

Installation Guide Linear Rotary Motors PR01-70

ENG



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1 General Information

1.1 Introduction

This manual includes instructions for the assembly, installation, maintenance, transport, and storage of linear rotary motors. The document is intended for electricians, mechanics, service technicians, and warehouse staff.

Read this manual before using the product and observe the general safety instructions and those in the relevant section at all times.

Keep these operating instructions in an accessible place and make them available to the personnel assigned.

1.2 Explanation of Symbols



Triangular warning signs warn of danger.



Round command symbols tell what to do.

1.3 Qualified Personnel

All work such as installation, commissioning, operation and service of the product may only be carried out by qualified personnel.

The personnel must have the necessary qualifications for the corresponding activity and be familiar with the installation, commissioning, operation and service of the product. The manual and in particular the safety instructions must be carefully read, understood and observed.

1.4 Liability

NTI AG (as manufacturer of LinMot 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 responsibility of the user to check the data and information provided by NTI AG for correct applicability in terms of safety. 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



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 a minimum distance of 300 mm (12") between the pacemaker / defibrillator and the housing of the linear rotary motor.
- Inform others who wear these devices to comply with this minimum distance!



Caution - Risk of Electric Shock !

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



Fast-moving machine parts

The sliders of LinMot linear motors are fast-moving machine parts. All necessary precautions must be taken to prevent persons approaching the moving elements 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.



Burn hazard

The shaft of LinMot linear rotary 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.

**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.

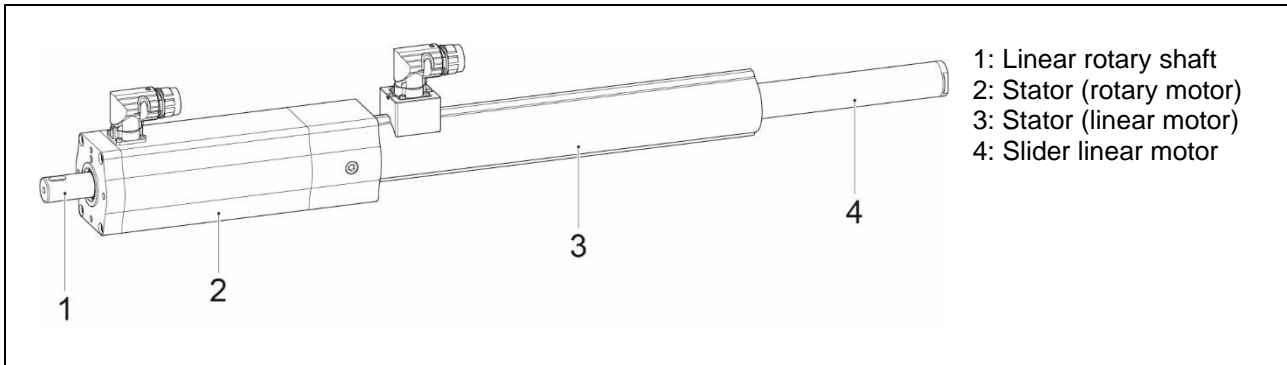
- For your own safety, avoid constant contact with magnets.
- Store large magnets at least one meter away from your body.

**Temperature resistance**

Keep motors away from unshielded flame or heat.
Temperature above 120°C will cause demagnetization.

3 Intended Use

3.1 Linear Rotary Motor



The PR01 linear rotary motors are electric direct drives for use in industrial and commercial installations. For correct handling, observe the warnings listed in chapter 2.

The PR01 linear rotary motor is designed for simultaneous linear and rotating movements. This means that the rotary and linear movements can be performed simultaneously and completely independently of each other. If the application allows it, it is recommended to perform the rotary motion with the linear rotary shaft retracted. The rotary and linear movements should also be carried out one after the other if possible. This reduces the bearing loads and increases the service life of the bearings.

3.2 Internal Mechanical Stops



Do not drive into the internal mechanical stops!

It must be ensured that the linear motor does not move to the lower or upper internal stop during operation, as otherwise the linear motor may be damaged! The internal stops may only be used for homing purposes. The homing speed must not exceed the value of 0.01 m/s.

3.3 Max. Speed



The mechanically maximum permissible speed of 1000 rpm must not be exceeded.

3.4 Pneumatic Brake



As an option, a brake can be attached to the linear motor. The pneumatic brake is controlled by the servo drive. To open and close the brake, an additional electric solenoid valve is required. The brake acts on the shaft arranged parallel to the rotor and is released by compressed air.



- The brake has a purely holding function and is not designed to slow down or stop dynamic movements.
- Not to be used for safety devices!
- Not approved as a safety element!

4 Installation Instructions

4.1 Operating Conditions



Maximum ambient temperature limits:

- -10 °C...80 °C

Internal temperature sensor error occurs at:

- 90 °C

Max. Installation altitude

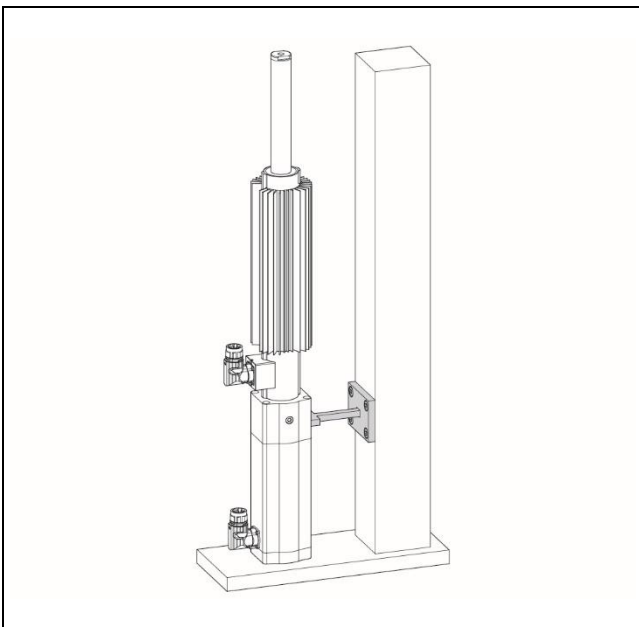
- The maximum installation altitude is 4000 metres above sea level.
From 1000m, a derating of 0.5% per 100m must be taken into account for the nominal force or the nominal torque with air cooling.

4.2 Installation Options

The PR01 linear rotary motors have a centric fit on the front side, so that an exact alignment of the rotation axis is possible.

Mounting only via the front screws is generally not sufficient (vibrations, transverse load) and must be supplemented by an additional support. For vibration reasons, a support as far back as possible is preferable. See the mounting examples in the following chapter. Please note that a tolerance compensation (see next chapter) must be provided so that the motor is not installed in the machine under tension. The detailed mounting dimensions can be found in chapter 10 "Dimensions". The corresponding CAD files are available in the LinMot eCatalog <https://shop.linmot.com/>

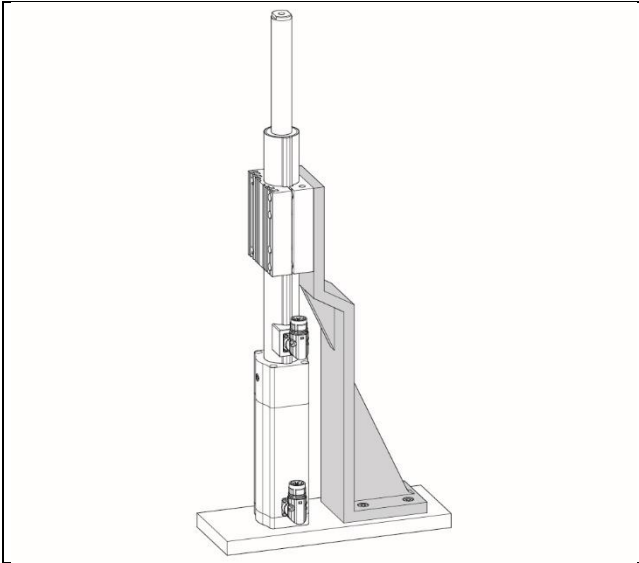
4.2.1 Vertical Installation



Support via lateral surface on the rotary motor



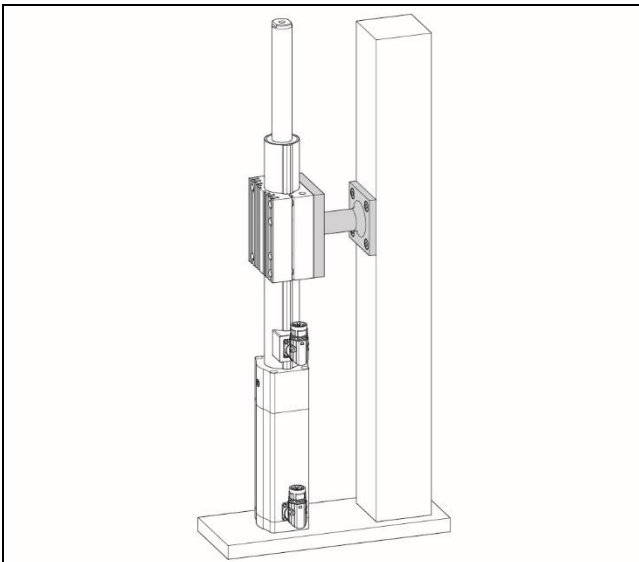
In order to avoid overdetermination of the different motor bearings, the support must have a minimum clearance. This compensates for any tolerances in the linear rotary motor.



Support via angle and cooling flange of the linear motor



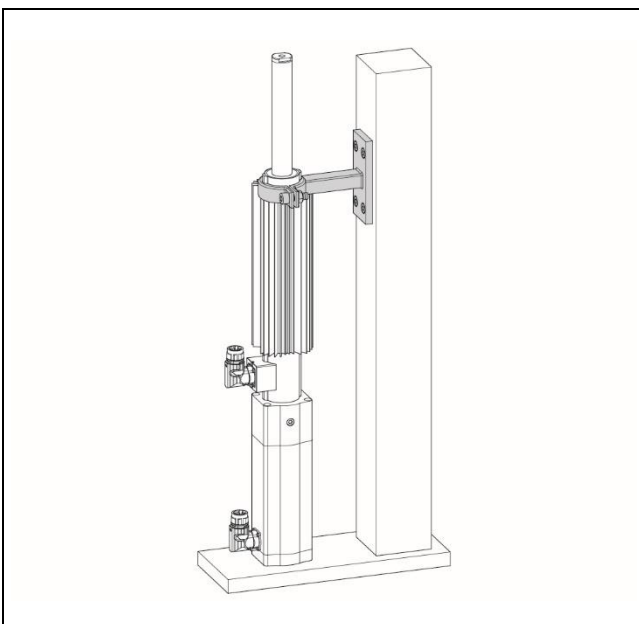
In order to avoid overdetermination of the different motor bearings, the support must have a minimum clearance. This compensates for any tolerances in the linear rotary motor.



Support via lateral bracing on the cooling flange of the linear motor



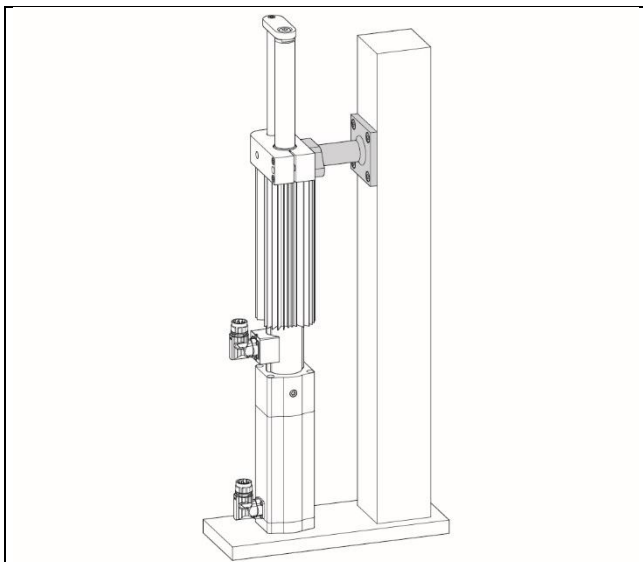
In order to avoid overdetermination of the different motor bearings, the support must have a minimum clearance. This compensates for any tolerances in the linear rotary motor.



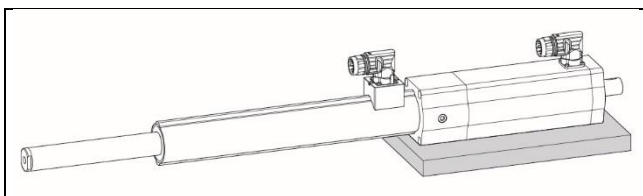
Support via lateral bracing at the end of the linear motor



In order to avoid overdetermination of the different motor bearings, the support must have a minimum clearance. This compensates for any tolerances in the linear rotary motor.

**Support via lateral bracing on the multi-function flange**

In order to avoid overdetermination of the different motor bearings, the support must have a minimum clearance. This compensates for any tolerances in the linear rotary motor.

4.2.2 Horizontal installation**Attachment to lower surface on rotary motor**

If the lower mounting holes are used, tolerance compensation with a washer should be provided.

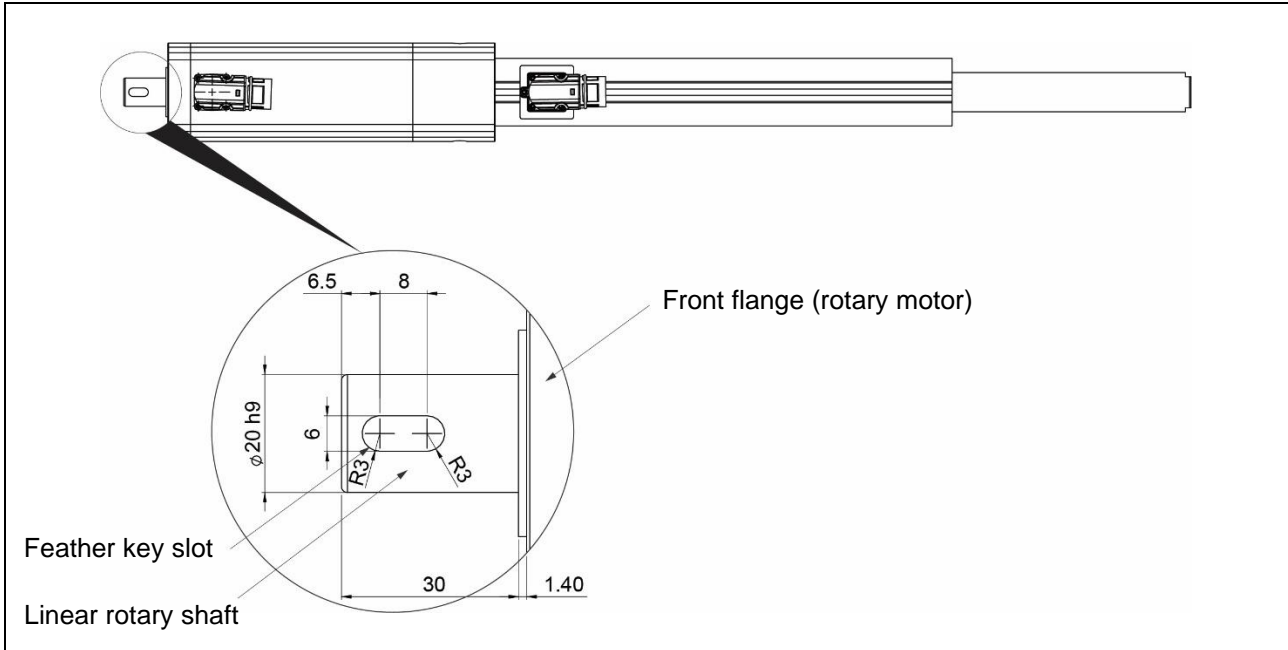
4.3 Mounting the Load on the Shaft



The assembly and disassembly of the load mass must not take place in the mechanical end stops of the linear movement. An external support must be used.

4.3.1 Feather Key

The load mass can be mounted via a feather key. For this purpose, a slot is machined into the end of the shaft.



Ordering information

Item	Description	Item-No.
Parallel keys deep pattern	face side domed / DIN 6885 A / ISO R773 6x6x14, steel C 45 K, plain	0230-0270

4.3.2 Shaft-Hub Clamping



The shaft-hub clamping is a non-positive connection which is produced by means of two conical rings. The use of drivers or the production of grooves is completely eliminated. The suitable shaft-hub clamping type can be ordered from LinMot. Mounting instructions and ordering information can be found in the "Accessories" chapter.

4.4 Material Data

Component	Material
Linear rotary shaft	C60 Quenched and tempered steel 1.0601
Front flange (Rotary motor)	Hard anodized aluminium 3.3206
Housing (Rotary motor)	Hard anodized aluminium 3.3206

5 Connections

5.1 Motor Cable



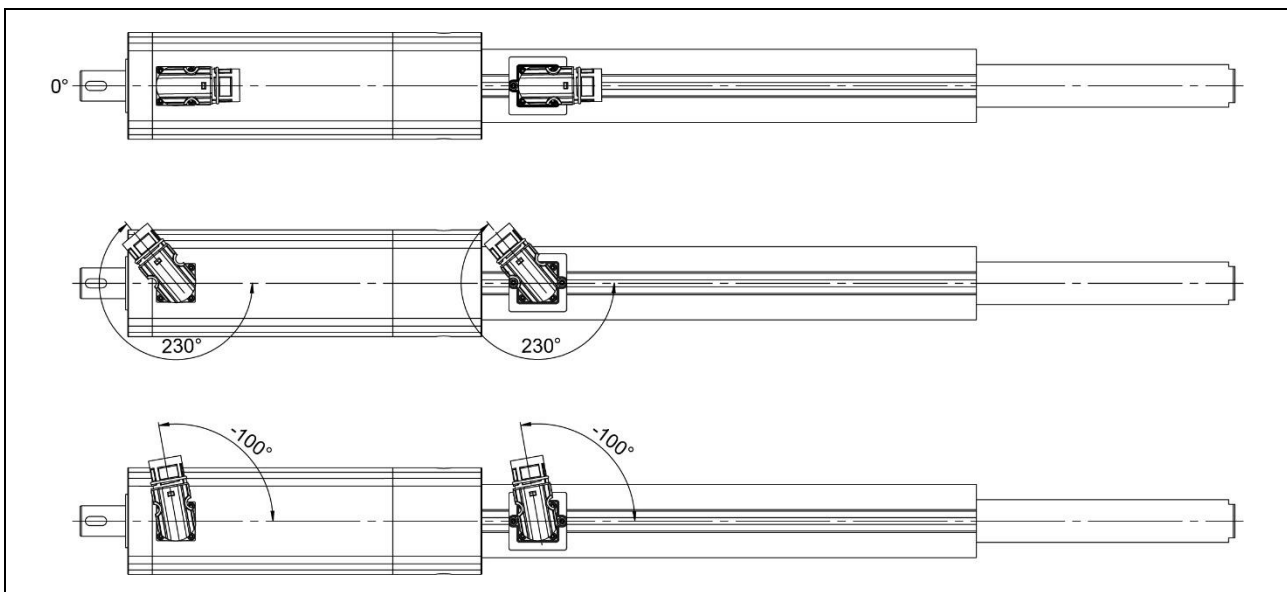
Only connect or disconnect the motor connector and sensor cable if no voltage is applied to the servo drive! Only original LinMot cables may be used for wiring the motor and sensor! Even assembled cables may only be manufactured from the original LinMot components and must be checked carefully before commissioning! Incorrect motor wiring can damage the motor and/or the servo drive!

5.1.1 Technical Data

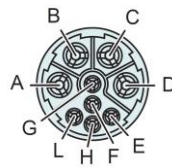
Cable type	Wiring Linear Rotary Motor		
	Standard cable	High-flex cable	Robot cable
Cable name	K15-04/05	KS10-04/05	KR10-04/05
Min. bending radius stationary	50 mm (2 in)	50 mm (2 in)	50 mm (2 in)
Min. bending radius moving	Not suitable for applications with moving motor cable	100 mm (4 in) No torsion	100 mm (4 in) Max. torsion: ±270° pro 0.5 m
Approval	UL / CSA 300V E467697	UL / CSA 300V E172204	UL / CSA 300V E172204
Material wire insulation	TPE-U	TPE-E	TPE-E
Material cable sheath	PUR	PUR	PUR
Oil resistance	very good	very good	very good
Chemical resistance (to acids, alkalis, solvents, hydraulic fluid)	good	good	good
Outdoor durability	very good	very good	very good
Flammability	flame retardant	flame retardant	flame retardant

5.1.2 Rotatability of Motor Connector

The motor connectors of the linear motor (C-connector) and the rotary motor (C-connector) can be turned by hand in both directions (see illustration below). The maximum angle of rotation for the C connector is 330°.



