

Installation Guide Linear Modules

ENG

SM01-37 / SM01-48



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1 General Information

1.1 Introduction

This manual includes instructions for the assembly, installation, maintenance, transport, and storage of linear modules. 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.

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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 / PL10-28)
 - 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

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.

**Combustibility**

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

**Burn Hazard**

During operation the slider can become hotter than 100 °C, which can cause burns if touched. All necessary precautions (e.g. covers, casing, etc.) must be taken to prevent contact with persons in the vicinity of the slider during operation.

**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 demagnetizes 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 Operating Instructions

3.1 Operating Conditions



- The ambient temperature limit is enclosed: 0 °C¹⁾...80 °C
- The maximum sensor temperature is enclosed: 120 °C
- Max. set up 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 with air cooling.

¹⁾ Lower temperatures possible upon request.

3.2 Dynamic Properties

In contrast to guide systems with rolling elements (< 50 m/s²), SM01 modules with plain bearings have no restrictions with regard to the permitted acceleration values. In principle, any speeds can also be run. However, it should be noted that the service life of the plain bearings corresponds in the first approximation to the product of "speed x bearing contact force". Speeds in excess of 1 m/s should be avoided, particularly in dry running.

3.3 Guide Accuracy

In contrast to a bearing arrangement based on rolling elements (linear ball bearings), the operating principle of plain bearings is based on a sufficiently large bearing clearance. This is in the order of magnitude of approx. 0.1 mm and can increase accordingly during the service life of the bearing. The accuracy of a cantilever bearing system designed with plain bearings is therefore inevitably lower than that of a comparable bearing arrangement based on preloaded rolling bearings.

As with all cantilever guide systems, the load-dependent deflection of the guide rods must also be taken into account. In addition, it should be noted that a change in load direction also causes a displacement based on the height of the bearing clearance.

4 Installation Instructions

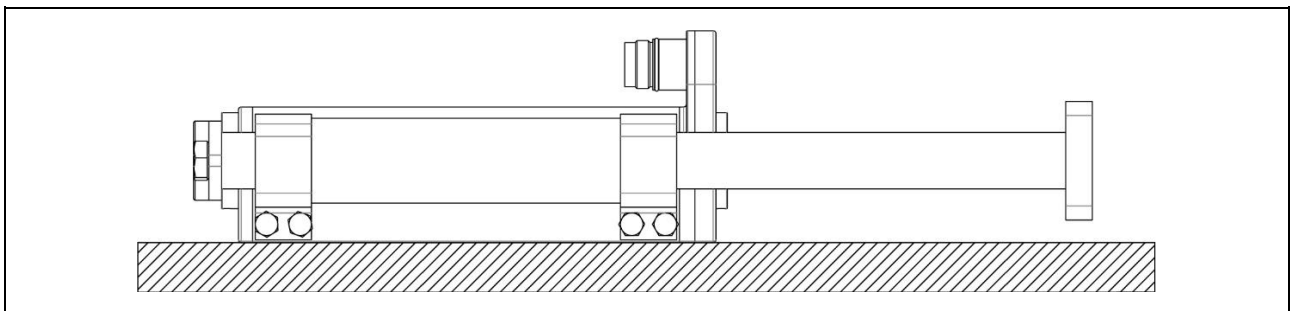
4.1 Mounting the Linear Module



Always observe the safety instructions in chapter 2 during installation!

For easy mounting of the linear module, the guide block is provided with fits for dowel pins and threaded holes on the underside. The exact positions are given in chapter 12.

The linear module can be mounted horizontally or vertically on a mounting surface using the threaded holes and fits provided. As the SM01 modules are a cantilever system, tolerances have a correspondingly strong effect and may require readjustment depending on the application. In this case, the use of the fits with dowel pins should be avoided. For vertical mounting, the MagSpring® vertical load compensation is recommended. See chap. 4.3



4.2 Mounting the Load

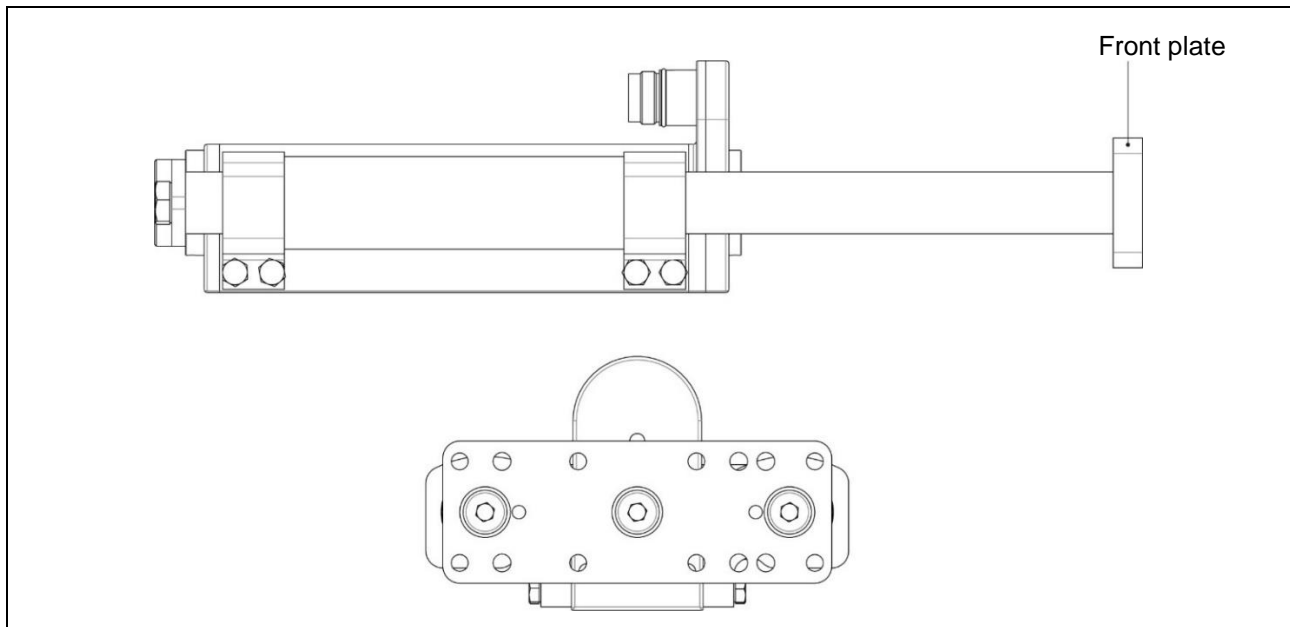
The load is mounted on the front plate of the SM01 linear modules. For this purpose, threaded holes and fits for dowel pins are machined into the plate.

The complete dimensions of the front plate as well as the positions and specifications of the threaded holes and fits can be found in chapter 12.

The center of gravity of the mounted load mass should be centered and the load should be placed as close as possible to the mounting plate. This ensures an even distribution of the mass and minimizes the maximum load on the linear module.



- It must be ensured that the front plate is not bent by the mounting of the load. This is especially the case if the mounting side of the load is not flat. In this case, it is recommended to place washers between the front plate and the load and to use only two fixing screws. Bending the front plate will result in the guide becoming sluggish.
- The back plate is only used to increase rigidity and must not be used for load mounting.
- The holes provided must be used for mounting and load mounting. Mechanical modification of the stator is prohibited and all mechanical modification of the front plate is not recommended.



4.3 Vertical Load Balancing MagSpring®

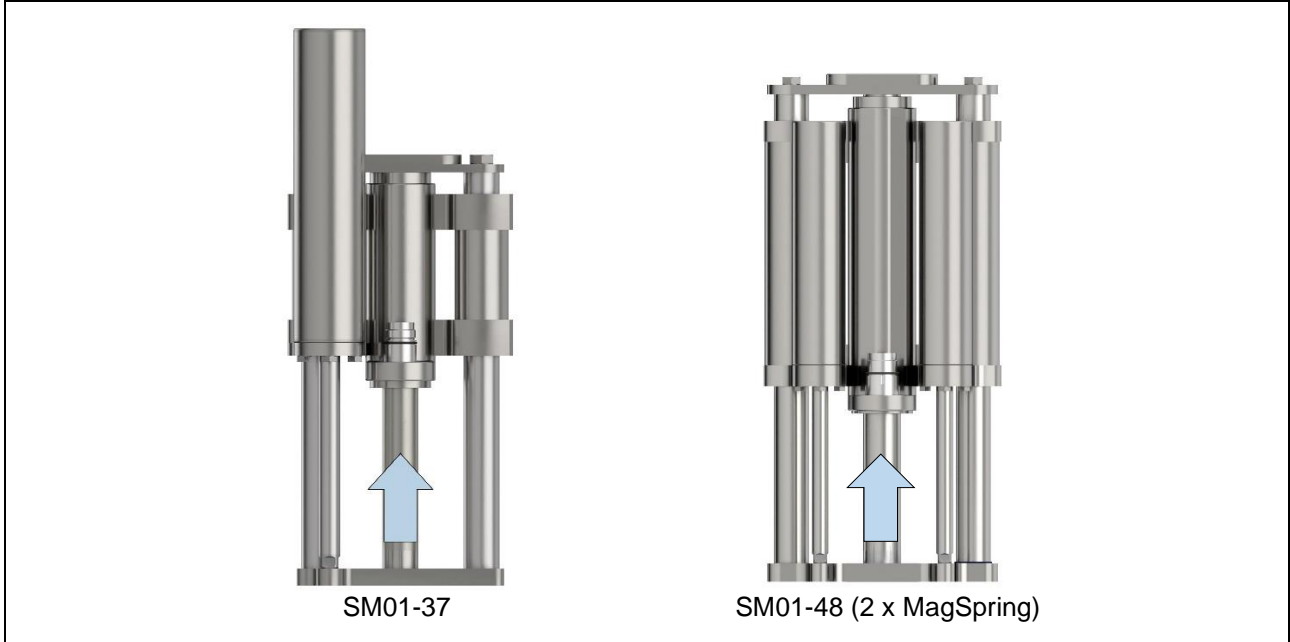
When installed vertically, linear modules and other direct drives must apply a constant force to counteract the weight force. With a magnetic spring, MagSpring®, installed parallel to the linear motor, the weight force can be passively compensated. Then the drive is only used for the actual positioning operation or the application of the dynamic forces required and therefore can be sized accordingly smaller.



- In an unloaded case or when the SM01 module is in the horizontal position, it must be ensured that the MagSpring does not pull the moving part of the guide into the end stops in an uncontrolled manner, which can lead to damage. The maximum speed at which the guide may be driven onto the end stops without the use of attenuators is 0.1 m/s and must be limited to initialization runs and emergency stop situations.
- Do not mount, hold or lift the SM01 on the MagSpring. Increased forces on the MagSpring stator may deform the mounting component and affect alignment.

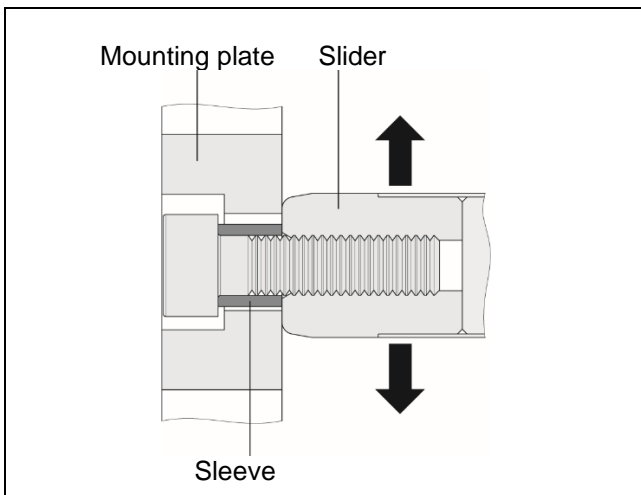
4.3.1 Installation Arrangement

The SM01 linear modules are optionally available with permanently installed MagSpring (option MSxx). These include the strength classes from 40 N to 120 N constant force. After vertical installation of the linear module, a constant force acts against the gravitational force to compensate for the moving load mass. For the sizing of the MagSpring, the moving mass of the module (chapter 12) and the additional load mass (customer-specific) must be considered.



Danger of crushing with the MagSpring force.
 When loads are disassembled, the MagSpring force can pull the module into the end position.
 Never hold fingers between the end plate and the stator.

4.3.2 MagSpring Slider Attachment



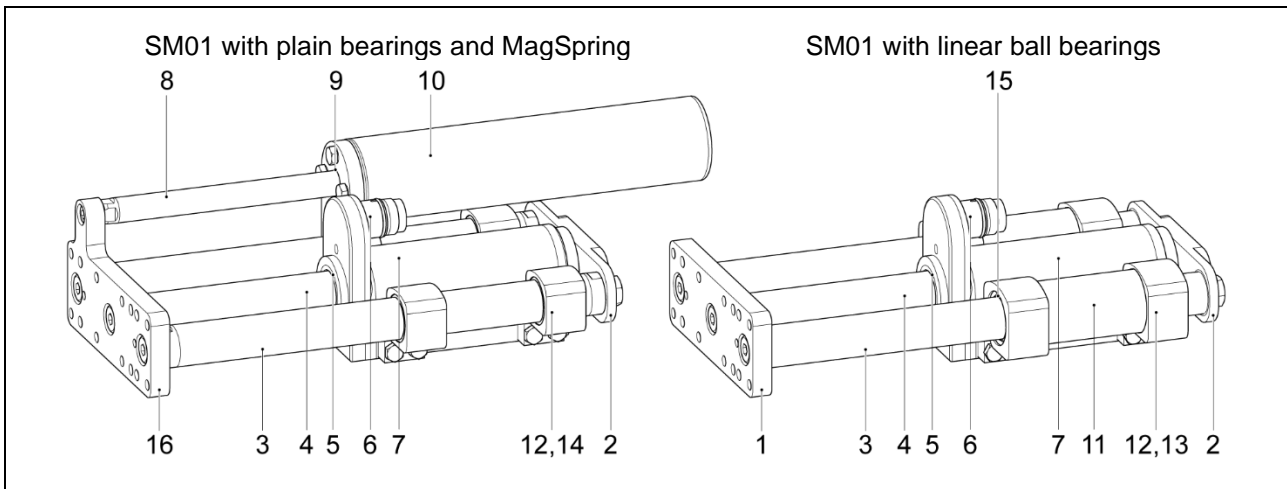
When handling with sliders, there are sometimes large magnetic forces of attraction.
 Observe warning instructions in section 2!

In order to avoid statically constraining the mounting of the MagSpring slider, it is non-rigidly attached to the mounting plate. This is ensured by the built-in sleeve.



With each assembly, make sure to reinstall the sleeve so that the slider can be moved sideways!

4.4 Material Specifications



Pos.	Component	Material
1	Front plate	Stainless steel 1.4404 / 316 L
2	Back plate	Stainless steel 1.4404 / 316 L
3	Shafts (Variant plain bearing, Name BE01)	Stainless steel 1.4404 / 316 L
	Shafts (Variant linear ball bearing)	Steel hardened, hard chrome plated 1.0601 / C 60
4	Slider linear motor (Variant plain bearing, Name BE01)	Stainless steel 1.4404 / 316 L
	Slider linear motor (Variant linear ball bearing)	Stainless steel 1.4301 / 303
5	Bearing linear motor	PPS and PEEK
6	Connector linear motor	Stainless steel 1.4404 / 316 L
7	Stator linear motor	Stainless steel 1.4404 / 316 L
8	Slider MagSpring	Stainless steel 1.4301 / 303
9	Bearing MagSpring	PPS (FDA conform)
10	Stator MagSpring	Stainless steel 1.4404 / 316 L
11	Bearing tube (Variant linear ball bearing)	Stainless steel 1.4404 / 316 L
12	Guide block	Stainless steel 1.4404 / 316 L
13	Linear ball bearings with food-grade grease according to NSF H1 and FDA (Variant linear ball bearing)	Stainless
14	Plain bearing (Variant plain bearing, Name BE01)	Polymer plain bearing (FDA compliant)
15	Seals (Variant linear ball bearing)	NBR (FDA compliant)
16	Front plate MagSpring-Adapter	Stainless steel 1.4404 / 316 L

4.5 Combinations

SM01 linear modules can be screwed directly together using the LinMot mounting kit (see chapter 9.3) and, depending on the combination, the adapter plate (see chapter 9.4). Thus, any YZ combinations, as shown below, can be realised. In addition, a classic pillar system (see chapter 9.5) is available, with which the units can be flexibly adjusted in height if required.

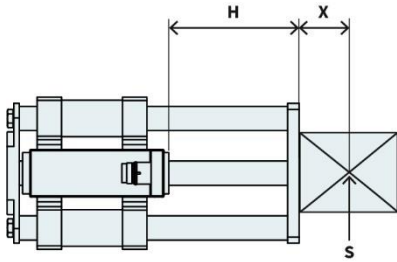
The possible mounting combinations of the SM01 linear modules are as follows:

- SM01-37 on SM01-37 (mounting kit required)
- SM01-37x120 on SM01-48x (mounting kit required)
- SM01-37x60 on SM01-48x (mounting kit + adapter plate required)



5 Load Data

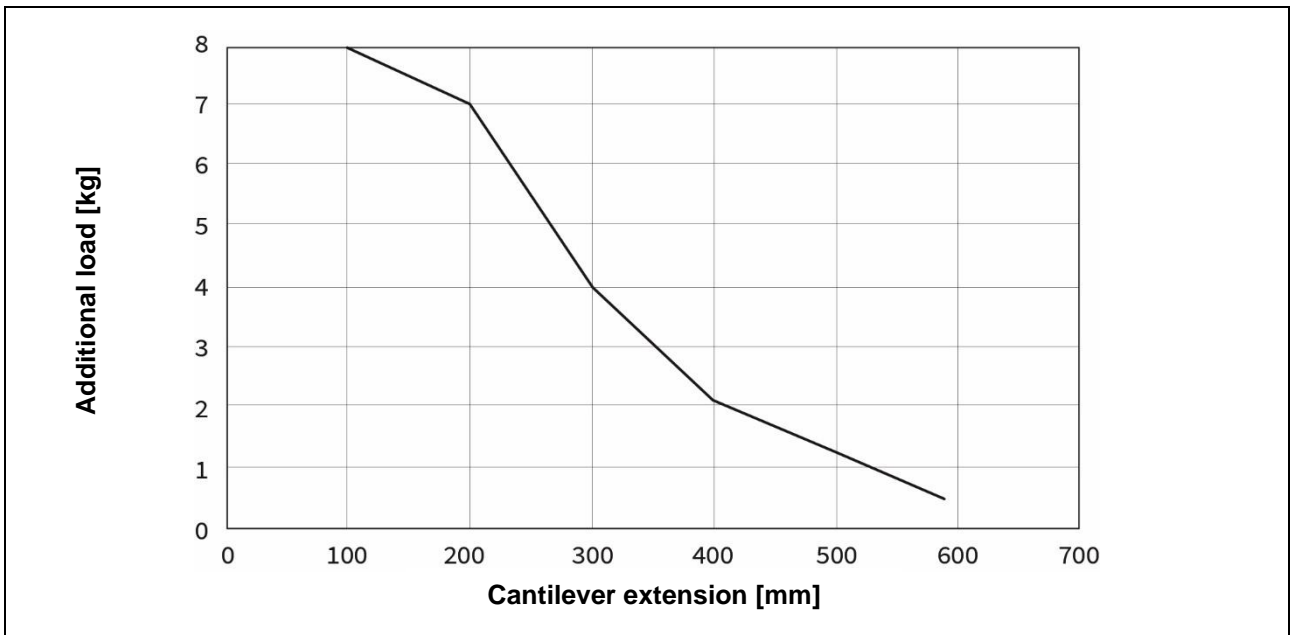
5.1 Maximum Load in vertical Mounting Position



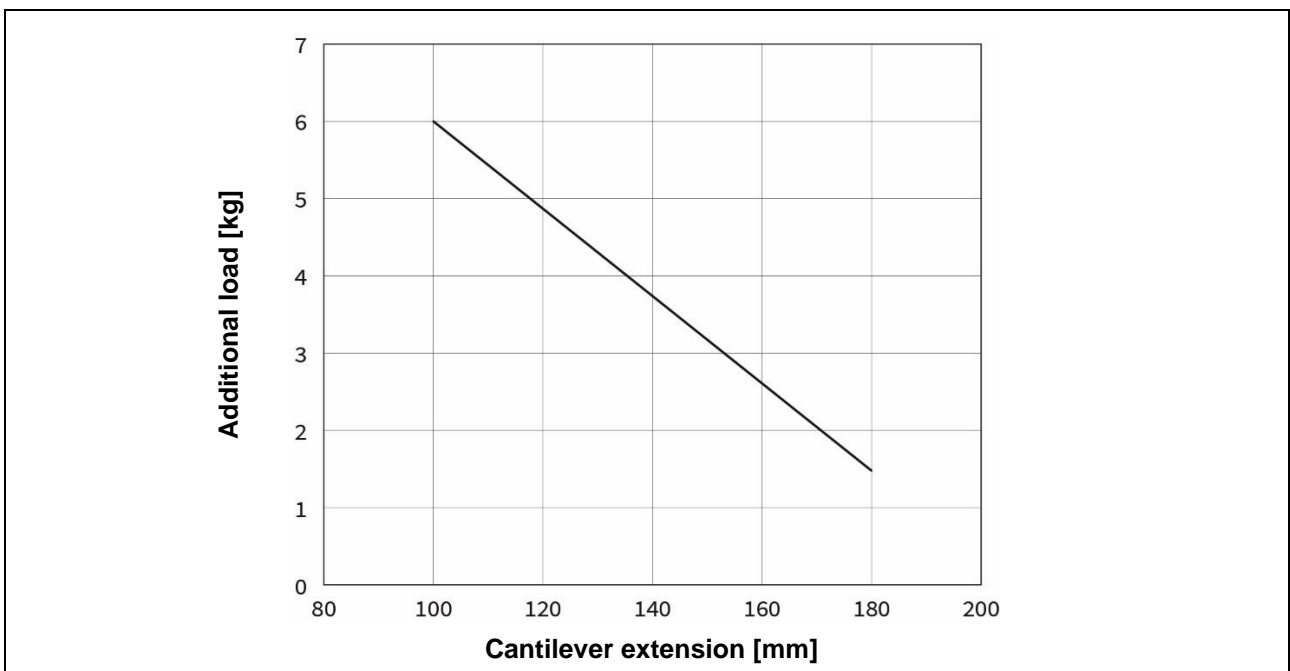
H = Stroke + Plate thickness
 X = Distance to center of gravity
 S = Center of gravity
 Cantilever extension = H + X

