the threaded end of the stator.



### 4. Push MagSpring into the flange.

The flange can now be pushed into the centre of the MagSpring.

**Important!** Make sure that the MagSpring is straight to the guide block. Then remove MagSpring and tighten the flange at that point with the guide block.



### 5. Retract the front plate as far as it will go and insert MagSpring into the flange.

Position MagSpring so that there is a distance of 10 mm between the MagSpring slider and the adapter.



### 6. Fasten MagSpring in the flange.

Tighten the MagSpring to 2.6 Nm using the clamping screw.



### 7. Slide the spacer sleeve onto the screw.



### 8. Connect MagSpring slider with adapter.

- Insert Loctite 243 screw lock into the threaded hole of the MagSpring slider.
- Tighten the screw to a torque of 5 Nm.

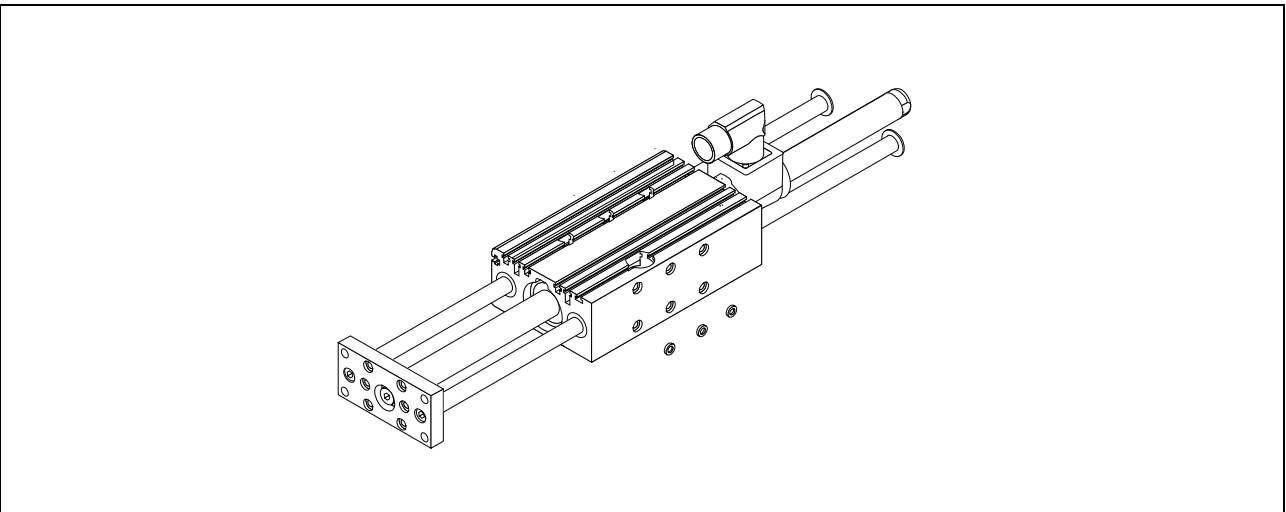




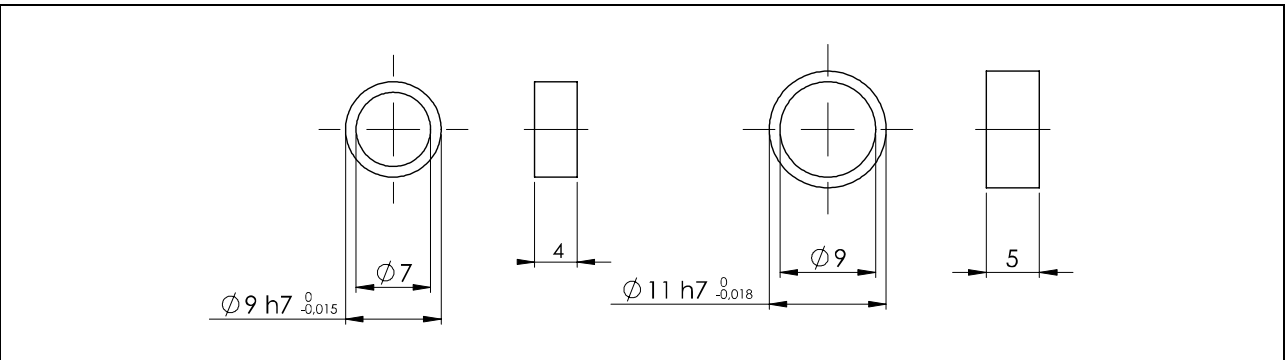
**9. Attach the MagSpring adapter to the guide rod.**

Retract the front plate as far as it will go and tighten the screw finger-tight.  
Then check that the guide runs smoothly. If necessary, realign the flange or stator.

**7.5 Centering sleeve**

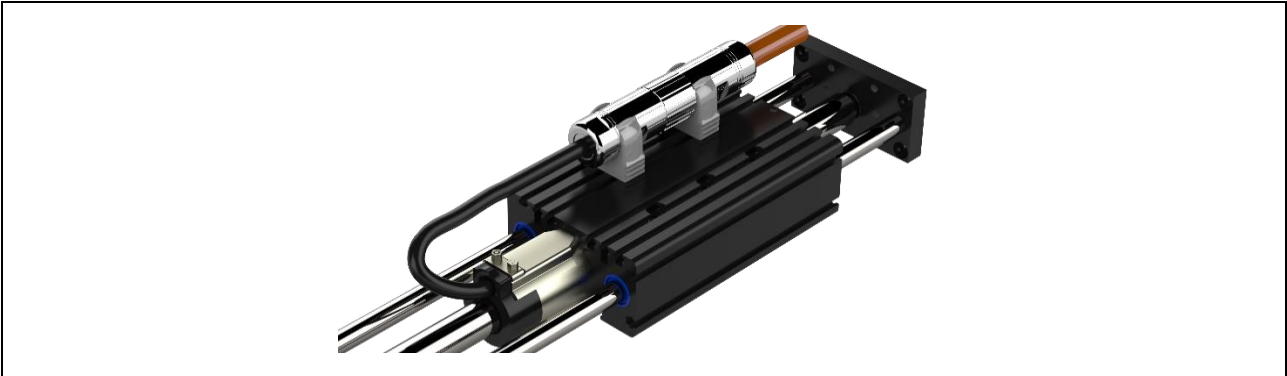


The centering sleeves simplify the mounting of the linear guide to another module. The mounting options of the linear guide are provided by several threaded holes at the bottom and side of the guide block.