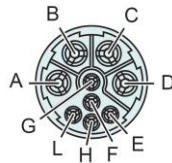
5.2 Connector Wiring Linear Motor



View: Motor connector, plug side

Connector wiring	Linear Motor: C-Connector	Wire colour Motor cable
Ph 1+ / Ph A	A	red
Ph 1- / Ph B	B	pink
Ph 2+ / Ph C	C	blue
Ph 2- / Ph D	D	grey
+5VDC	E	white
GND	F	inner shield
Sin	G	yellow
Cos	H	green
Temp.	L	black
Shield	Housing	outer shield

5.3 Connector Wiring Rotary Motor



View: Motor connector, plug side

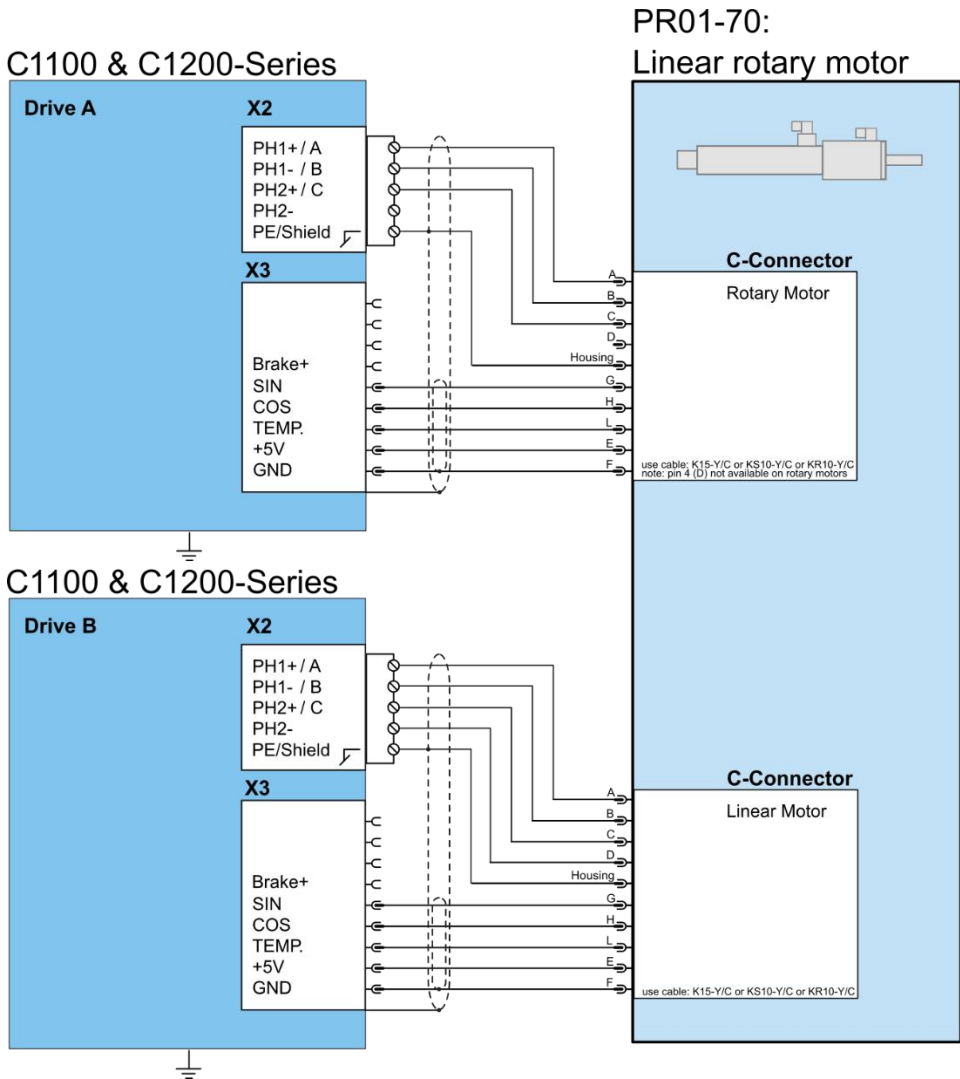
Connector wiring	Rotary Motor: C-Connector	Wire colour Motor cable
Ph 1+ / Ph A	A	red
Ph 1- / Ph B	B	pink
Ph 2+ / Ph C	C	blue
Ph 2- / Ph D	D (not connected)	grey
+5VDC	E	white
GND	F	inner shield
Sin	G	yellow
Cos	H	green
Temp.	L	black
Shield	Housing	outer shield



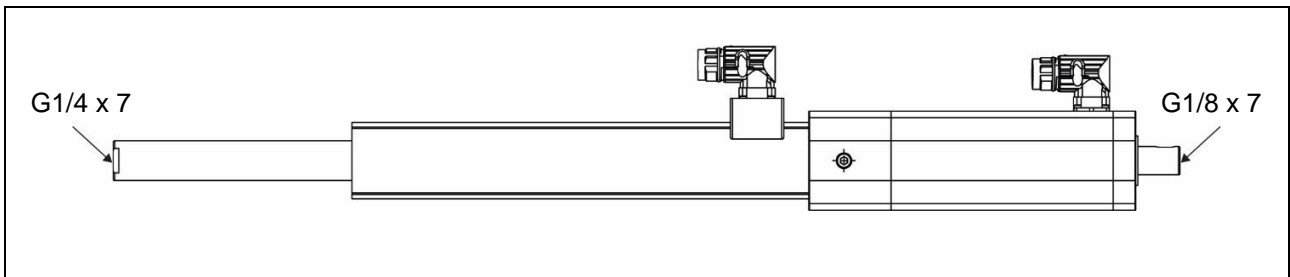
Motor extension cables are double shielded. The two shields of the extension cable are insulated from each other. The inner shield of the extension cable may only be connected to GND (no contact to the outer shield).
The outer shield must be connected to the shield of the connector.

5.4 Connecting the Drive to the Motor

The following diagram shows the connection of the linear motor with the LinMot Drive.



5.5 Pneumatic Air Connection



All linear rotary motors of the size PR01-70 are optionally available in a hollow shaft L-version. This motor type has a through bore of \varnothing 4 mm, which passes through the rotor and the rotary shaft. This enables the user to implement pneumatic applications with an operating pressure of max. 6 bar. In the case of a vacuum application, it is recommended to use a unit with sufficient power, since experience has shown that any air coupling points generate minor losses.

The specifications of the connections are shown in the drawing above.

6 Start-up

6.1 Linear Motor and Rotary Motor

Linear motor and rotary motor are electrically independent units. The commissioning of the linear motor can therefore be performed sequentially. It does not matter which motor (linear motor or rotary motor) is commissioned first.

The various parameters for the linear motor and the rotary motor are set on the drive side via the Motor Wizard in the LinMot Talk configuration program.

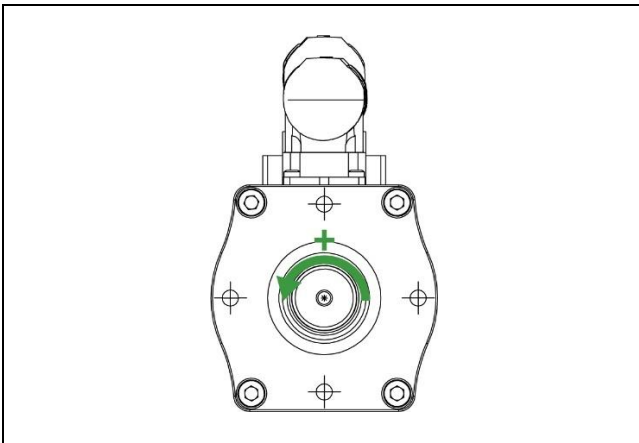


Do not drive into the internal mechanical stops!

It must be ensured that the linear motor does not move to the internal stop during operation under any circumstances, as otherwise the linear motor may be damaged! The internal stops may be used for the purpose of homing, but the homing speed must not exceed 0.01 m/s.

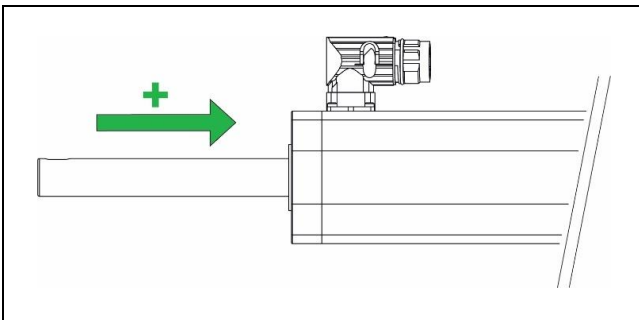
6.2 Default Values of the Coordinate System

6.2.1 Angle of Rotation



Looking into the shaft, the positive counterclockwise counting direction of the angle of rotation is defined.

6.2.2 Position



With regard to the motor, the positive counting direction of the position is defined by retracting the stroke rotary shaft.

To invert the coordinate system you will find detailed information in chapter 6.4.3.

6.3 Plug and Play Function for Linear Rotary Motors

LinMot linear rotary motors of the latest generation are Plug and Play capable (see motor label "PnP"). This means that they register with the drive independently. The module- and motor-specific parameters are automatically stored in the drive and the motor is ready for operation.

Application-specific parameters, such as cable length, load mass, PID control settings etc. can be entered by the user using the Motor Wizard.

To do this, click on the Motor Wizard symbol in the task bar of the LinMot-Talk software.



Then follow the sequence of steps from chapter 6.4.2.

6.4 Setting Motor Parameters

The various parameters for the linear motor and the rotary motor are set via the corresponding motor wizard in the LinMot Talk configuration program. To open the wizard, select the "Motor Wizard" icon in the task bar.

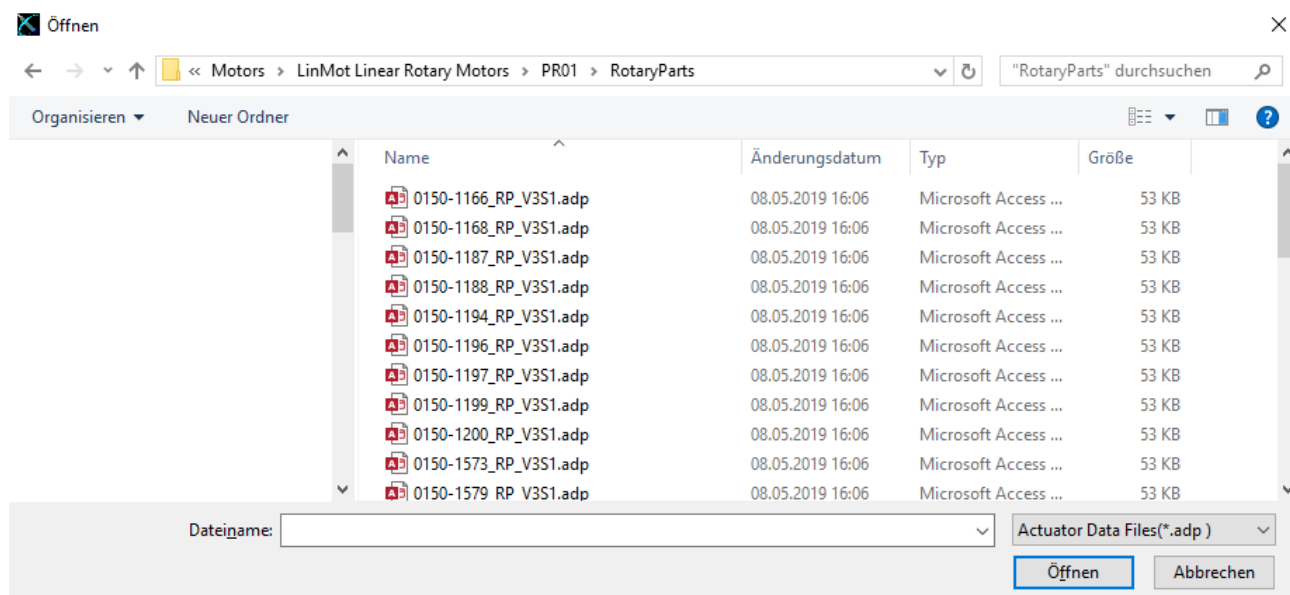


6.4.1 Selection of the Motor Data Files

If the connected motor is a module with plug and play functionality, the following step can be skipped.

If no "PnP" symbol is printed on the motor nameplate, the module and motor-specific parameters must be loaded manually via the Motor Wizard. So-called motor data files are available for this purpose. The motor data file corresponding to the module (*.adf or *.adp) must be selected in the first step of the Motor Wizard. The linear rotary motors are located in the installation directory of the LinMot-Talk software (download at www.linmot.com) in the folder "Motors\LinMot Linear Rotary Motors\...".

Please contact support if the motor data files are not available.



6.4.2 Application-specific Parameters

Application-specific parameters, such as cable length, load mass, PID control settings, etc. can be entered by the user using the Motor Wizard. The Motor Wizard must be started for this purpose. Once the Motor Datafile has been selected (according to the previous chapter), the Motor Wizard guides you through the menu step by step.

Application parameters should be entered as accurately as possible to ensure the best possible motor control.

6.4.3 Inverting the Coordinate System

Starting with LinMot-Talk version 6.8 the direction of the coordinate system can be selected.

Default value for rotary motors: Positive counting direction = counterclockwise (see figure chapter 6.2.1)

Default value for linear motors: Positive direction of movement = Regular (see figure in chapter 6.2.2)



If the coordinate system is reversed, this has an influence on the current and the force/torque of the motor. In case of any uncertainties, the LinMot support should definitely be contacted.

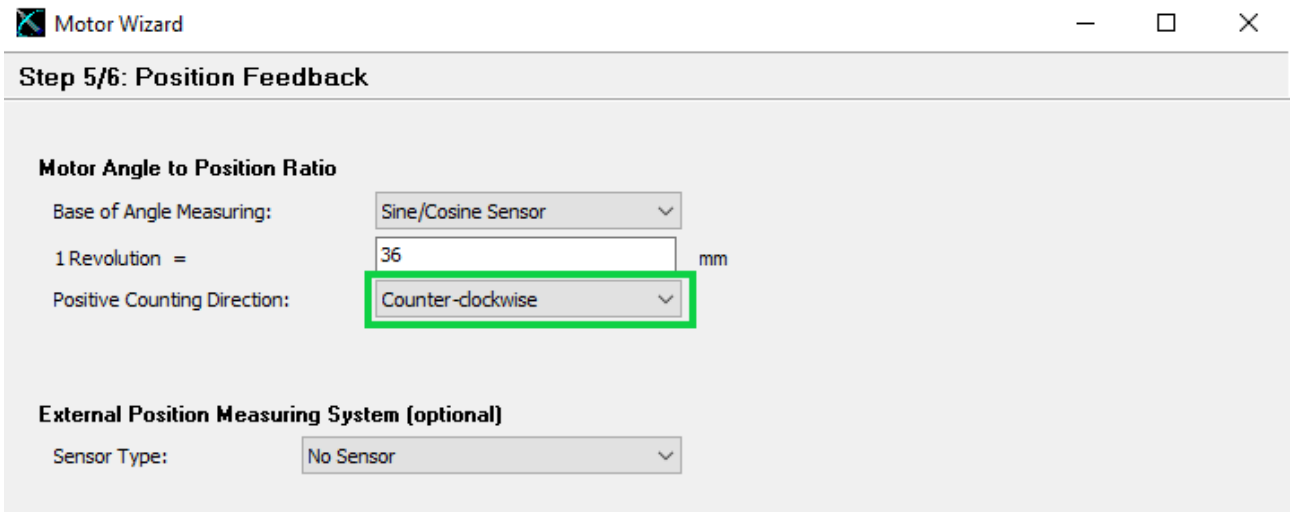


Figure: Selection of the positive counting direction (rotary motor)

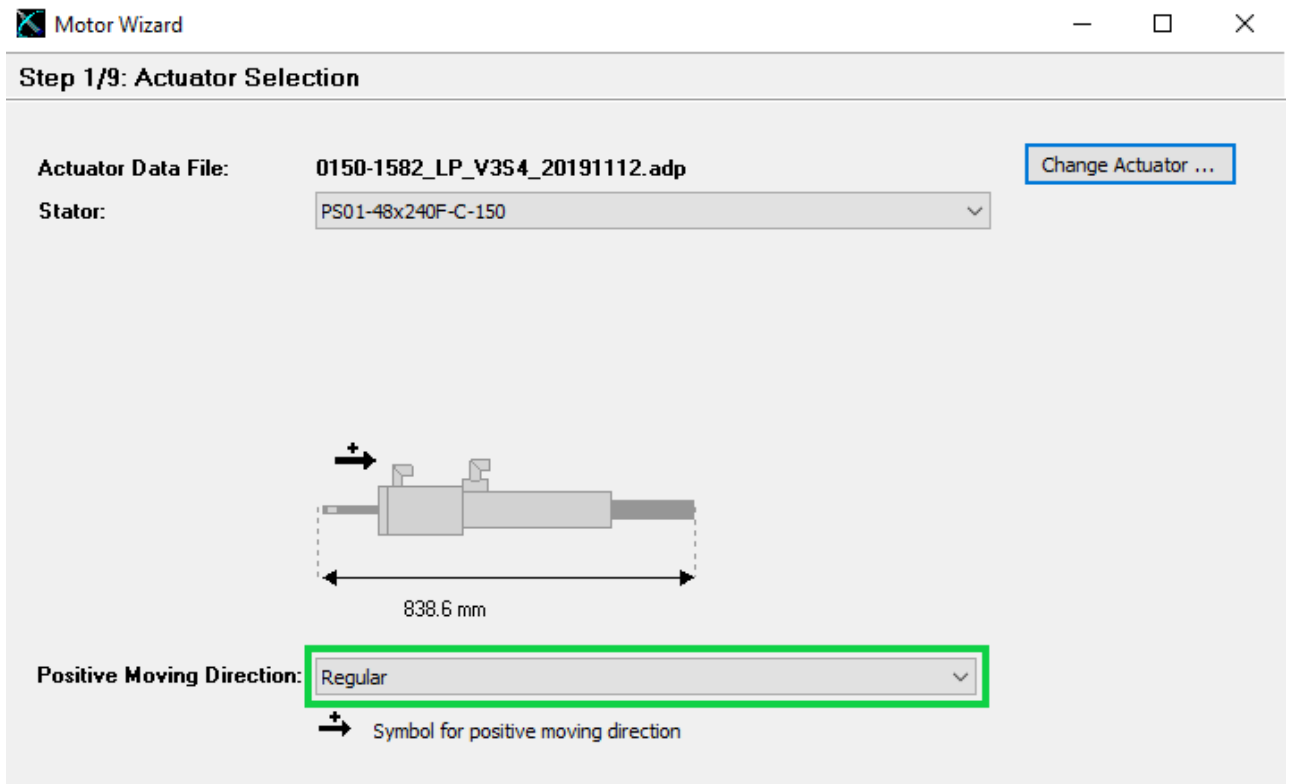


Figure: Selection of the positive direction of movement (linear motor)

6.4.4 Selection of the Linear and Rotary Unit System

In step 4 of the Motor Wizard the GUI (Graphical User Interface) of the LinMot-Talk software can be set. This setting only affects the display of the LinMot-Talk software. The resolution and scaling of the transmission data (raw data) to the higher-level PLC are retained.

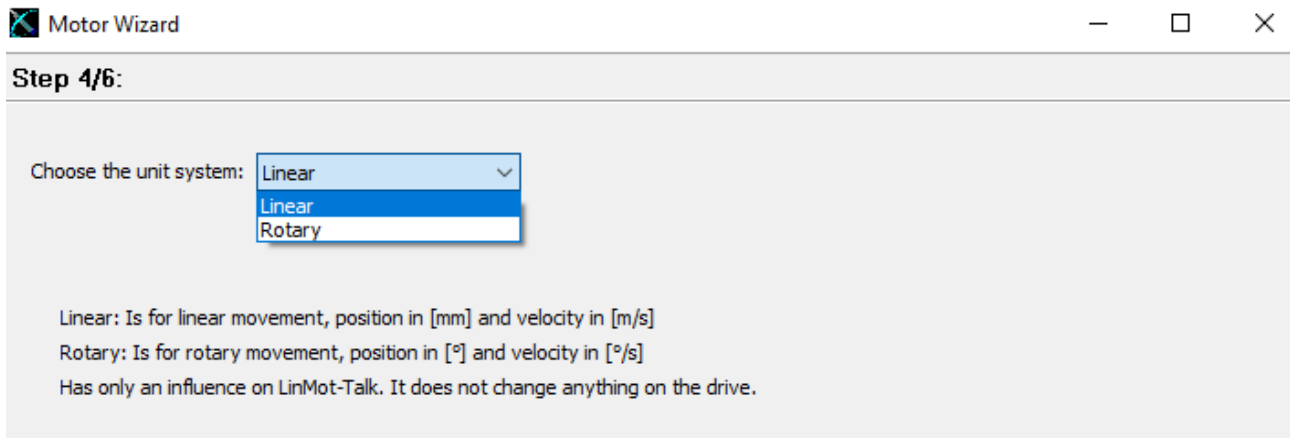


Figure: Selection of the units to be displayed in the LinMot-Talk software

6.4.5 Referencing the Linear Motor

The built-in linear motor has a position detection system which must be referenced. Various modes are available to the user for this purpose. Depending on the selected mode, the linear motor searches for a mechanical stop and/or an electronic switch, for example.

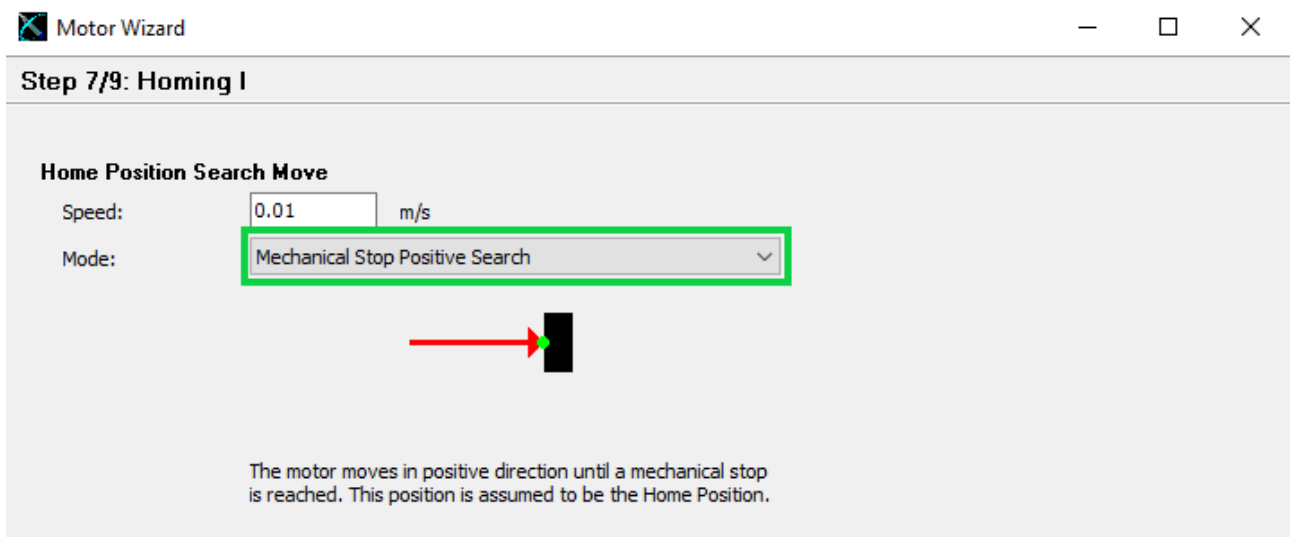
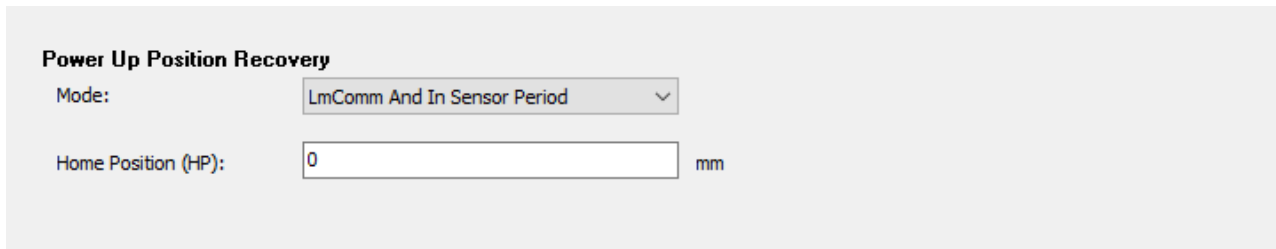


Figure: Selection of reference run linear motor

6.4.6 Referencing the Rotary Motor

The rotary motor has an integrated single-turn absolute encoder. This means that the rotary motor knows its position without any reference run after the drive is started up.