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

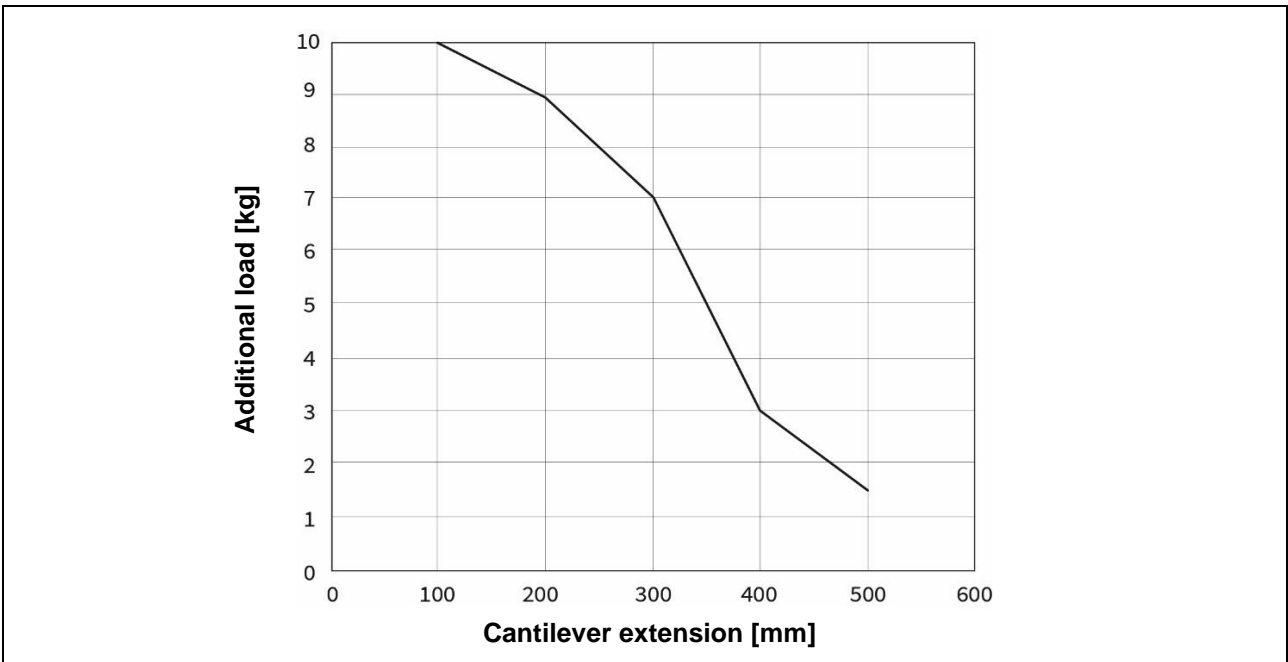
5.1.1 SM01-37Sx60



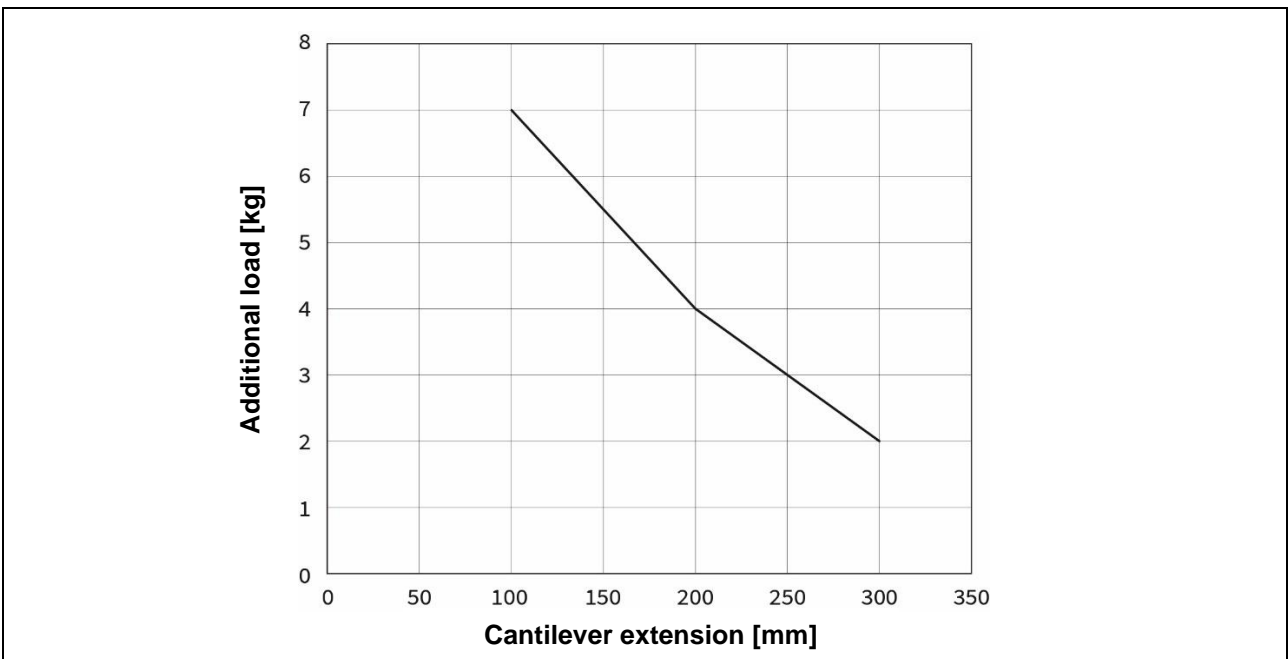
5.1.2 SM01-37Sx60_BE01



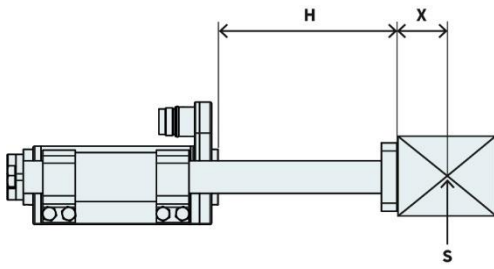
5.1.3 SM01-37Sx120



5.1.4 SM01-37Sx120_BE01



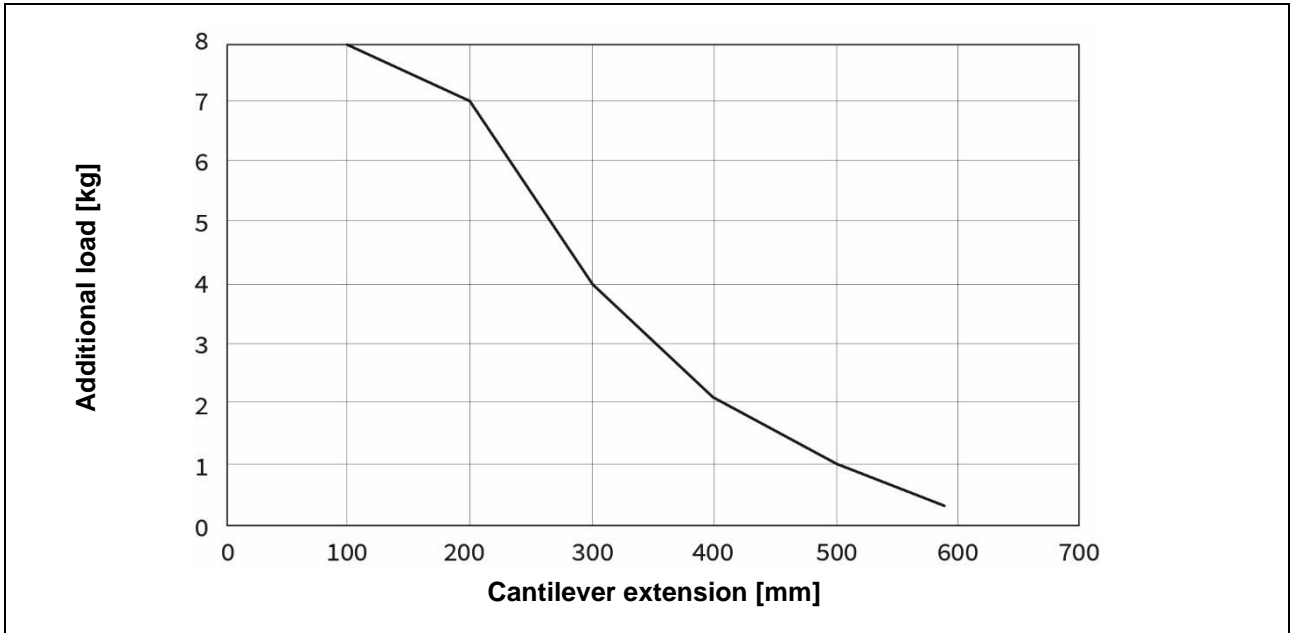
5.2 Maximum Load in horizontal Mounting Position



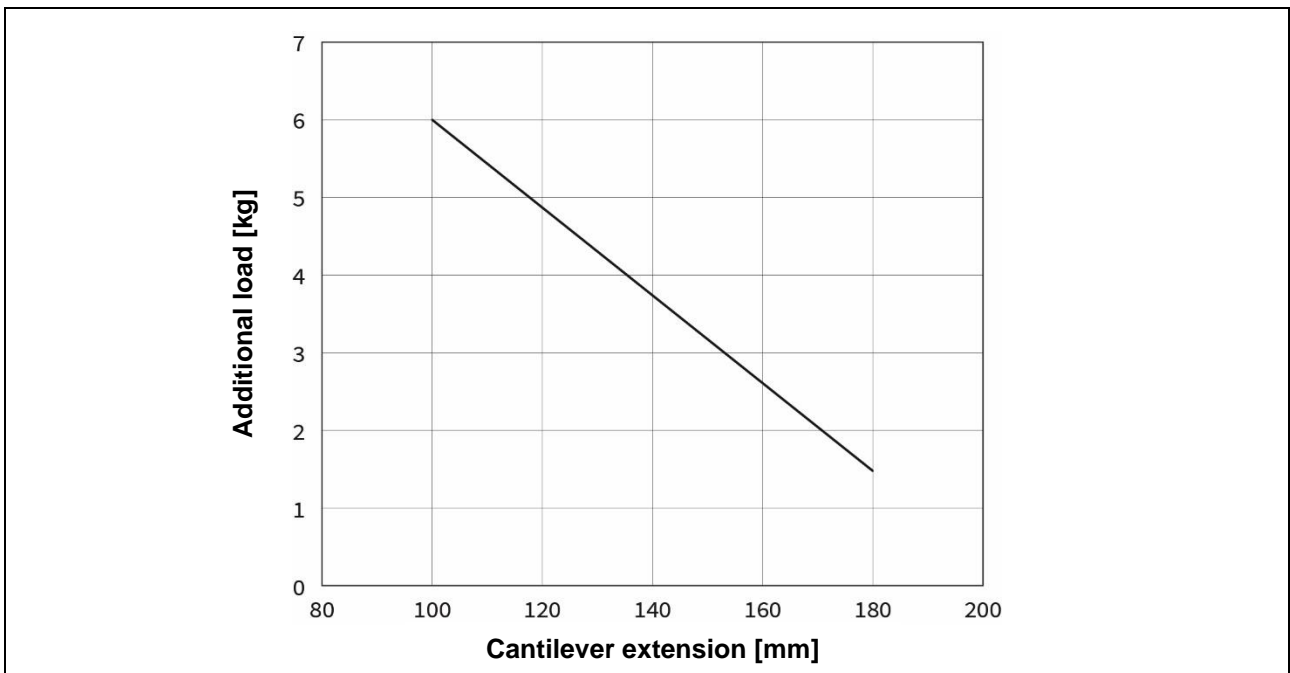
H = Stroke + Plate thickness
 X = Distance to center of gravity
 S = Center of gravity
 Cantilever extension = H + X

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

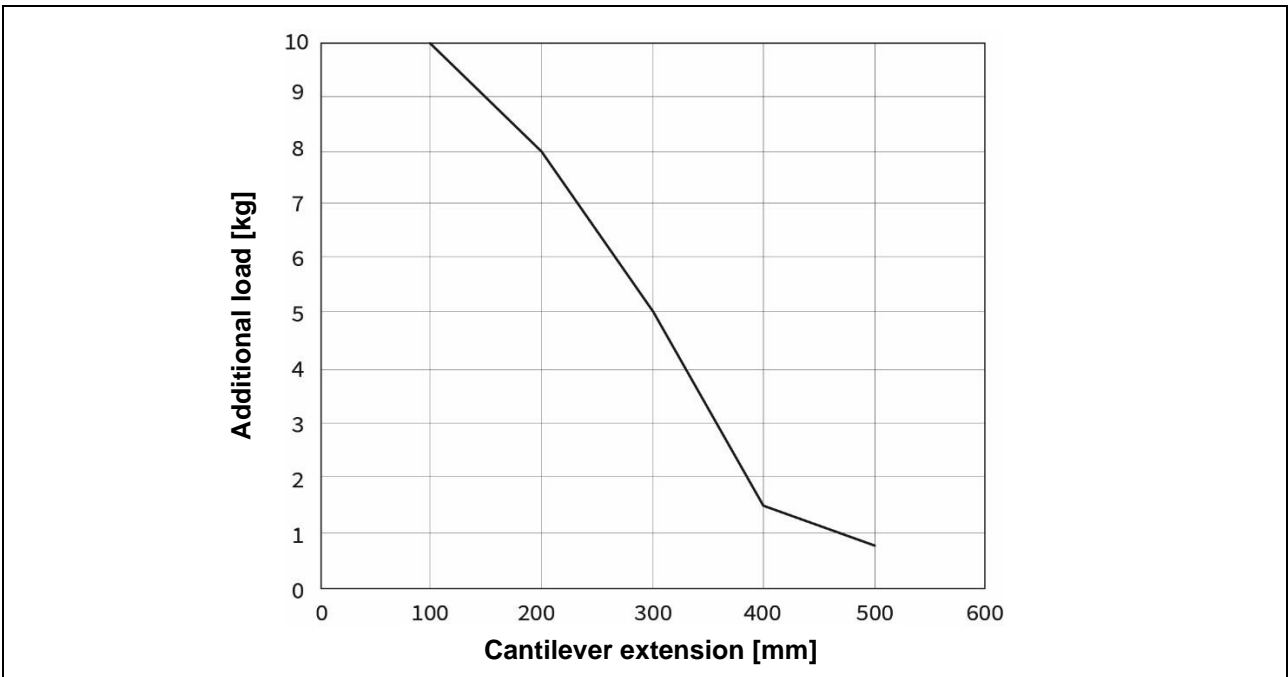
5.2.1 SM01-37Sx60



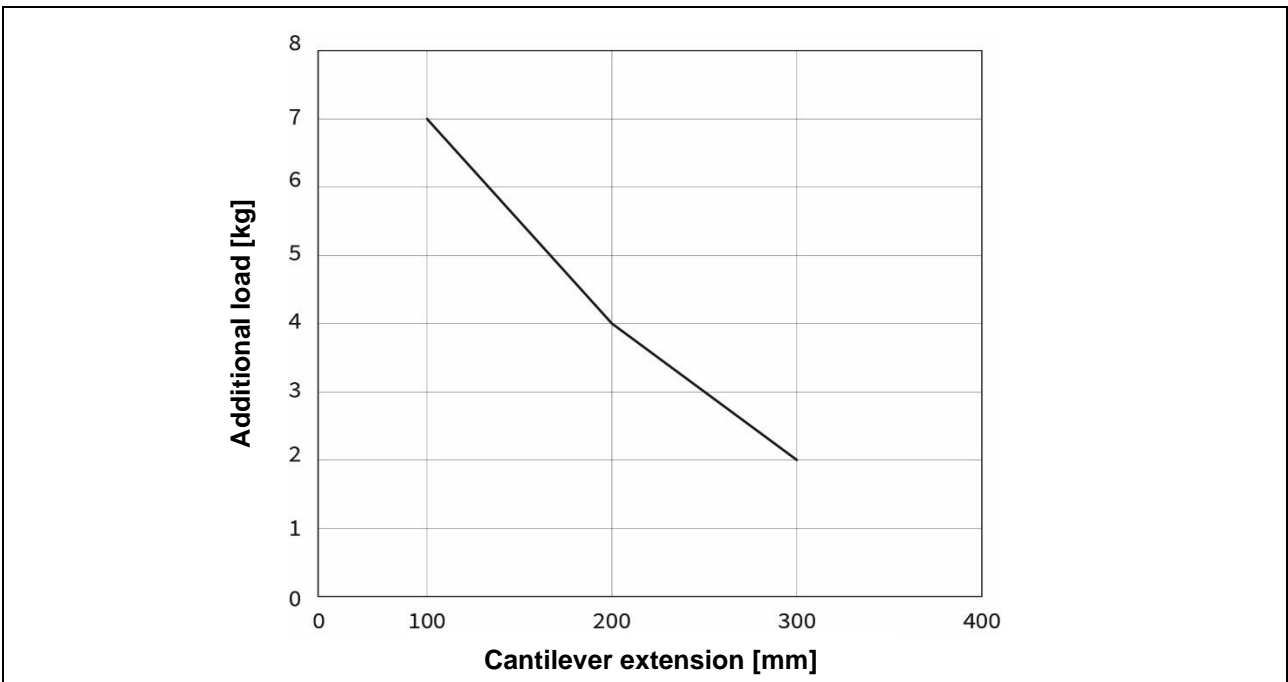
5.2.2 SM01-37Sx60_BE01



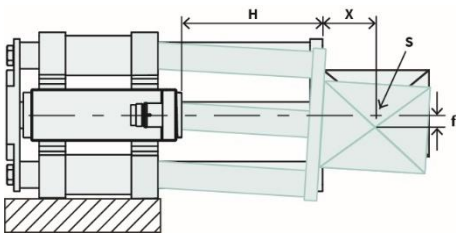
5.2.3 SM01-37Sx120



5.2.4 SM01-37Sx120_BE01



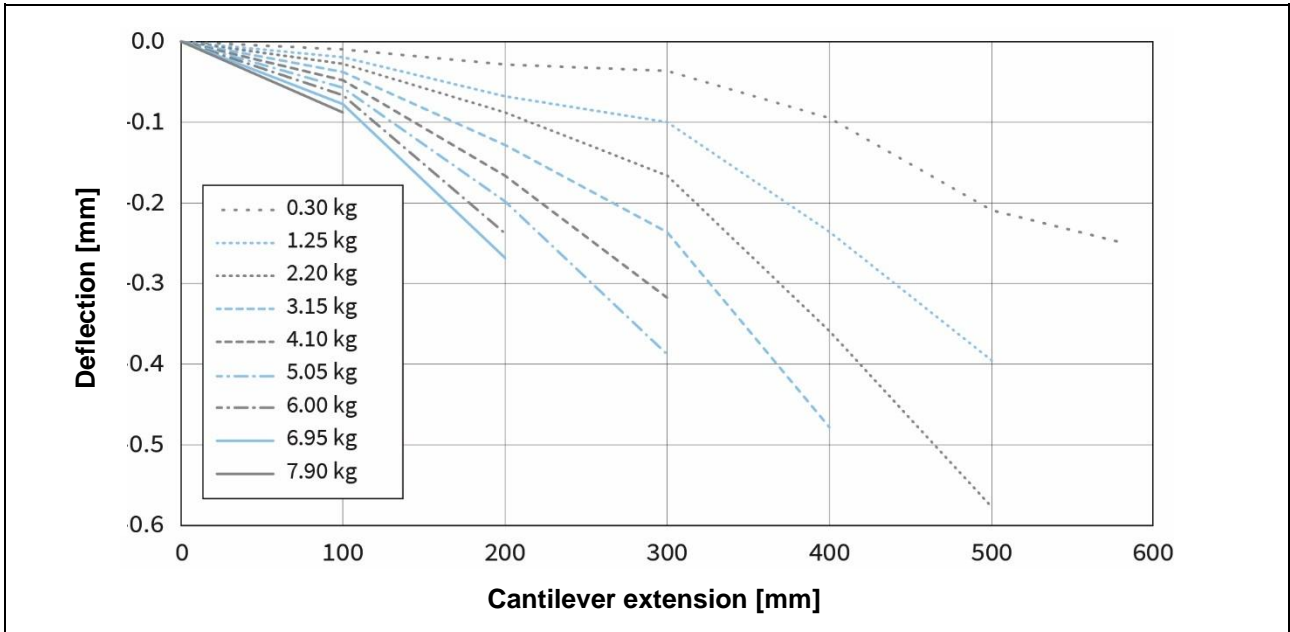
5.3 Maximum Deflection in vertical Mounting Position



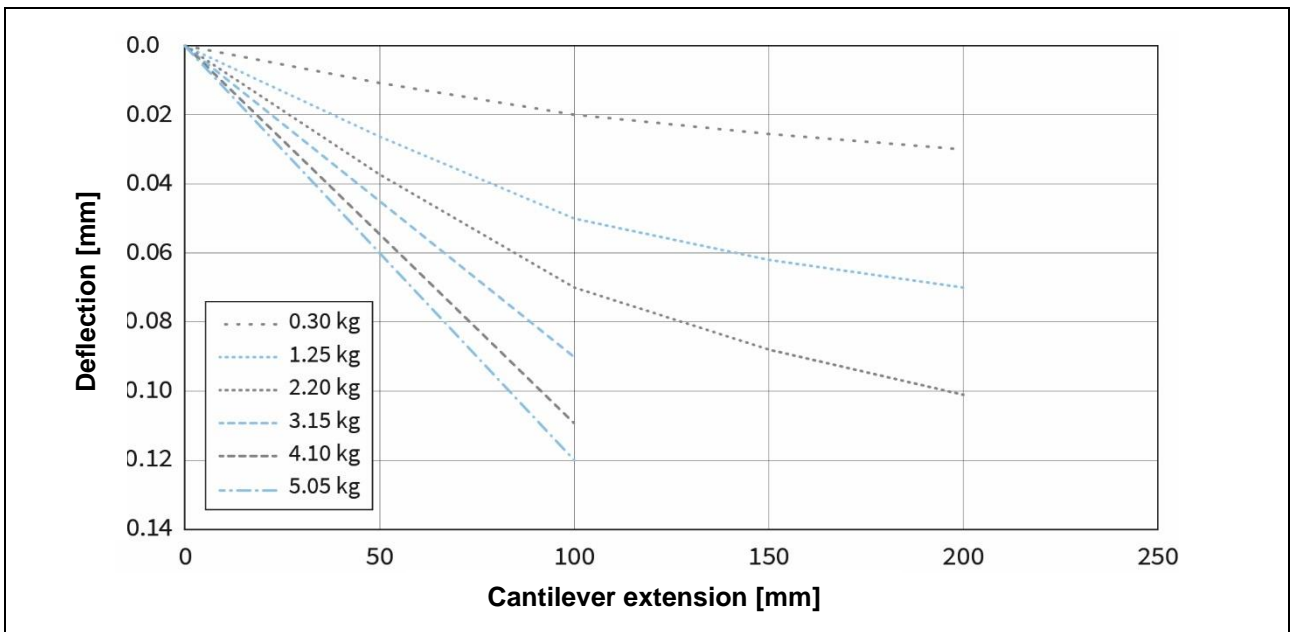
H = Stroke + Plate thickness
 S = Center of gravity
 X = Distance to center of gravity
 f = Deflection of theoretical axis

Total deflection =
 Static deflection + deflection under load
 (Deflection measured at standstill)

5.3.1 SM01-37Sx60

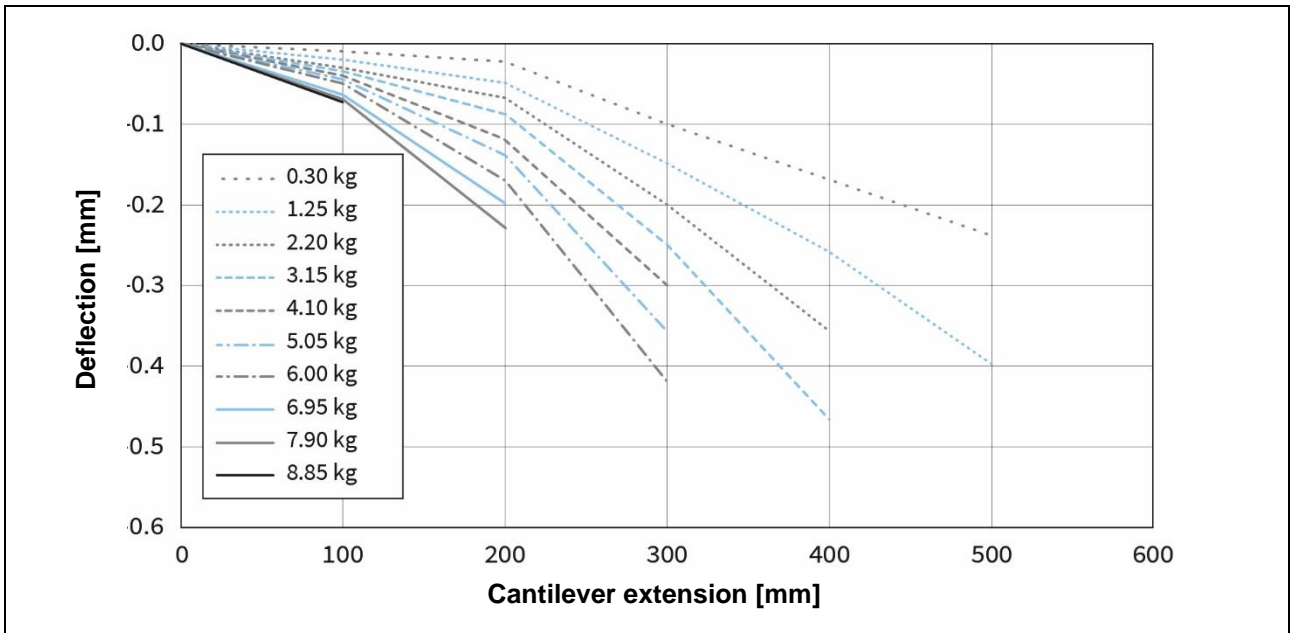


5.3.2 SM01-37Sx60_BE01

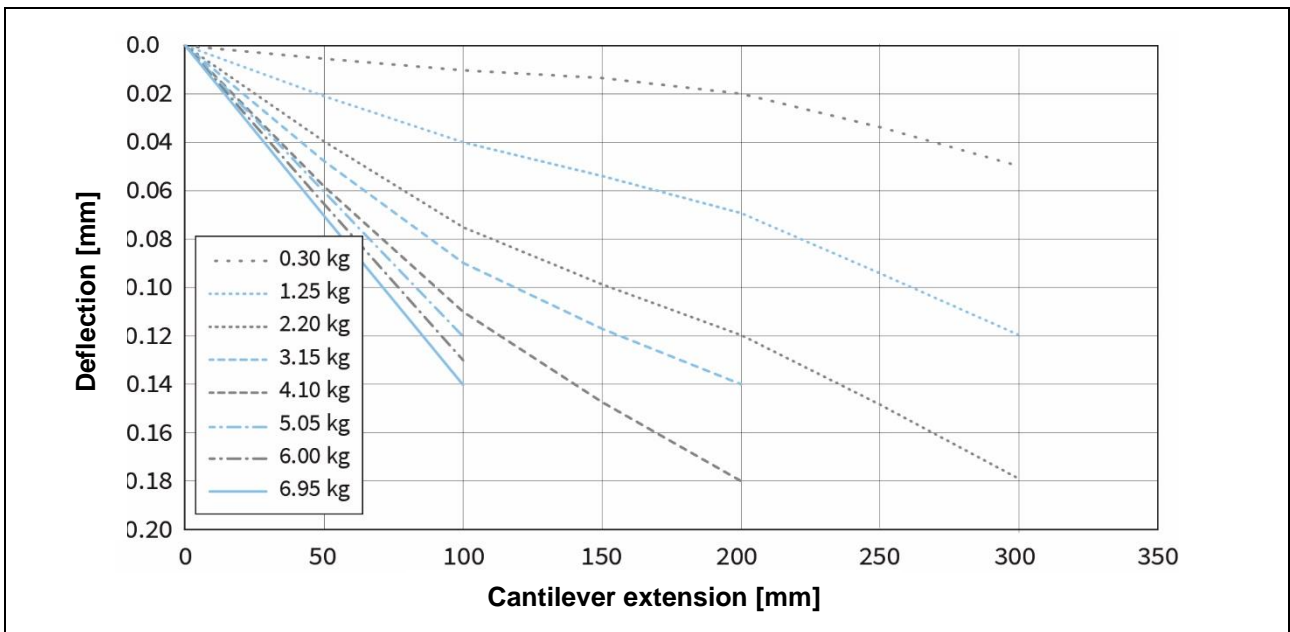


For SM01 modules with plain bearings, please note that in addition to the load-dependent deflection, there is also a change in position due to the bearing clearance.