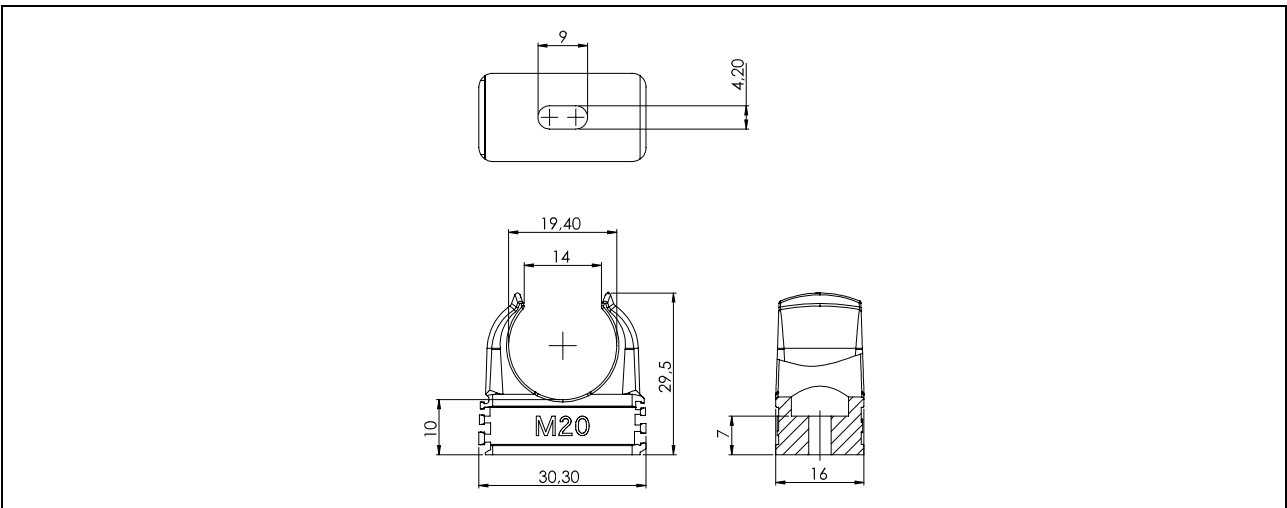


Item	Description	Item-No.
HC01-09/04	Centering sleeve D9x4mm for H01-23 and H01-37	0150-3251
HC01-11/05	Centering sleeve D11x5mm for H01-48	0150-3252

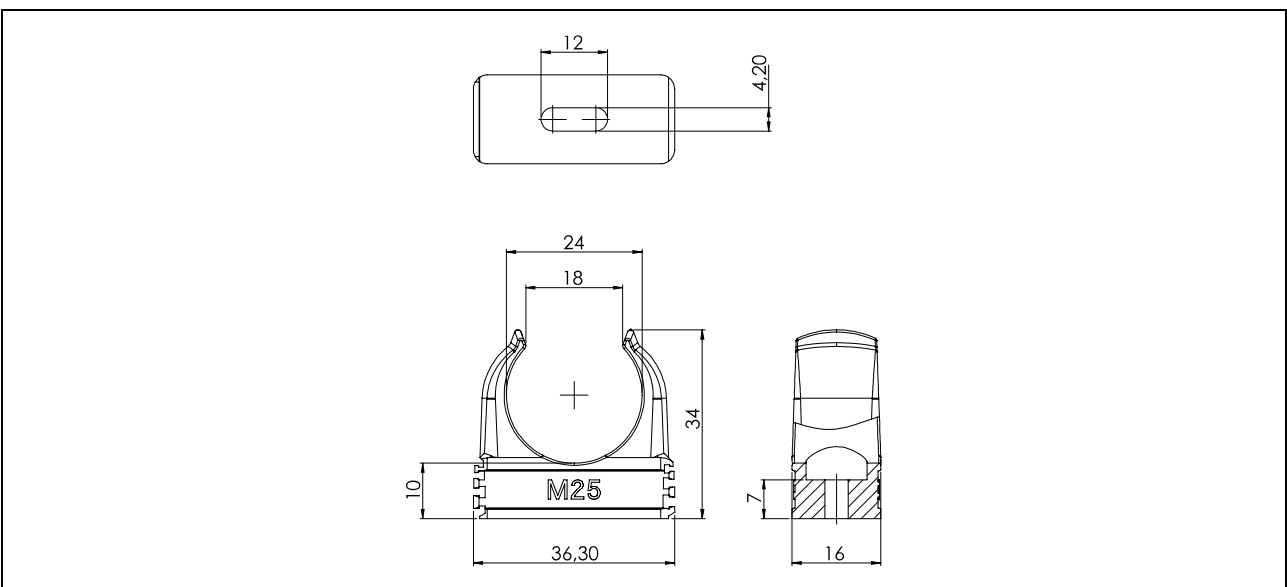
### 7.6 Mounting clip



The flexible connector end of the M, C and R-cable type motors can be fixed with mounting clips. The clip is fixed to the guiding block with an M4x12 screw and an M4 square nut. In applications with a moving stator, the clips prevent damage caused by vibrations.



Item	Description	Item-No.
MCF01-R	Mounting clip for M-connector and R-connector	0150-3076



Item	Description	Item-No.
MCF01-C	Mounting clip C-Stecker	0150-3151

## 8 Maintenance and testing instructions

Linear guides with ball bearings are provided with initial lubrication at the factory. Lubrication and inspection intervals depend primarily on the average travel speed, operating temperature and grease quality. The following table with the inspection intervals is based on normal industrial, central european conditions (5-day week with 8 hours of operation per day) and the use of LinMot grease.

Linear guides with sintered plain bearings are generally not relubricated. Relubrication is only required under exceptional loads and special conditions (see list below). NTI AG / LinMot should be contacted beforehand.