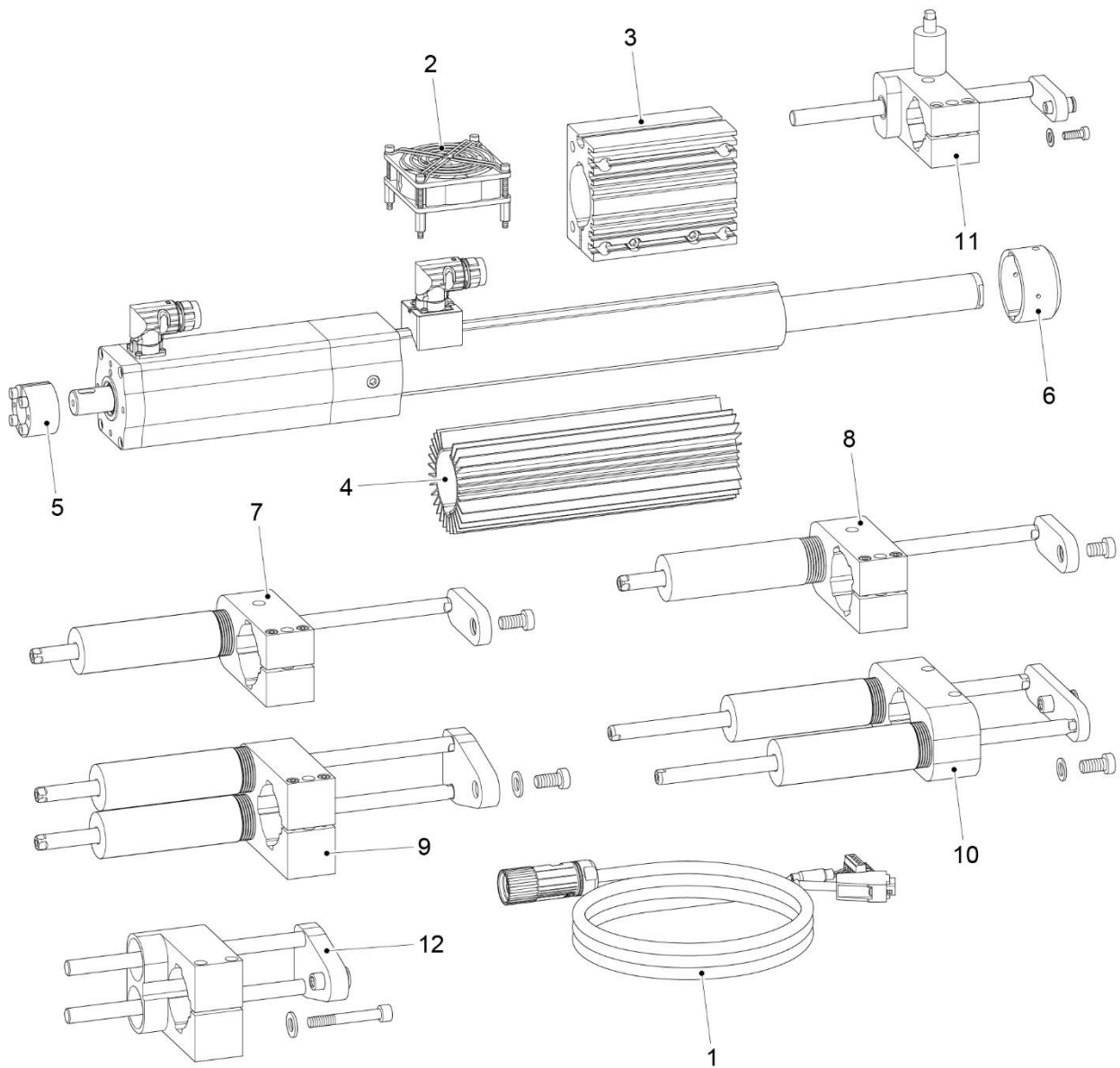
The screenshot shows a configuration window titled "Power Up Position Recovery". It contains two fields: "Mode:" with a dropdown menu set to "LmComm And In Sensor Period" and "Home Position (HP):" with a text input field containing "0" and a unit label "mm".

Figure: Activate the absolute encoder for rotary motors by selecting "LmComm And In Sensor Period" (default value). With parameter "Home Position" an offset to the start position can be set.

If a reference run is necessary due to mechanical events, e.g. an external gear, it is recommended to reference an external sensor. A number of options for homing are available to the user under Parameter -> Motion Control SW -> State Machine Setup -> Homing.

7 Accessories

7.1 Overview



1. Motor Cable (Linear Motor / Rotary Motor)
2. Fan Kit (Linear Motor)
3. Mounting Flange (Linear Motor)
4. Cooling Profile (Linear Motor)
5. Shaft-Hub Clamping for Load Fastening
6. Wiper
7. MagSpring Kit UNO
8. MagSpring Kit UNO 30°
9. MagSpring Kit DUO
10. MagSpring Kit SYM
11. Holding brake kit
12. Cam Kit

7.2 Motor Cable



7.2.1 Linear Motor / Rotary Motor

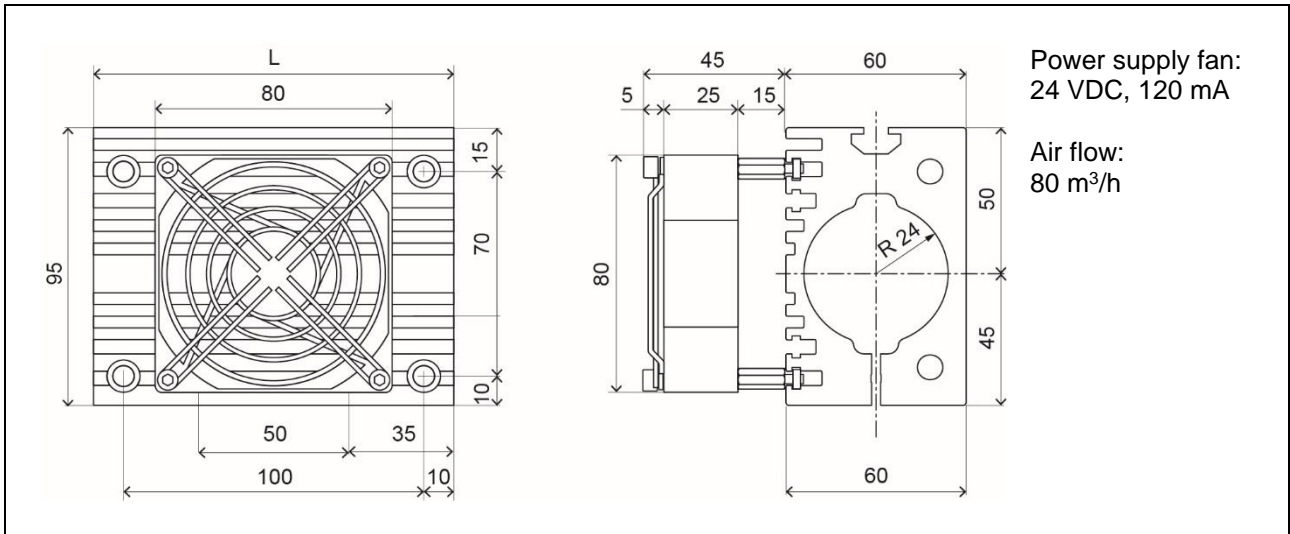
Item	Description	Item-No.
K15-Y/C-2	Motor cable Y/C, 2 m	0150-2429
K15-Y/C-4	Motor cable Y/C, 4 m	0150-2430
K15-Y/C-6	Motor cable Y/C, 6 m	0150-2431
K15-Y/C-8	Motor cable Y/C, 8 m	0150-2432
K15-Y-Fe/C-	Motor cable K15-Y-Fe/C, Custom length	0150-3506

Item	Description	Item-No.
KS10-Y/C-4	Trailing chain cable Y/C, 4 m	0150-2439
KS10-Y/C-6	Trailing chain cable Y/C, 6 m	0150-2440
KS10-Y/C-8	Trailing chain cable Y/C, 8 m	0150-2441
KS10-Y-Fe/C-	Trailing chain cable KS10-Y-Fe/C, Custom length	0150-3511

Item	Description	Item-No.
KR10-Y-Fe/C-	Robot cable KR10-Y-Fe/C, Custom length	0150-3515

7.3 Fan Kit

Forced ventilation of the linear motor by the fan enables an increase of the continuous force (See design programme "LinMot Designer").



Power supply fan:
24 VDC, 120 mA

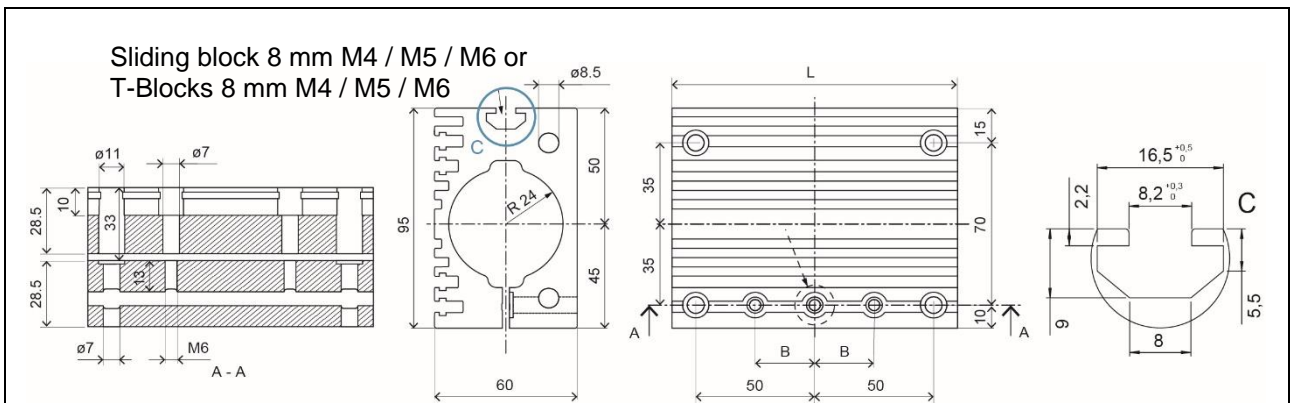
Air flow:
80 m³/h

Item	Description	Item-No.
HV01-37/48*	Fan Kit for H01-37, B01-37 and PF02-37	0150-5051

* a mounting flange PF01-48x120 or PF01-48x226 is required for mounting. See next chapter.

7.4 Mounting Flanges for Linear Motor

The following flanges in different lengths are used for cooling the linear motor as well as for mounting the linear rotary motors.



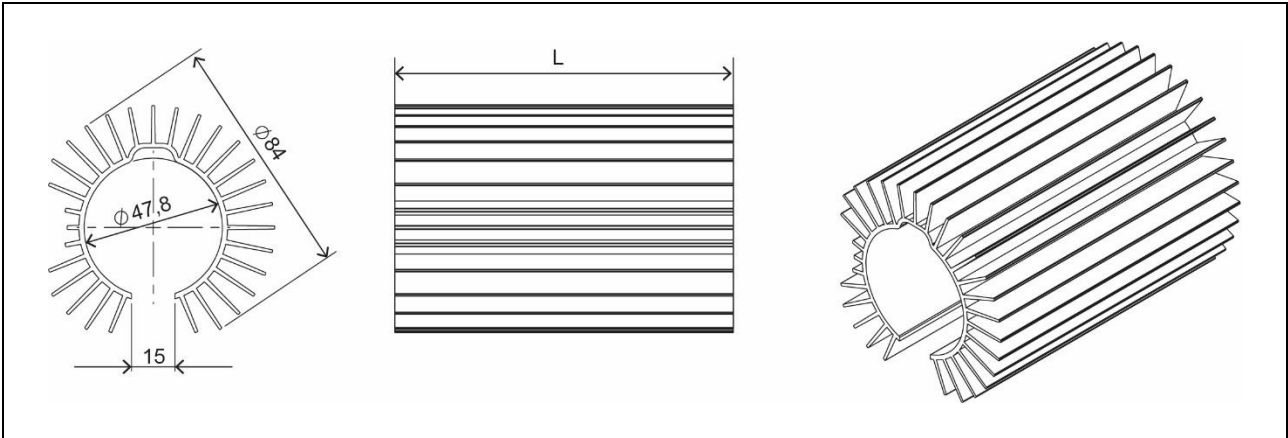
Sliding block 8 mm M4 / M5 / M6 or
T-Blocks 8 mm M4 / M5 / M6

Max. Torque (Clamping screws): 12 Nm (8.86 lbf ft)

Item	Description	L [mm / inch]	B [mm / inch]	Weight [g / lb]	Item-No.
PF01-48x120	Flansch 48x120 mm	120	25	970	0150-1976
PF01-48x226	Flansch 48x226 mm	226	85	1850	0150-2108

7.5 Cooling Profile for Linear Motor

The listed cooling profile serves to cool the linear motor. The cooling profile can be mounted without accessories or together with a MagSpring or brake kit.



Item	Description	Length L [mm / inch]	Weight [g / lb]	Item-No.
PC01-48x100	Kühlkörper	99	210	0160-2145
PC01-48x117	Kühlkörper	117	250	0160-2138

7.6 Shaft-Hub Clamping

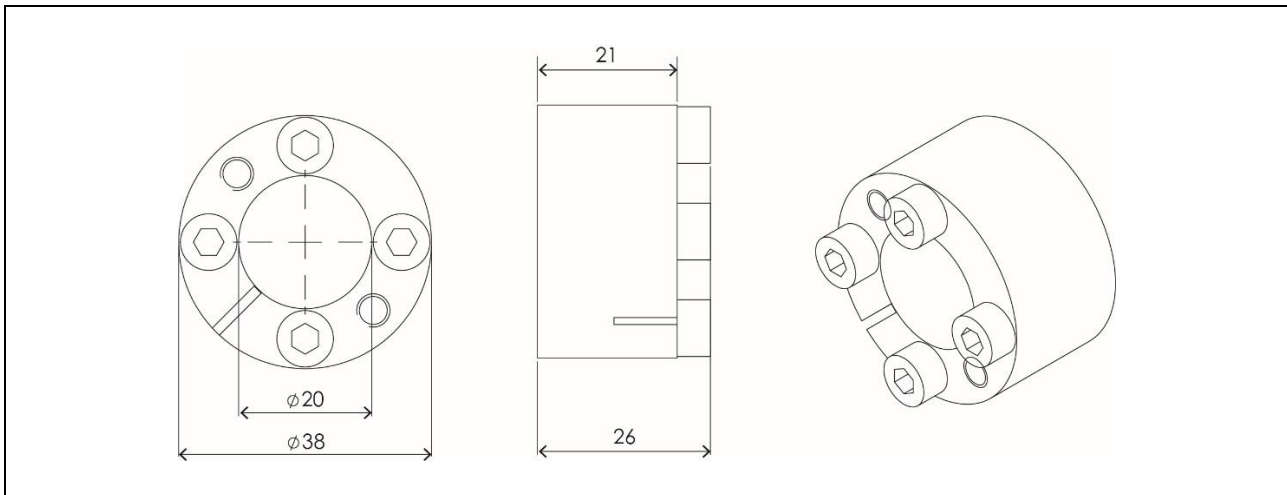


Since linear rotary motors perform both rotary and linear motion, a load mounting method on the shaft must be selected that can absorb both torques and forces in the longitudinal direction. A frictional connection is created with the aid of a shaft-hub clamping.

Ordering information

Item	Description	Item-No.
RS01-SS20x38	Shaft-hub clamping for 20mm shaft (PR01-84...)	0230-0100

7.6.1 Dimensions and Technical Data



Item	For shaft	T [Nm]	F _{ax} [kN]	T _A [Nm]	D [mm]	Weight [g]
RS01-SS20x38	20 mm	179	17	10	38H9	100

*T = transmittable torque at F_{ax} = 0.
 F_{ax} = transmittable axial force at T = 0.
 T_A = fastening torque of the screws.
 D = external exposure tolerance.*

7.6.2 Mounting



- The shaft-hub clamping has to sit inside the bore by at least the clamp length (21 mm).
- Slightly oil the shaft-hub clamping before mounting, do not use molybdenum disulphide or fat.
- Tighten screws opposite each other 180 degrees offset in several steps to tightening torque T_A (see above for details).

7.7 Wiper

The rotary axis is equipped with a wiper as standard. The slider of the linear unit can optionally be protected by a wiper. For this purpose, it is possible to use either the wiper attachment as shown below or a multi-function flange (see next chapter), for which the wiper is also included in the scope of delivery.

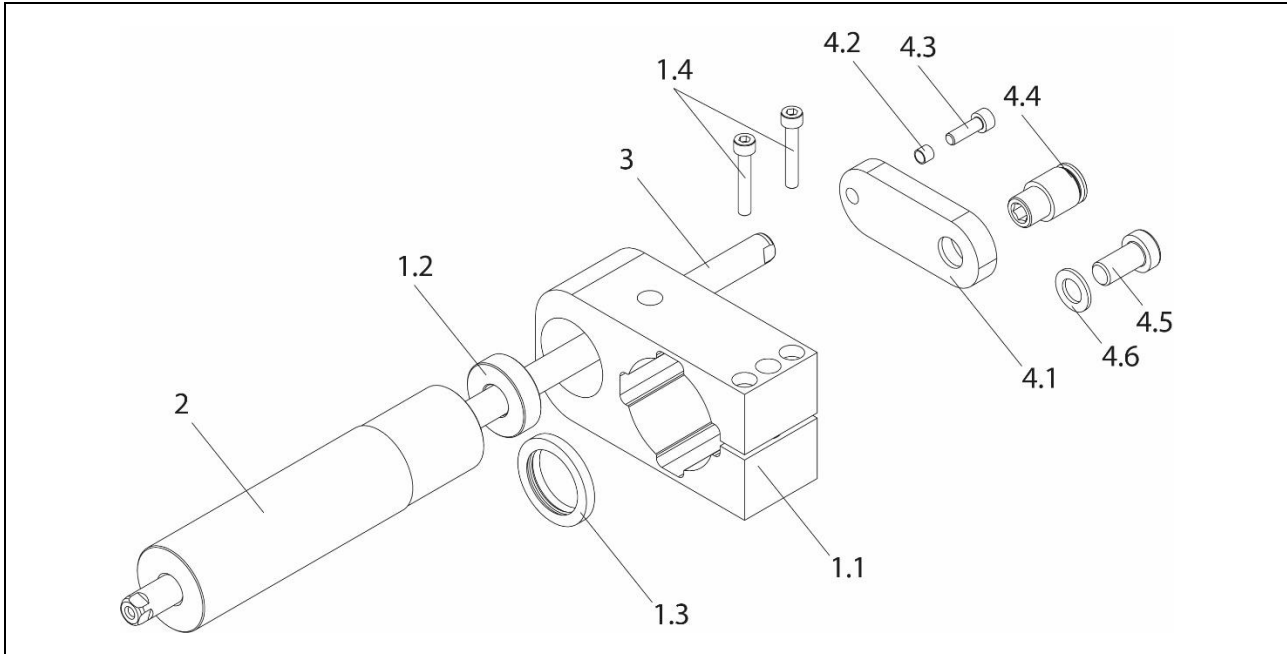


Item	Description	Item-No.
PA01-48/28-F	Wiper front side for PS01-48x...	0150-3127

7.8 Magnetic Spring «MagSpring®» Kit UNO

If the weight force of the linear rotary axis is to be passively compensated for a vertical application, a magnetic spring MagSpring can be mounted. The matching flange and adapter are available for easy mounting.