5.3.3 SM01-37Sx120

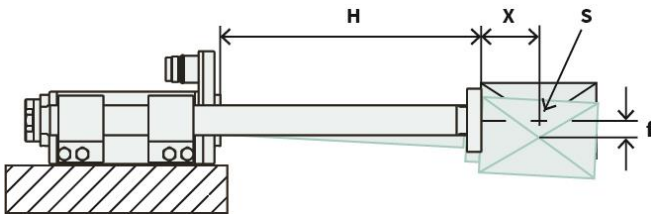


5.3.4 SM01-37Sx120_BE01



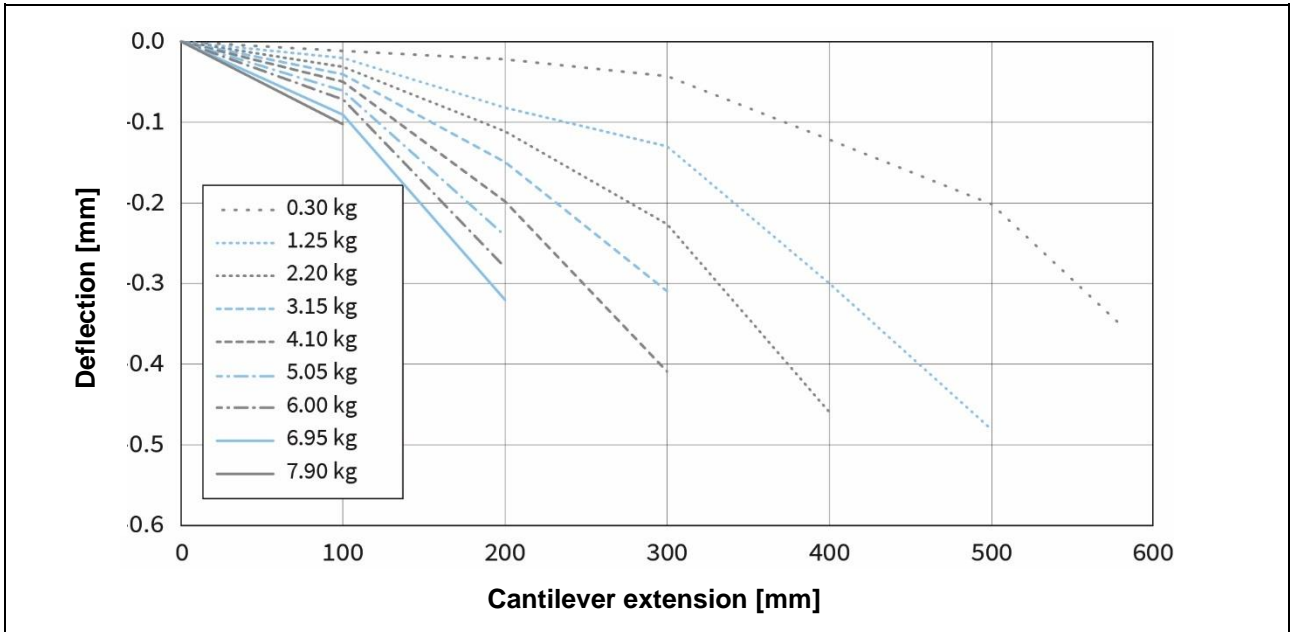
For SM01 modules with plain bearings, please note that in addition to the load-dependent deflection, there is also a change in position due to the bearing clearance.

5.4 Maximum Deflection in horizontal Mounting Position

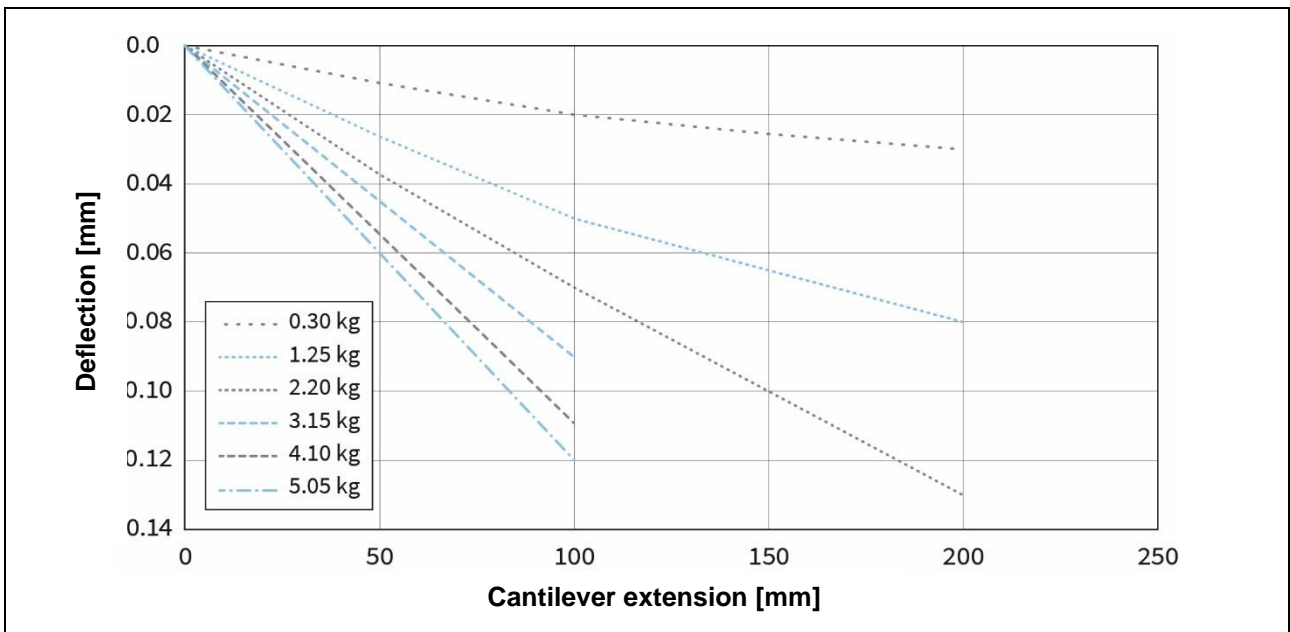


H = Stroke + Plate thickness
 S = Center of gravity
 X = Distance to center of gravity
 f = Deflection of theoretical axis
 Total deflection =
 Static deflection + deflection under load
 (Deflection measured at standstill)

5.4.1 SM01-37Sx60

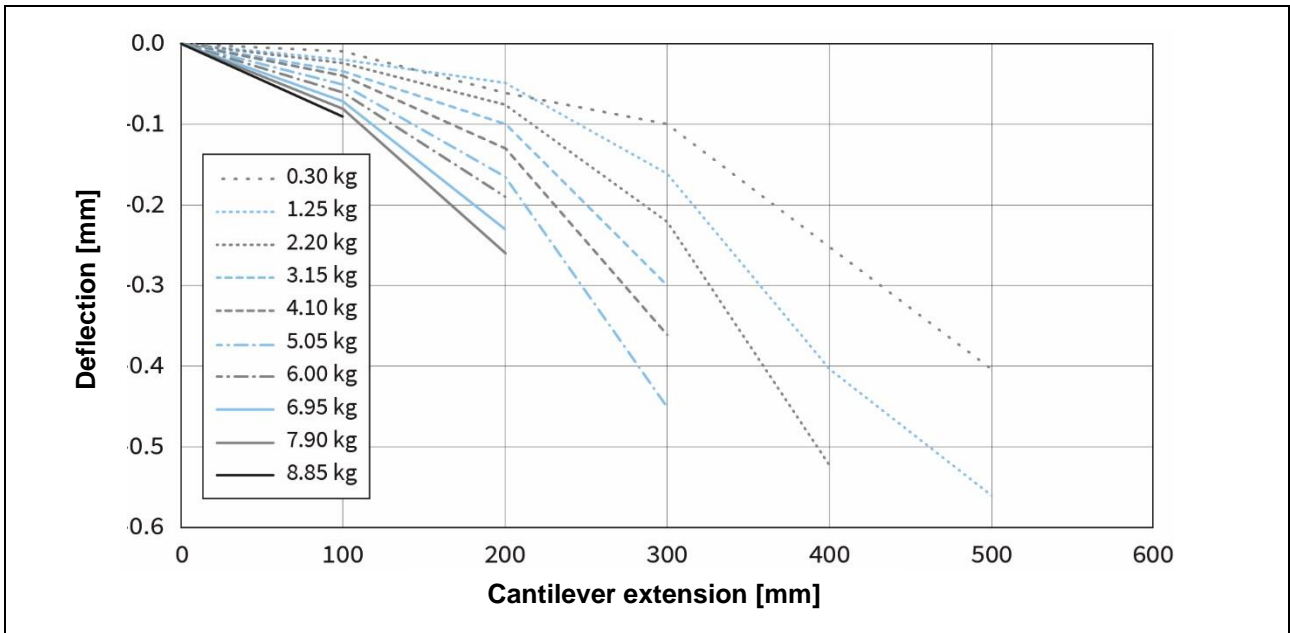


5.4.2 SM01-37Sx60_BE01

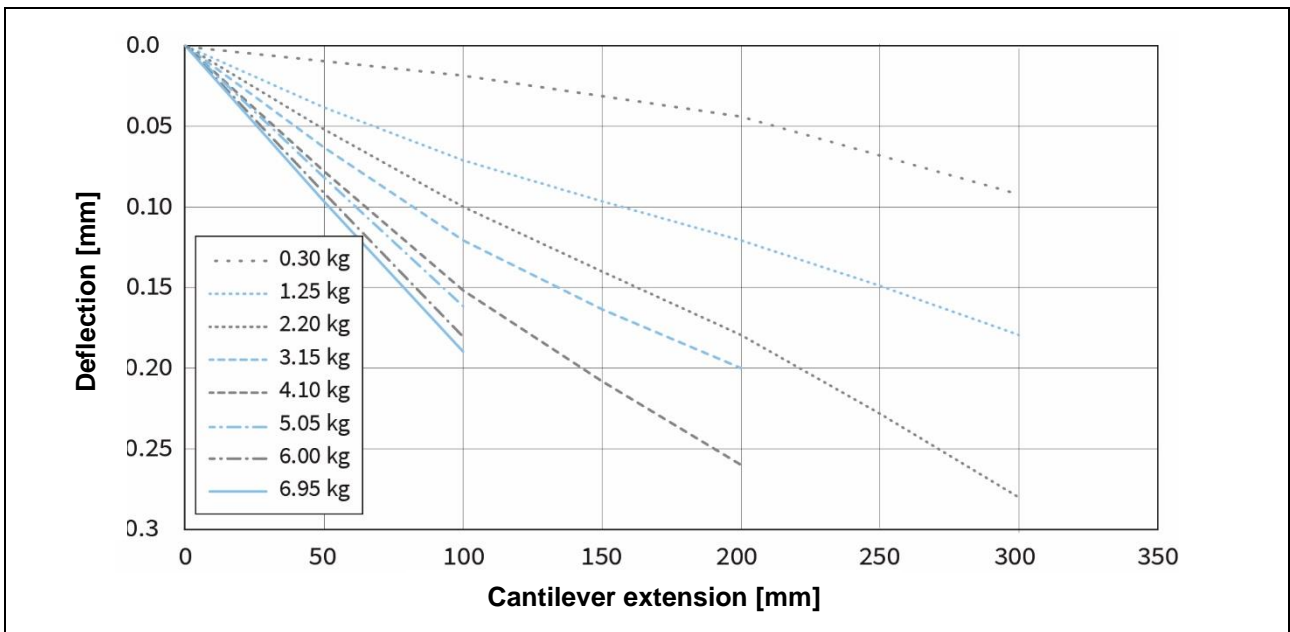


For SM01 modules with plain bearings, please note that in addition to the load-dependent deflection, there is also a change in position due to the bearing clearance.

5.4.3 SM01-37Sx120



5.4.4 SM01-37Sx120_BE01



For SM01 modules with plain bearings, please note that in addition to the load-dependent deflection, there is also a change in position due to the bearing clearance.

6 Electrical Connection

6.1 Motor Cable



Do not connect or disconnect motor when there is power on the servo drive. Use only double-shielded original LinMot cable. Cables from other sources must be checked precisely before commissioning. Incorrect connections can destroy the drive and stator.



The stator is connected to protective earth via the motor cable. The screw connections of C and R connector must be tightened up to the stop. Three types of cables are available for linear motors. The standard motor cable is intended for stationary installation. The High-Flex cable (suitable for trailing chains) and the robot cable are used for moving cable applications.

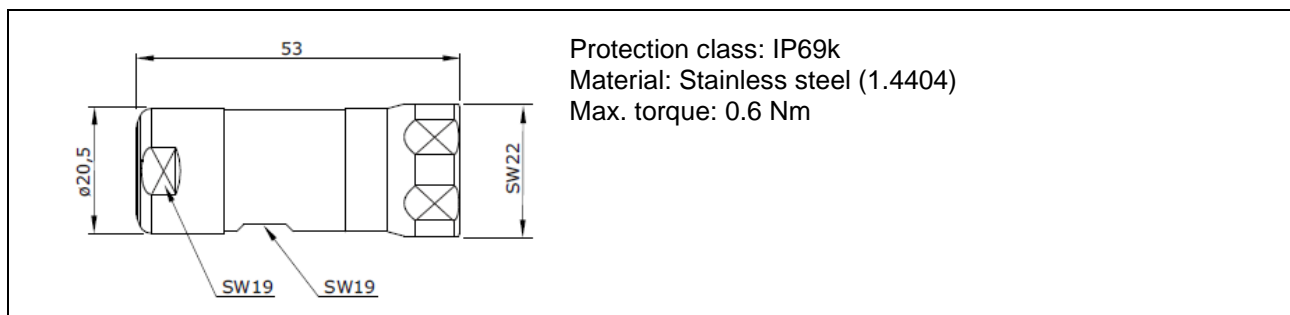
6.1.1 Technical Data

	Standard cable		High-Flex cable		Robot cable	
Cable name	K05-04/05	K15-04/05	KS05-04/05	KS10-04/05	KR05-04/05	KR10-04/05
Minimum bending radius for fixed installation	25 mm (1 in)	50 mm (2 in)	30 mm (1.2 in)	50 mm (2 in)	40 mm (1.6 in)	50 mm (2 in)
Minimum bending radius when moving	Not suitable for applications with moving motor cable		60 mm (2.4 in) No torsion	100 mm (4 in) No torsion	80 mm (3.2 in) Max. Torsion: ±270° pro 0.5 m	100 mm (4 in) Max. Torsion: ±270° pro 0.5 m
Approval	UL / CSA 300V		UL / CSA 300V		UL / CSA 300V	
Material wire insulation	PUR	TPE-U	TPE-E		TPE-E	
Material cable sheath	PUR		PUR		PUR	
Oil resistance	very good acc. DIN VDE 0282 Part 10 + HD 22.10		very good acc. DIN VDE 0282 Part 10 + HD 22.10		very good acc. DIN VDE 0282 Part 10 + HD 22.10	
Chemical resist. (to acids, alkalis, solvents, hydraulic fluid)	good		good		good	

6.2 Connectors

For the purpose of complete encapsulation, the standard motor connector is welded onto the housing of the stator. The connector is horizontally aligned and designed to be tightened. The cable connectors are offered in protection class IP69k. Motor connector and cable connector are screwed together tightly. Dimensions and tightening torque are shown in the following illustrations.

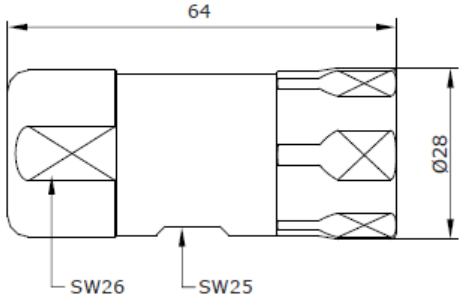
6.2.1 R-Connector



Ordering information

Item	Description	Item-No.
MC01-R/f-IP69K-SSC	Motor Connector R/f, IP69k, SSC	0150-3347

6.2.2 C-Connector



Protection class: IP69k
 Material: Stainless steel (1.4404)
 Max. torque: 0.6 Nm

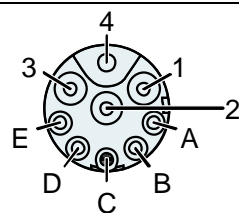
Ordering information

Item	Description	Item-No.
MC01-C/f-IP69K-SSC	Motor connector C/f, IP69k, SSC	0150-3306

6.2.3 Pin Assignment Linear Modules SM01-37



Do not connect or disconnect motor when there is power on the servo drive. Use only double-shielded original LinMot cable. Cables from other sources must be checked precisely before commissioning. Incorrect connections can destroy the drive and stator.

Connector Type	R-Connector
	Pin
Phase1+	1
Phase1-	2
Phase2+	3
Phase2-	4
+5V	A
SIGNAL-GROUND*	B
Sensor Sin	C
Sensor Cos	D
Temp sensor	E
SHIELD** of stator and stator cable	Case
Connector on the stator (-cables)	



Extension cables are double shielded. The two shields of the extension cables must not be connected together: the inner shield of the extension cables is used as GROUND and must be connected to SIGNAL-GROUND*; only the outer shield must be connected to SHIELD** of the connector.

6.2.4 Pin Assignment Linear Modules SM01-48



Do not connect or disconnect motor when there is power on the servo drive. Use only double-shielded original LinMot cable. Cables from other sources must be checked precisely before commissioning. Incorrect connections can destroy the drive and stator.

Connector Type	C-Connector
	Pin
Phase1+	A
Phase1-	B
Phase2+	C
Phase2-	D
+5V	E
SIGNAL-GROUND*	F
Sensor Sin	G
Sensor Cos	H
Temp sensor	L
SHIELD** of stator and stator cable	Case
Connector on the stator	



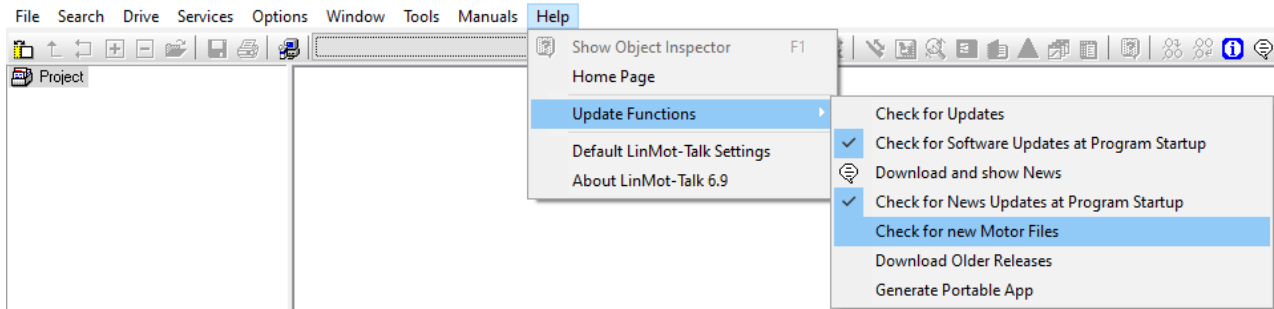
Extension cables are double shielded. The two shields of the extension cables must not be connected together: the inner shield of the extension cables is used as GROUND and must be connected to SIGNAL-GROUND*; only the outer shield must be connected to SHIELD** of the connector.

7 Start-up

7.1 Plug and Play

LinMot SM01 linear modules are "Plug and Play" capable (see motor label "PnP"). This means that they log on to the drive independently. The module- and motor-specific parameters are automatically stored in the drive, and the motor is ready for operation.

If the motor file is not automatically found in the installation directory of the software, the file can be reloaded via the LinMot-Talk software as shown below.



7.2 Setting Motor Parameters



To configure the linear module, use the LinMot-Talk software from version 6.9. The software and the corresponding detailed user manual can be downloaded from <https://linmot.com/download/linmot-talk-drive-configuration/> can be downloaded.

7.2.1 Application-specific Parameters

The various application-specific parameters, such as cable length, load mass, PID control settings, etc. are set on the drive side via the Motor Wizard in the LinMot-Talk configuration program.

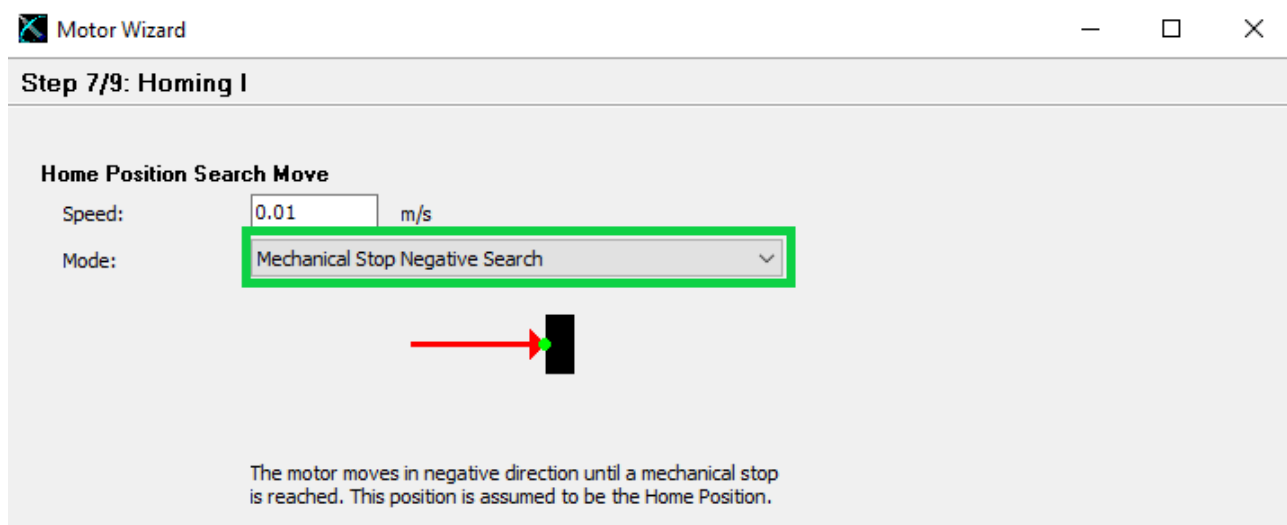
For this purpose, the LinMot-Talk software should be started first. Then the Motor Wizard can be opened.