Velocity [v]	Lubrication and inspection interval [km] (Linear guides with ball bearings)
$v < 1 \text{ m/s}$	5000
$1 \text{ m/s} < v < 1.5 \text{ m/s}$	2500
$v > 1.5 \text{ m/s}$	1200

The stators are also initially lubricated at the factory. Maintenance is only necessary if the motors run dry or are heavily soiled. Under normal industrial, central european conditions (5-day week with 8 hours of operation per day), a quarterly inspection is sufficient. From an organizational point of view, it is advisable to check the motors together with the linear guides.

In principle, the inspection cycle of the drive unit must be shortened if there are heavy loads or deviating conditions. These are e.g.

- Permanent soiling
- Direct sunlight
- Low humidity
- outdoor operation
- Strong shocks or vibrations
- Increased operating temperature

### 8.1 Inspection

According to the inspection intervals, the following tests must be carried out.

#### 8.1.1 Linear guide with ball bearings

- a) Do the guide shafts have too much clearance? If yes -> Replace bearing.
- b) Do the guide shafts show signs of wear or grooves? -> If yes -> Replace guide shafts.
- c) Have the shaft bearings been relubricated? If no -> Cleaning + Lubrication
- d) Is it easy to move the guide unit? If no -> Align slider (see installation instructions chapter 4.3).

#### 8.1.2 Linear guide with plain bearings

- a) Do the guide shafts have too much clearance? If yes -> Replace bearing.
- b) Do the guide shafts show signs of wear or grooves? -> If yes -> Replace guide shafts.
- c) Is it easy to move the guide unit? If no -> Align slider (see installation instructions chapter 4.3).

#### 8.1.3 Linear Motor

- a) Is the slider covered with a light greasy film? If no -> Lubrication
- b) Is the wiper (if present) without visible wear? If no -> Replace wiper
- c) Is the lubricant decomposed? If yes -> Cleaning (stator, slider) + Lubrication
- d) Is it easy to move the slider? if no -> Cleaning (stator, slider) + Lubrication

#### 8.1.4 MagSpring

- a) Is the slider covered with a light greasy film? If no -> Lubrication
- b) Does the slider show signs of wear or grooves? If yes -> Replace slider
- c) Does the MagSpring stator bearing show signs of wear? If yes -> Replace MagSpring
- d) Is it easy to move the MagSpring slider? If no -> Cleaning (stator, slider) + lubrication

### 8.1.5 Pneumatic Brake

Does the brake continue to exert the expected holding force? If no -> Replace brake.

## 8.2 Cleaning

### 8.2.1 Linear Guide

- Remove the guide shafts according to the first two steps in section 6.1.1.
- Guide shafts and bearings should ideally be cleaned with a soft disposable paper using LU06 cleaning spray (alternatively fuel or alcohol).

### 8.2.2 Linear Motor/ MagSpring

- Carefully pull the slider out of the stator.  
**Attention!** High magnetic attraction forces (note warnings from p. 5 on)! It may be necessary to cover nearby iron structures with non-magnetic material (e.g. wood).
- Clean slider and stator with a soft disposable paper ideally with the aid of LU06 cleaning spray (alternatively fuel or alcohol).

## 8.3 Lubrication

### 8.3.1 Linear guide with ball bearing

- First, follow the cleaning instructions in the section above.
- Grease the shaft bearing with 2-3 g grease SKF LGEP 2, using a brush for even application.  
**Important!** Avoid over-greasing!
- The guide shafts are inserted into the guide without lubrication.

### 8.3.2 Linear guide with plain bearing

- First, follow the cleaning instructions in the section above.
- Grease the shaft bearing with 2-3 g grease LU02, using a brush for even application.  
**Important!** Avoid over-greasing!
- The guide shafts are inserted into the guide without lubrication.

### 8.3.3 Linear Motor / MagSpring

- First, follow the cleaning instructions in the section above.
- Then grease the stator bore with 2-3 g grease LU02, whereby only a light film of grease should be present on the inside.  
**Important!** Avoid over-greasing!
- Slide the slider with a length  $\leq 500$  mm into the stator when cleaned.  
Sliders with length  $> 500$  mm must be slightly greased before assembly. Grease the slider along the length with approx. 4 g fat LU02 (4 g = approx  $\frac{1}{2}$  hazelnut) per meter. The grease can be applied by hand or with a soft paper towel. If wipers are used, their sealing lips must also be slightly greased with LU02 during installation.



Basically, it must be ensured that only a light film of grease is present on the sliders. 4 g grease per 1000 mm rotor length is sufficient for this. Overgreasing can lead to gumming of the grease, especially at higher operating temperatures! In this case, the motor must be completely cleaned.

### 8.3.4 Pneumatic Brake

The clamping unit is provided with basic grease lubrication at the factory. Oil mist lubrication is not absolutely necessary, but increases the service life of the wear parts.



Once you use oiled compressed air, you must always use oiled compressed air. Too much oil can cause malfunctions.

## 8.4 Cleaning agent / Lubricant

The cleaning spray LU06 is recommended for cleaning LinMot stators and sliders.

LinMot Grease LU02 is prescribed to improve the sliding properties between slider and stator or guide shafts and plain bearing. Lubricant SKF LGEP 2 is recommended for greasing the ball bearings.

### Ordering information

Item	Description	Item-No.
LU06-250	Klüberfood NH1 4-002 Spray* (250 ml)	0150-2394
LU02-50	Lubricant for linear motors** (50 g)	0150-1954
LU02-1000	Lubricant for linear motors** (1000 g)	0150-1955

\* LinMot Spray LU06 corresponds to KLÜBERFOOD NH1 4-002 which was developed for the food processing industry.