7.8.1 Overview



Pos.	Item	Item-No.
1	MagSpring Mounting Flange UNO	MF01-PR01-84x37-1 (Item-No. 0250-2337)
delivered with:		
1.1	Mounting Flange	MF01k-PR01-84x80-37-1 (Item-No. 0260-0148)
1.2	Spacer Sleeve	MF01-AR-84 (Item-No. 0250-0132)
1.3	Wiper	PAW01-28 (Item-No. 0150-3133)
1.4	Socket Screw (2x)	M5x35 / ISO 4762
2	MagSpring Stator	MS01-37x170 (60N F _{const.}) (Item-No. 0250-1017)
3	MagSpring Slider	ML01-12x375/160-20 (Item-No. 0250-2326)
4	MagSpring Adapter	MA01-PR01-84x80-37-1 (Item-No. 0250-2341)
delivered with:		
4.1	Adapter	MA01k-PR01-84x80-37-1 (Item-No. 0250-0134)
4.2	Spacer Sleeve	MA01PR01-sleeve 4.9
4.3	Socket Screw	M5x14 / ISO 4762
4.4	Pneumatic Fitting	for 10 mm hose 1/4"
4.5	Socket Screw	M10x14 / DIN 7984
4.6	Adjusting Washer	M10



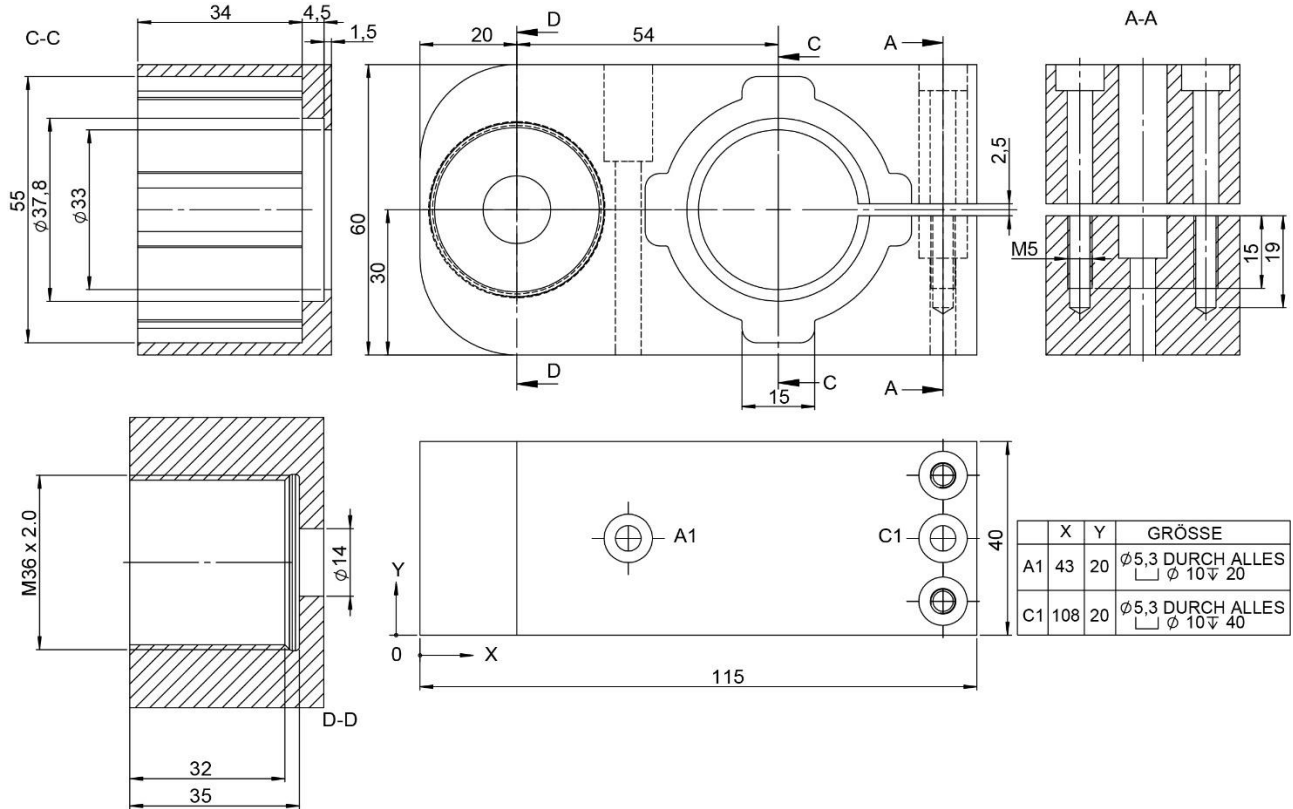
- Items 2, 4.3, 4.4 and 4.5 must be secured with a screw lock.
- One piece each of items 1,2,3 and 4 must be ordered.

7.8.2 Dimensions and Technical Data

MagSpring Mounting Flange UNO

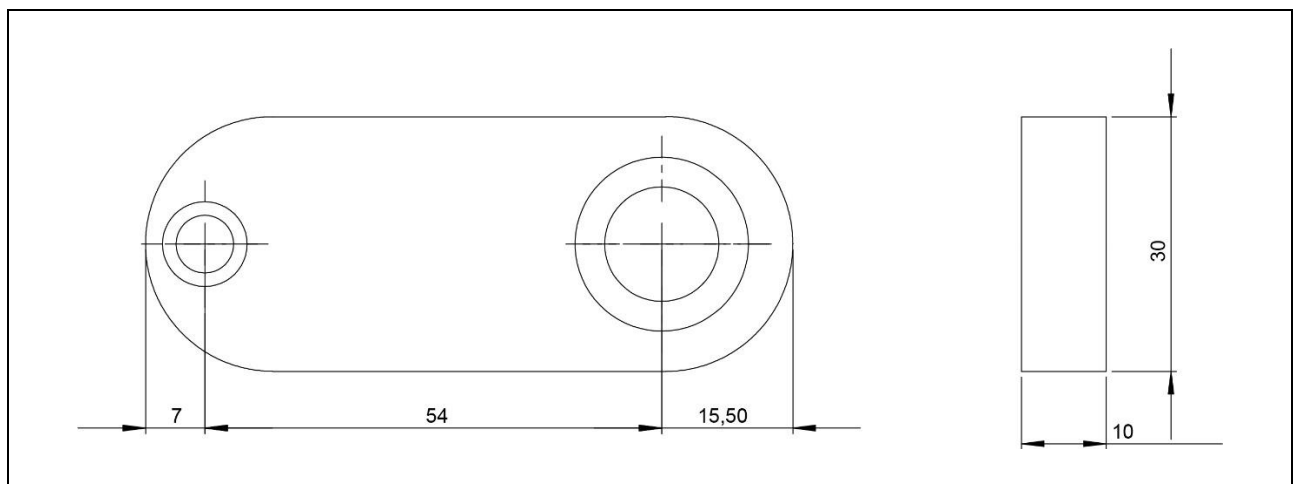
The MagSpring Mounting Flange (MF) can perform one or more of the following functions:

- Mounting of the wiper for the slider of the linear motor
- Mounting of a MagSpring for load compensation
- Mounting element for the linear rotary motor



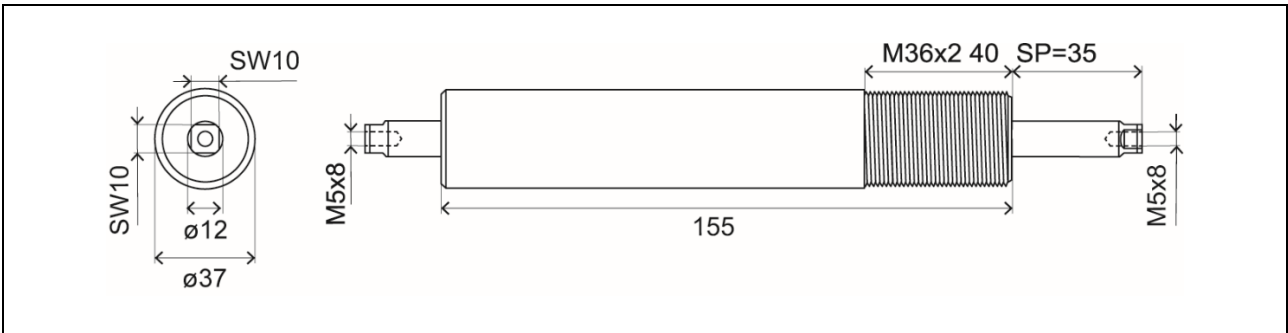
Item	Description	Weight [g]	Item-No.
MF01-PR01-84x37-1	Mounting Flange MagSpring Linear Rotary motor UNO including add. material (see chapter 7.8.1)	425	0250-2337

Mounting Adapter



Item	Description	Weight [g]	Item-No.
MA01-PR01-84x80-37-1	Mounting Adapter Linear Rotary Motor UNO including add. material (see chapter 7.8.1)	85	0250-2341

MagSpring Stator and MagSpring Slider

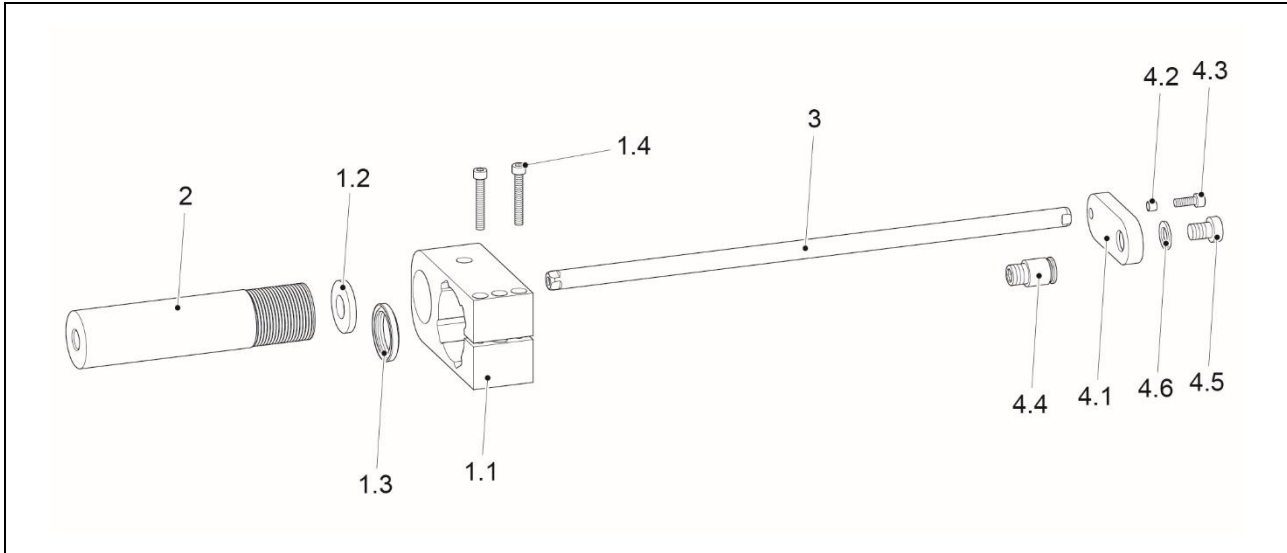


Item	Description	Length [mm]	Weight [kg]	Item-No.
MS01-37x170	MagSpring stator	170	0.96	0250-1017
ML01-12x375/160-20	MagSpring slider	375	0.2	0250-2326

7.9 Magnetic Spring «MagSpring®» Kit UNO 30°

If the weight force of the linear rotary axis is to be passively compensated for a vertical application, a magnetic spring MagSpring can be mounted. The matching flange and adapter are available for easy mounting.

7.9.1 Overview



Pos.	Item	Item-No.
1	MagSpring Mounting Flange UNO 30°	MF01-PR01-84x80-37-1-30° (Item-No. 0250-2351)
delivered with:		
1.1	Mounting Flange	MF01k-PR01-84x80-37-1-30° (Item-No. 0260-0009)
1.2	Spacer Sleeve	MF01-AR-84 (Item-No. 0250-0132)
1.3	Wiper	PAW01-28 (Item-No. 0150-3133)
1.4	Socket Screw (2x)	M5x35 / ISO 4762
2	MagSpring Stator	MS01-37x170 (60N F _{const.}) (Item-No. 0250-1017)
3	MagSpring Slider	ML01-12x375/160-20 (Item-No. 0250-2326)
4	MagSpring Adapter	MA01-PR01-84x80-37-1 (Item-No. 0250-2341)
delivered with:		
4.1	Adapter	MA01k-PR01-84x80-37-1 (Item-No. 0250-0134)
4.2	Spacer Sleeve	MA01PR01-sleeve 4.9
4.3	Socket Screw	M5x14 / ISO 4762
4.4	Pneumatic Fitting	for 10 mm hose 1/4"
4.5	Socket Screw	M10x14 / DIN 7984
4.6	Adjusting Washer	M10



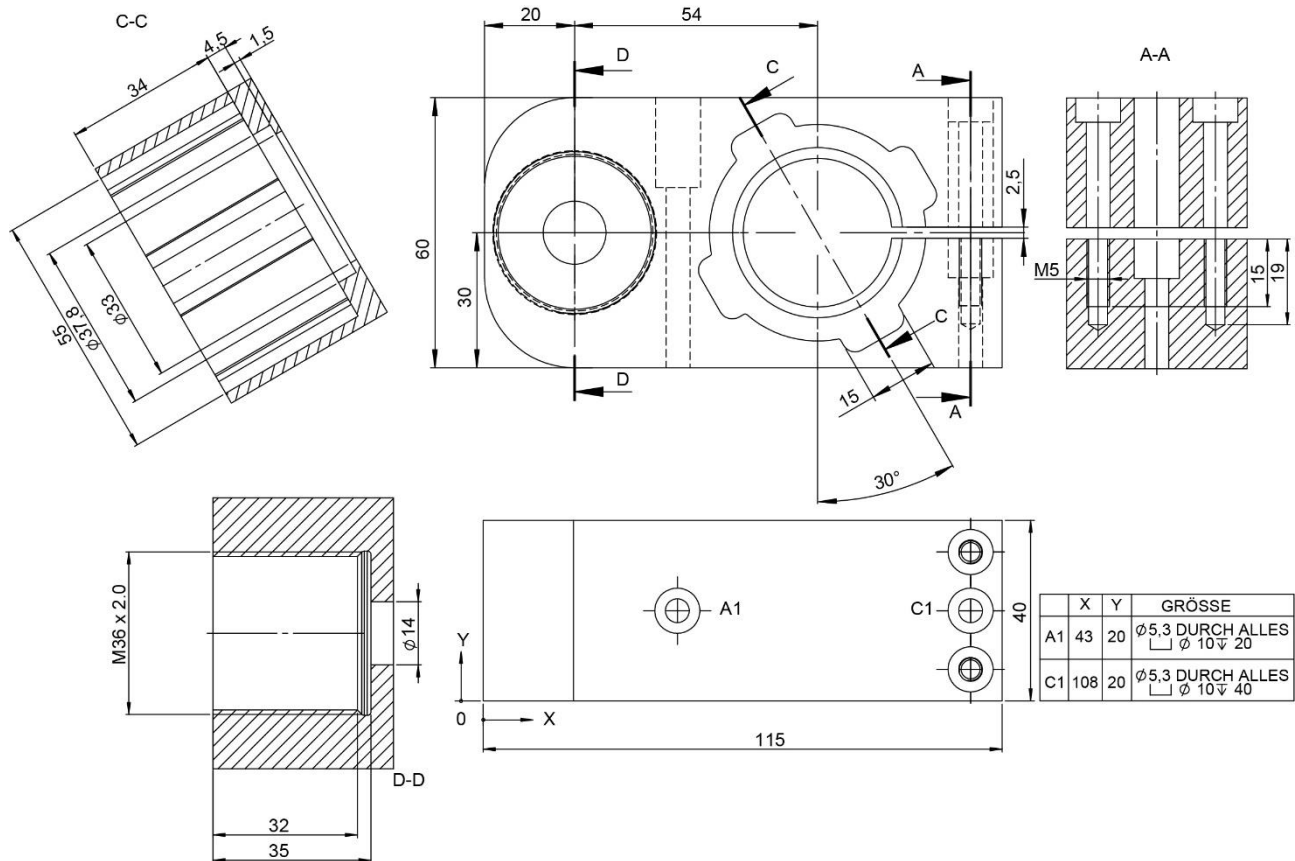
- Items 2, 4.3, 4.4 and 4.5 must be secured with a screw lock.
- One piece each of items 1,2,3 and 4 must be ordered.

7.9.2 Dimensions and Technical Data

MagSpring Mounting Flange UNO 30°

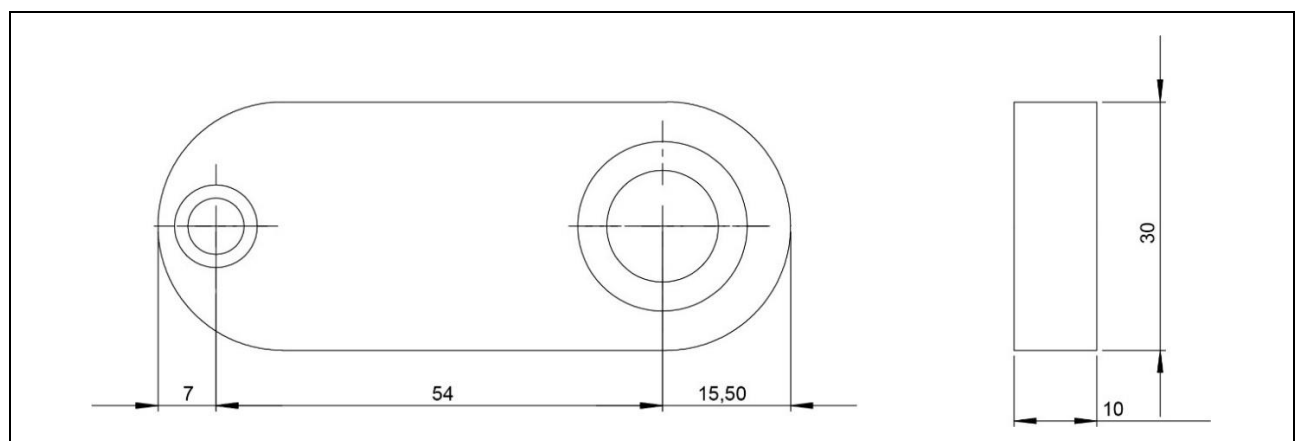
The MagSpring Mounting Flange (MF) can perform one or more of the following functions:

- Mounting of the wiper for the slider of the linear motor
- Mounting of a MagSpring for load compensation
- Mounting element for the linear rotary motor



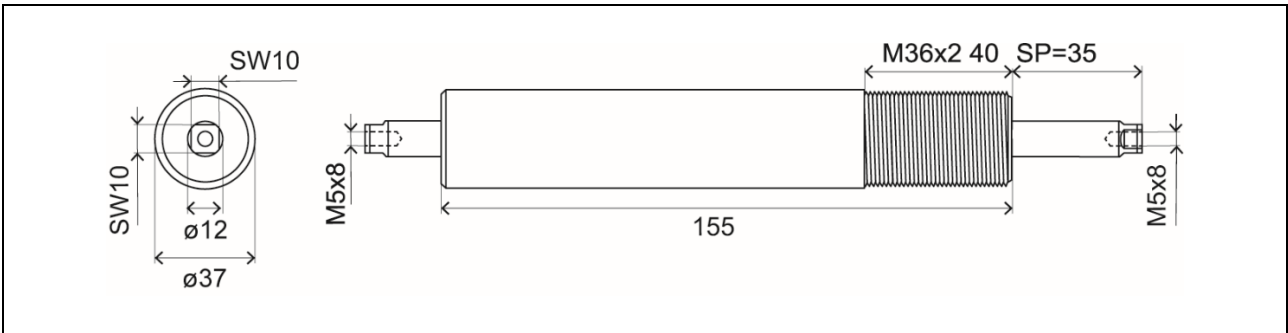
Item	Description	Weight [g]	Item-No.
MF01-PR01-84x80-37-1-30°	MF MagSpring Linear Rotary Motor UNO 30° including add. material (see chapter 7.9.1)	425	0250-2351

Mounting Adapter



Item	Description	Weight [g]	Item-No.
MA01-PR01-84x80-37-1	Mounting Adapter Linear Rotary Motor UNO including add. material (see chapter 7.9.1)	85	0250-2341

MagSpring Stator and MagSpring Slider

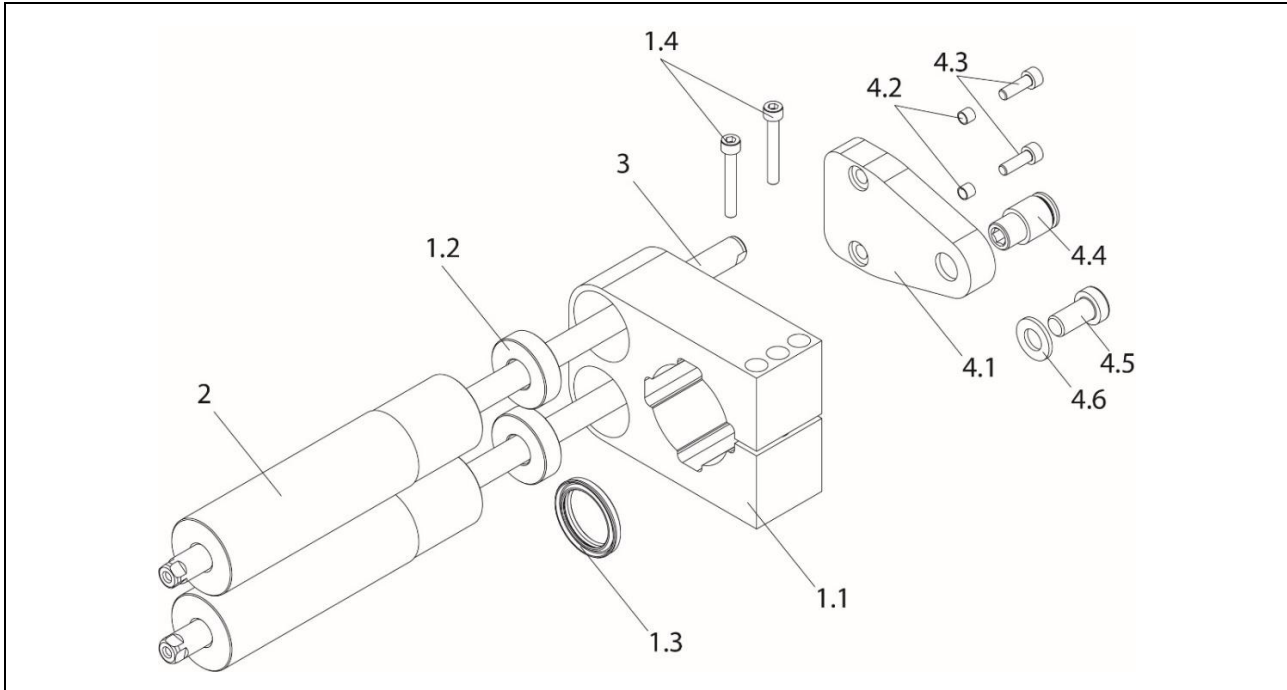


Item	Description	Length [mm]	Weight [kg]	Item-No.
MS01-37x170	MagSpring stator	170	0.96	0250-1017
ML01-12x375/160-20	MagSpring slider	375	0.2	0250-2326

7.10 Magnetic Spring «MagSpring®» Kit DUO

If the weight force of the linear rotary axis is to be passively compensated for a vertical application, a magnetic spring MagSpring can be mounted. The matching flange and adapter are available for easy mounting.