To open it, please select the "Motor Wizard" icon in the task bar. 

The Motor Wizard now guides the user step by step through the menu. The application parameters should be entered as accurately as possible to ensure the best possible motor control.

7.2.2 Referencing the Linear Module

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.



The motor moves in negative direction until a mechanical stop is reached. This position is assumed to be the Home Position.

Figure: Selection of reference run linear module

8 Spare Parts

8.1 Linear Ball Bearings

The SM01 linear modules are available with linear ball bearings or plain bearings. Both bearing types can be exchanged. The linear ball bearings are greased at the factory with the food-grade lubricant LU02 (food-grade: UH1 approval). The replacement interval of the bearings is determined by the function test of the linear guide. See chapter 10.1.

8.1.1 Ordering Information

All 4 linear ball bearings with the 4 associated seals should be replaced per linear module.

For Linear Modules SM01-37

Item	Description	Item-No.
Linear Ball Bearing EXC-20-F-RB	20x28x30 with misalignment compensation, Klüber-synth UH1 14-31	0160-3221
LBBR 20x28x5/19.02	Seal linear ball bearing	0160-3167

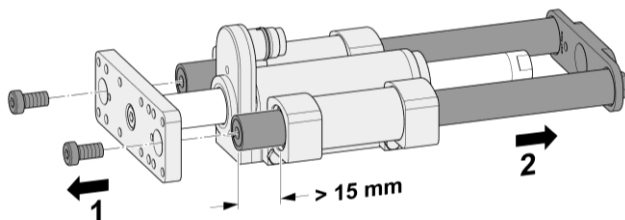
For Linear Modules SM01-48

Item	Description	Item-No.
Linear Ball Bearing EXC-25-F-RB	25x35x40 with misalignment compensation, Klübersynth UH1 14-31	0160-3222
LBBR 25x35x5	Seal linear ball bearing	0160-3106

8.1.2 Mounting

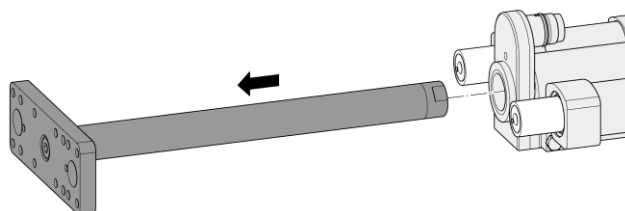


Always observe the safety instructions in chapter 2 during installation!



1. Release guide shafts

- (1) Loosen the screws of the guide shafts on the front plate.
- (2) Then push the guide shafts outwards, but do not pull them out completely.



2. Remove slider

Now the slider can be removed together with the front plate.



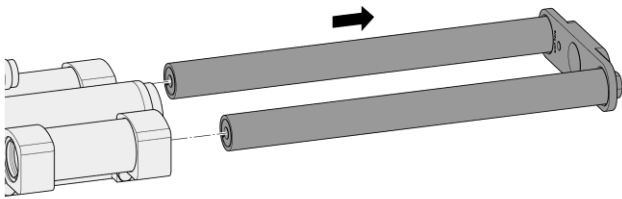
Mark the "top" and "bottom" of the front plate so that it can be reinstalled exactly the same.



When handling with sliders, there are sometimes large magnetic forces of attraction. Observe the warnings in section 2! If necessary, cover nearby iron structures with non-magnetic material (e.g. wood).

3. Remove the guide shafts

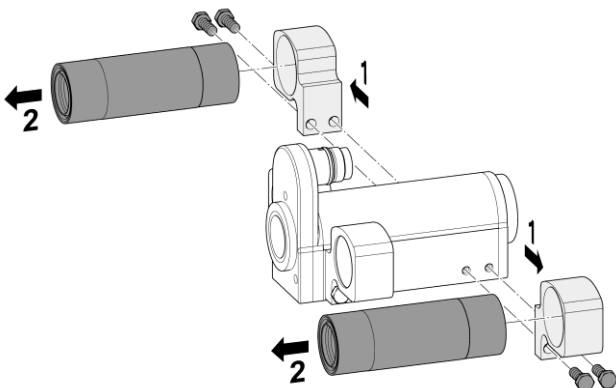
The guide shafts are pulled out together with the back plate.



Mark the "top" and "bottom" of the back plate so that it can be reinstalled exactly the same.

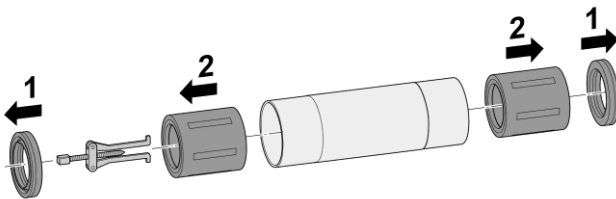
4. Dismantle tube support

- (1) Dismantle the left and right rear tube support.
- (2) Remove bearing tube.



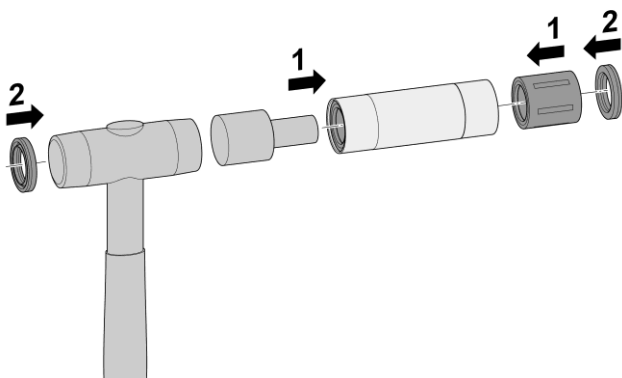
5. Dismantle old linear ball bearings

- (1) Remove the old seals by hand.
- (2) Pull out the old bearings using a universal puller such as Kukko 27-A.

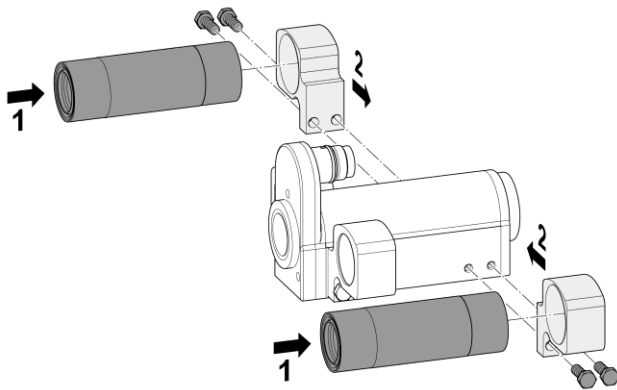


6. Insert new linear ball bearings and seals

- (1) The new bearings are inserted as far as they will go with the help of a hand press or a press pin.
- (2) After that, there is approx. 5 mm space left to insert the seals.

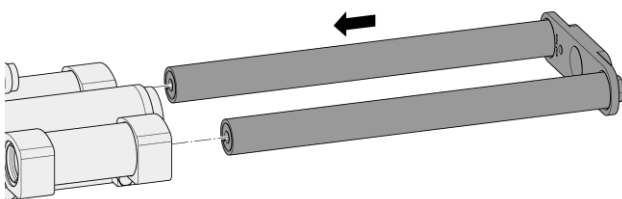


The bearings are already initially lubricated.

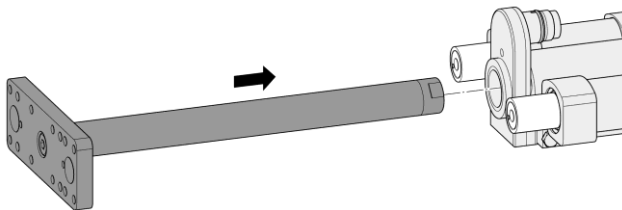


- 7. Insert bearing tube and mount tube support**
 (1) Push the bearing tubes into both tube supports.
 (2) Screw on the tube support. Apply Loctite 243 threadlocker to these screws.

Tightening torque for SM01-37: 4.2 Nm
 Tightening torque for SM01-48: 7.4 Nm



- 8. Insert guide shafts**
 The guide shafts are reinserted together with the back plate on the side without connector.

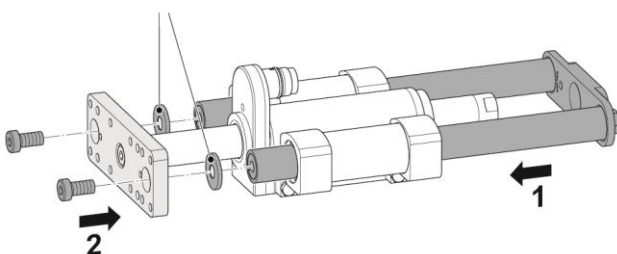


- 9. Insert slider**
 The slider is inserted together with the front plate on the side of the connector.



When handling with sliders, there are sometimes large magnetic forces of attraction. Observe the warnings in section 2! If necessary, cover nearby iron structures with non-magnetic material (e.g. wood).

Shaft seals

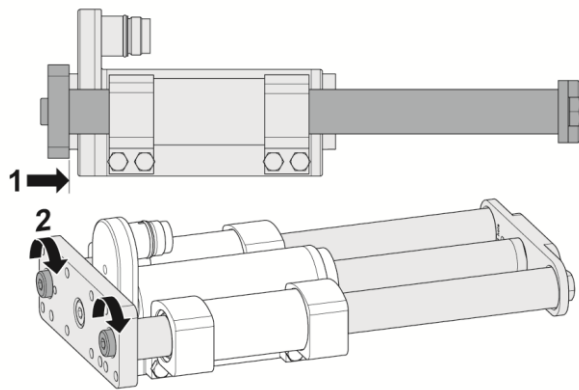


- 10. Fix guide shafts**



Make sure that the shaft seals are inserted in the back plate.

Apply Loctite 243 threadlocker to the threaded hole of the guide shafts. Then fasten the front plate (2) temporarily with the guide shafts (1).



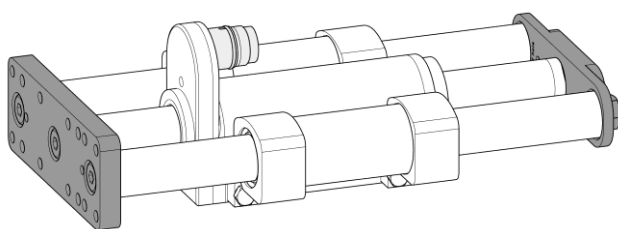
11. Screw the guide shafts tightly

- (1) Push the guide shafts to the stop of the guide block.
- (2) Tighten the screws firmly.

Tightening torque: 18 Nm

! If the guide does not move smoothly, loosen the screws again and repeat this step.

12. Note the installation position of the plates



! The front plate must be positioned on the side of the connector and the back plate on the opposite side. The installation positions of the mounting plates must not be interchanged!

8.2 Plain Bearing

The SM01 linear modules are available with linear ball bearings or plain bearings. Both types of bearings can be replaced. The replacement interval of the bearings is determined by the function test of the linear guide. See chapter 10.1.

8.2.1 Ordering Information

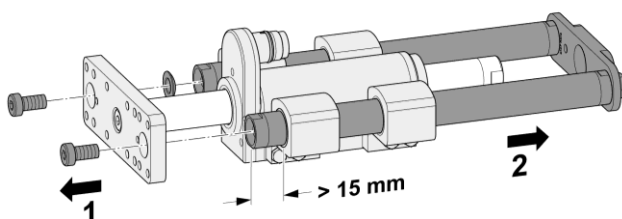
All 4 plain bearings should be replaced per linear module.

Item	Description	Item-No.
GL-A-2023-30	Plain bearings for the food sector 20x23-30 for SM01-37 Linear Modules	0160-3163
GL-A-3034-30	Plain bearings for the food sector 30x34x30 for SM01-48 Linear Modules	0160-3162

8.2.2 Mounting



Be sure to observe the safety instructions in chapter 2 during assembly!

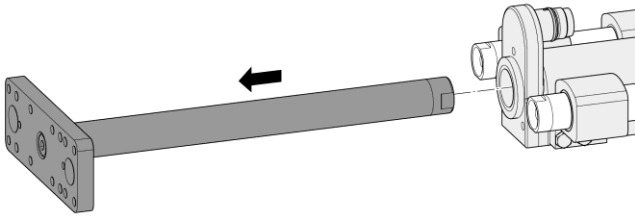


1. Loosen the guide shafts

- (1) Loosen the screws of the guide shafts on the front plate.
- (2) Then push the guide shafts into the guide block, but do not pull them out completely.

2. Remove slider

Now the slider can be removed together with the front plate.



Mark the "top" and "bottom" of the front plate so that it can be reinstalled exactly the same.

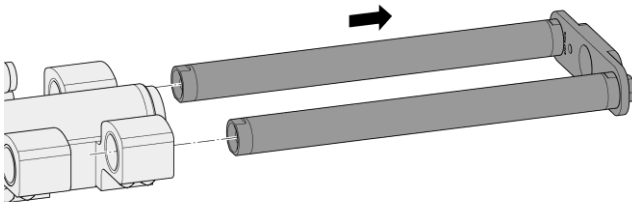


When handling with sliders, there are sometimes large magnetic forces of attraction.

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

3. Remove the guide shafts

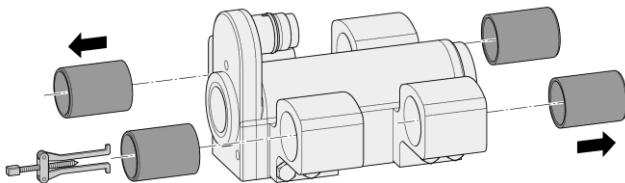
The guide shafts are pulled out together with the back plate.



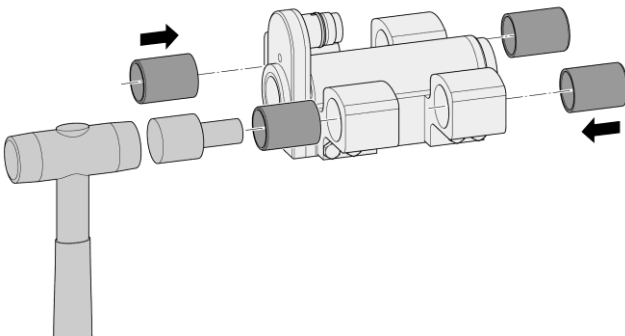
Mark the "top" and "bottom" of the back plate so that it can be reinstalled exactly the same.

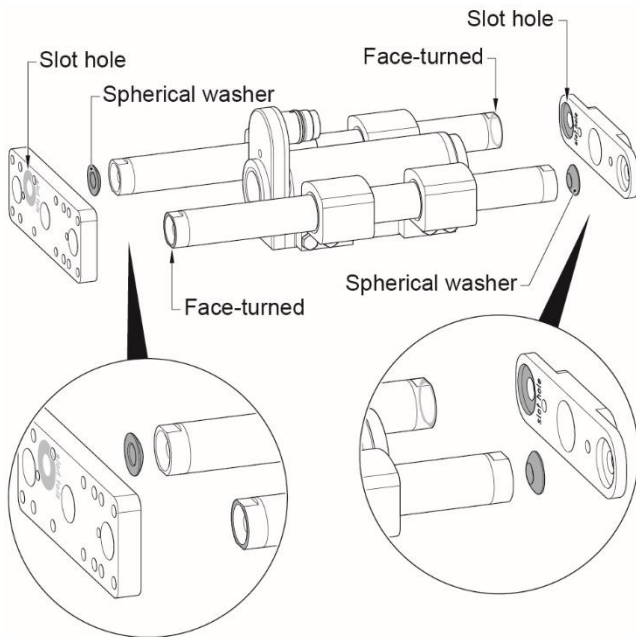
4. Dismantle the old plain bearings

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

**5. Insert new plain bearings**

The new bearings are inserted as far as they will go with the help of a hand press or a press pin.





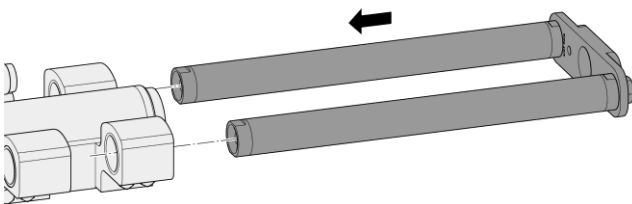
6. Place guide shafts, plates and spherical washers in the correct position



Before the guide shafts are inserted and screwed tight, they and the spherical washers as well as the front and rear plates must be positioned correctly. Pay attention to the diagonal positioning of the face-turned shaft ends. Spherical washers must also be inserted diagonally, at the shaft ends that are not face-turned.

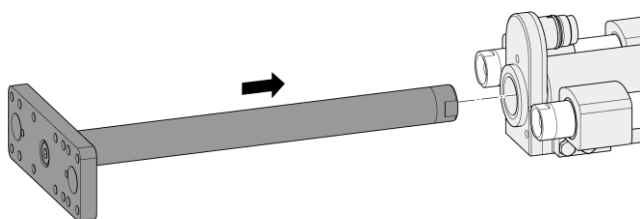
7. Insert guide shafts

The guide shafts are reinserted together with the back plate on the side without connector.

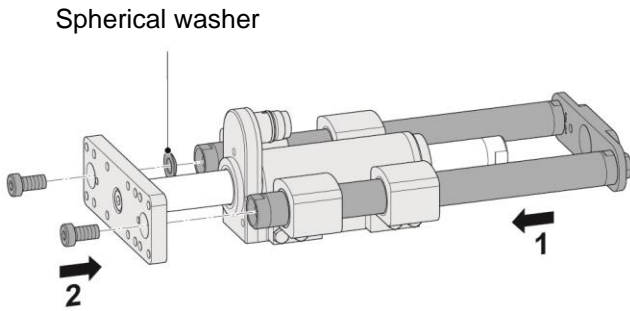


8. Insert slider

The slider is inserted together with the front plate on the side of the connector.



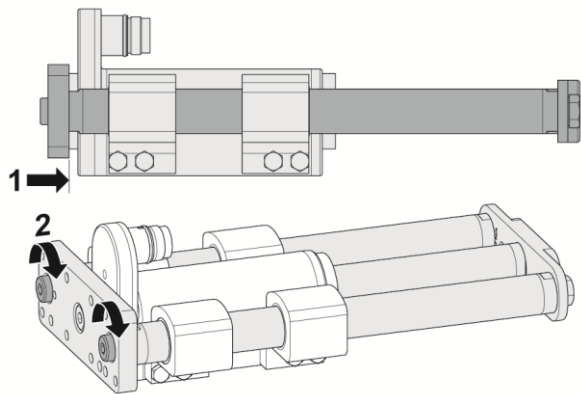
When handling with sliders, there are sometimes large magnetic forces of attraction. Observe the warnings in chapter 2! If necessary, cover nearby iron constructions with non-magnetic material (e.g. wood).



9. Fix the guide shafts

Apply Loctite 243 threadlocker to the threaded hole of the guide shaft.
Then fasten the front plate (2) temporarily with the guide shafts (1).

! For linear modules with plain bearings, 2 spherical washers are attached crosswise to the end of the shafts.

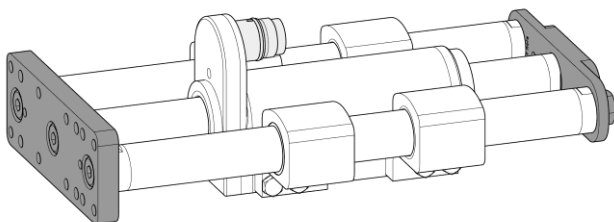


10. Screw the guide shafts tightly

(1) Push the guide shafts to the stop of the guide block.
(2) First tighten the screw on the face-turned shaft end, then tighten the other screw.

Tightening torque: 18 Nm

! If the guide does not move smoothly, loosen the screws again and repeat this step. Do not loosen the plain bearing holders (4 pieces). Alignment is done via the spherical washers, which must be tightened according to the instructions.



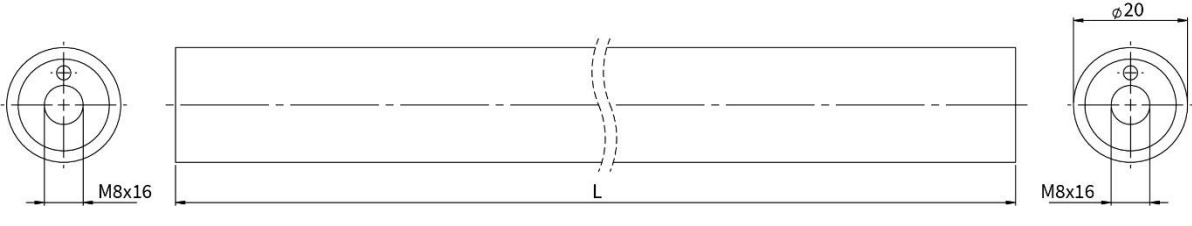
11. Note the installation position of the plates

! The front plate must be positioned on the side of the connector and the rear plate on the opposite side. The installation positions of the mounting plates must not be interchanged!

8.3 Guide Shafts

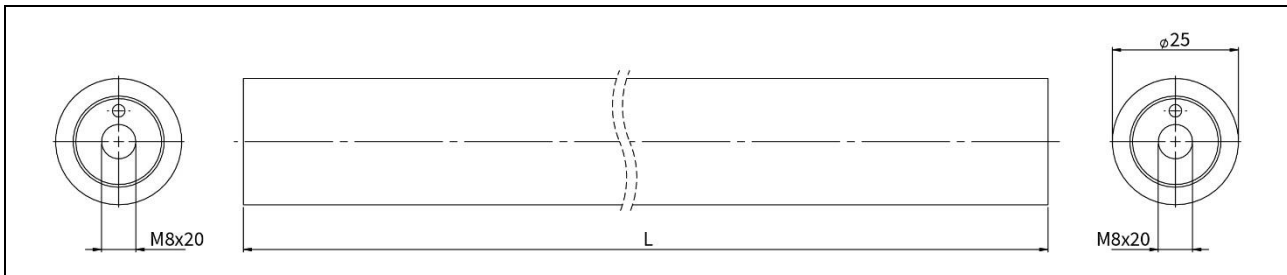
Stainless steel or hard-chrome plated shafts ensure precise guidance. As a rule, these do not need to be replaced. Only in case of damage should the guide shafts be replaced.