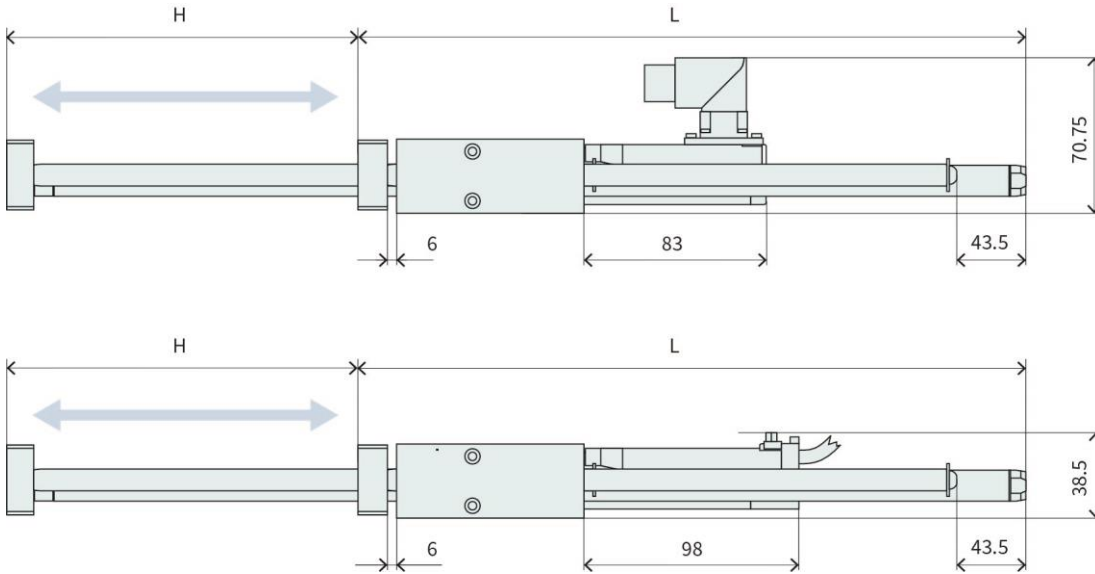
\*\* LinMot LU02 Lubricant corresponds to KLÜBERSYNTH UH1 14-31 which was developed for the food processing industry.

## 9 Storage, transport, installation altitude

- LinMot linear guides may only be transported and stored in their original packaging.
- The linear guides should not be removed from their packaging until they are installed.
- The storage room must be dry, dust-free, frost-free and vibration-free.
- The relative humidity should be less than 60%.
- Prescribed storage temperature: -15 °C...70 °C
- The linear guides must be protected from extreme weather conditions.
- The room air must not contain any aggressive gases.
- The maximum installation altitude is 4000 metres above sea level.  
From 1000m, a derating of 0.5% per 100m must be taken into account for the nominal force with air cooling.