7.10.1 Overview



Pos.	Item	Item-No.
1	MagSpring Mounting Flange DUO	MF01-PR01-84x80-37-2 (Item-No. 0250-2338)
delivered with:		
1.1	Mounting Flange	MF01k-PR01-84x80-37-2 (Item-No. 0260-0149)
1.2	Spacer Sleeve (2x)	MF01-AR-84 (Item-No. 0250-0132)
1.3	Wiper	PAW01-28 (Item-No. 0150-3133)
1.4	Socket Screw (2x)	M5x35 / ISO 4762
2	MagSpring Stator (2x)	MS01-37x170 (60N F _{const.}) (Item-No. 0250-1017)
3	MagSpring Slider (2x)	ML01-12x375/160-20 (Item-No. 0250-2326)
4	MagSpring Adapter	MA01-PR01-84x80-37-2 (Item-No. 0250-2340)
delivered with:		
4.1	Adapter	MA01k-PR01-84x80-37-2 (Item-No. 0250-0133)
4.2	Spacer Sleeve (2x)	MA01PR01-sleeve 4.9
4.3	Socket Screw (2x)	M5x14 / ISO 4762
4.4	Pneumatic Fitting	for 10 mm hose 1/4"
4.5	Socket Screw	M10x14 / DIN 7984
4.6	Adjusting Washer	M10



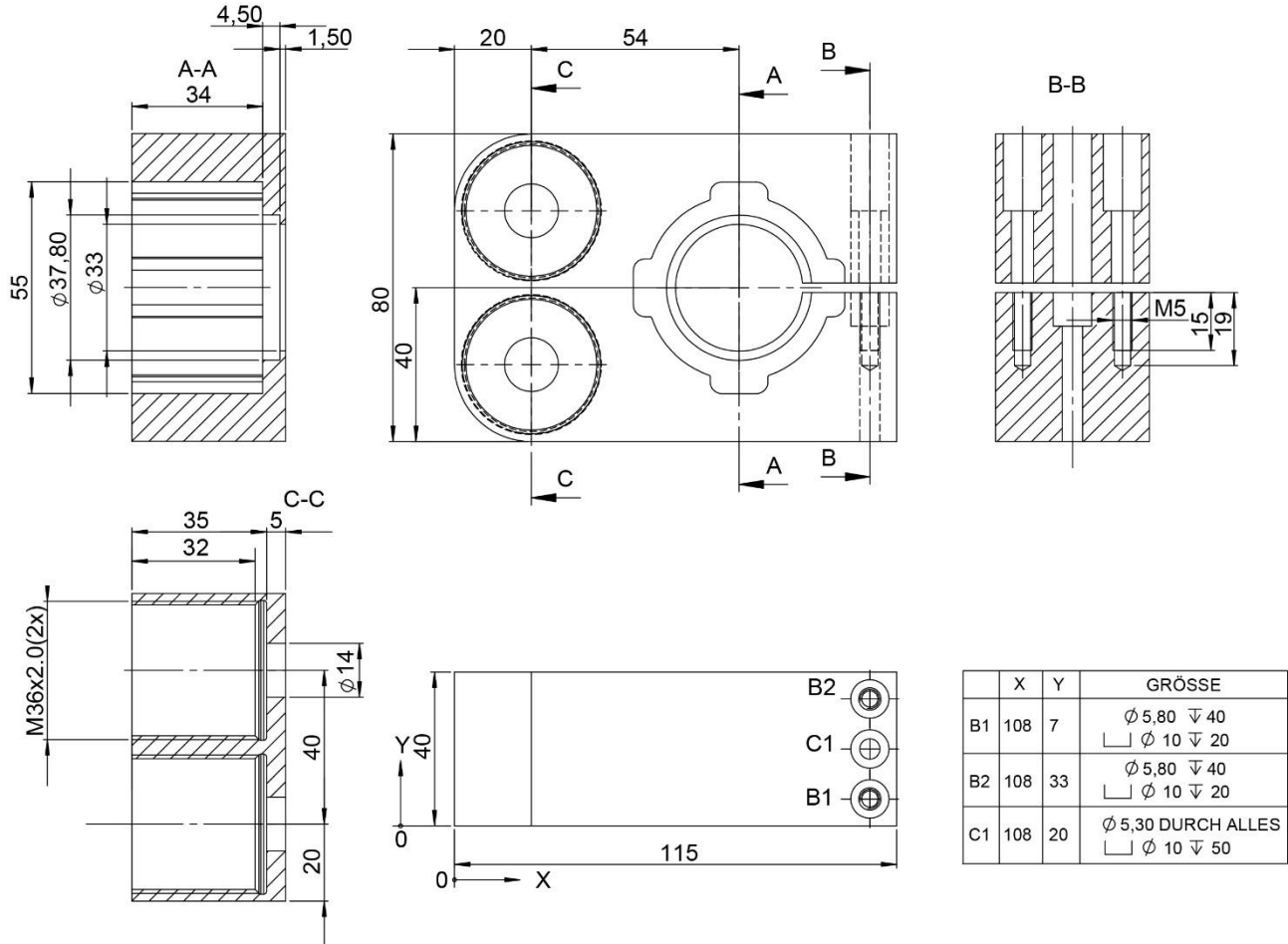
- Items 2, 4.3, 4.4 and 4.5 must be secured with a screw lock.
- One piece each of position 1 and 4 must be ordered.
Two pieces each of position 2 and 3 must be ordered.

7.10.2 Dimensions and Technical Data

MagSpring Mounting Flange DUO

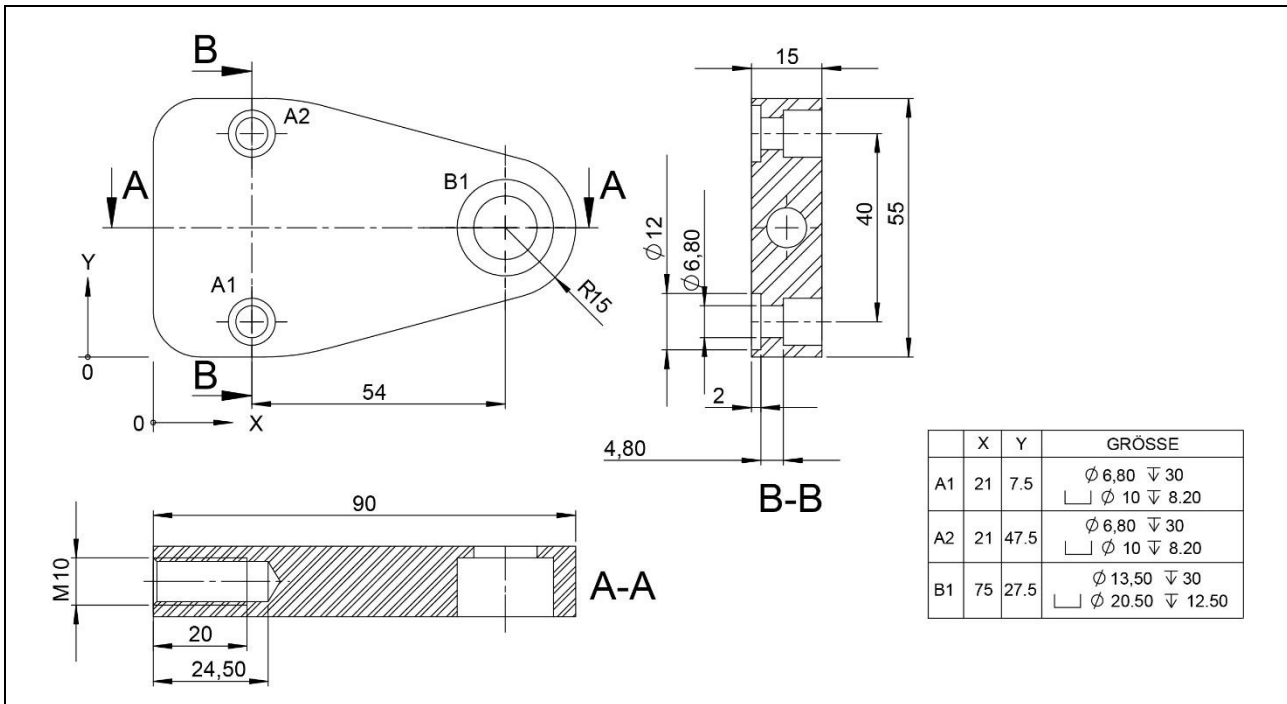
The MagSpring Mounting Flange (MF) can perform one or more of the following functions:

- Mounting of the wiper for the slider of the linear motor
- Mounting of a MagSpring for load compensation
- Mounting element for the linear rotary motor



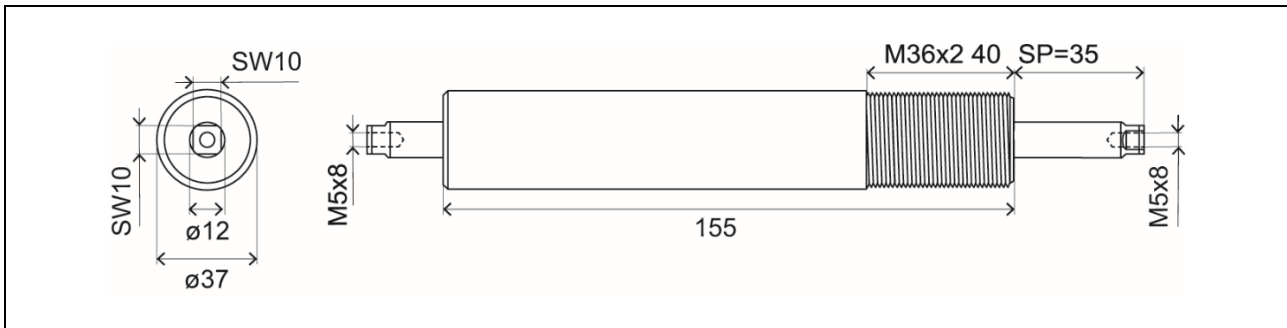
Item	Description	Weight [g]	Item-No.
MF01-PR01-84x80-37-2	MF MagSpring Linear Rotary Motor DUO including add. material (see chapter 7.10.1)	590	0250-2338

Mounting Adapter



Item	Description	Weight [g]	Item-No.
MA01-PR01-84x80-37-2	Mounting Adapter Linear Rotary Motor DUO including add. material (see chapter 7.10.1)	186	0250-2340

MagSpring Stator and MagSpring Slider

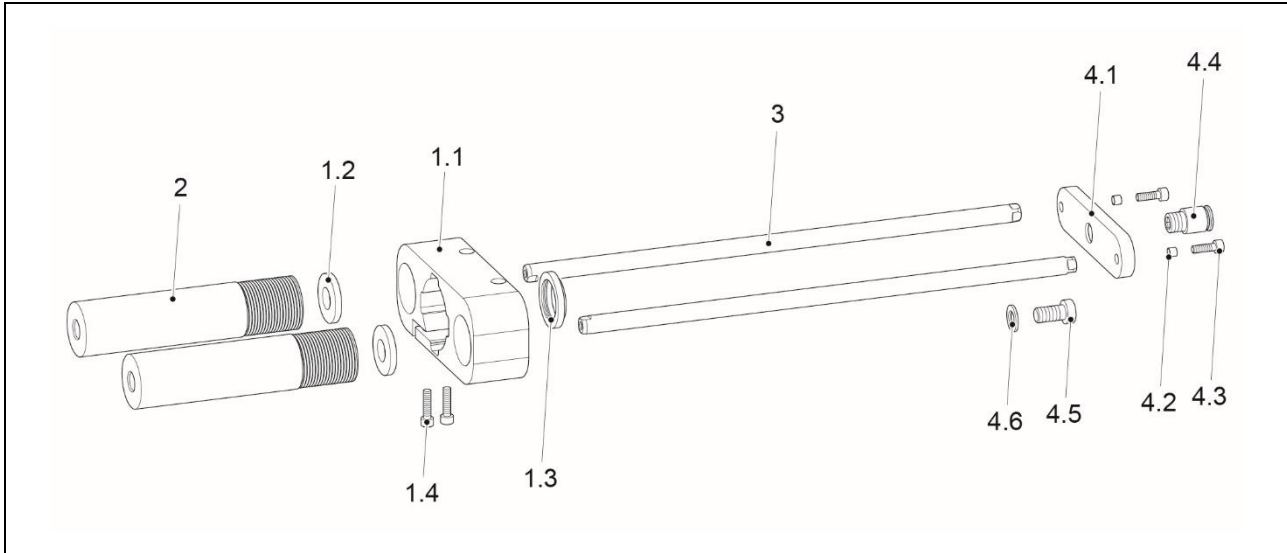


Item	Description	Length [mm]	Weight [kg]	Item-No.
MS01-37x170	MagSpring stator	170	0.96	0250-1017
ML01-12x375/160-20	MagSpring slider	375	0.2	0250-2326

7.11 Magnetic Spring «MagSpring®» Kit SYM

If the weight force of the linear rotary axis is to be passively compensated for a vertical application, a magnetic spring MagSpring can be mounted. The matching flange and adapter are available for easy mounting.

7.11.1 Overview



Pos.	Item	Item-No.
1	MagSpring Mounting Flange SYM	MF01-PR01-84x80-2-SYM (Item-No. 0250-2349)
delivered with:		
1.1	Mounting Flange	MF01k-PR01-84x80-2-SYM (Item-No. 0260-0016)
1.2	Spacer Sleeve (2x)	MF01-AR-84 (Item-No. 0250-0132)
1.3	Wiper	PAW01-28 (Item-No. 0150-3133)
1.4	Socket Screw (2x)	M5x20 / ISO 4762
2	MagSpring Stator (2x)	MS01-37x170 (60N F _{const.}) (Item-No. 0250-1017)
3	MagSpring Slider (2x)	ML01-12x375/160-20 (Item-No. 0250-2326)
4	MagSpring Adapter	MA01-PR01-84x80-37-2-SYM (Item-No. 0250-2348)
delivered with:		
4.1	Adapter	MA01k-PR01-84x80-37-2-SYM (Item-No. 0260-0017)
4.2	Spacer Sleeve (2x)	MA01-PR01-sleeve 4.9
4.3	Socket Screw (2x)	M5x14 / ISO 4762
4.4	Pneumatic Fitting	for 10 mm hose 1/4"
4.5	Socket Screw	M10x14 / DIN 7984
4.6	Adjusting Washer	M10



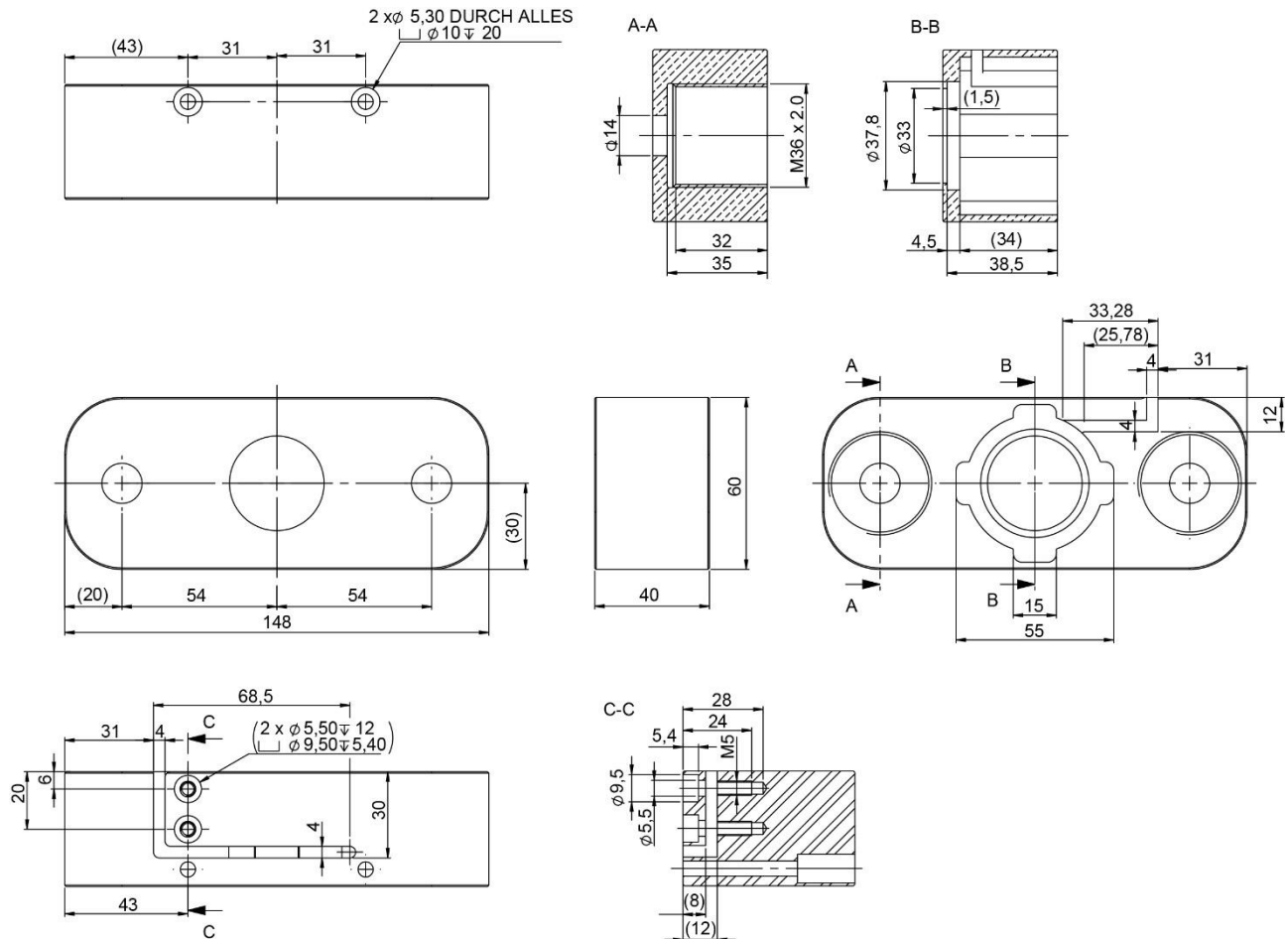
- Items 2, 4.3, 4.4 and 4.5 must be secured with a screw lock.
- One piece each of position 1 and 4 must be ordered.
Two pieces each of position 2 and 3 must be ordered.

7.11.2 Dimensions and Technical Data

MagSpring Mounting Flange SYM

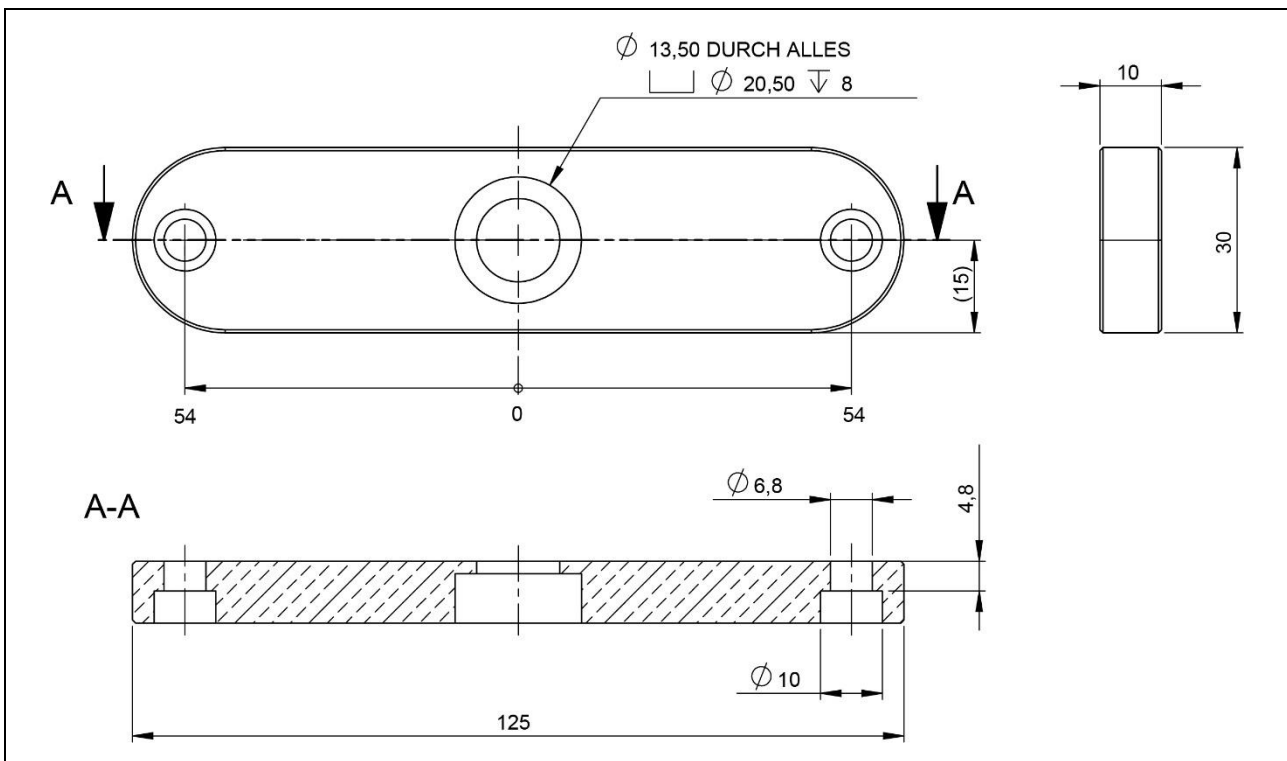
The MagSpring Mounting Flange (MF) can perform one or more of the following functions:

- Mounting of the wiper for the slider of the linear motor
- Mounting of a MagSpring for load compensation
- Mounting element for the linear rotary motor