8.3.1 Guide Shafts for SM01-37 Linear Modules with Linear Ball Bearing



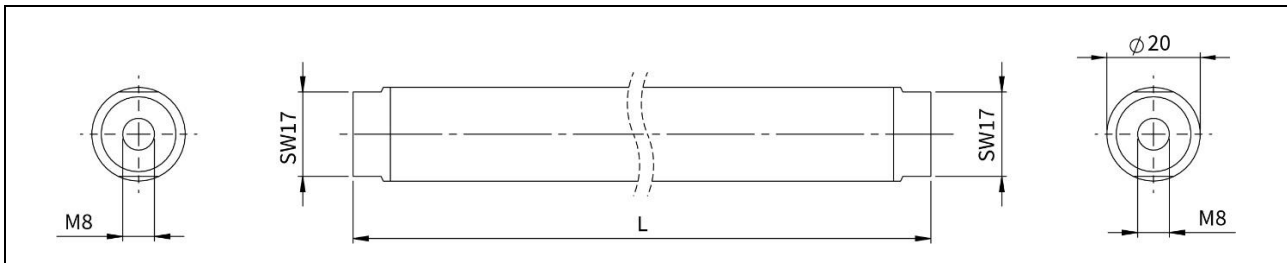
Item	Description	Item-No.
SL01-20-14x224-2xM8	Guide shaft, hollow, hard chrome plated, L= 224 mm for SM01-37Sx60, Hub= 100 mm	0160-3083
SL01-20-14x304-2xM8	Guide shaft, hollow, hard chrome plated, L= 304 mm for SM01-37Sx60, Hub= 180 mm SM01-37Sx120, Hub= 120 mm	0160-3076
SL01-20-14x404-2xM8	Guide shaft, hollow, hard chrome plated, L= 404 mm for SM01-37Sx60, Hub= 280 mm SM01-37Sx120, Hub= 220 mm	0160-3077
SL01-20-14x504-2xM8	Guide shaft, hollow, hard chrome plated, L= 504 mm for SM01-37Sx60, Hub= 380 mm SM01-37Sx120, Hub= 320 mm	0160-3078
SL01-20-14x604-2xM8	Guide shaft, hollow, hard chrome plated, L= 604 mm for SM01-37Sx60, Hub= 480 mm SM01-37Sx120, Hub= 420 mm	0160-3079
SL01-20-14x704-2xM8	Guide shaft, hollow, hard chrome plated, L= 704 mm for SM01-37Sx60, Hub= 580 mm SM01-37Sx120, Hub= 520 mm	0160-3080

8.3.2 Guide Shafts for SM01-48 Linear Modules with Linear Ball Bearing



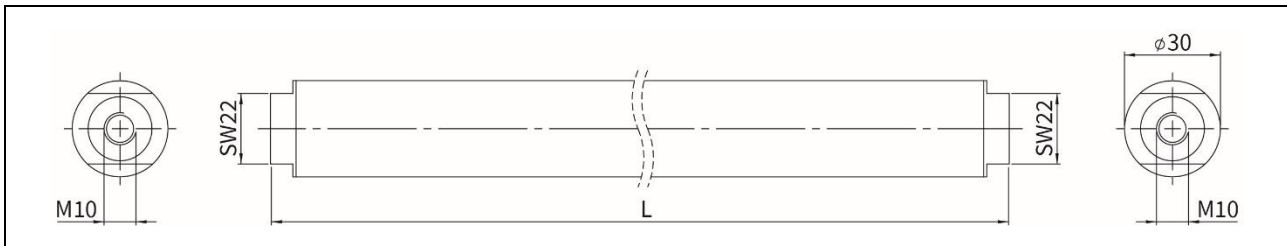
Item	Description	Item-No.
SL01-25-15.6x340-M8	Guide shaft, hollow, hard chrome plated, L= 340 mm for SM01-48x150, Stroke= 105 mm	0150-4455
SL01-25-15.6x400-M8	Guide shaft, hollow, hard chrome plated, L= 400 mm for SM01-48x150, Stroke= 165 mm SM01-48x240, Stroke = 75 mm	0150-4456
SL01-25-15.6x490-M8	Guide shaft, hollow, hard chrome plated, L= 490 mm for SM01-48x150, Stroke = 255 mm SM01-48x240, Stroke = 165 mm	0150-4457
SL01-25-15.6x610-M8	Guide shaft, hollow, hard chrome plated, L= 610 mm for SM01-48x150, Stroke = 375 mm SM01-48x240, Stroke = 285 mm	0150-4458
SL01-25-15.6x700-M8	Guide shaft, hollow, hard chrome plated, L= 700 mm for SM01-48x150, Stroke = 465 mm SM01-48x240, Stroke = 375 mm	0150-4459
SL01-25-15.6x790-M8	Guide shaft, hollow, hard chrome plated, L= 790 mm for SM01-48x150, Stroke = 555 mm SM01-48x240, Stroke = 465 mm	0150-4460

8.3.3 Guide Shafts for SM01-37 Linear Modules with Plain Bearings



Item	Description	Item-No.
SL01-20-16x223-SSC-HIS	Guide shaft, hollow, SSC, hardened, L= 223 mm for SM01-37Sx60, Stroke = 100 mm	0150-4363
SL01-20-16x303-SSC-HIS	Guide shaft, hollow, SSC, hardened, L= 303 mm for SM01-37Sx60, Hub= 180 mm SM01-37Sx120, Stroke = 120 mm	0150-3990
SL01-20-16x403-SSC-HIS	Guide shaft, hollow, SSC, hardened, L= 403 mm for SM01-37Sx120, Stroke = 220 mm	0150-3991
SL01-20-16x503-SSC-HIS	Guide shaft, hollow, SSC, hardened, L= 503 mm for SM01-37Sx120, Stroke = 320 mm	0150-3992

8.3.4 Guide Shafts for SM01-48 Linear Modules with Plain Bearings

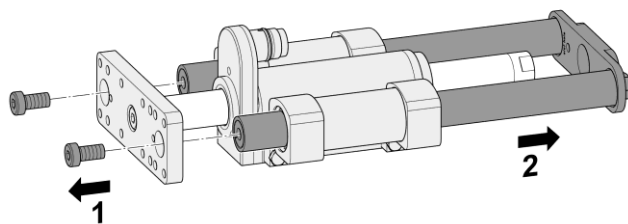


Artikel	Beschreibung	Art-Nr.
SL01-30-25x339-SSC-HIS	Guide shaft, hollow, SSC, hardened, L= 339 mm for SM01-48x150, Stroke = 105 mm	0150-4400
SL01-30-25x399-SSC-HIS	Guide shaft, hollow, SSC, hardened, L= 399 mm for SM01-48x150, Stroke = 165 mm SM01-48x240, Stroke = 75 mm	0150-4150
SL01-30-25x489-SSC-HIS	Guide shaft, hollow, SSC, hardened, L= 489 mm for SM01-48x150, Stroke = 255 mm SM01-48x240, Stroke = 165 mm	0150-4151
SL01-30-25x609-SSC-HIS	Guide shaft, hollow, SSC, hardened, L= 609 mm for SM01-48x150, Stroke = 375 mm SM01-48x240, Stroke = 285 mm	0150-4152
SL01-30-25x699-SSC-HIS	Guide shaft, hollow, SSC, hardened, L= 699 mm for SM01-48x240, Stroke = 375 mm	0150-4153

8.3.5 Mounting



Be sure to observe the safety instructions in chapter 2 during assembly!

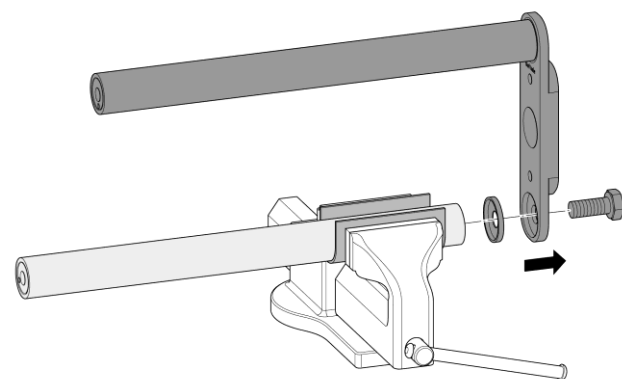


1. Remove guide shafts

- (1) Loosen the screws of the guide shafts on the front plate.
- (2) Then pull out the guide shafts together with the back plate.



Mark the "top" and "bottom" of the front plate so that it can be reinstalled exactly the same.

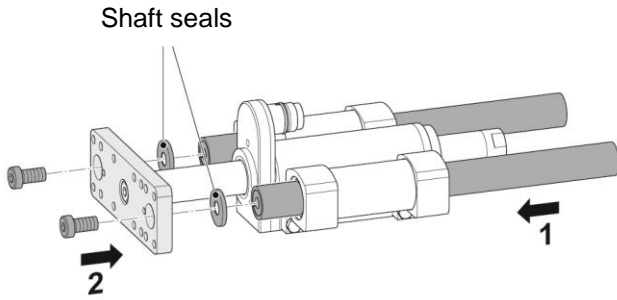


2. Loosen the back plate from the guide shafts

- Clamp the guide unit and loosen the screws of the guide shafts on the back plate completely.



Mark the "top" and "bottom" of the back plate so that it can be reinstalled exactly the same.



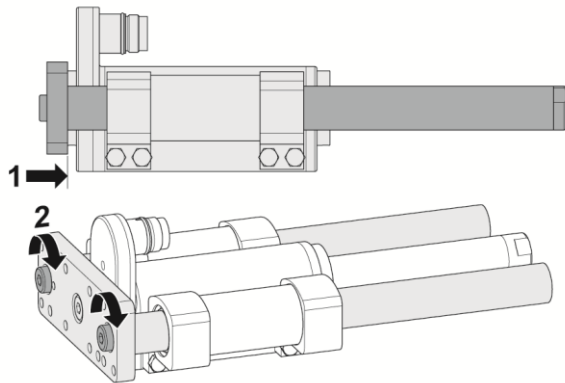
3. Fix new guide shafts to the front plate

Apply Loctite 243 threadlocker to the threaded hole of the guide shafts.

Then fasten the front plate (2) temporarily with the guide shafts (1).



Linear modules with linear ball bearings have shaft seals fitted in the front plate and back plate. These must remain installed when the guide shafts are replaced.

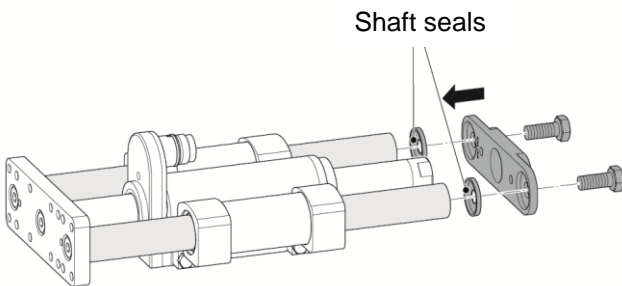


4. Screw the new guide shafts tightly to the front plate

(1) Slide the front plate to the stop of the guide block.

(2) Tighten the screws.

Tightening torque: 18 Nm



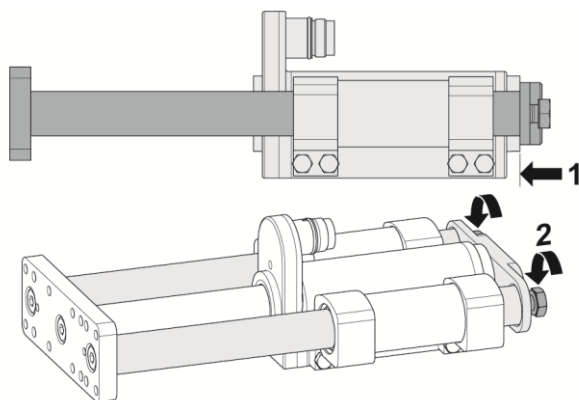
5. Fix the new guide shafts to the back plate

Apply Loctite 243 threadlocker to the threaded hole of the guide shafts.

Then temporarily fix the back plate with the guide shafts.



Linear modules with linear ball bearings have shaft seals fitted in the front plate and back plate. These must remain installed when the guide shafts are replaced.



6. Screw the new guide shafts tightly to the back plate

(1) Push the back plate to the stop of the guide block.

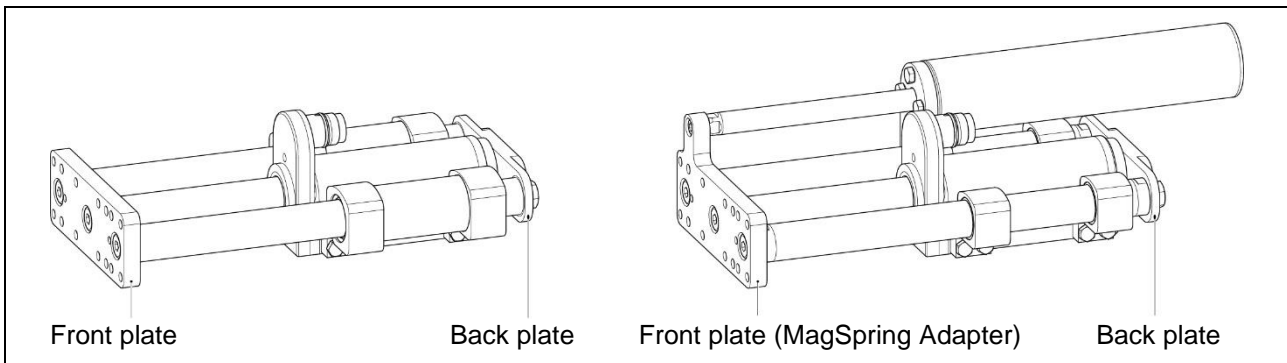
(2) Tighten the screws firmly.

Tightening torque: 18 Nm



If the guide does not move smoothly, loosen the screws again and repeat this step.

8.4 Front Plate / Back Plate

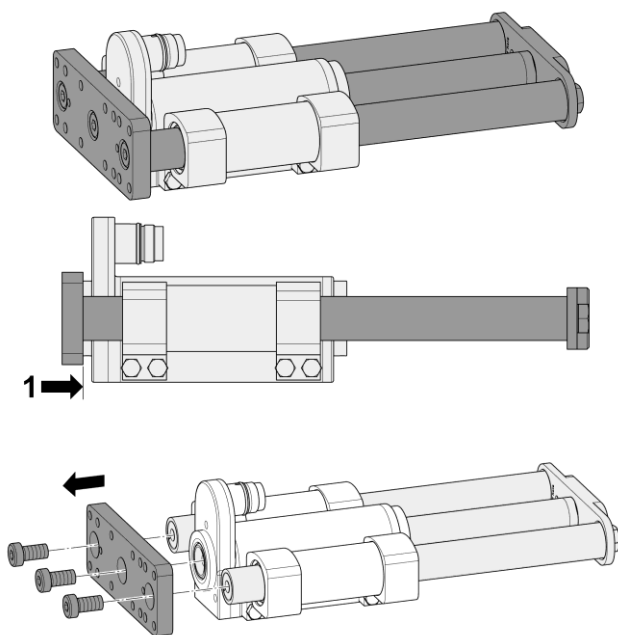


The front plate, the MagSpring adapter SSC and the back plate can be ordered again if damaged. The dimensions can be taken from chapter 12.

Ordering information

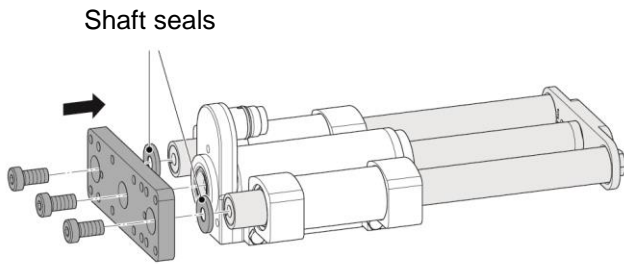
Item	Description	Item-No.
SM01k-37S-FP-SSC	Front plate SM01-37S-SSC Module (Linear ball bearing)	0160-3176
SM01k-37S-MA-40-SSC	Front plate MagSpring-Adapter SSC (Linear ball bearing)	0260-0077
SM01k-37S-RP-SSC	Back plate SM01-37S-SSC Module (Linear ball bearing)	0160-3177
SM01k-37S-FP-BE01-SSC	Front plate SM01-37S-SSC Module (Plain bearing)	0160-1237
SM01k-37S-MA-BE01-40-SSC	Front plate MagSpring-Adapter SSC (Plain bearing)	0260-0031
SM01k-37S-RP-BE01-SSC	Back plate SM01-37S-SSC Module (Plain bearing)	0160-1805
SM01k-48-FP-SSC	Front plate SM01-48-SSCP Module (Linear ball bearing)	0160-3109
SM01k-48-RP-SSC	Back plate SM01-48-SSCP Module (Linear ball bearing)	0160-3110
SM01k-48-FP-BE01-SSC	Front plate SM01-48-BE01-SSCP Module (Plain bearing)	0160-2959
SM01k-48-RP-BE01-SSC	Back plate SM01-48-BE01-SSCP Module (Plain bearing)	0160-2960

8.4.1 Mounting the Front Plate



1. Slide the front plate to the stop of the guide block.

2. Dismantle the front plate
Loosen the screws of the guide shafts and the slider and remove the plate.



3. Mount front plate

Apply Loctite 243 threadlocker to the threaded holes of the guide shafts and the slider. Screw on the new front plate tightly. Tightening torque: 18 Nm

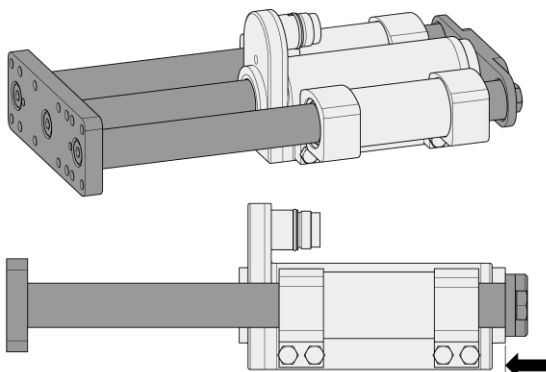


Linear modules with linear ball bearings have shaft seals inserted in the front plate and back plate. These must be reinstalled when replacing the front plate.

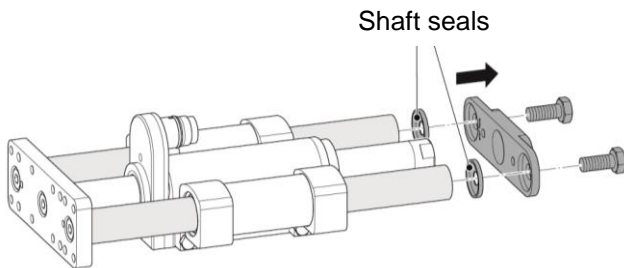


The "slot hole" labelling on the front plate must be on the same side as the back plate.

8.4.2 Mounting the Back Plate

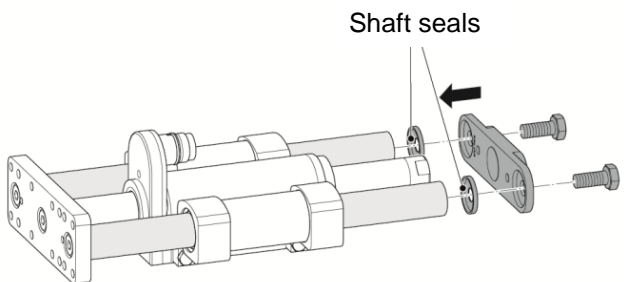


1. Push the back plate to the stop of the guide block.



2. Dismantle the back plate

Loosen the screws of the guide shafts and remove the plate.



3. Mount the back plate

Apply Loctite 243 threadlocker to the threaded hole of the guide shafts. Screw the new back plate on tightly. Tightening torque: 18 Nm



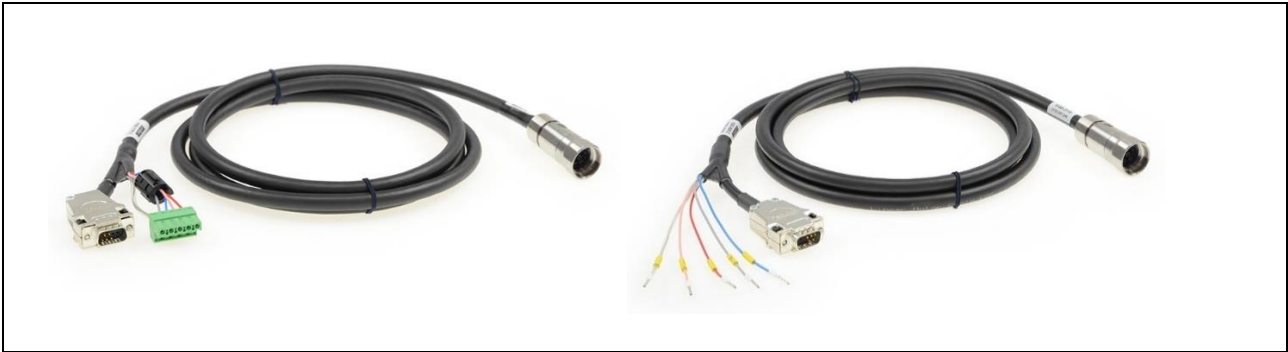
Linear modules with linear ball bearings have shaft seals inserted in the front plate and back plate. These must be reinstalled when replacing the back plate.



The "slot hole" labelling on the back plate must be on the same side as the front plate.

9 Accessories

9.1 Motor Cable for Linear Modules SM01-37



Item	Description	Item-No.
K05-W/R-SSC-	Motor cable W/R-SSC, Custom length	0150-3586
K05-Y-Fe/R-SSC-	Motor cable Y-Fe/R-SSC, Custom length	0150-3715

Item	Description	Item-No.
KS05-W/R-SSC-2	Trailing chain cable W/R-SSC, 2 m	0150-2683
KS05-W/R-SSC-4	Trailing chain cable W/R-SSC, 4 m	0150-2684
KS05-W/R-SSC-6	Trailing chain cable W/R-SSC, 6 m	0150-2685
KS05-W/R-SSC-8	Trailing chain cable W/R-SSC, 8 m	0150-2686
KS05-W/R-SSC-	Trailing chain cable W/R-SSC, Custom length	0150-3583

Item	Description	Item-No.
KS05-Y/R-SSC-2	Trailing chain cable Y/R-SSC, 2 m	0150-2687
KS05-Y/R-SSC-4	Trailing chain cable Y/R-SSC, 4 m	0150-2688
KS05-Y/R-SSC-6	Trailing chain cable Y/R-SSC, 6 m	0150-2689
KS05-Y/R-SSC-8	Trailing chain cable Y/R-SSC, 8 m	0150-2690
KS05-Y-Fe/R-SSC-	Trailing chain cable Y-Fe/R-SSC, Custom length	0150-3646

Item	Description	Item-No.
KR05-W/R-SSC-	Robot cable KR05-W/R-SSC-, Custom length	0150-3587

Item	Description	Item-No.
KS05-R/R-SSC-	Extension cable KS05-R/R-SSC-, Custom length	0150-3730

9.2 Motor Cable for Linear Modules SM01-48



Item	Description	Item-No.
K15-W/C-SSC-	Motor cable W/C-SSC, Custom length	0150-3539
K15-Y-Fe/C-SSC-	Motor cable Y-Fe/C-SSC, Custom length	0150-3630

Item	Description	Item-No.
KS10-W/C-SSC-2	Trailing chain cable W/C-SSC, 2 m	0150-2675
KS10-W/C-SSC-4	Trailing chain cable W/C-SSC, 4 m	0150-2676
KS10-W/C-SSC-6	Trailing chain cable W/C-SSC, 6 m	0150-2677
KS10-W/C-SSC-8	Trailing chain cable W/C-SSC, 8 m	0150-2678
KS10-W/C-SSC-	Trailing chain cable W/C-SSC, Custom length	0150-3358

Item	Description	Item-No.
KS10-Y/C-SSC-2	Trailing chain cable Y/C-SSC, 2 m	0150-2679
KS10-Y/C-SSC-4	Trailing chain cable Y/C-SSC, 4 m	0150-2680
KS10-Y/C-SSC-6	Trailing chain cable Y/C-SSC, 6 m	0150-2681
KS10-Y/C-SSC-8	Trailing chain cable Y/C-SSC, 8 m	0150-2682
KS10-Y-Fe/C-SSC-	Trailing chain cable Y/C-SSC, Custom length	0150-3574

Item	Description	Item-No.
KR10-W/C-SSC-	Robot cable KR05-W/C-SSC-, Custom length	0150-3536

Item	Description	Item-No.
KS10-C/C-SSC-	Extension cable KS10-C/C-SSC-, Custom length	0150-3368

9.3 Mounting Kit

The mounting kit contains all necessary screws to mount the SM01 linear modules together.