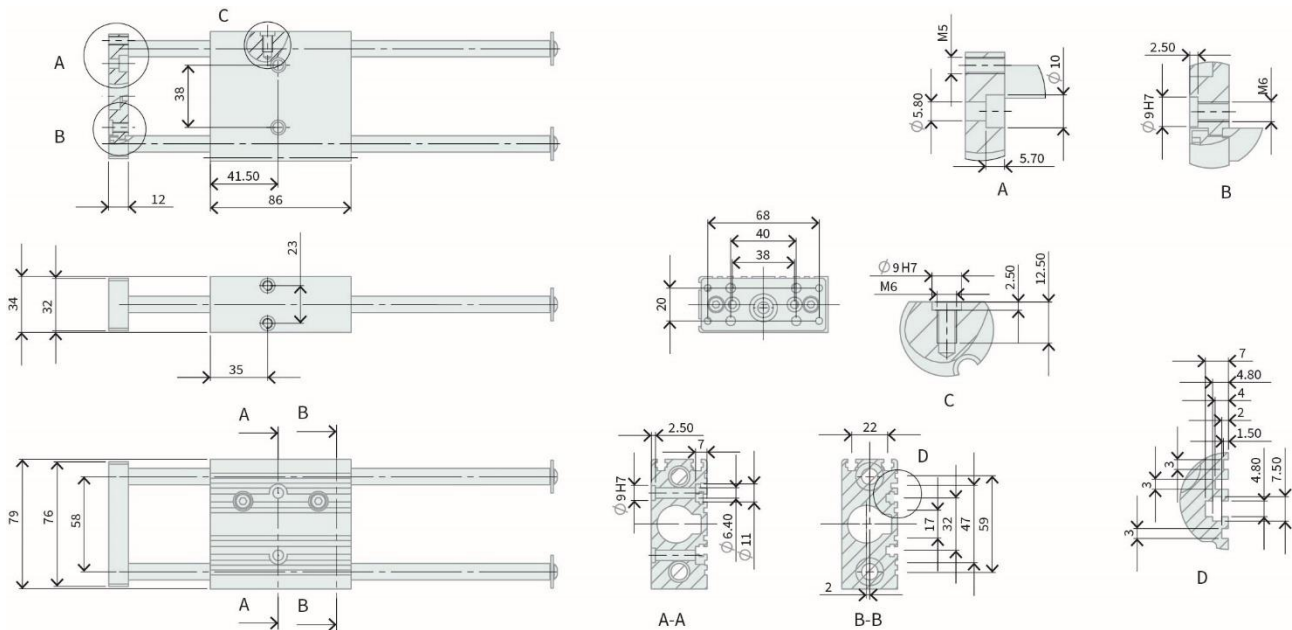
## 10 Dimensions & Weights

### 10.1 H01-23x86

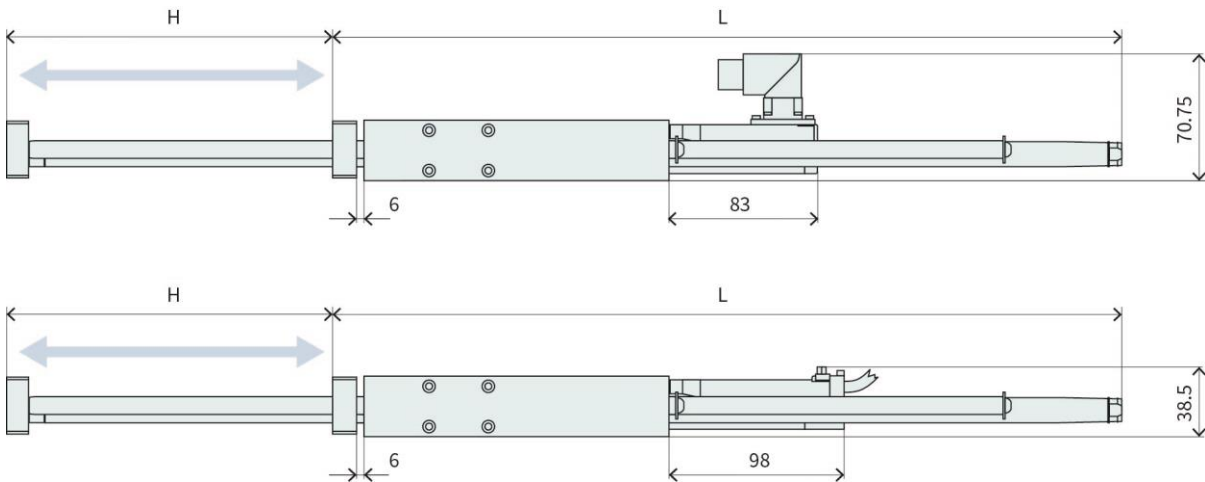


Linear module	Bearing type	Stroke H [mm (inch)]		Moving Parts L [mm (inch)]		Moving Mass <sup>1</sup> [g (lb)]		Total Weight [g (lb)]	
HM01-23x80/60	Ball bearings	60	( 2.36)	205.5	( 8.09)	405	(0.89)	1100	(2.43)
HM01-23x80/160	Ball bearings	160	( 6.30)	305.5	(12.03)	610	(1.34)	1310	(2.88)
HM01-23x80/260	Ball bearings	260	(10.24)	435.5	(17.15)	860	(1.90)	1560	(2.43)
HM01-23x80/60-GF	Plain bushing	60	( 2.36)	205.5	( 8.07)	405	(0.89)	1100	(2.43)
HM01-23x80/160-GF	Plain bushing	160	( 6.30)	305.5	(12.03)	610	(1.34)	1310	(2.88)
HM01-23x80/260-GF	Plain bushing	260	(10.24)	435.5	(17.15)	860	(1.90)	1560	(2.43)