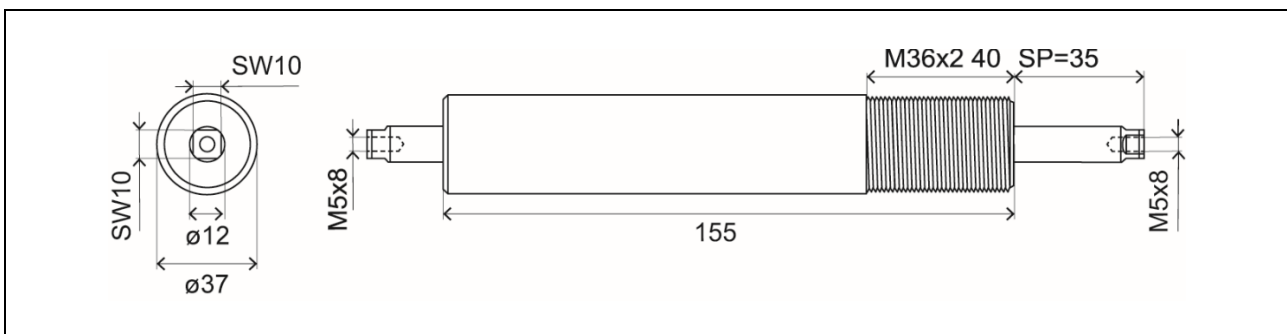
Item	Description	Weight [g]	Item-No.
MF01-PR01-84x80-2-SYM	MF MagSpring Linear Rotary Motor symmetrical including add. material (see chapter 7.11.1)	848	0250-2349

Mounting Adapter



Item	Description	Weight [g]	Item-No.
MA01-PR01-84x80-37-2-SYM	Adapter Linear Rotary Motor symmetrical including add. material (see chapter 7.11.1)	499	0250-2348

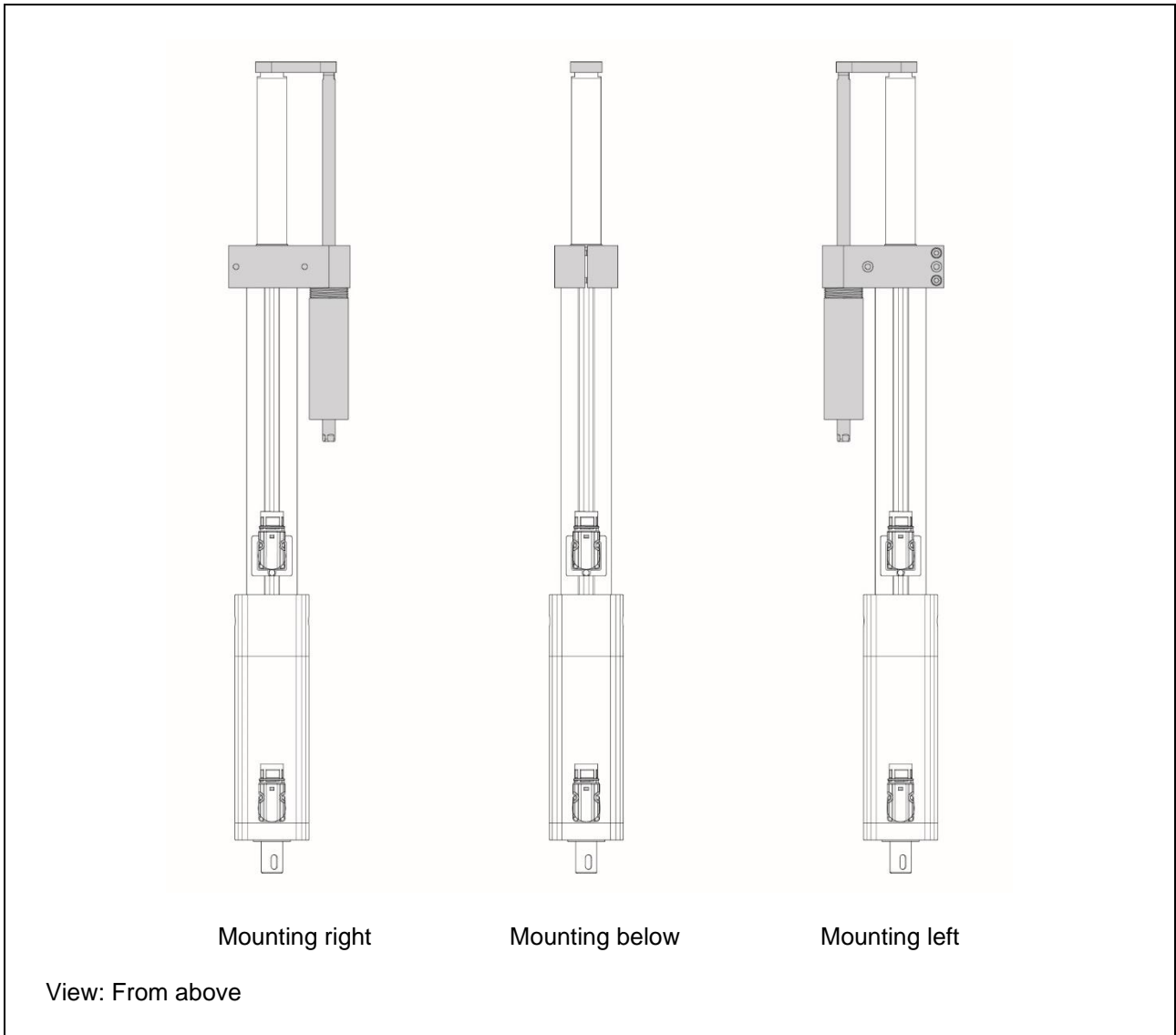
MagSpring Stator and MagSpring Slider



Item	Description	Length [mm]	Weight [kg]	Item-No.
MS01-37x170	MagSpring stator	170	0.96	0250-1016
ML01-12x375/160-20	MagSpring slider	375	0.2	0250-2326

7.12 MagSpring Kit Mounting Orientation

The MagSpring can be mounted underneath the linear rotary motor or on the left or right sides. On customer request, the accessories can be delivered pre-assembled. To do this, the ordering information below must already be available when the ordering process is initiated.



Ordering information

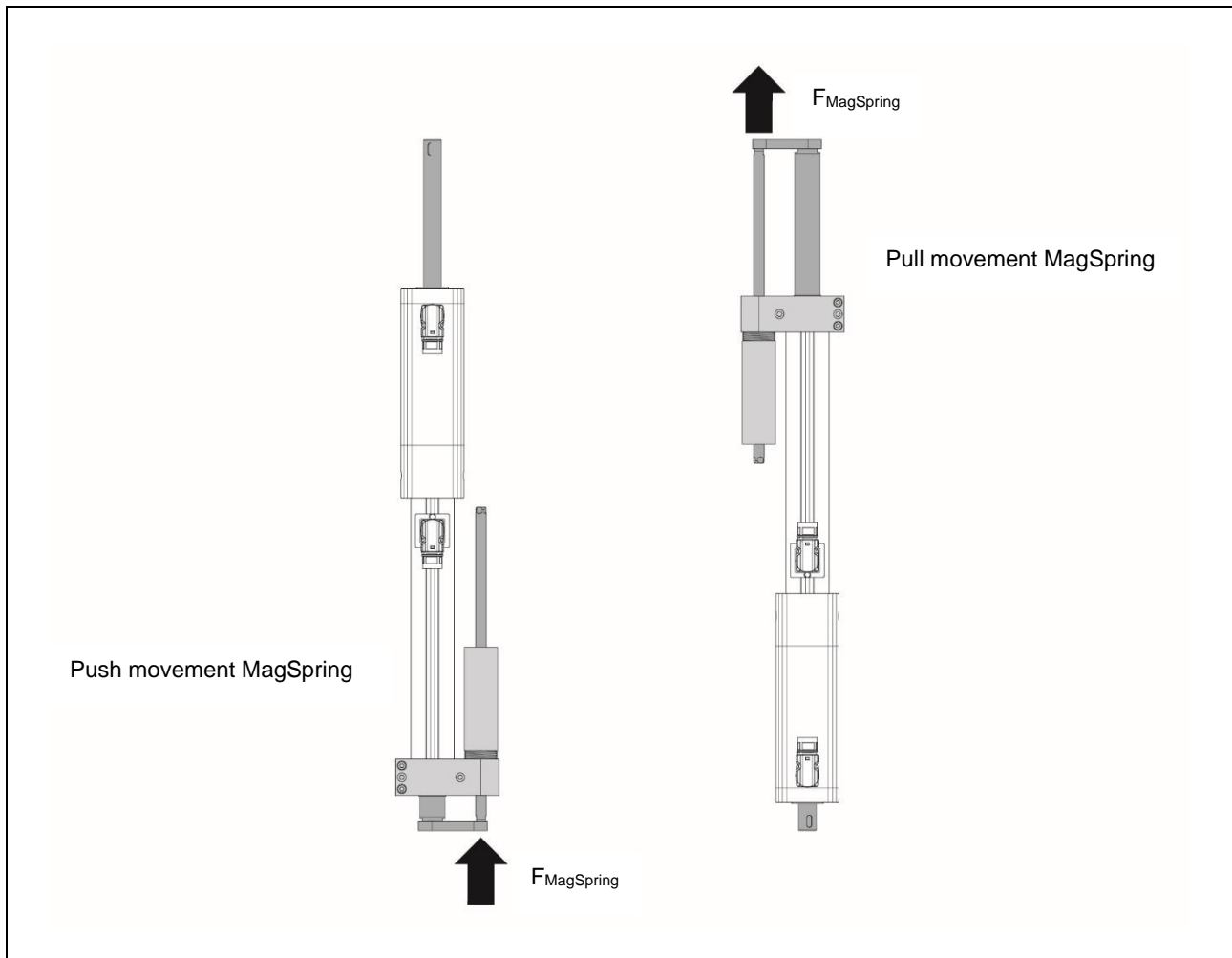
Item	Description	Item-No.
Mounting right	Linear-Rotary Motor Accessories orientation: right	0140-0002
Mounting below	Linear-Rotary Motor Accessories orientation: below	0140-0003
Mounting left	Linear-Rotary Motor Accessories orientation: left (default)	0140-0004



If no assembly type no. or information regarding assembly is available, the ordered accessories are delivered separately.

7.13 Direction of Force MagSpring Kit

The direction of force changes depending on the installation direction of the MagSpring slider. This means that the MagSpring can pull or push out the motor shaft. The direction of force for the pre-assembled MagSpring can be selected using the part numbers listed below.



Ordering information

Item	Description	Item-No.
MagSpring push	Linear-Rotary Motor MagSpring force direction: push	0140-0005
MagSpring pull	Linear-Rotary Motor MagSpring force direction: pull (default)	0140-0006



Do not drive into the internal mechanical stops!

Basically, it must be ensured that the linear motor does not move to the lower or upper internal stop during operation under any circumstances. In particular, when using a MagSpring, it must be ensured that the MagSpring does not 'fling' the rotary axis into the internal mechanical stops under any circumstances. A mechanical stop ring, for example, mounted on the linear rotary shaft, can prevent this.

7.14 Holding Brake Kit

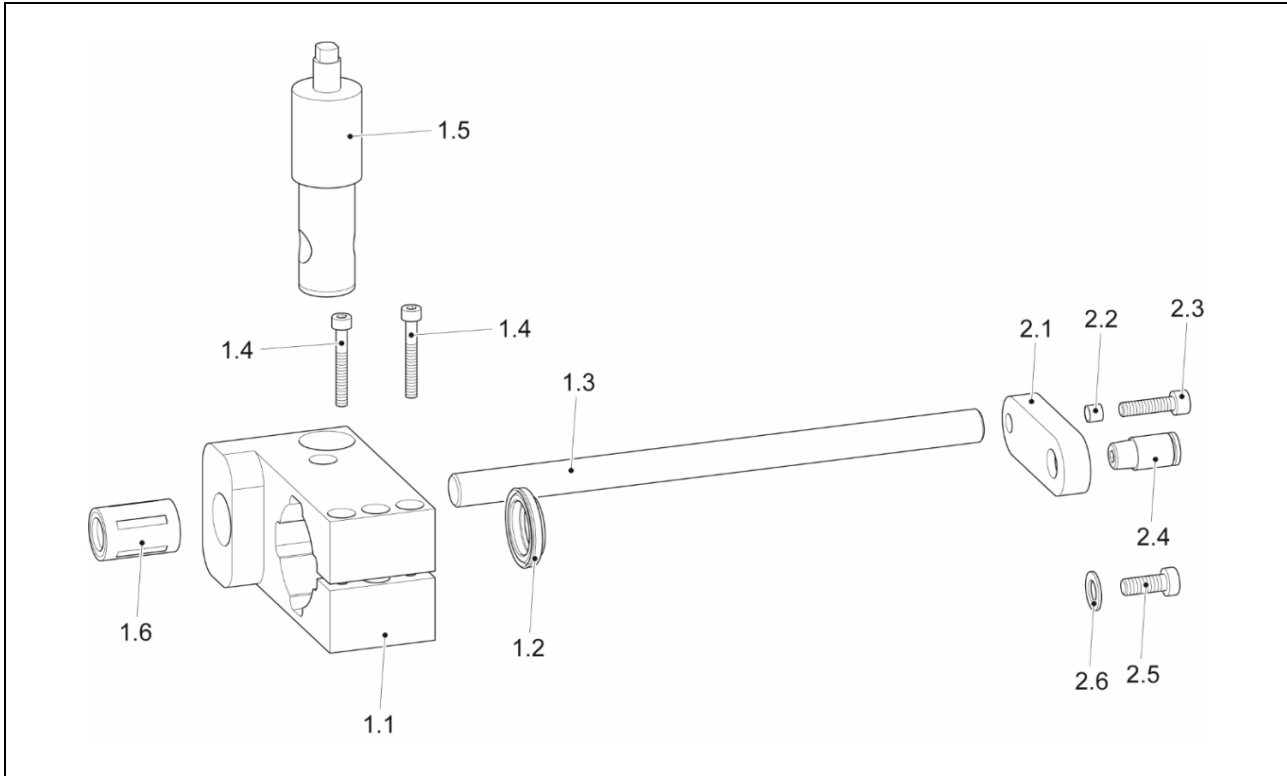
A brake can be mounted as an option. The pneumatic brake is controlled by the Servo Drive. To open and close the brake, an additional electric solenoid valve is required.

The brake acts on a shaft arranged parallel to the slider and is released by compressed air.



- The brake has a pure holding function and is not designed to slow down or stop dynamic movements.
- Not to be used for safety devices!
- Not approved as a safety element!

7.14.1 Overview



Pos.	Description	Item-No.
1	MF01-BK84	Holding brake kit linear rotary motor for PR01-84 (Item-No. 0250-2347)
delivered with:		
1.1	Mounting flange	MF01k-BK84 (Item-No. 0260-0002)
1.2	Wiper	PAW01-28 (Item-No. 0150-3133)
1.3	Cam shaft	MF01k-KS12x200 (Item-No. 0260-0134)
1.4	Socket screw (2x)	M5x35 / ISO 4762
1.5	Pneumatic holding brake	HB01-37 (Item-No. 0150-5052)
1.6	Linear ball bearing	LBBR 12-2LS (Item-No. 0230-0062)
2	Mounting adapter	MA01-PR01-84x80-37-1 (Item-No. 0250-2341)
delivered with:		
2.1	Adapter	MA01k-PR01-84x80-37-1 (Item-No. 0250-0134)
2.2	Spacer sleeve	MA01-PR01-DH-4.9
2.3	Socket screw	M5x14 / ISO 4762
2.4	Pneumatic fitting	M10x14 / ISO 7984
2.5	Socket screw	for 10 mm hose 1/4"
2.6	Adjusting washer	M10



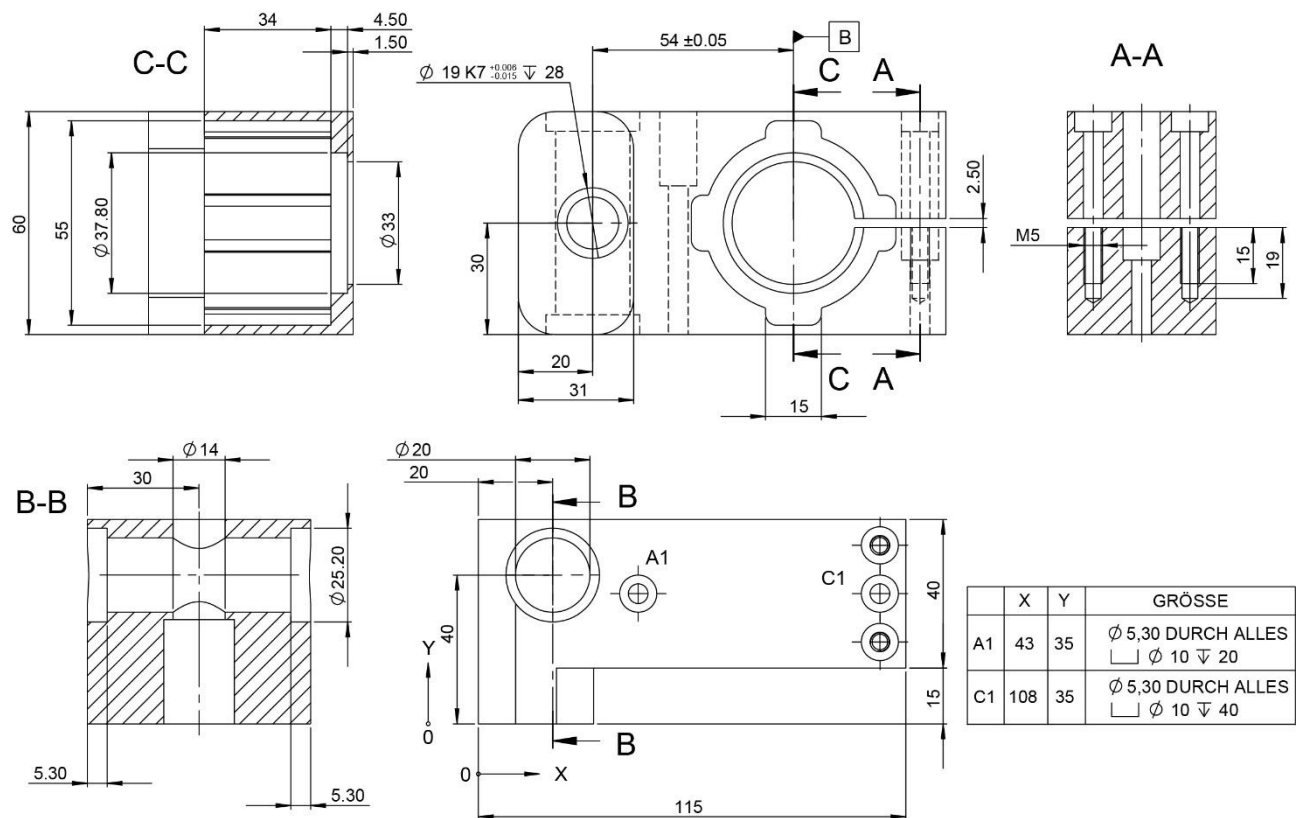
- Items 2.3, 2.4 and 2.5 must be secured with a screw lock.
- One piece each of position 1 and 2 must be ordered.

7.14.2 Dimensions and Technical Data

Mounting Flange Holding Brake Kit

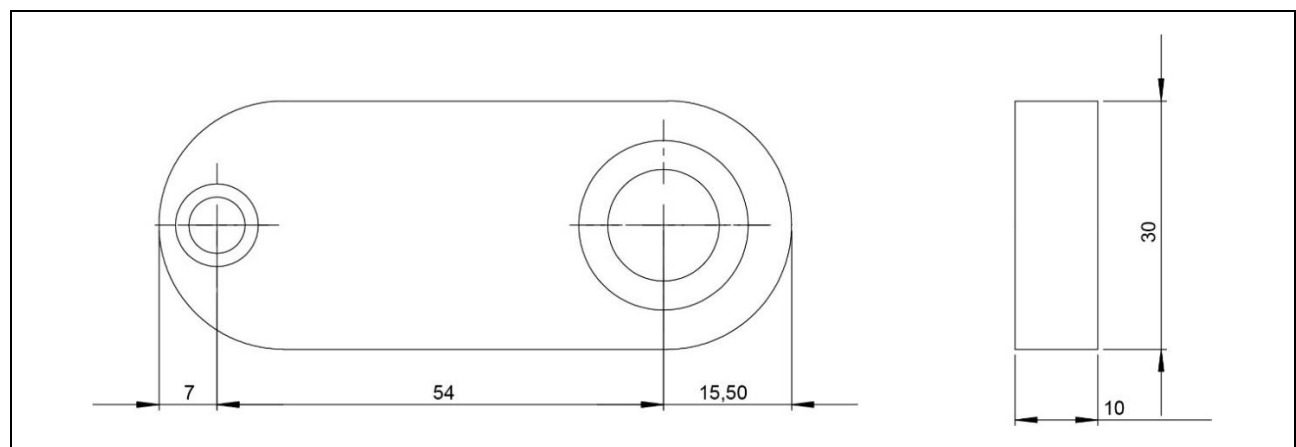
The mounting flange can perform one or more of the following functions:

- Mounting of the wiper for the slider of the linear motor
- Fixation of a holding brake
- Mounting element for the linear rotary motor



Item	Description	Weight [g]	Item-No.
MF01k-BK84	Mounting Flange Holding Brake Kit for Linear Rotary Motor	366	0260-0001

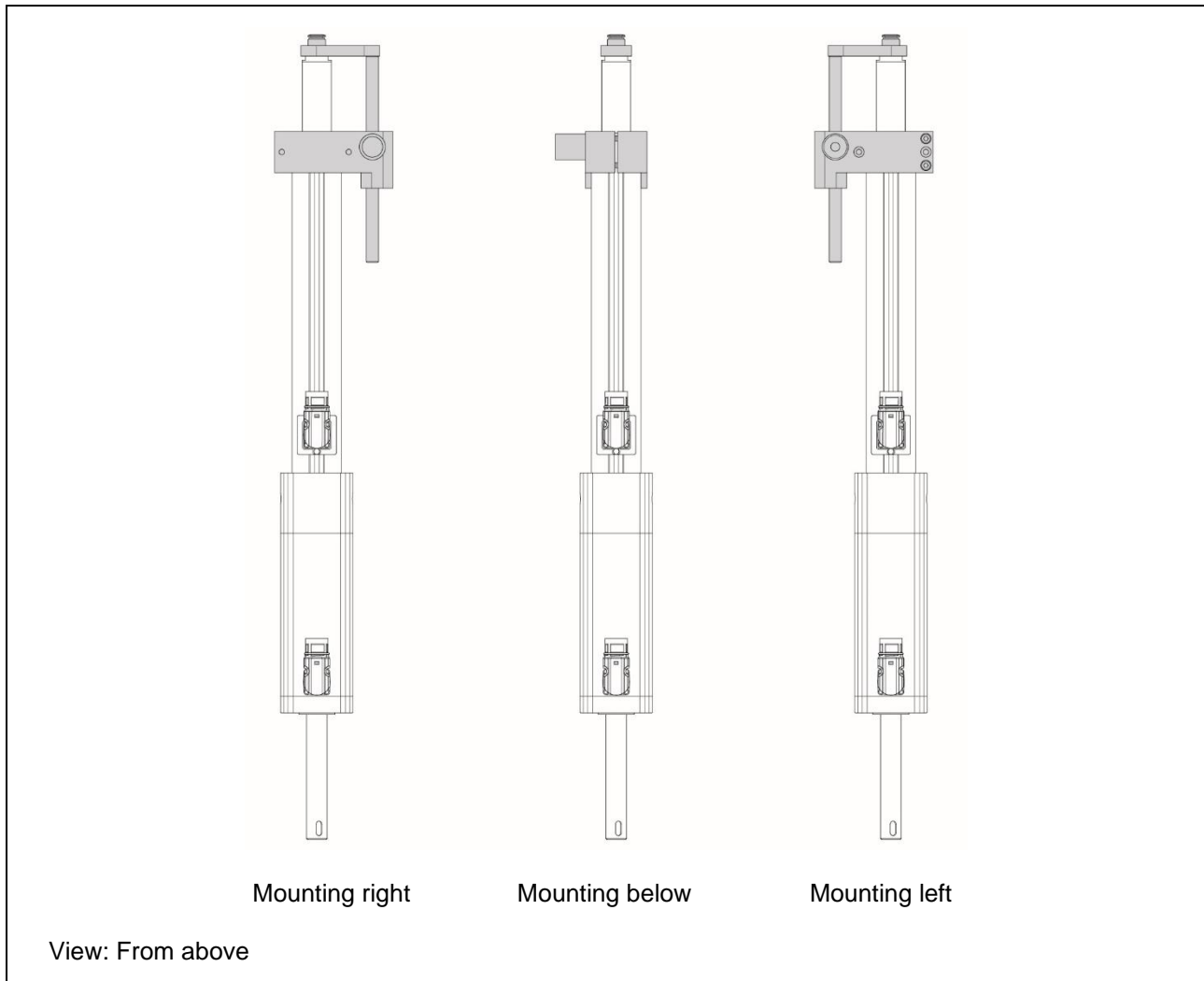
Mounting Adapter



Item	Description	Weight [g]	Item-No.
MA01-PR01-84x80-37-1	Mounting Adapter Linear Rotary Motor UNO including add. material (see chapter 7.9.1)	85	0250-2341

7.14.3 Holding Brake Kit Mounting Orientation

The holding brake kit can be mounted underneath the linear rotary motor or on the left or right sides. On customer request, the accessories can be delivered pre-assembled. For this purpose, the ordering information below must already be available when the ordering process is initiated.