The mounting combination of the SM01 linear modules are as follows:

- SM01-37 on SM01-37 (mounting kit required)
- SM01-37x120 on SM01-48x (mounting kit required)
- SM01-37x60 on SM01-48x (mounting kit + adapter plate required)

Item	Description	Item-No.
Z01-AsKit-SM01-SM01	Mounting kit for SM01 on SM0x Linear Modules includes: 4 x Hexagon head screw M5x16 A4 (ISO 4017) 4 x Hexagon head screw M5x40 A4 (ISO 4017)	0150-4507

9.4 Adapter Plate

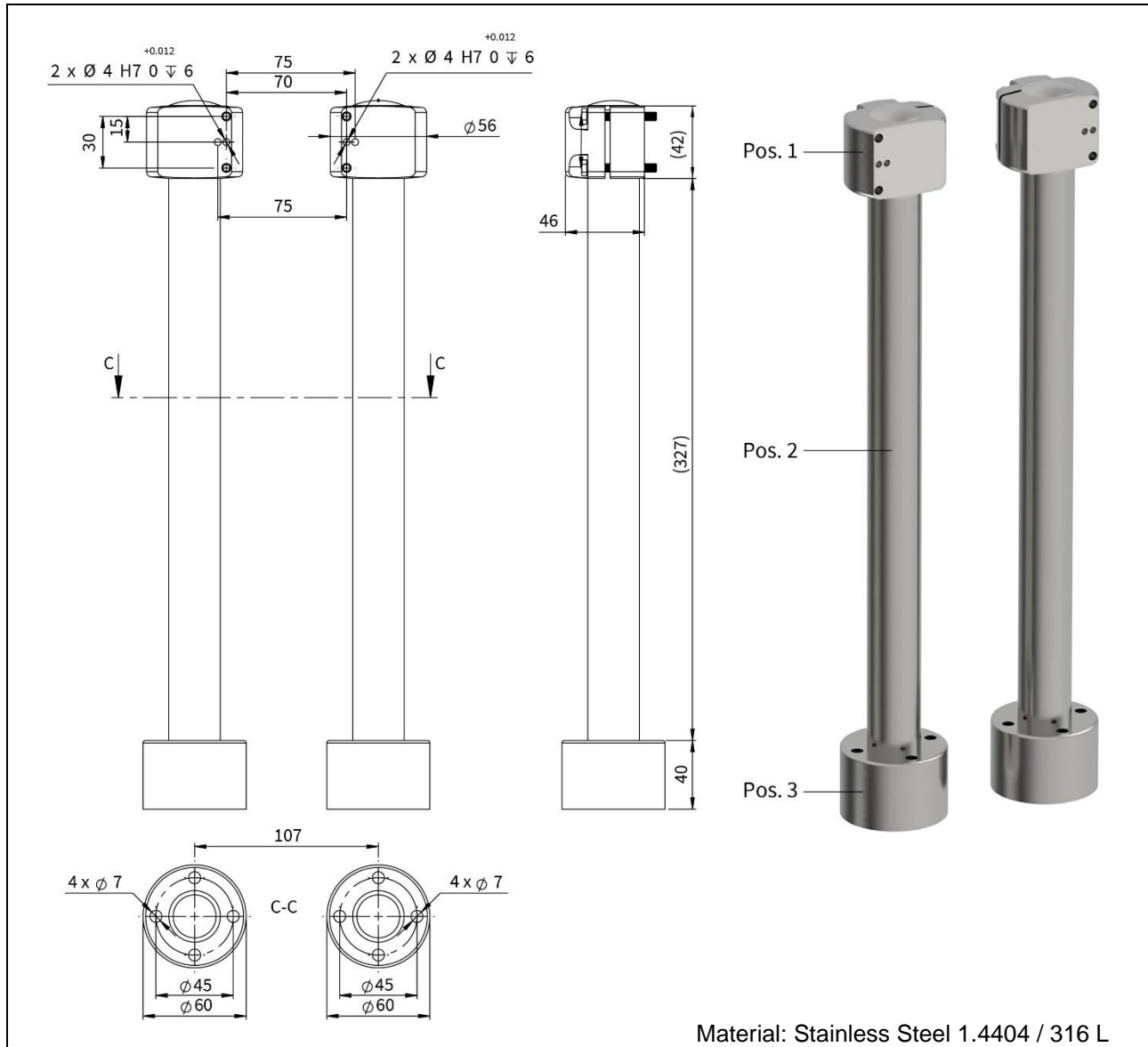
This adapter plate is required if you want to combine an SM01-37Sx60 linear module with an SM01-48 linear module. In addition, the mounting kit (see chapter 9.3) is necessary.

Item	Description	Item-No.
SM01-48-AP-37Sx60	Adapter Plate-Kit for SM01-37Sx60 to SM01-48	0150-4187

9.5 Pillar System

To realize a YZ combination of the SM01 linear modules, LinMot offers a mounting kit for screwing the modules together as well as a classic pillar system with which the units can be flexibly adjusted in height if required. For improved heat dissipation, pillars with an integrated heat pipe are optionally available.

9.5.1 Pillar System for SM01-37 Linear Modules

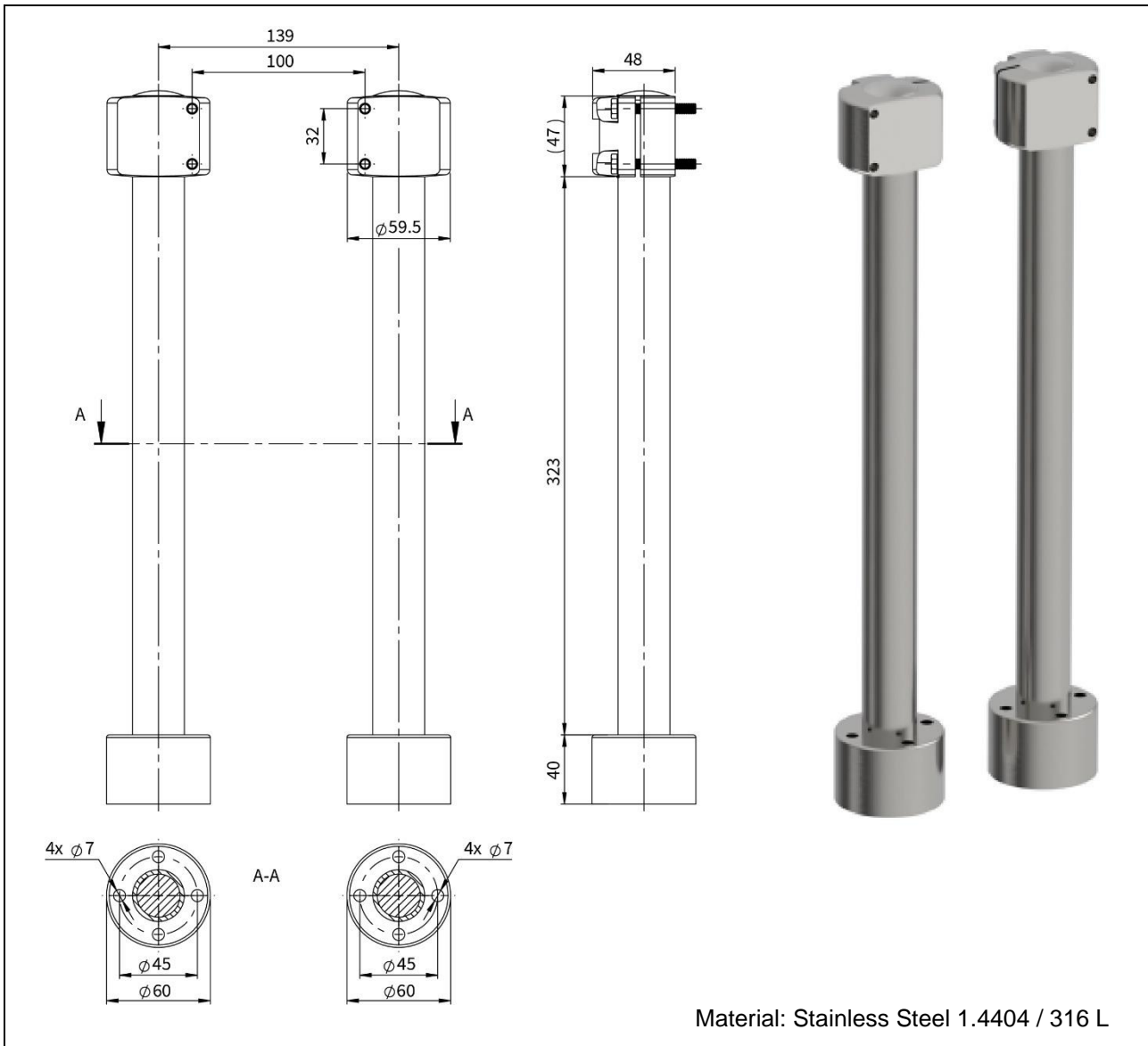


Pos.	Item	Item-No.	
1	Pillar adapter	Z01-VF-30-SSC (Item-No. 0150-4501)	
2	Pillar	Z01-SL30x400-HP-SSC L= 400 mm, Mat. 1.4112 (Item-No. 0150-4508)	Z01-SL30-25x400-SSCP L=400 mm, Mat. 1.4404 mit Heat Pipe (Item-No. 0150-4502)
3	Pillar base	Z01-SF-30-SSC (Item-No. 0150-4500)	



- 2 pieces each of position 1, 2 and 3 must be ordered.
- If two SM01 linear modules are to be screwed together, the assembly kit "Z01-AsKit-SM01-SM01" (Item-No. 0150-4507) can be ordered. It contains all the necessary screws.

9.5.2 Pillar System for SM01-48 Linear Modules



Pos.	Item	Item-No.	
1	Pillar adapter	Z01-VF-32-SSC (Item-No. 0150-4787)	
2	Pillar	Z01-SL30x400-HP-SSC L= 400 mm, Mat. 1.4112 (Item-No. 0150-4508)	Z01-SL30-25x400-SSCP L=400 mm, Mat. 1.4404 mit Heat Pipe (Item-No. 0150-4502)
3	Pillar base	Z01-SF-30-SSC (Item-No. 0150-4500)	



- 2 pieces each of position 1, 2 and 3 must be ordered.
- If two SM01 linear modules are to be screwed together, the assembly kit "Z01-AsKit-SM01-SM01" (Item-No. 0150-4507) can be ordered. It contains all the necessary screws.

10 Maintenance and Test Instructions

The linear ball bearings and plain bearings of the SM01 linear modules are provided with initial lubrication at the factory. The lubrication or inspection intervals depend primarily on the average driving speed, the operating temperature and the general ambient conditions. 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 the recommended bearing grease LU02.

Linear Modules with Linear Ball Bearings

Velocity [v]	Lubrication / Inspection interval [km]
$v < 1 \text{ m/s}$	5000
$1 \text{ m/s} < v < 1.5 \text{ m/s}$	2500
$v > 1.5 \text{ m/s}$	1200

Linear Modules with Plain Bearings

Velocity [v]	Inspection interval [km]
$v < 1 \text{ m/s}$	1200

Basically, 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

10.1 Inspection

The following inspections must be carried out in accordance with the inspection intervals.

10.1.1 Linear Module

- Do the guide shafts have too much clearance? If yes -> Replace bearings.
- Do the guide shafts show signs of wear or grooves? -> If yes -> Replace guide shafts and bearings.
- Have the shaft bearings been relubricated? If no -> Clean + lubricate
- Can the guide unit be moved smoothly? If no -> Align the mounting plates

10.1.2 MagSpring

- Does the slider show signs of wear or grooves? If yes -> Replace slider
- Does the MagSpring stator bearing show signs of wear? If yes -> Replace MagSpring
- Does the MagSpring slider move smoothly? If no -> Cleaning (stator, slider)

10.2 Cleaning

10.2.1 Guide Shafts

- Dismantle the guide shafts according to chapter 8.3.3.
- Clean the guide shafts with a soft disposable paper, possibly with the aid of a grease-dissolving cleaning agent (e.g. benzine).

10.2.2 Plain Bearings

SM01 modules with plain bearings for the guide shafts have the advantage that the modules can normally be cleaned without dismantling the guides. The modules are particularly suitable for wet cleaning or cleaning with foam cleaner. In addition, operating cases are permitted in which the modules also become wet during operation or are operated in water. However, lubrication of the bearings is recommended and also prescribed in certain load cases (see chapter 10.3.1).

In lubricated operation, cleaning is carried out as follows:

- Remove the old grease from the guide shafts with a soft cleaning cloth or paper towel. If necessary, use a grease-dissolving agent (e.g. benzine).
- Move the moving part of the guide back and forth several times so that the bearings are also degreased. Repeat point 1.
Note: Disassembly of the guide or removal of the guide shafts from the bearings is generally not necessary.

10.2.3 Linear Ball Bearings

- Dismantle guide shafts and seals according to chapter 8.1.
- Clean linear ball bearings with a soft disposable paper, possibly with the aid of a grease-dissolving cleaning agent (e.g. benzine).

10.2.4 MagSpring

- Carefully pull the slider out of the stator.
Caution! Large magnetic attraction forces (observe warning notes from p. 5)! If necessary, cover nearby iron structures with non-magnetic material (e.g. wood).
- Clean the slider and stator with a soft disposable paper, ideally with the aid of LU06 cleaning spray (alternatively benzine or alcohol).
- Lightly grease the slider with LU02.

10.3 Lubrication

10.3.1 Plain Bearings

The plain bearings used have built-in solid lubricants which allow dry running. The following limiting factors must be taken into account:

- At speeds above 1 m/s, wear increases disproportionately.
- The load on the individual plain bearings is strongly related to the overhang or the maximum stroke. The greater the stroke, the greater the load on the plain bearings due to the leverage effect.
- The greater the transverse load or, in the horizontal case, the load mass on the connecting part of the moving guide part, the greater the leverage effect or the load on the slide bearings.

The above points naturally also apply to the operation of an SM01 guide with grease lubrication. However, the grease film greatly reduces the sliding friction at higher loads and speeds, thus enabling a significantly longer service life and generally permitting higher operating values in terms of speed and transverse loads.

Basically, dry running should only be considered under the following conditions:

Conditions for Dry Running				
	SM01-37Sx60	SM01-37Sx120	SM01-48x150	SM01-48x240
Stroke range	< 120 mm	< 220 mm	< 255 mm	< 285 mm
Velocity	< 1 m/s	< 1 m/s	< 1 m/s	< 1 m/s
Transverse load	< 15 N	< 15 N	< 15 N	< 15 N
In vertical applications without transverse load, larger strokes can also be operated in dry conditions.				

When operating with grease, it should be noted that the relubrication intervals are strongly dependent on the operating and ambient conditions. In addition to the drive-related loads in the form of stroke kilometers, speeds and surface pressure, the ambient conditions such as temperature, humidity and general contamination also play a decisive role. It is therefore advisable to inspect the specific application regularly and to determine the relubrication intervals from this. The inspection intervals can be extended in stages.

The recommended lubricating grease LU02 is largely resistant to water and steam. Nevertheless, in applications where the guides are regularly wet cleaned, the lubrication intervals should be shortened accordingly. If the cleaning process or the cleaning agents include a targeted removal of the lubricating grease on the guide rods, relubrication is necessary after each cleaning process.

Relubrication is carried out according to the following instructions:

- Remove the old grease from the guide shafts with a soft cleaning cloth or paper towel. If necessary, use a grease-dissolving agent (e.g. petroleum ether).

- Move the moving part of the guide back and forth several times so that the bearings are also degreased. Repeat point 1.
Note: Disassembly of the guide or removal of the guide shafts from the bearings is generally not necessary.
- Grease the guide shafts carefully and completely with LU02 grease. Move the movable part of the guide back and forth. Remove any grease that has been wiped off. There should only be a thin film of grease on the guide shafts.

10.3.2 Linear Ball Bearings

- First carry out cleaning instructions according to the section above.
- Grease the bearing with 2-3 g of LU02 grease. A brush can be used to apply the grease evenly.
Important! Avoid overgreasing!
- The guide shafts are inserted into the guide without lubrication.

10.4 Cleaning Agents / Lubricants

Depending on the degree of soiling and the requirements of the respective industry, different types of cleaning are to be used. Starting with a dry wipe of the modules up to wet cleaning with foam cleaner. Due to the variety of cleaning agents, concentrations and exposure times, no general statements can be made regarding compatibility. If necessary, the resistance of the materials to chemicals must be checked under the specific practical conditions. In particular, deviations in chemical resistance may occur at elevated temperatures or in the case of interaction between individual chemicals.

However, the materials used in the SM01 modules (see chapter guarantee a high chemical resistance and must be checked with the compatibility tables of the cleaning agents used.

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

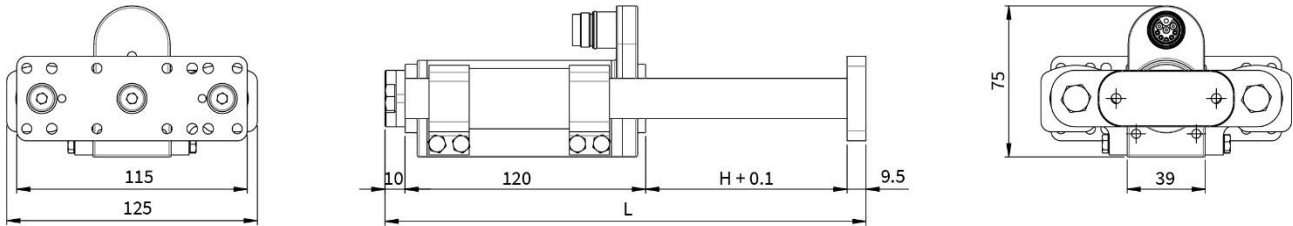
* LinMot Spray LU06 is identical to KLÜBERFOOD NH1 4-002 (food grade UH1 approval).
** LinMot grease LU02 is identical with KLÜBERSYNTH UH1 14-31 (food grade UH1 approval).

11 Transport and Storage

- LinMot linear modules may only be transported and stored in their original packaging.
- The linear modules should not be removed from the 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 modules must be protected from extreme weather conditions.
- The room air must not contain any aggressive gases.

12 Dimensions & Masses

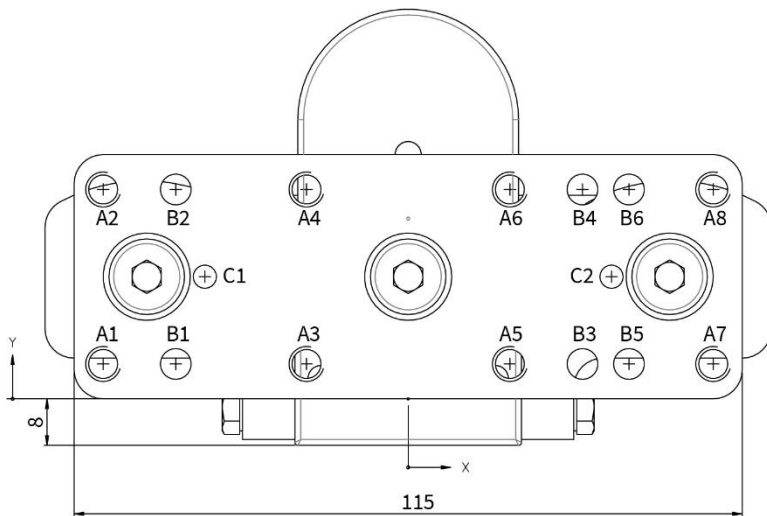
12.1 Linear Modules SM01-37Sx60_SSCP



Linear Module	Stroke H [mm (inch)]		Carriage Length L [mm (inch)]		Moving Mass ¹⁾ [g (lb)]		Total Mass [g (lb)]	
SM01-37Sx60-HP-R-100_SSCP	100	(3.94)	240	(9.45)	1615	(3.56)	2852	(6.29)
SM01-37Sx60-HP-R-180_SSCP	180	(7.09)	320	(12.60)	1997	(4.4)	3234	(7.13)
SM01-37Sx60-HP-R-280_SSCP	280	(11.02)	420	(16.54)	2485	(5.48)	3722	(8.21)
SM01-37Sx60-HP-R-380_SSCP	380	(14.96)	520	(20.47)	2973	(6.55)	4210	(9.28)
SM01-37Sx60-HP-R-480_SSCP	480	(18.90)	620	(24.41)	3461	(7.63)	4698	(10.36)
SM01-37Sx60-HP-R-580_SSCP	580	(22.83)	720	(28.35)	3949	(8.71)	5186	(11.43)

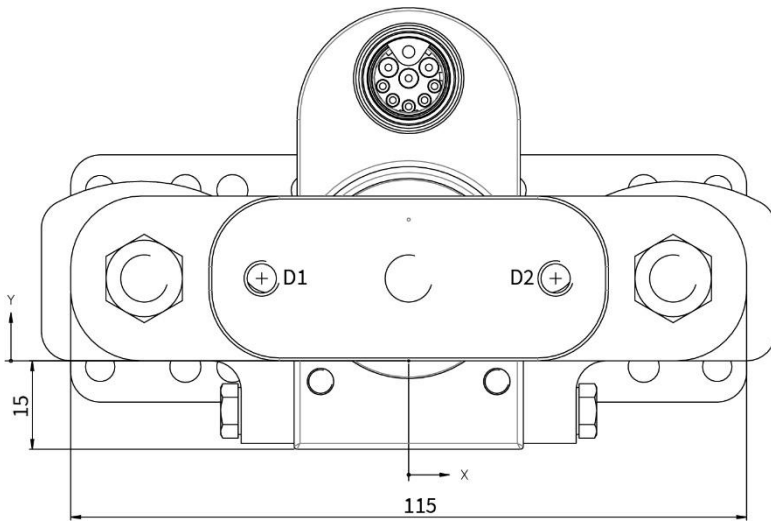
¹⁾ Mass: Slider, Shafts, Front plate, Back plate

12.1.1 Front Plate



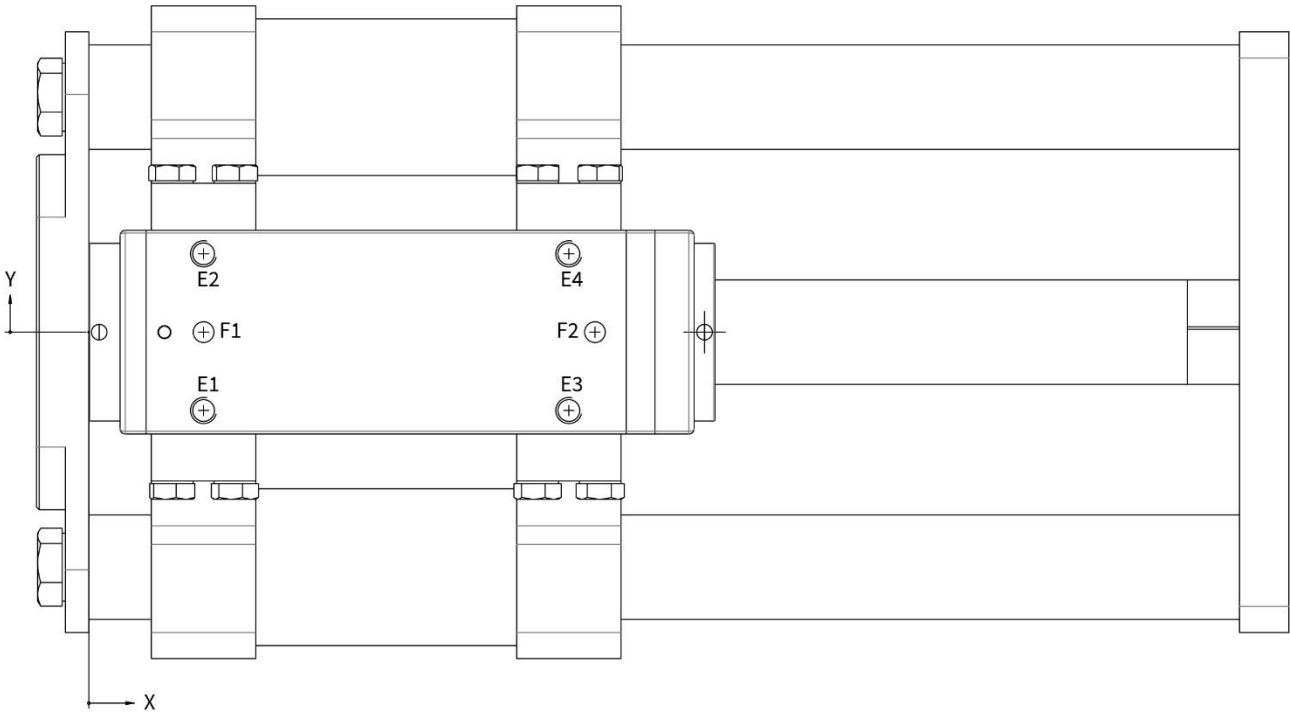
	X-POS.	Y-POS.	
A1	0	6	M6x9.5
A2	0	36	
A3	35	6	
A4	35	36	
A5	70	6	
A6	70	36	
A7	105	6	
A8	105	36	
B1	12.5	6	∅ 5.3x9.5
B2	12.5	36	
B3	82.5	6	
B4	82.5	36	
B5	90.5	6	
B6	90.5	36	
C1	17.5	21	∅ 4 H7 0 x6 +0.012
C2	87.5	21	

12.1.2 Back Plate



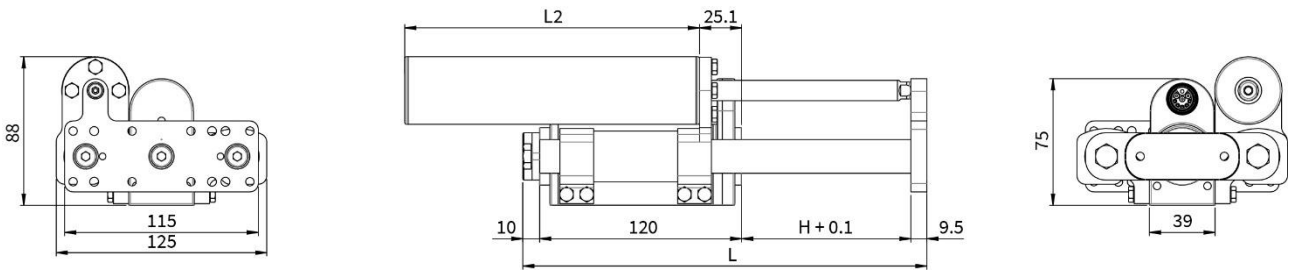
	X-POS.	Y-POS.	
D1	-25	14	M6x10
D2	25	14	