<sup>1</sup> Mass with moving slider

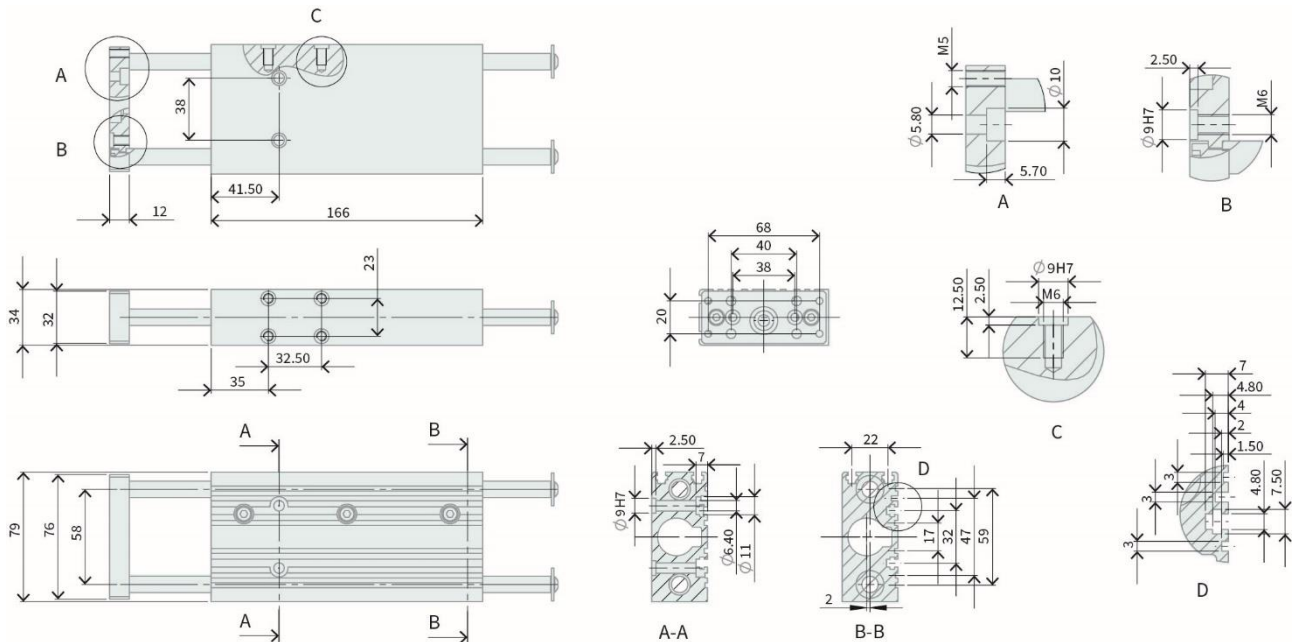


**10.2 H01-23x166**

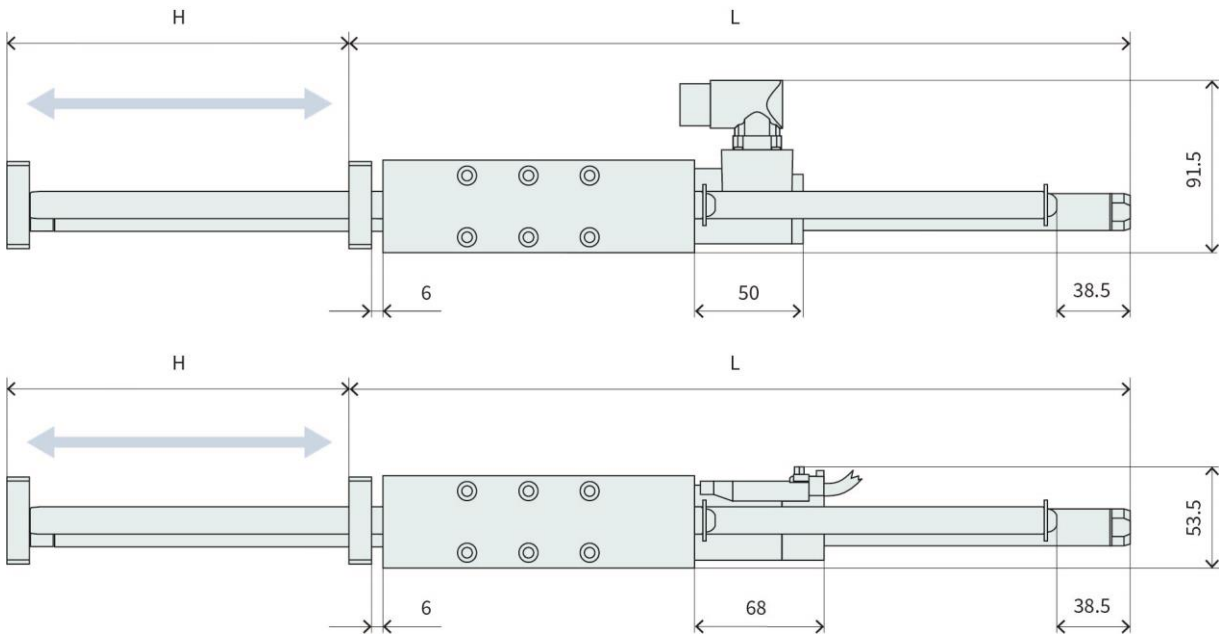


Linear module	Bearing type	Stroke H [mm (inch)]	Moving Parts L [mm (inch)]	Moving Mass <sup>1</sup> [g (lb)]	Total Weight [g (lb)]
HM01-23x160/80	Ball bearings	80 (3.15)	305.5 (12.03)	610 (1.34)	1890 (4.17)
HM01-23x160/180	Ball bearings	180 (7.09)	435.5 (17.15)	860 (1.90)	2140 (4.72)
HM01-23x160/280	Ball bearings	280 (11.02)	495.5 (19.51)	1020 (2.25)	2300 (5.07)
HM01-23x160/80-GF	Plain bushing	80 (3.15)	305.5 (12.03)	610 (1.34)	1890 (4.17)
HM01-23x160/180-GF	Plain bushing	180 (7.09)	435.5 (17.15)	860 (1.90)	2140 (4.72)
HM01-23x160/280-GF	Plain bushing	280 (11.02)	495.5 (19.51)	1020 (2.25)	2300 (5.07)