Ordering information

Item	Description	Art-Nr.
Mounting right	Linear-Rotary Motor Accessories orientation: right	0140-0002
Mounting below	Linear-Rotary Motor Accessories orientation: below	0140-0003
Mounting left	Linear-Rotary Motor Accessories orientation: left (default)	0140-0004

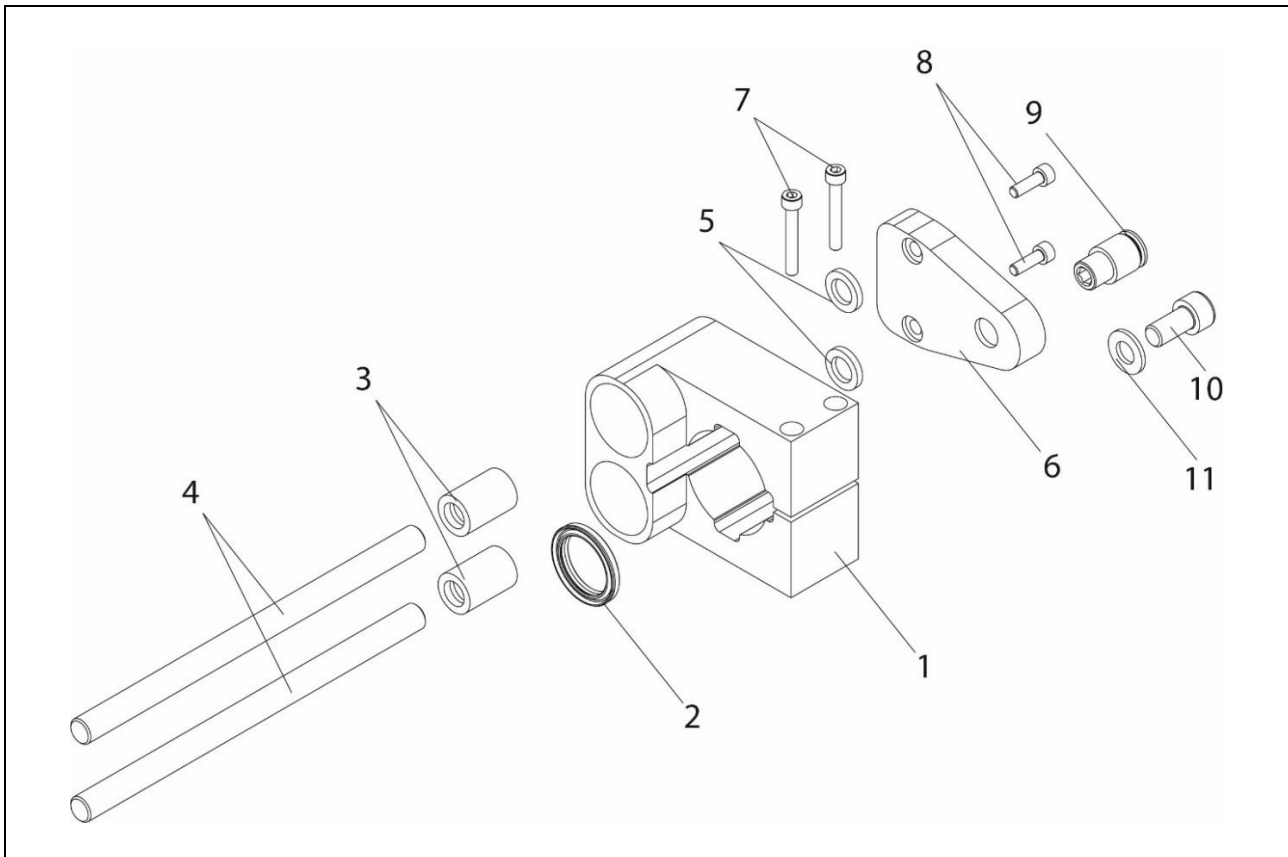


If no assembly type no. or information regarding assembly is available, the ordered accessories are delivered separately.

7.15 Cam Kit

The multi-part cam kit offers the user a simple way to couple the linear rotary motor to an emergency backdrop. In the event of a power failure, the cam control forcibly moves the moving part of the linear rotary motor upwards out of the collision-endangering zone. A collision of the axle with an object is thus effectively avoided.

7.15.1 Overview



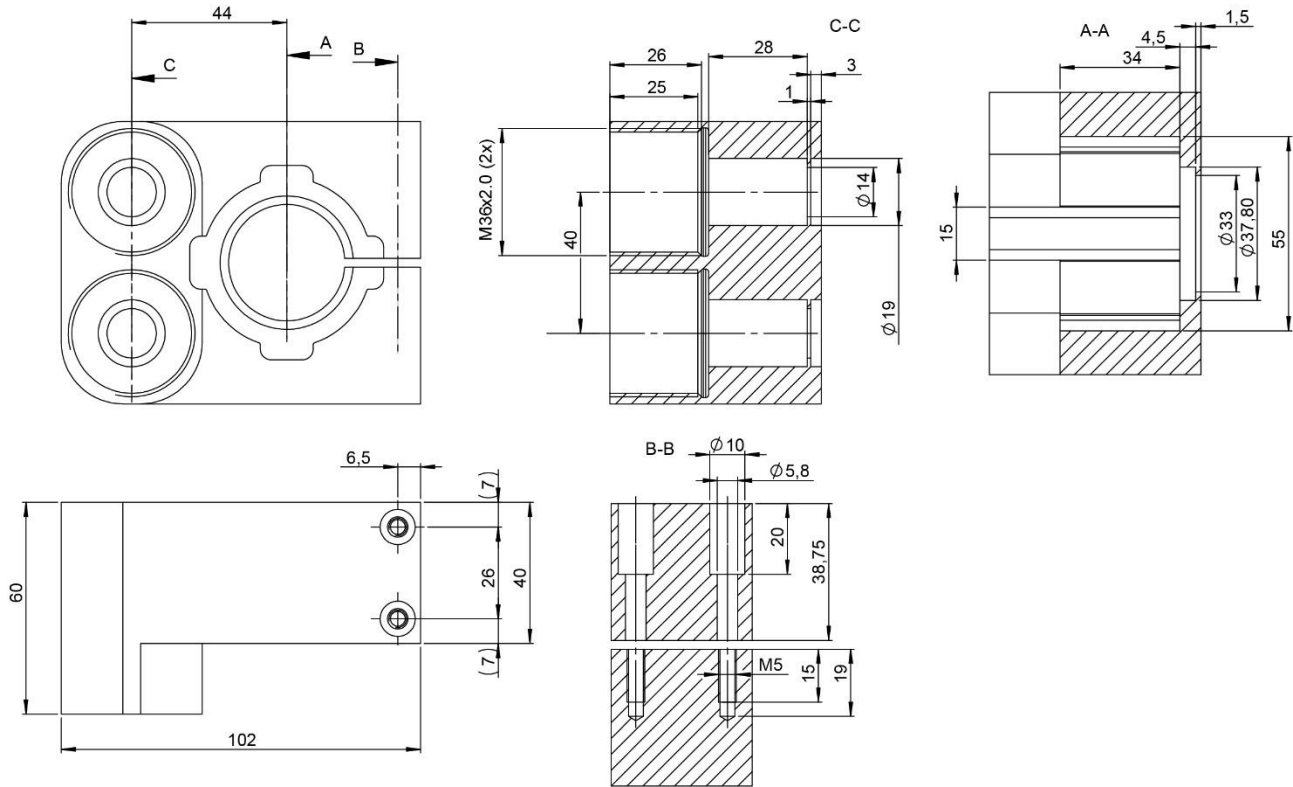
Pos.	Item	Item-No.
	MF01-BK84	Cam Kit for Linear Rotary Motor (Item-No. 0250-2324)
consisting of:		
1	Cam flange	MF01k-PR01-84x80-K (Item-No. 0260-0151)
2	Wiper	PAW01-28 (Item-No. 0150-3133)
3	Linear ball bearings (2x)	LBBR 12-2LS (Item-No. 0230-0062)
4	Guiding rods (2x)	MF01k-KS12x215 (Item-No. 0260-0174)
5	Shaft seals (2x)	SP-12x19x3 (Item-No. 0230-0018)
6	Adapter	MA01k-PR01-84x80-K (Item-No. 0260-0150)
7	Socket screws (2x)	M5x35 / ISO 4762
8	Socket screws (2x)	M5x14 / ISO 4 762
9	Pneumatic fitting	for 10mm hose 1/ 4"
10	Socket screws	M10x14 / DIN 7984
11	Adjustung washer	M10



- Items 8, 9 and 10 must be secured with a screw lock.

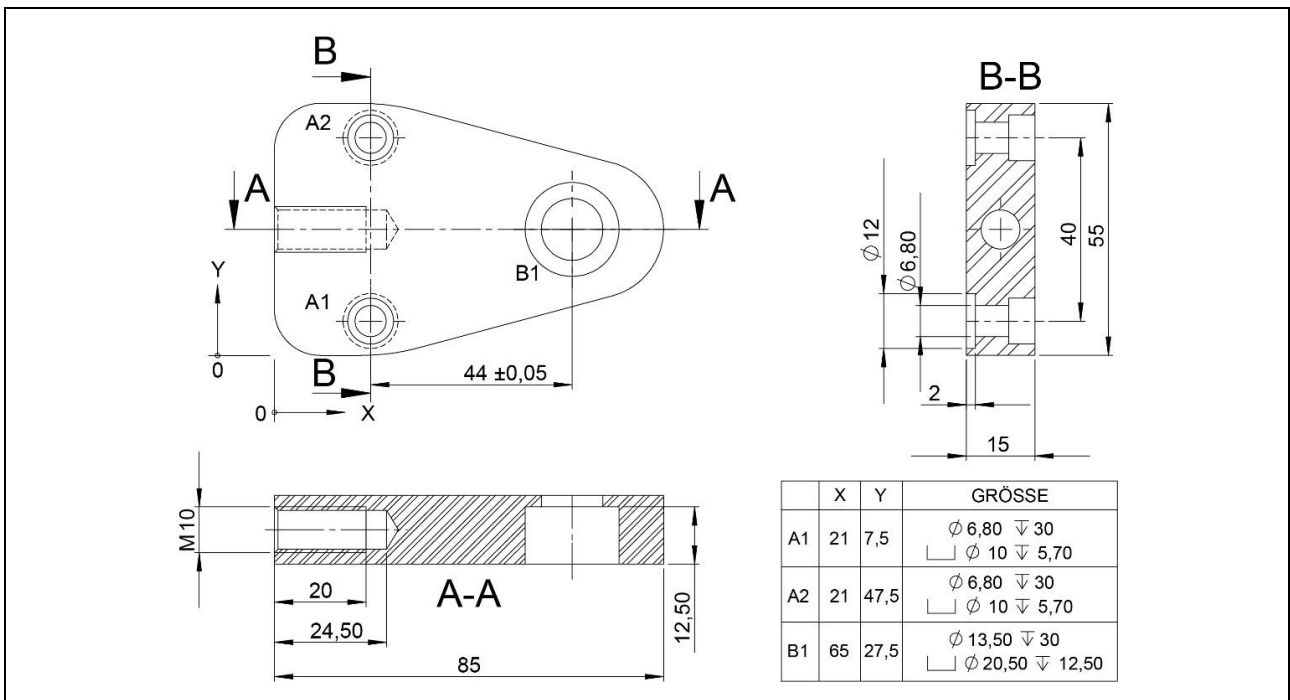
7.15.2 Dimensions and Technical Data

Cam Flange



Item	Description	Weight [g]	Item-No.
MF01k-PR01-84x80-K	Cam Flange for Linear Rotary Motor	610	0260-0151

Mounting Adapter



Item	Description	Weight [g]	Item-No.
MA01k-PR01-84x80-K	Cam Adapter for Linear Rotary Motor	125	0260-0150

8 Maintenance and Test Instructions

8.1 Maintenance

LinMot linear rotary motors are provided with initial lubrication at the factory. Maintenance is only necessary if the motors run dry or are very dirty. Under normal industrial, Central European conditions (5 days a week with 8 hours of operation per day) a quarterly inspection is sufficient.

The inspection cycle must be shortened if there are heavy motor loads or extreme conditions. These are for example:

- Permanent soiling
- Direct solar radiation
- Low humidity
- Outdoor operation
- Increased operating temperature
- Other specific environmental conditions

Maintenance or disassembly of the linear rotary motors must be carried out by the following companies:

- NTI AG
- LinMot GmbH
- Companies qualified by LinMot



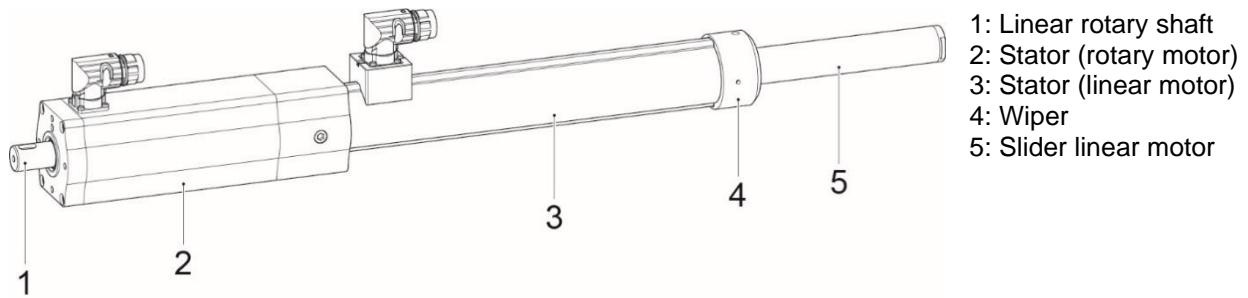
If the linear rotary motor is not serviced by one of the companies mentioned above, the warranty claim expires.

Ordering information

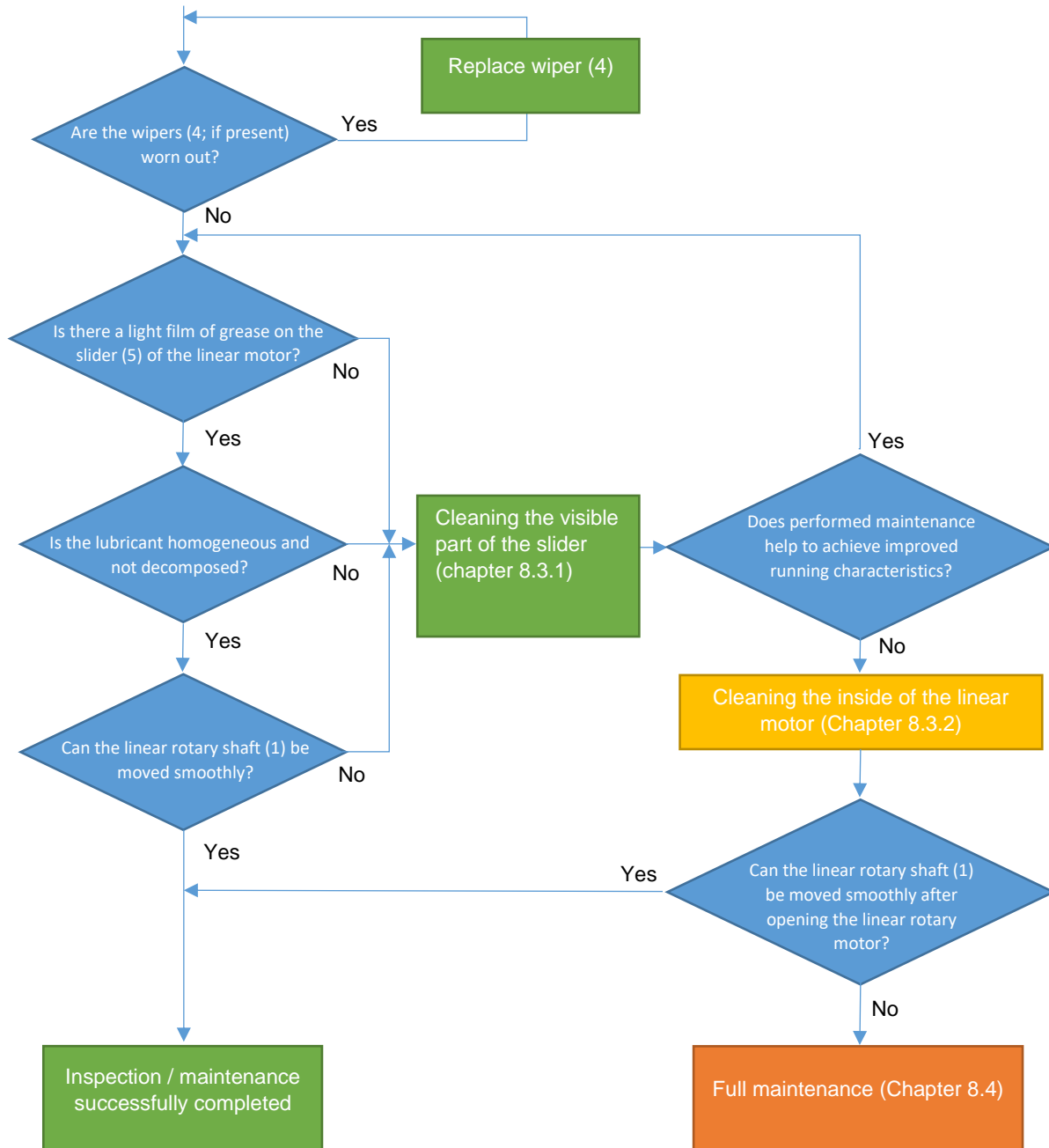
Item	Description	Item-No.
Maintenance: PR01-84 / -70 / PR02-88 Cleaning, replacement wear parts	Maintenance Linear Rotary Motors	r157

8.2 Inspection

When inspecting the linear rotary motors, the following points must be checked:



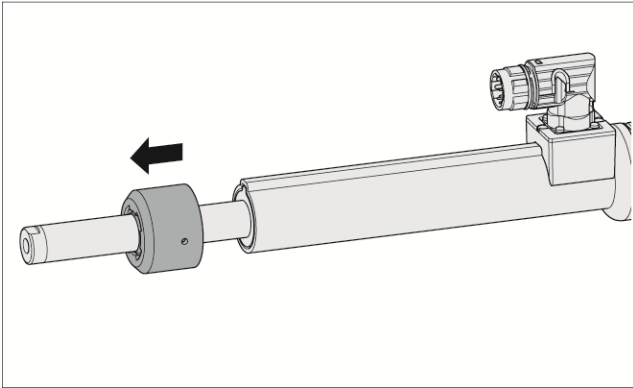
- 1: Linear rotary shaft
- 2: Stator (rotary motor)
- 3: Stator (linear motor)
- 4: Wiper
- 5: Slider linear motor



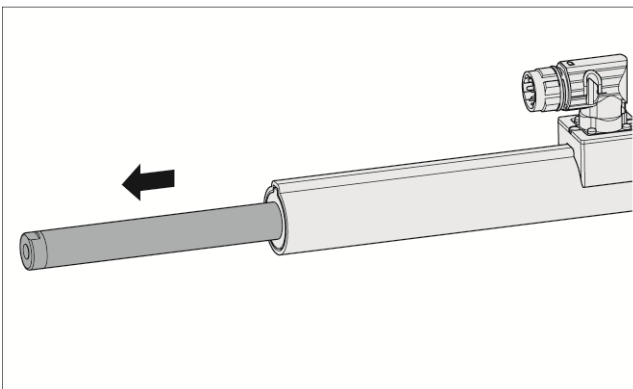
- Blue:** Check Points (authorised personnel / follow assembly instructions)
- Green:** Tasks (authorised personnel / observe assembly instructions)
- Yellow:** Tasks (qualified personnel trained by LinMot)
- Orange:** Tasks (only experts / LinMot)

8.3 Maintenance Instructions

8.3.1 Cleaning the visible Part of the Slider



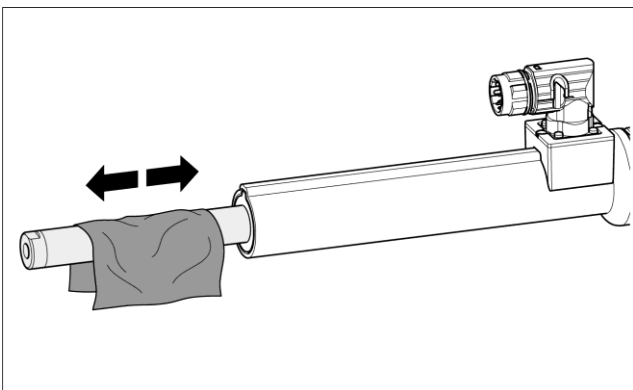
- 1. Remove additional parts.**
Remove any mounted wiper (shown), MagSpring or brake flange.