12.1.3 Guide Block



	X-POS.	Y-POS.	
E1	22	-15	M5x7
E2	22	15	
E3	92	-15	
E4	92	15	
F1	22	0	$\varnothing 4 \text{ H7 } 0^{+0.012} \times 3$
F2	97	0	

12.2 Linear Modules SM01-37Sx60_MSxx_SSCP

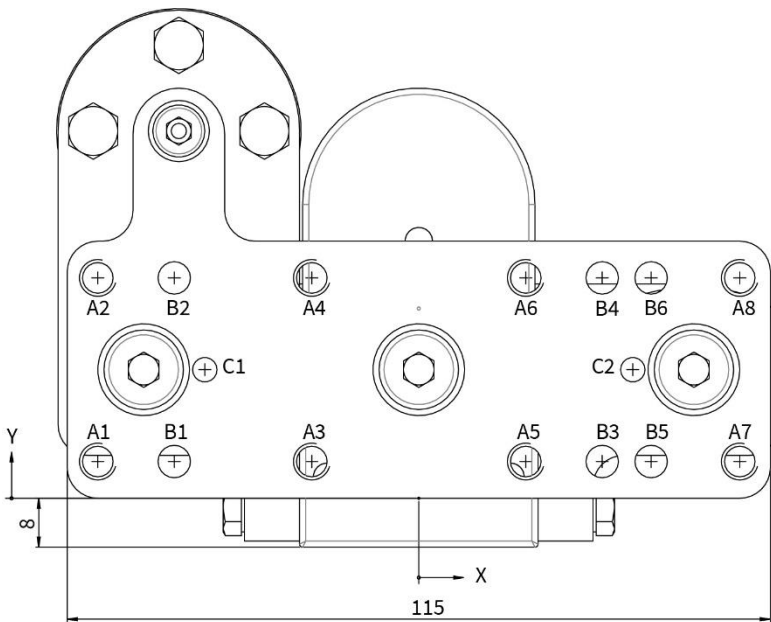


Linear Module with MagSpring SM01-37Sx60-HP-R...	Stroke H [mm (inch)]		MS Stator Length L2 [mm (inch)]		Carriage Length L [mm (inch)]		Moving Mass ¹⁾ [g (lb)]		Total Mass [g (lb)]	
...-100_MSxx_SSCP ²⁾	100	(2.36)	175	(6.89)	240	(9.45)	1769	(3.9)	3986	(8.79)
...-180_MSxx_SSCP ²⁾	180	(3.93)	250	(9.84)	320	(12.60)	2221	(4.9)	4778	(10.53)

¹⁾ Mass: Slider, Shafts, Front plate, Back plate, MagSpring slider

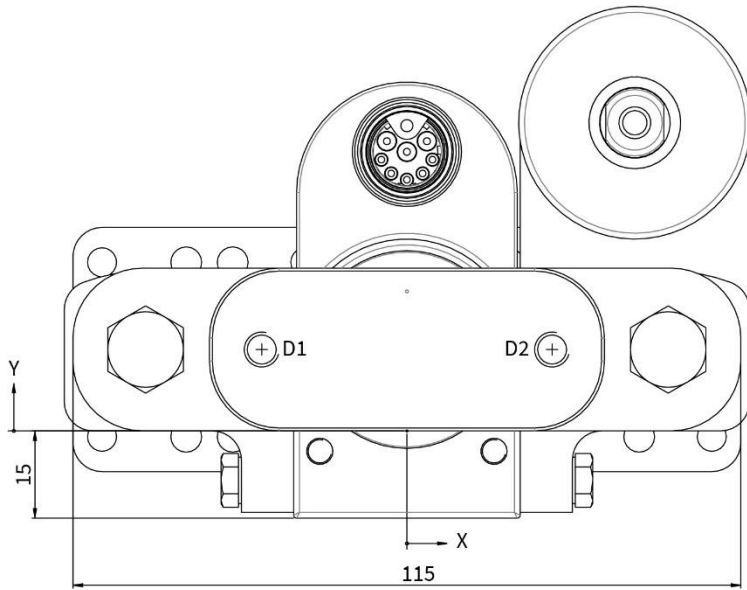
²⁾ MagSpring variants with different constant forces: MS02 (40N); MS03 (50N); MS04 (60N)

12.2.1 Front Plate



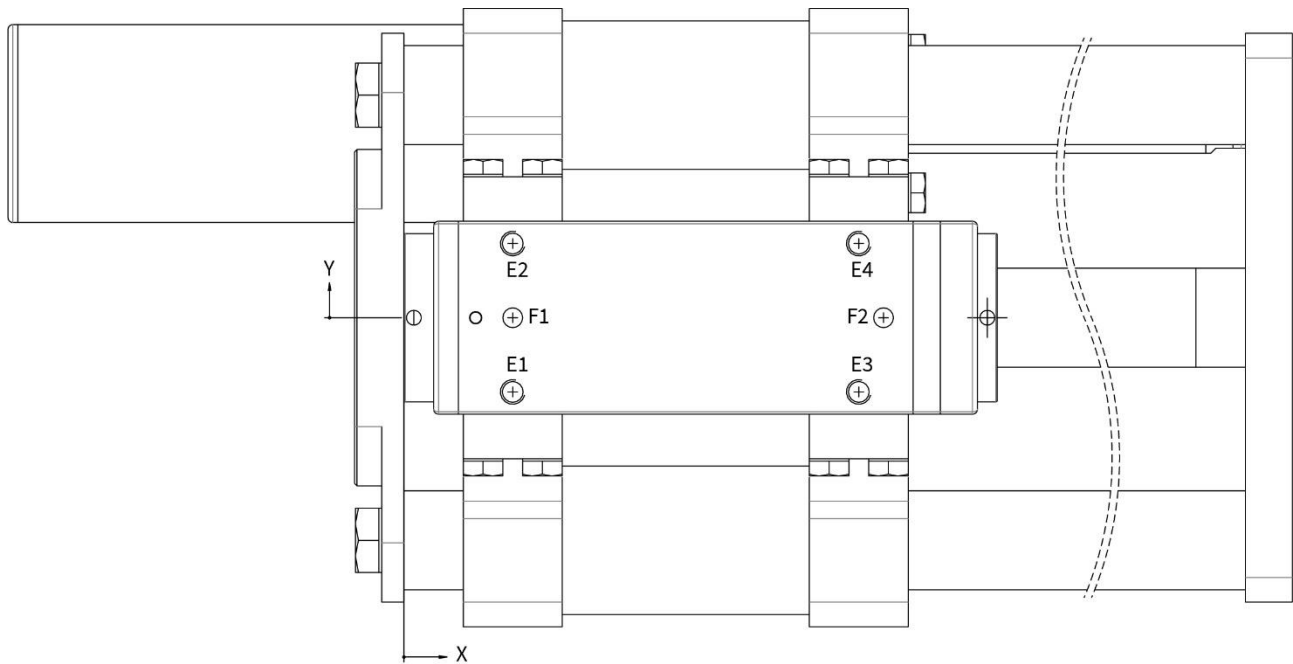
ETIKETT	X-POS.	Y-POS.	GRÖSSE
A1	-52.5	6	M6x9.5
A2	-52.5	36	
A3	-17.5	6	
A4	-17.5	36	
A5	17.5	6	
A6	17.5	36	
A7	52.5	6	
A8	52.5	36	
B1	-40	6	Ø 5.3x9.5
B2	-40	36	
B3	30	6	
B4	30	36	
B5	38	6	
B6	38	36	
C1	-35	21	Ø 4 H7 0 ^{+0.012} x6
C2	35	21	

12.2.2 Back Plate



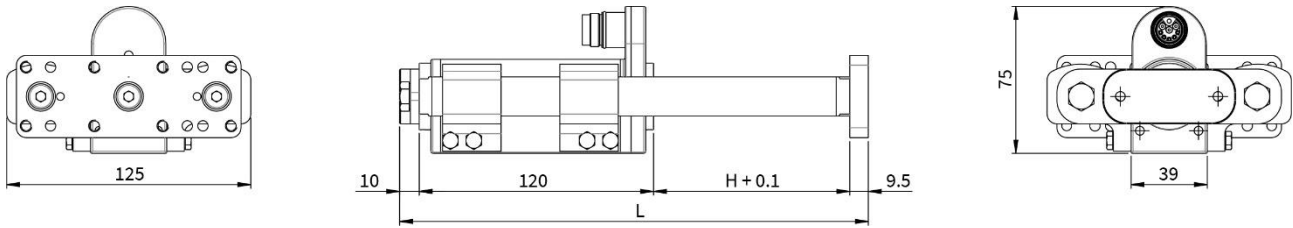
	X-POS.	Y-POS.	
D1	-25	14	M6x10
D2	25	14	

12.2.3 Guide Block



	X-POS.	Y-POS.	
E1	22	-15	M5x7
E2	22	15	
E3	92	-15	
E4	92	15	
F1	22	0	+0.012
F2	97	0	∅ 4 H7 0 x3

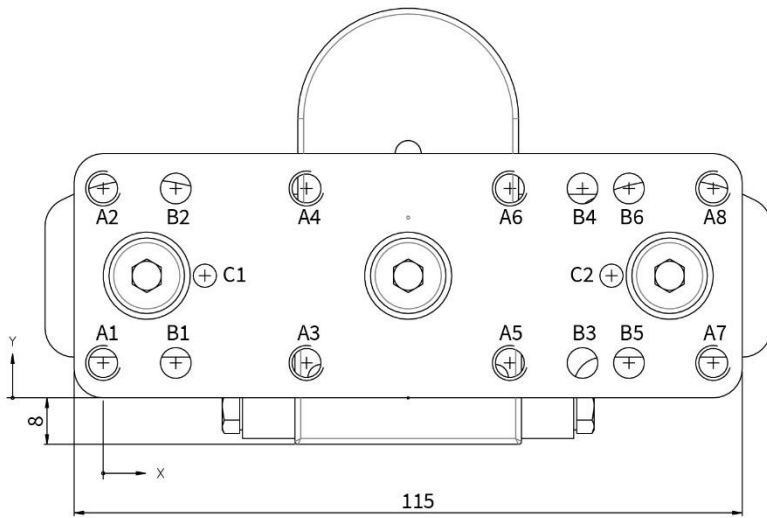
12.3 Linear Modules SM01-37Sx60_BE01_SSCP



Linear Module	Stroke H [mm (inch)]		Carriage Length L [mm (inch)]		Moving Mass ¹⁾ [g (lb)]		Total Mass [g (lb)]	
SM01-37Sx60-HP-R-100_BE01_SSCP	100	(3.94)	240	(9.45)	1501	(3.31)	3137	(6.92)
SM01-37Sx60-HP-R-180_BE01_SSCP	180	(7.09)	320	(12.60)	1831	(4.04)	3467	(7.64)

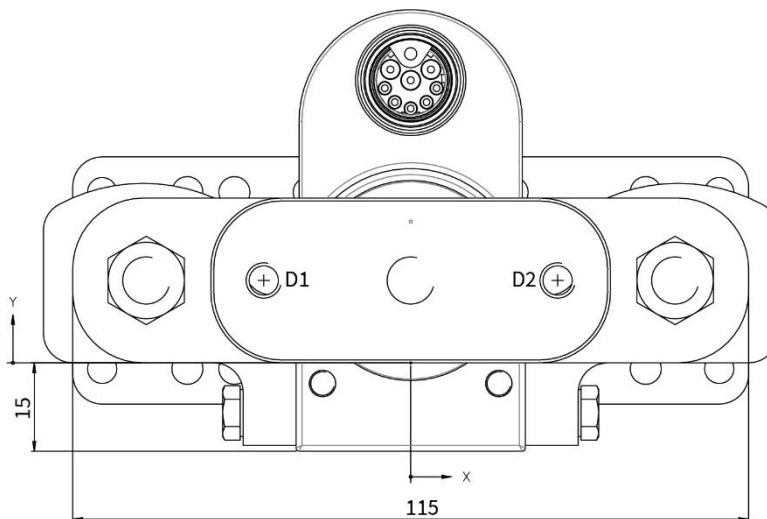
¹⁾ Mass: Slider, Shafts, Front plate, Back plate

12.3.1 Front Plate



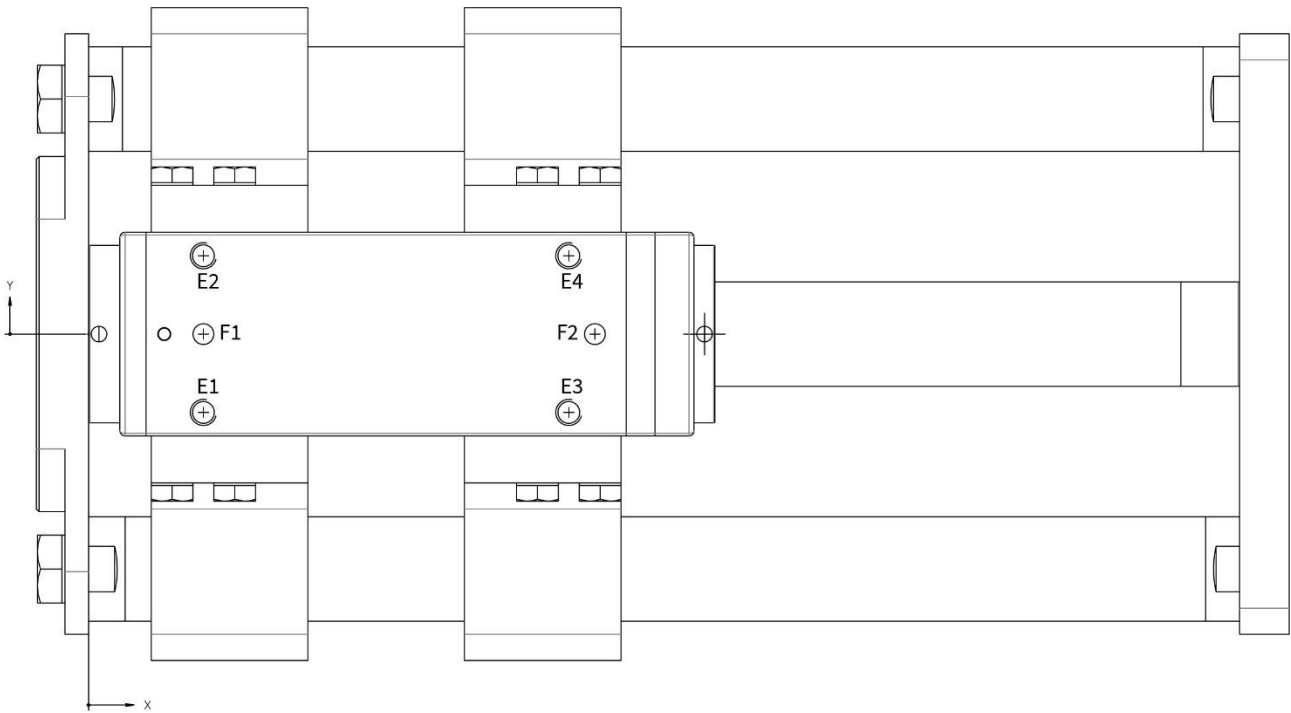
	X-POS.	Y-POS.	
A1	0	6	M6x9.5
A2	0	36	
A3	35	6	
A4	35	36	
A5	70	6	
A6	70	36	
A7	105	6	
A8	105	36	
B1	12.5	6	∅ 5.3x9.5
B2	12.5	36	
B3	82.5	6	
B4	82.5	36	
B5	90.5	6	
B6	90.5	36	
C1	17.5	21	∅ 4 H7 0 ^{+0.012} x6
C2	87.5	21	

12.3.2 Back Plate



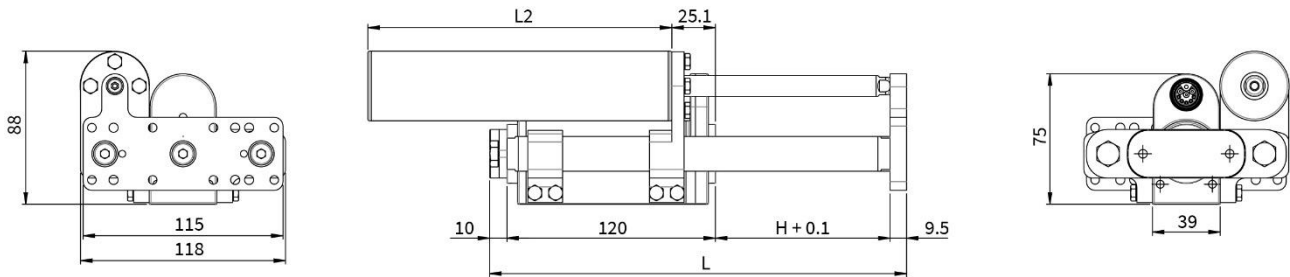
	X-POS.	Y-POS.	
D1	-25	14	M6x10
D2	25	14	

12.3.3 Guide block



	X-POS.	Y-POS.	
E1	22	-15	M5x7
E2	22	15	
E3	92	-15	
E4	92	15	
F1	22	0	$\varnothing 4 \text{ H7 } 0 \text{ } ^{+0.012} \text{ x3}$
F2	97	0	

12.4 Linear Modules SM01-37Sx60_BE01_MSxx_SSCP

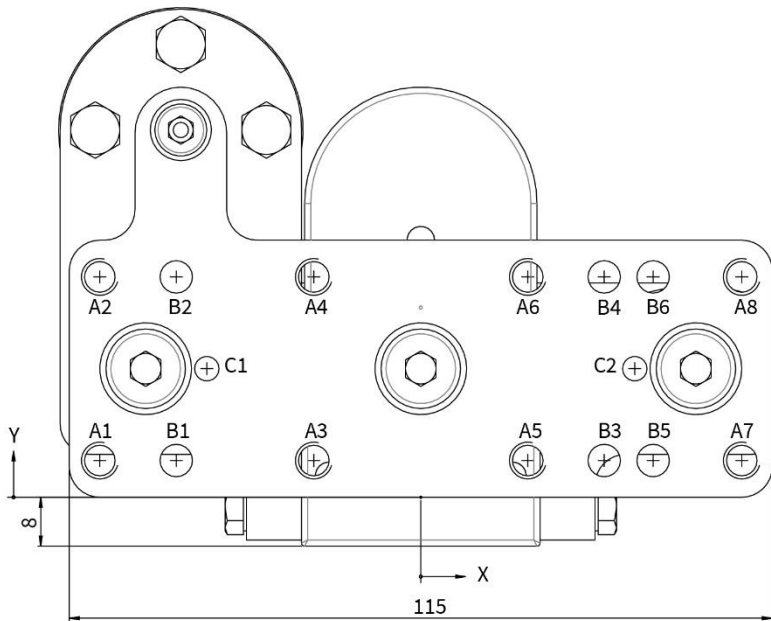


Linear Module with MagSpring SM01-37Sx60-HP-R...	Stroke H [mm (inch)]		MS Stator Length L2 [mm (inch)]		Carriage Length L [mm (inch)]		Moving Mass ¹⁾ [g (lb)]		Total Mass [g (lb)]	
...-100_BE01_MSxx_SSCP ²⁾	100	(2.36)	175	(6.89)	240	(9.45)	1655	(3.65)	3965	(8.74)
...-180_BE01_MSxx_SSCP ²⁾	180	(3.93)	250	(9.84)	320	(12.60)	2055	(4.53)	4705	(10.37)

¹⁾ Mass: Slider, Shafts, Front plate, Back plate, MagSpring slider

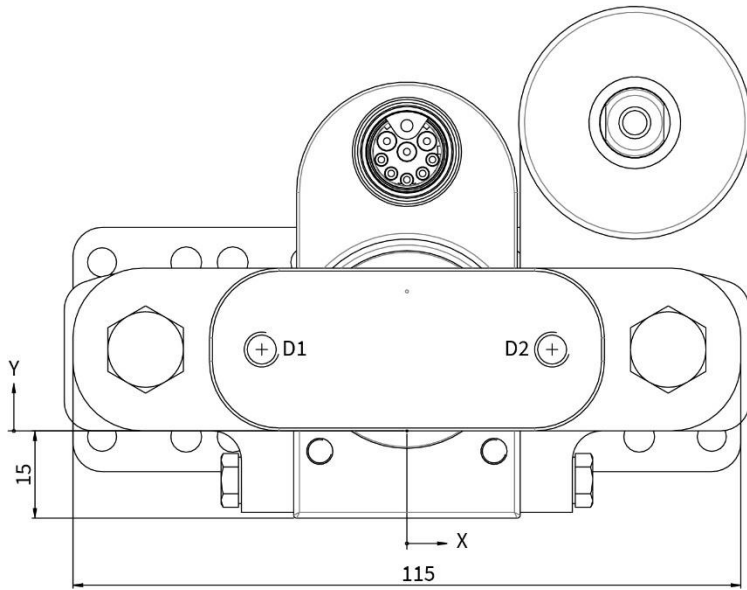
²⁾ MagSpring variants with different constant forces: MS02 (40N); MS03 (50N); MS04 (60N)

12.4.1 Front Plate



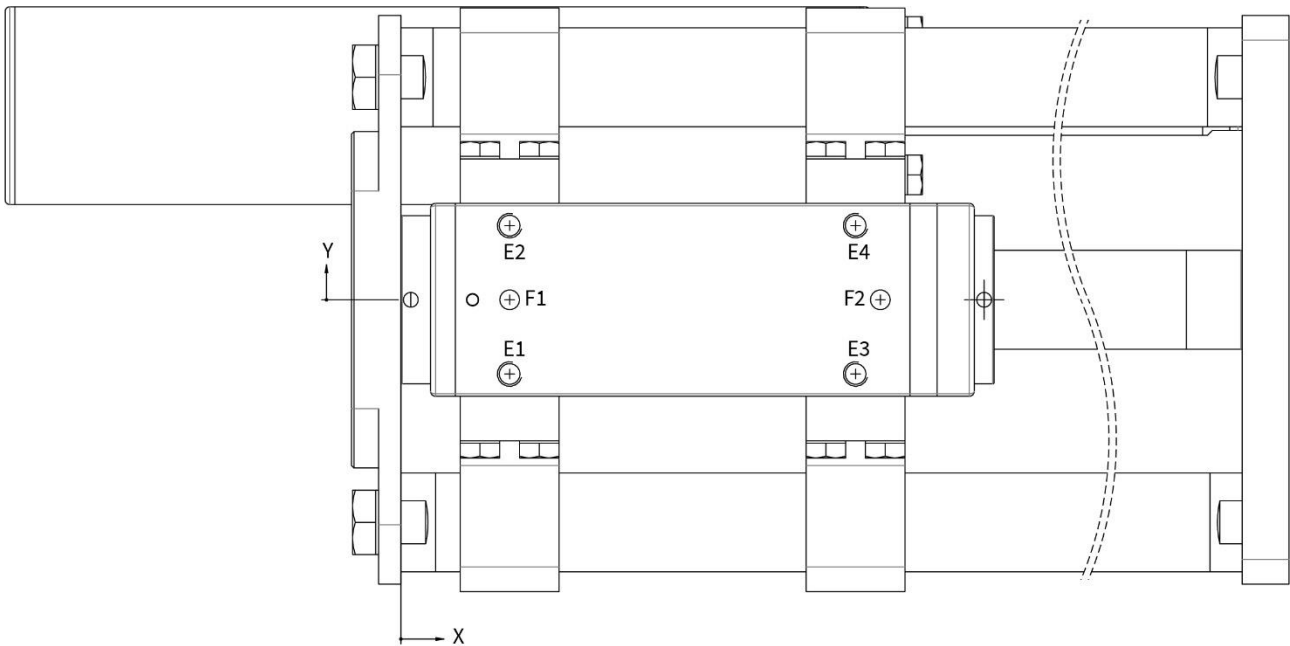
	X-POS.	Y-POS.	
A1	-52.5	6	M6x9.5
A2	-52.5	36	
A3	-17.5	6	
A4	-17.5	36	
A5	17.5	6	
A6	17.5	36	
A7	52.5	6	
A8	52.5	36	
B1	-40	6	Ø 5.3x9.5
B2	-40	36	
B3	30	6	
B4	30	36	
B5	38	6	
B6	38	36	
C1	-35	21	Ø 4 H7 0 ^{+0.012} x6
C2	35	21	