<sup>1</sup> Mass with moving slider

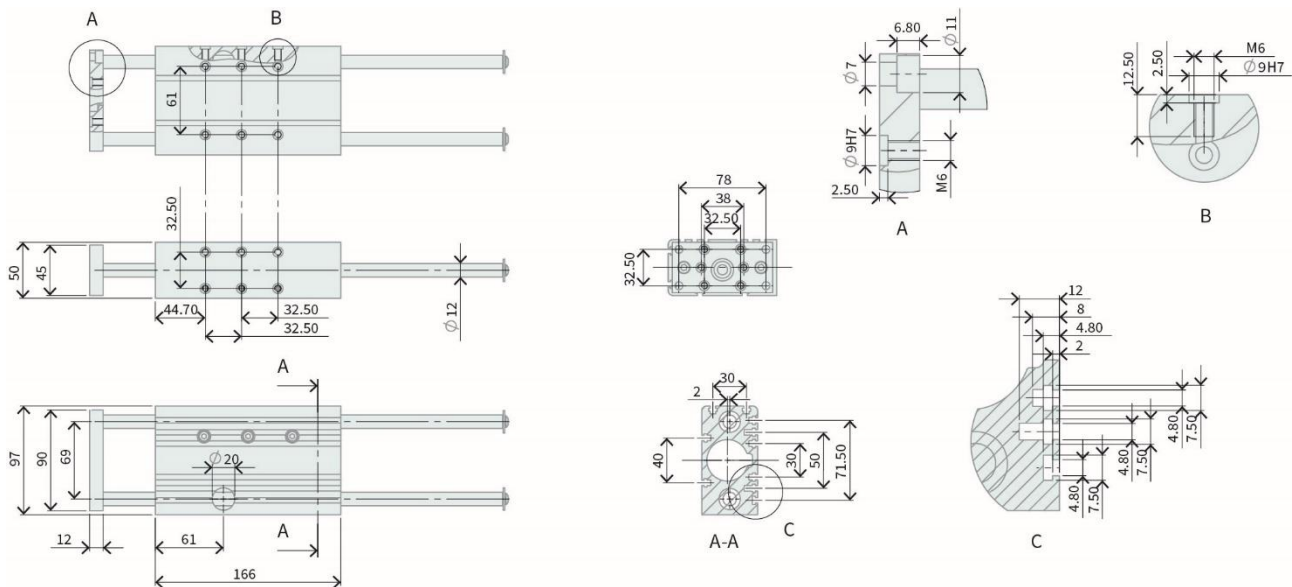


**10.3 H01-37x166**



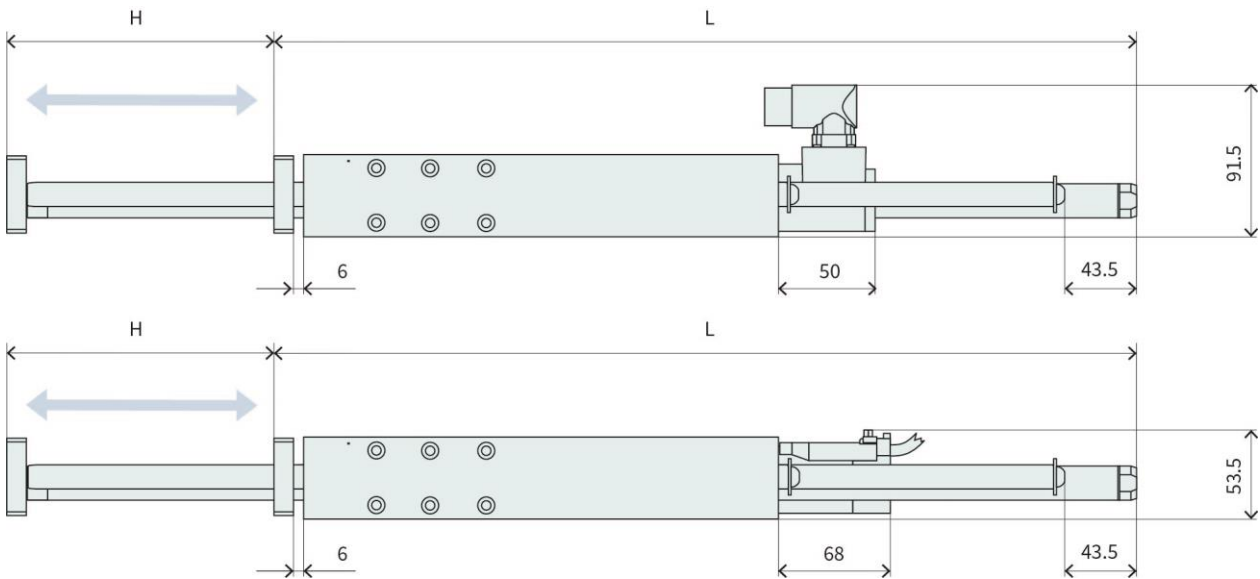
Linear module	Bearing type	Stroke H [mm (inch)]	Moving Parts L [mm (inch)]	Moving Mass <sup>1</sup> [g (lb)]	Total Weight [g (lb)]
HM01-37x120/80	Ball bearings	80 ( 3.15)	318 (12.52)	1190 (2.62)	3260 (7.18)
HM01-37x120/180	Ball bearings	180 ( 7.09)	413 (16.26)	1600 (3.53)	3670 (8.09)
HM01-37x120/280	Ball bearings	280 (11.02)	518 (20.39)	2030 (4.46)	4100 (9.03)
HM01-37x120/80-GF	Plain bushing	80 ( 3.15)	318 (12.52)	1190 (2.62)	3260 (7.18)
HM01-37x120/180-GF	Plain bushing	180 (7.09)	413 (16.26)	1600 (3.53)	3670 (8.09)
HM01-37x120/280-GF	Plain bushing	280 (11.02)	518 (20.39)	2030 (4.46)	4100 (9.03)