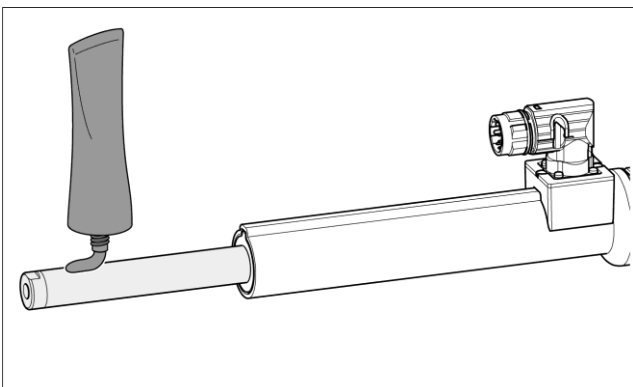
- 2. Pull the slider out of the stator as far as possible.**



Large magnetic attraction forces (observe warning notice, section 2)! If necessary, cover nearby iron constructions with non-magnetic material (e.g. wood).



- 3. Clean the slider.**
Clean the visible end of the slider with a clean and soft cloth. Ideally use LU06 cleaning spray (alternatively methylated spirit or alcohol) for cleaning.

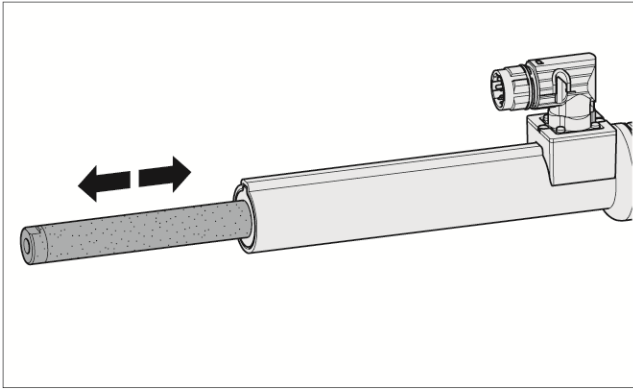


- 4. Grease the slider.**

Grease the end of the slider with approx. 4 g grease LU02 (for ordering information see chapter 8.5) Only a light grease film should be present on the slider surface.



Make sure that the specified grease quantity is observed. Overgreasing can lead to resinification of the grease, especially at higher operating temperatures!



- 5. Remove further dirt particles.**
 Move the slider of the linear motor or the entire linear rotary shaft axially forwards and backwards to remove further possible dirt particles from the stator of the linear motor. If necessary, repeat steps 1-4 of the maintenance instructions until no more dirt is visible on the slider. Make sure that only a light film of grease remains on the slider.



Linear rotary motors may have grease nipples which are required by LinMot for initial factory lubrication. The customer is prohibited from using the grease nipples for cyclical maintenance. For proper maintenance, refer to the following sections in this chapter.

8.3.2 Cleaning the Inside of the Linear Motor



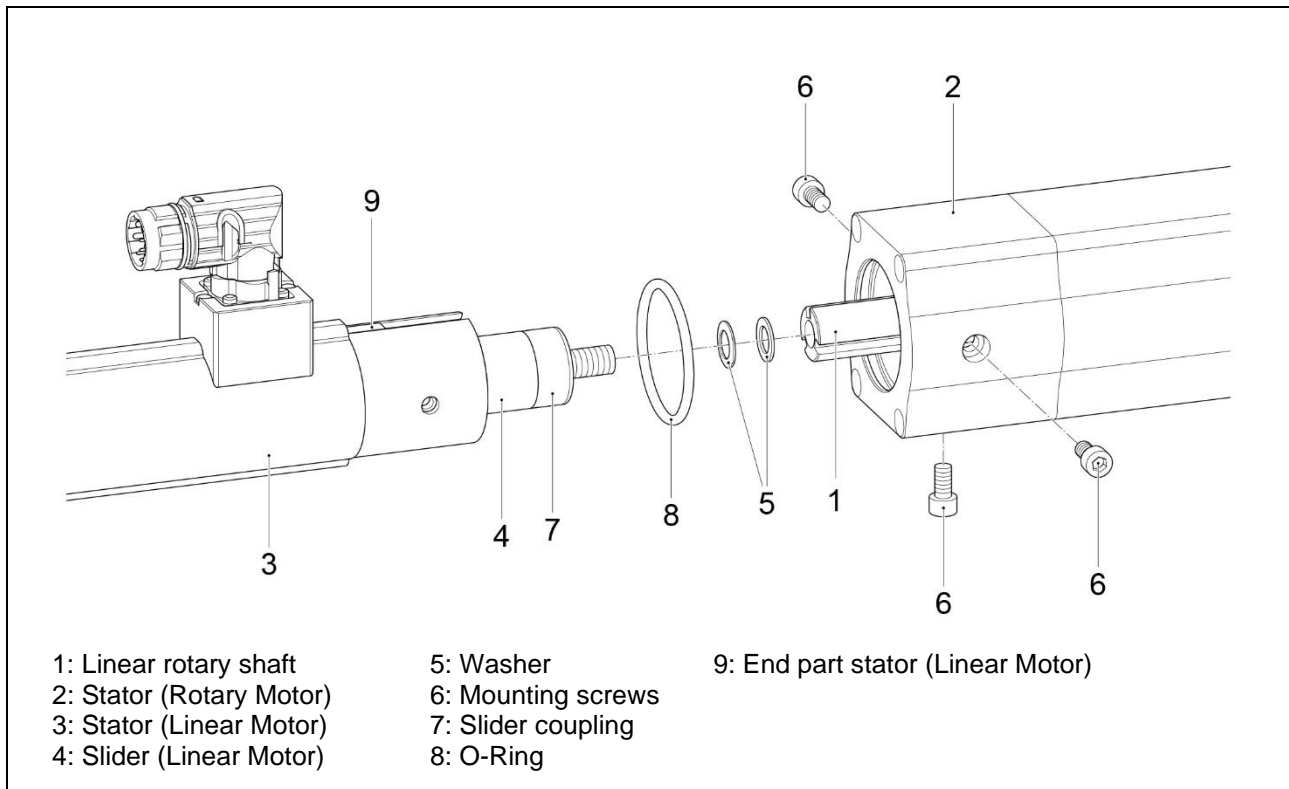
- The following work may only be carried out by NTI AG / LinMot GmbH or companies qualified by LinMot.
- The linear rotary motor may only be opened by trained personnel.
- The motor may only be opened after the previous chapter "Cleaning the visible part of the slider" has not produced the desired effect.
- Opening of the motor by unqualified personnel will result in loss of warranty.

A full maintenance of the PR01 linear rotary motor can be ordered from NTI AG / LinMot (recommended).

Item	Description	Item-No.
Maintenance: PR01-84 / -70 / PR02-88 Cleaning, replacement wear parts	Maintenance Linear Rotary Motors	r157



The motor shown below is representative for all linear rotary motors of the PR01 family. Depending on the type of motor and revision, there are different mechanical versions. It is the responsibility of trained personnel to handle the different versions accordingly. This applies to disassembly and assembly.



1. Detach the Rotary Motor from the Linear Motor

The two stators (2 and 3) are connected by 2 or 3 screws (6), depending on the linear rotary motor family. After removing the screws, the stator of the rotary motor (2) can be pushed in the axial direction by the stator of the linear motor (3).



- It is not recommended to detach the linear rotary shaft (1) from the slider (4) of the linear motor.
- It is not recommended to detach the end part stator linear motor (9) from the linear motor.
- Linear rotary motors can have a silicone layer between the end part of the stator of the linear motor (9) and the stator of the rotary motor (2) instead of the O-ring (8).

2. Pull the Slider 80% out of the Stator of the Linear Motor



- Avoid pulling the slider (4) completely out of the stator of the linear motor (3).
- If the slider of the linear motor (4) is completely removed from the linear motor, it must be ensured that the slider of the linear motor (4) is not magnetically attracted by the end part of the stator of the linear motor (9).



Large magnetic attraction forces. Observe the warnings shown in chapter 2! If necessary, cover nearby iron constructions with non-magnetic material (e.g. wood).

3. Clean Slider and Stator of the Linear Motor

Clean the slider of the linear motor (4) and stator of the linear motor (3) with a soft cloth, ideally with the aid of LU06 cleaning spray (alternatively methylated spirit or alcohol).

4. Grease the Plain Bearings

Grease the plain bearings of the stator of the linear motor (3) with 2-3 g of LU02 grease, whereby only a light grease film may be present on the inside.



Avoid overlubrication!

5. Grease the Slider of the Linear Motor

Grease the slider (4) along its length with approx. 4 g of grease LU02 (4 g = approx ½ hazelnut) per meter. The grease can be applied with a soft cloth. If wipers are used, their sealing lips should also be lightly greased with LU02 during assembly. In principle, care must be taken to ensure that there is only a light film of grease on the sliders (4).



Overlubrication can lead to resinification of the grease, particularly at higher operating temperatures! In this case, a complete cleaning of the linear motor must be carried out.

6. Assembling the Linear Rotary Motor



If the slider of the linear motor (4) has been completely removed from the stator of the linear motor (3), it must be ensured before assembly that the slider (4) cannot be attracted to the end part of the linear motor (9) by magnetic attraction. A mounting aid (e.g. made of wood or plastic) must be used to protect the slider (4).

The PR01 motor must be assembled according to the previous figure. Note that the mechanics may differ from the figure depending on the motor type or due to revision. Differences may include silicone joints, precision tapes and other components not shown. Trained personnel are responsible for reassembling the motor in reverse order of disassembly.



- Sealing made of silicone must be professionally removed and renewed before assembly.
- In case of installed precision strips, their thickness and position in the housing is marked.

7. Screwing the Rotary Motor to the Linear Motor

After successful assembly of the slider (linear motor) (4), stator (linear motor) (3) and stator (rotary motor) (2), the two screws (6) opposite each other must be tightened. In the case of a third screw (6), this must be tightened only at the end.

8.4 Full Maintenance

Complete disassembly of the PR01 motor is only necessary if the stator of the rotary motor (2) has to be cleaned or the rotary motor ball bearings have to be replaced.



- A complete disassembly is only to be carried out by NTI AG / LinMot or certified companies.
- If the motor is completely disassembled by other companies / persons, a complete loss of warranty automatically comes into effect.
- A complete maintenance of the PR01 motor can be ordered under article number r157 from NTI AG / LinMot.

8.4.1 Linear Ball Bearing / Plain Bearing

The linear rotary shaft is guided in the stator of the rotary motor by a linear ball bearing. The linear ball bearings are of high quality, initially lubricated, shielded from environmental influences and do not require cyclical maintenance. Linear ball bearings can only be replaced by NTI AG / LinMot in the course of a full maintenance of the PR01 linear rotary motor (Item-No. r157).

8.4.2 Ball Bearing

High-quality recirculating ball bearings installed in the linear motor are initially lubricated, shielded from environmental influences and do not require cyclical maintenance. Ball bearings can only be replaced by NTI AG / LinMot in the course of a full maintenance of the PR01 motor (Item-No. r157).

8.4.3 Air Coupling / Rotary Coupling (Hollow Slider)

Linear rotary motors with option -L (through bore-hole) have an air coupling / rotary coupling between the slider of the linear motor and linear rotary shaft. Before delivery, the coupling is checked and validated for leakage. The air coupling can lose its tightness due to influences such as aging, temperature, load cycles, etc., which can be particularly noticeable in the finest vacuum applications. In such applications it is recommended to work with a sufficiently large vacuum reserve.

The air coupling can only be replaced by NTI AG / LinMot in the course of a full maintenance of the PR01 motor (Item-No. r157).

8.5 Cleaning Agents / Lubricants

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

LinMot grease LU02 is prescribed to improve the sliding properties between the chromium nickel steel surface of the slider and the plastic plain bearing.

Ordering information

Item	Description	Item-No.
LU06-250	Klüberfood NH1 4-002 Spray* (250 ml)	0150-2394
LU02-08	Lubricant for linear motors ** (8 g)	0150-1953
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.

8.6 Electrical Resistance Test

To check the stators, the ohmic resistances between the individual connector pins can be measured. If the measured values are outside the tolerance of +/- 10% of the listed values, the stator could be damaged (listed values measured at 20°C).

8.6.1 Linearmotor PS01–48x240F-C

Pin assignment	Pins	Resistance @ 20 °C
Phase 1+ / Phase 1-	Pin A / Pin B	1.1 Ω
Phase 2+ / Phase 2-	Pin C / Pin D	1.1 Ω
5V / GND	Pin E / Pin F	155 Ω
Sensor Sine / GND	Pin G / Pin F	33 kΩ
Sensor Cosine / GND	Pin H / Pin F	33 kΩ
Temp. Sensor / GND	Pin L / Pin F	10 kΩ
Phase / GND	Pin A, B, C, D / Pin F	>20 MΩ
Alle Pins / Shield	Pin A-L / Housing	>20 MΩ

8.6.2 Drehmotor-Stator RS01-70x100-C

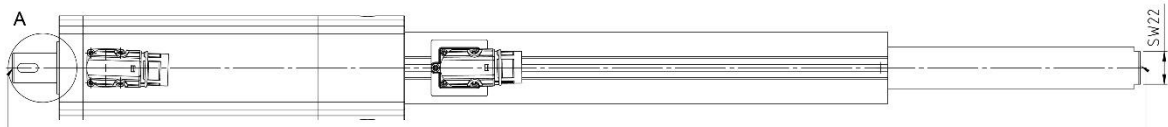
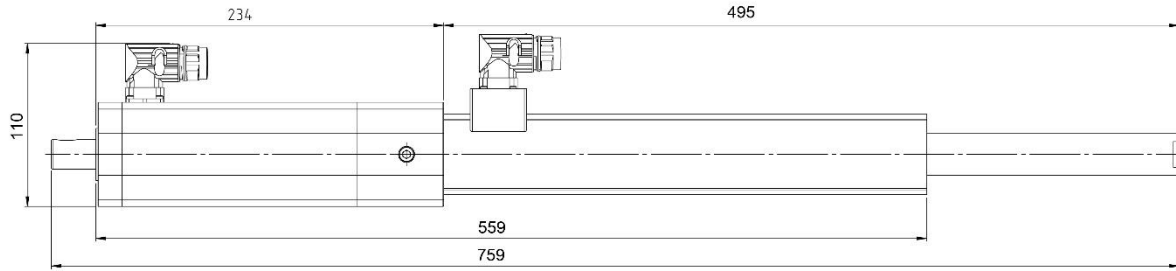
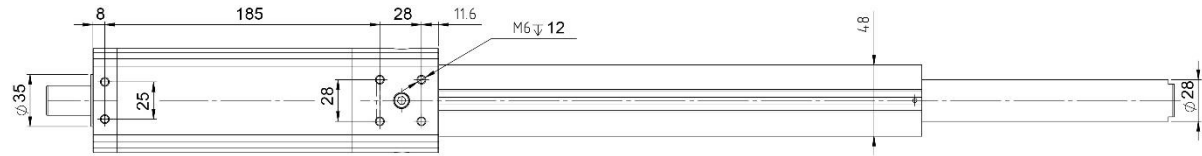
Pin assignment	Pins	Resistance @ 20 °C
Phase A / Phase B	Pin A / Pin B	2.4 Ω
Phase A / Phase C	Pin C / Pin D	2.4 Ω
5V / GND	Pin E / Pin F	155 Ω
Sensor Sinus / GND	Pin G / Pin F	33 kΩ
Sensor Cosine / GND	Pin H / Pin F	33 kΩ
Temp. Sensor / GND	Pin L / Pin F	10 kΩ
Phase / GND	Pin A, B, C, D / Pin F	>20 MΩ
Alle Pins / Schirm	Pin A-L / Housing	>20 MΩ

9 Transport and Storage

- LinMot linear rotary motors may only be transported and stored in their original packaging.
- The motors should not be removed from the packaging until installation.
- The storage room must be dry, dust-free, frost-free and vibration-free.
- The relative air humidity have to be less than 60 %. (non condensing !)
- Prescribed storage temperature: -15 °C...70 °C
- Linear rotary motors must be protected against extreme weather conditions.

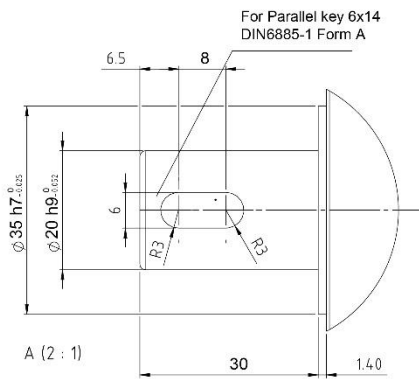
10 Dimensions

10.1 PR01-70x100-C/48x240F-C-150 (L)

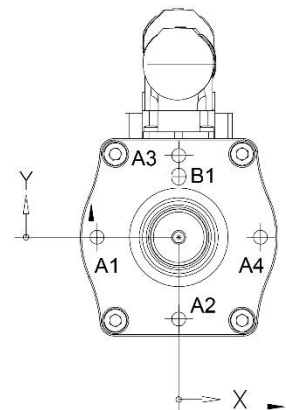


PR01-70x100-C/48x240F-C-150	M6x18
PR01-70x100-C/48x240F-C-150-L	G1/8x7



PR01-70x100-C/48x240F-C-150	M10x13
PR01-70x100-C/48x240F-C-150-L	G1/4x7



	X-POSITION	Y-POSITION	
A1	-29	0	∅ 5 H7 20 M6 - 5H H15
A2	0	-29	
A3	0	29	5.05 X 6 H 8
A4	29	0	
B1	0	2150	



11 International Certificates

<p>Europe</p> 	<p>See chapter “EU Declaration of Conformity CE-Marking”</p>
<p>UK</p> 	<p>See chapter “UK Declaration of Conformity UKCA-Marking”</p>
<p>IECEE CB SCHEME</p>	<p>Ref. Certif. Nr. CH-8521</p>



Ref. Certif. No.

CH-8521

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

CB TEST CERTIFICATE

Product	Linear motor	
Name and address of the applicant	NTI AG	Bodenackerstrasse 2 SWITZERLAND 8957 Spreitenbach
Name and address of the manufacturer	NTI AG	Bodenackerstrasse 2 SWITZERLAND 8957 Spreitenbach
Name and address of the factory	NTI AG	Bodenackerstrasse 2 SWITZERLAND 8957 Spreitenbach
<i>Note: When more than one factory, please report on page 2</i>	<input type="checkbox"/> Additional Information on page 2	
Ratings and principal characteristics	supplied via servo drive, see TR 17-EL-0006.E02 for details	
Trade mark (if any)	LinMot	
Customers's Testing Facility (CTF) Stage used	---	
Model / Type Ref.	PR series PS series P04 series P05 series	
Additional information (if necessary may also be reported on page 2)	---	
A sample of product was tested and found to be in conformity with IEC	<input type="checkbox"/> Additional Information on page 2	
National differences	IEC 61000-6-2:2016 IEC 61000-6-4:2006, IEC 61000-6-4:2006/AMD1:2010 IEC 61000-6-7:2014 EU Group Differences; EU Special National Conditions; EU A-Deviations	
As shown in the Test Report Ref. No. which forms part of this Certificate	17-EL-0006.E01 + .E02 + .Z01	



This CB Test Certificate is issued by the National Certification Body

Electrosuisse
Luppenstrasse 1
8320 Fehraltorf
SWITZERLAND

Signed by: Martin Plüss
Date: 2017-03-13



12 EU Declaration of Conformity CE-Marking

NTI AG / LinMot ®
Bodenaeckerstrasse 2
8957 Spreitenbach

Switzerland

Tel.: +41 (0)56 419 91 91
Fax: +41 (0)56 419 91 92

declares under sole responsibility the compliance of the products:

- Linear Rotary Motors of the Series **PR01-70**

with the EMC Directive 2014/30/EU.

Applied harmonized standards:

- **EN 61000-6-2: 2005 (Immunity for industrial environments)**
- **EN 61000-6-4: 2007 + A1: 2011 (Emission for industrial environments)**

According to the EMC directive, the listed devices are not independently operable products.

Compliance of the directive requires the correct installation of the product, the observance of specific installation guides and product documentation. This was tested on specific system configurations.

The safety instructions of the manuals are to be considered.

The product must be mounted and used in strict accordance with the installation instructions contained within the installation guide, a copy of which may be obtained from NTI AG.

Company: NTI AG
Spreitenbach, 21.12.2023



Dr.-Ing. Ronald Rohner
CEO NTI AG

13 UK Declaration of Conformity UKCA-Marking

NTI AG / LinMot®
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8957 Spreitenbach

Switzerland

Tel.: +41 (0)56 419 91 91
Fax: +41 (0)56 419 91 92

declares under sole responsibility the compliance of the products:

- Linear Rotary Motors of the Series **PR01-70**

with the EMC Regulation S.I. 2016 No. 1091.

Applied designated standards:

- **EN 61000-6-2: 2005 (Immunity for industrial environments)**
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Company: NTI AG
Spreitenbach, 21.12.2023



Dr.-Ing. Ronald Rohner
CEO NTI AG

ALL LINEAR MOTION FROM A SINGLE SOURCE

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