<sup>1</sup> Mass with moving slider



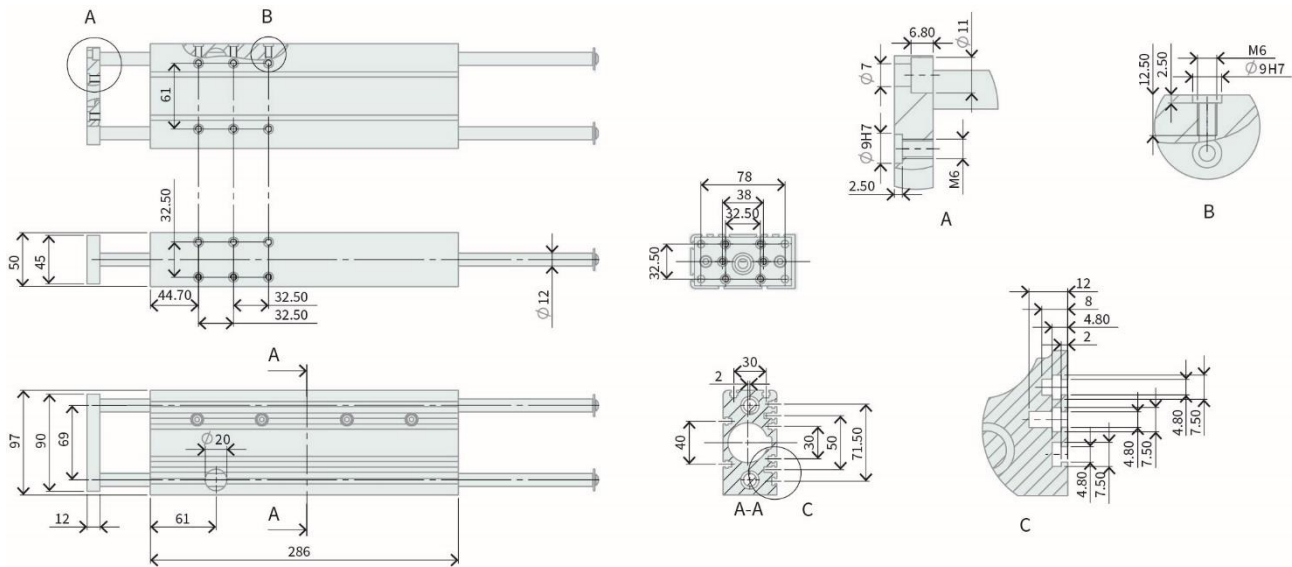


**10.4 H01-37x286**

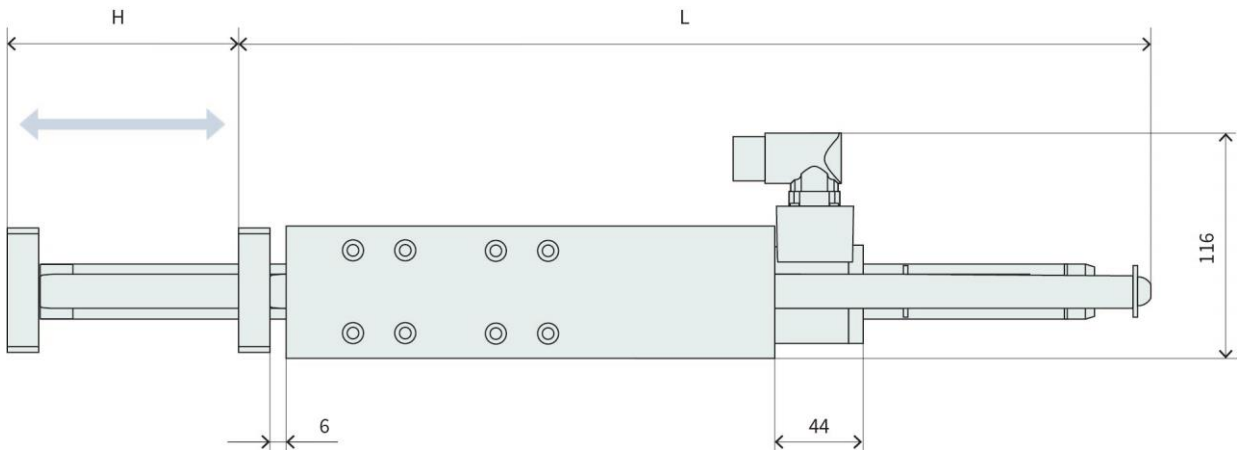


Linear module	Bearing type	Stroke H [mm (inch)]		Moving Parts L [mm (inch)]		Moving Mass <sup>1</sup> [g (lb)]		Total Weight [g (lb)]	
HM01-37x240/60	Ball bearings	60	(2.36)	413	(16.26)	1600	(3.53)	5280	(11.63)
HM01-37x240/160	Ball bearings	160	(6.30)	518	(20.39)	2020	(4.44)	5690	(12.54)
HM01-37x240/260	Ball bearings	260	(10.24)	618	(24.33)	2420	(5.33)	6100	(13.43)
HM01-37x240/60-GF	Plain bushing	60	(2.36)	413	(16.26)	1600	(3.53)	5280	(11.63)
HM01-37x240/160-GF	Plain bushing	160	(6.30)	518	(20.39)	2020	(4.44)	5690	(12.54)
HM01-37x240/260-GF	Plain bushing	260	(10.24)	618	(24.33)	2420	(5.33)	6100	(13.43)

<sup>1</sup> Mass with moving slider

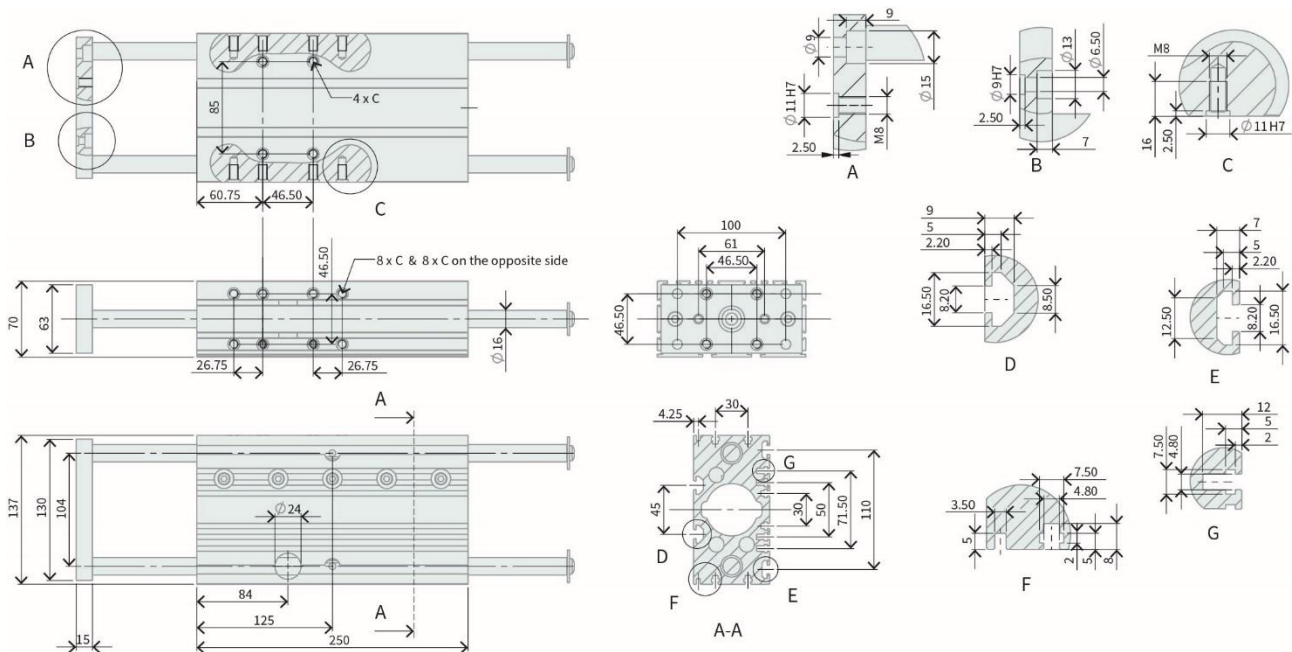


10.5 H01-48x250



Linear module	Bearing type	Stroke H [mm (inch)]	Moving Parts L [mm (inch)]	Moving Mass <sup>1</sup> [g (lb)]	Total Weight [g (lb)]
HM01-48x240/120	Ball bearings	120 (4.72)	460 (18.11)	3400 (7.47)	8950 (19.66)
HM01-48x240/210	Ball bearings	210 (8.27)	550 (21.65)	4100 (9.02)	9650 (21.21)
HM01-48x240/330	Ball bearings	330 (12.99)	670 (26.38)	5050 (11.07)	10600 (23.26)
HM01-48x240/420	Ball bearings	420 (16.54)	760 (29.92)	5750 (12.61)	11300 (24.80)
HM01-48x240/120-GF	Plain bushing	120 (4.72)	460 (18.11)	3400 (7.47)	8950 (19.66)
HM01-48x240/210-GF	Plain bushing	210 (8.27)	550 (21.65)	4100 (9.02)	9650 (21.21)
HM01-48x240/330-GF	Plain bushing	330 (12.99)	670 (26.38)	5050 (11.07)	10600 (23.26)
HM01-48x240/420-GF	Plain bushing	420 (16.54)	760 (29.92)	5750 (12.61)	11300 (24.80)

<sup>1</sup> Mass with moving slider





# ALL LINEAR MOTION FROM A SINGLE SOURCE

## LinMot Europe

### NTI AG - LinMot & MagSpring

Bodenaeckerstrasse 2  
CH-8957 Spreitenbach

Sales / Administration: +41-(0)56-419 91 91  
[office@linmot.com](mailto:office@linmot.com)

Tech. Support: +41-(0)56-544 71 00  
[support@linmot.com](mailto:support@linmot.com)

Tech. Support (Skype): skype:support.linmot

Fax: +41-(0)56-419 91 92  
Web: <http://www.linmot.com/>

## LinMot USA

### LinMot USA, Inc.

N1922 State Road 120, Unit 1  
Lake Geneva, WI 53147

Sales / Administration : 262-743-2555

Tech. Support: [usasupport@linmot.com](mailto:usasupport@linmot.com)

E-Mail: [usasales@linmot.com](mailto:usasales@linmot.com)  
Web: <http://www.linmot-usa.com/>

Visit <http://www.linmot.com/> to find a distributor next to you.