12.4.2 Back Plate



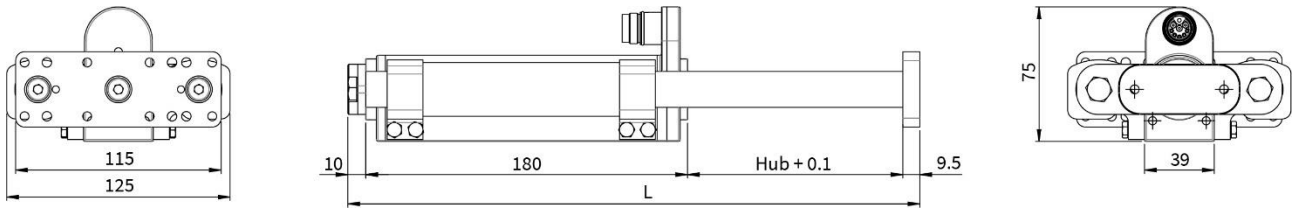
	X-POS.	Y-POS.	
D1	-25	14	M6x10
D2	25	14	

12.4.3 Guide Block



	X-POS.	Y-POS.	
E1	22	-15	M5x7
E2	22	15	
E3	92	-15	
E4	92	15	
F1	22	0	∅ 4 H7 0 x3 +0.012
F2	97	0	

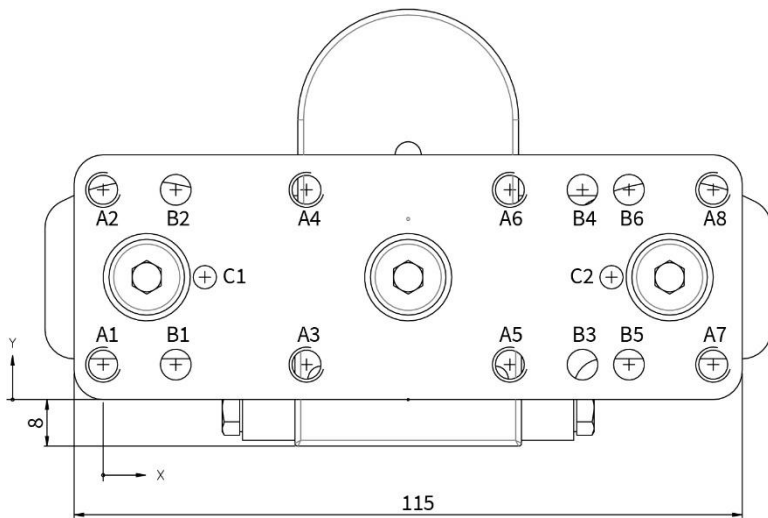
12.5 Linear Modules SM01-37Sx120_SSCP



Linear Module	Stroke H [mm (inch)]		Carriage Length L [mm (inch)]		Moving Mass ¹⁾ [g (lb)]		Total Mass [g (lb)]	
	SM01-37Sx120F-HP-R-120_SSCP	120	(4.72)	320	(12.60)	1997	(4.4)	4142
SM01-37Sx120F-HP-R-220_SSCP	220	(8.66)	420	(16.54)	2485	(5.48)	4630	(10.21)
SM01-37Sx120F-HP-R-320_SSCP	320	(12.60)	520	(20.47)	2973	(6.55)	5118	(11.28)
SM01-37Sx120F-HP-R-420_SSCP	420	(16.54)	620	(24.41)	3461	(7.63)	5606	(12.36)
SM01-37Sx120F-HP-R-520_SSCP	520	(20.47)	720	(28.35)	3949	(8.71)	6094	(13.43)

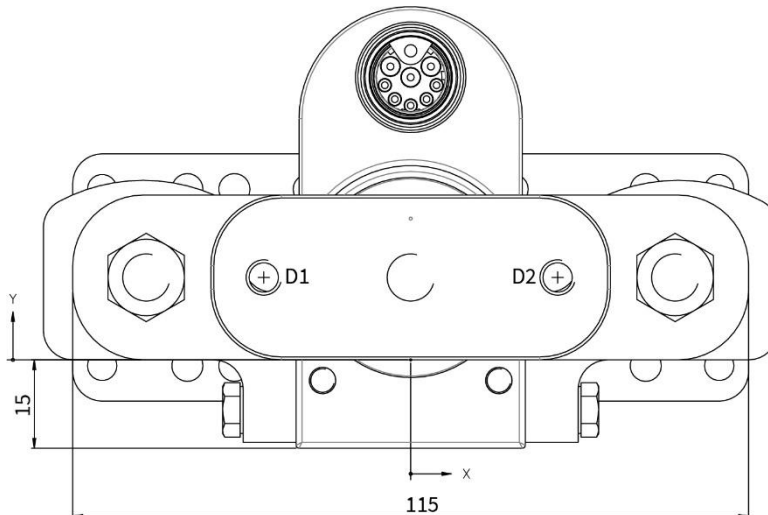
¹⁾ Mass: Slider, Shafts, Front plate, Back plate

12.5.1 Front Plate



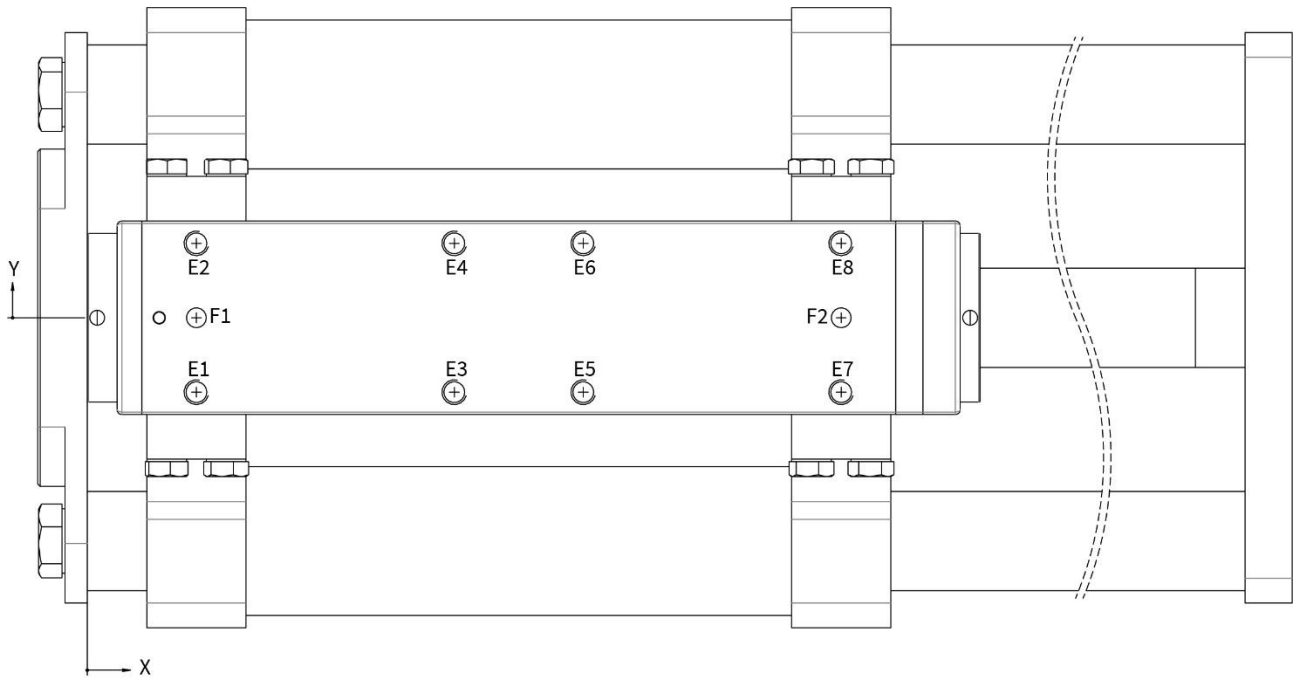
	X-POS.	Y-POS.	
A1	0	6	M6x9.5
A2	0	36	
A3	35	6	
A4	35	36	
A5	70	6	
A6	70	36	
A7	105	6	
A8	105	36	
B1	12.5	6	∅ 5.3x9.5
B2	12.5	36	
B3	82.5	6	
B4	82.5	36	
B5	90.5	6	
B6	90.5	36	
C1	17.5	21	+0.012 ∅ 4 H7 0 x6
C2	87.5	21	

12.5.2 Back Plate



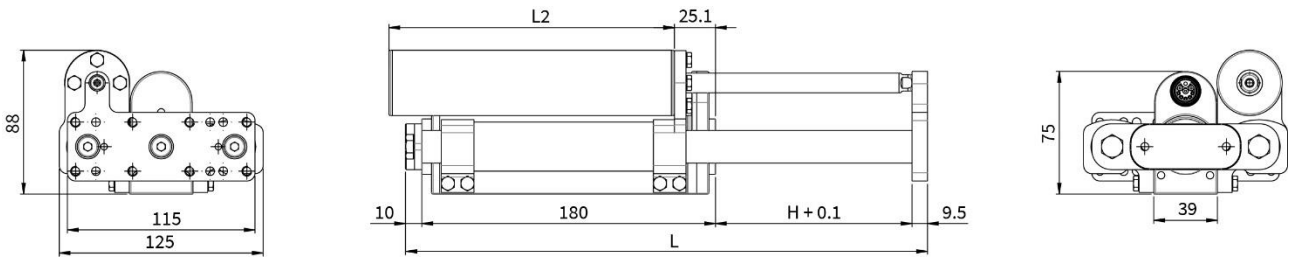
	X-POS.	Y-POS.	
D1	-25	14	M6x10
D2	25	14	

12.5.3 Guide Block



	X-POS.	Y-POS.	
E1	22	-15	M5x7
E2	22	15	
E3	74	-15	
E4	74	15	
E5	100	-15	
E6	100	15	
E7	152	-15	
E8	152	15	
F1	22	0	+0.012 ∅ 4 H7 0 x3
F2	152	0	

12.6 Linear Modules SM01-37Sx120_MSxx_SSCP

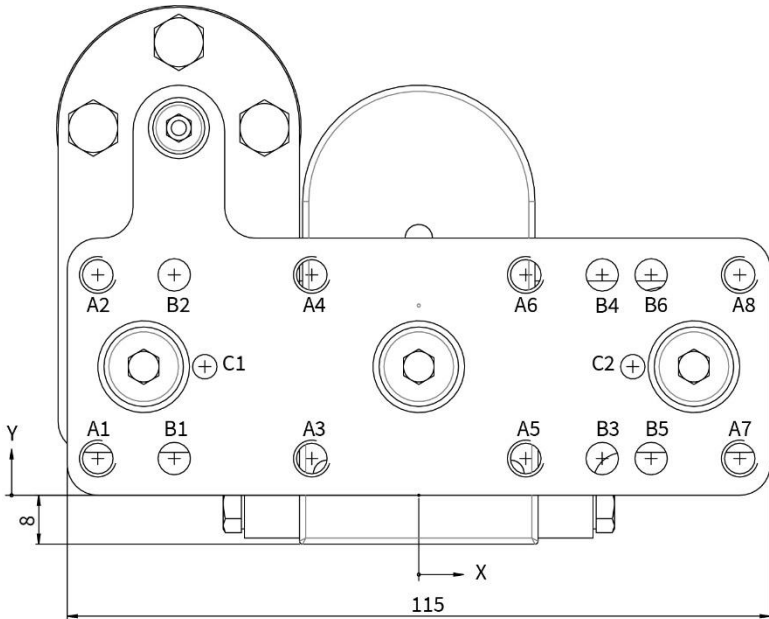


Linear Module with MagSpring SM01-37Sx120F-HP-R...	Stroke H [mm (inch)]		MS Stator Length L2 [mm (inch)]		Carriage Length L [mm (inch)]		Moving Mass ¹⁾ [g (lb)]		Total Mass [g (lb)]	
	...-120_MSxx_SSCP ²⁾	120	(4.72)	175	(6.89)	320	(12.60)	1985	(4.38)	4745
...-220_MSxx_SSCP ²⁾	220	(8.66)	325	(12.8)	420	(16.54)	2535	(5.59)	6115	(13.48)

¹⁾ Mass: Slider, Shafts, Front plate, Back plate, MagSpring slider

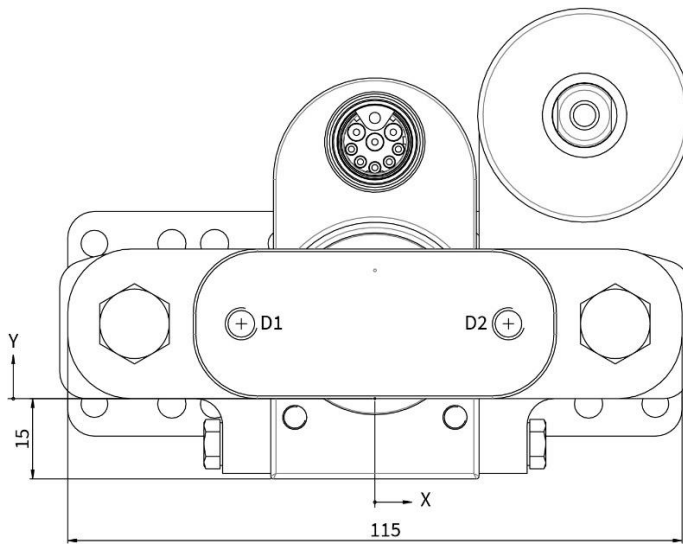
²⁾ MagSpring variants with different constant forces: MS02 (40N); MS03 (50N); MS04 (60N)

12.6.1 Front Plate



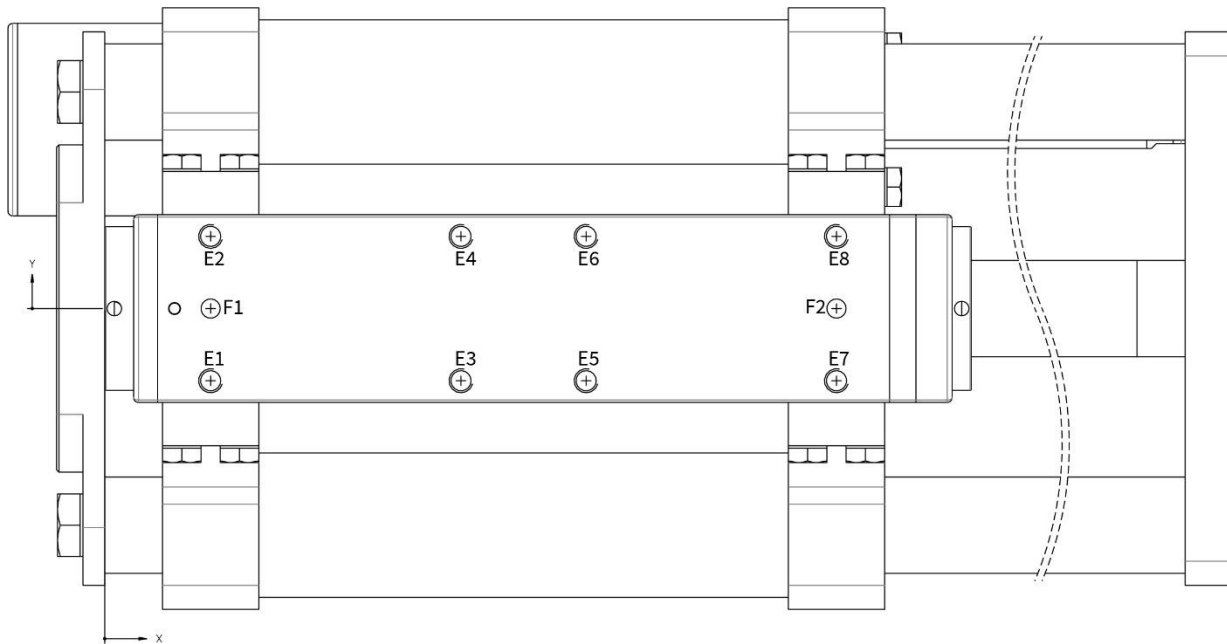
	X-POS.	Y-POS.	
A1	-52.5	6	M6x9.5
A2	-52.5	36	
A3	-17.5	6	
A4	-17.5	36	
A5	17.5	6	
A6	17.5	36	
A7	52.5	6	
A8	52.5	36	
B1	-40	6	Ø 5.3x9.5
B2	-40	36	
B3	30	6	
B4	30	36	
B5	38	6	
B6	38	36	
C1	-35	21	Ø 4 H7 ^{+0.012} 0 x6
C2	35	21	

12.6.2 Back Plate



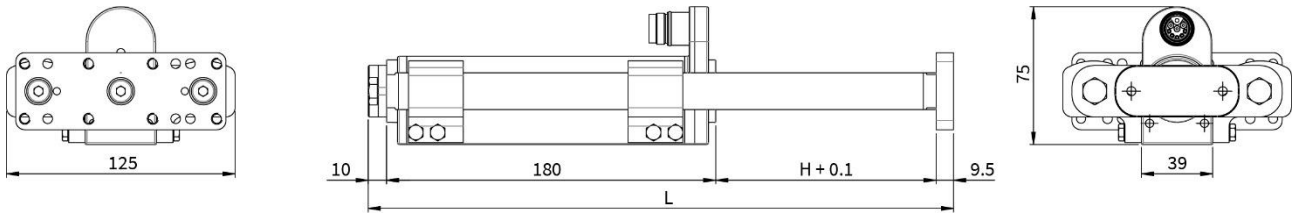
	X-POS.	Y-POS.	
D1	-25	14	M6x10
D2	25	14	

12.6.3 Guide Block



	X-POS.	Y-POS.	
E1	22	-15	M5x7
E2	22	15	
E3	74	-15	
E4	74	15	
E5	100	-15	
E6	100	15	
E7	152	-15	
E8	152	15	
F1	22	0	$\varnothing 4 \text{ H7 } 0^{+0.012} \text{ x3}$
F2	152	0	

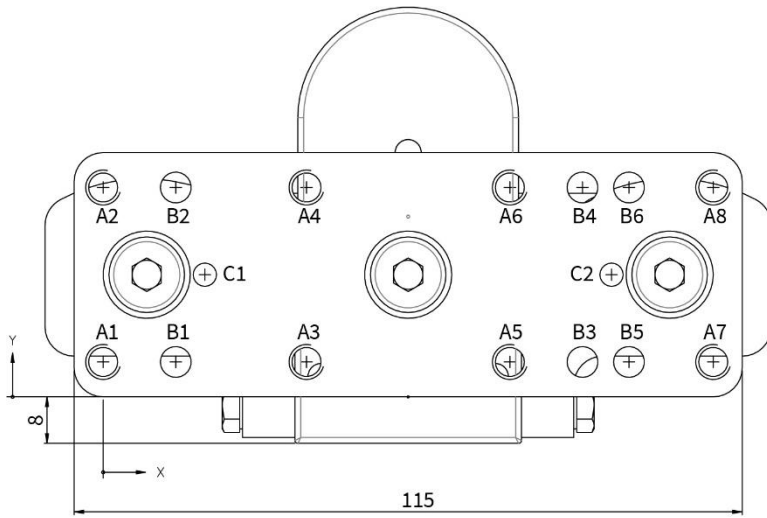
12.7 Linear Modules SM01-37Sx120_BE01_SSCP



Linear Module	Stroke H [mm (inch)]		Carriage Length L [mm (inch)]		Moving Mass ¹⁾ [g (lb)]		Total Mass [g (lb)]	
	mm	inch	mm	inch	g	lb	g	lb
SM01-37Sx120F-HP-R-120_BE01_SSCP	120	(4.72)	320	(12.60)	1831	(4.04)	3917	(8.64)
SM01-37Sx120F-HP-R-220_BE01_SSCP	220	(8.66)	420	(16.54)	2249	(4.96)	4335	(9.56)
SM01-37Sx120F-HP-R-320_BE01_SSCP	320	(12.60)	520	(20.47)	2649	(5.84)	4735	(10.44)

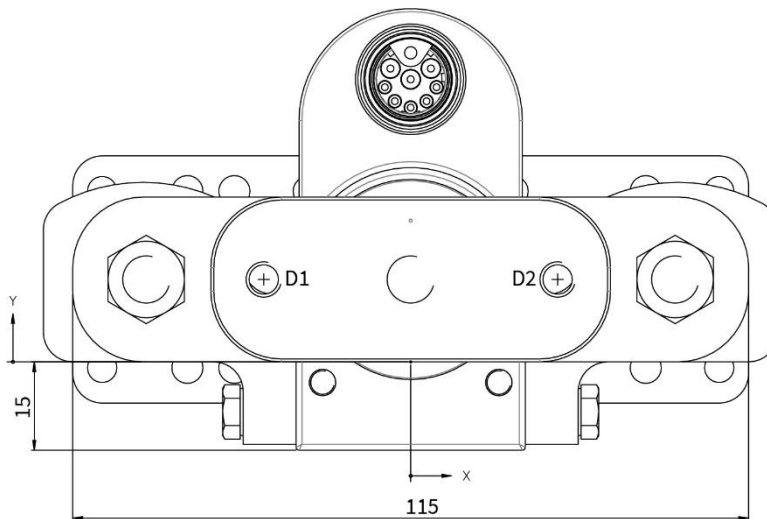
¹⁾ Mass: Slider, Shafts, Front plate, Back plate

12.7.1 Front Plate



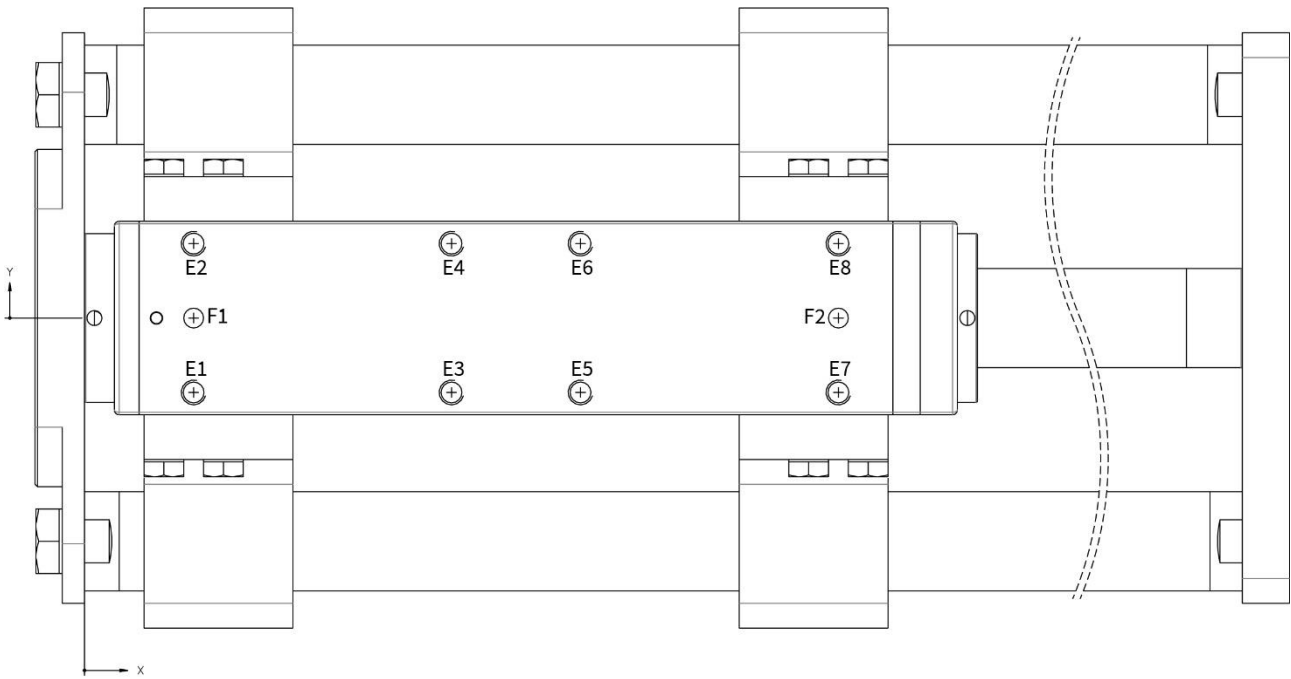
	X-POS.	Y-POS.	
A1	0	6	M6x9.5
A2	0	36	
A3	35	6	
A4	35	36	
A5	70	6	
A6	70	36	
A7	105	6	
A8	105	36	
B1	12.5	6	∅ 5.3x9.5
B2	12.5	36	
B3	82.5	6	
B4	82.5	36	
B5	90.5	6	
B6	90.5	36	
C1	17.5	21	∅ 4 H7 0 x6 +0.012
C2	87.5	21	

12.7.2 Back Plate



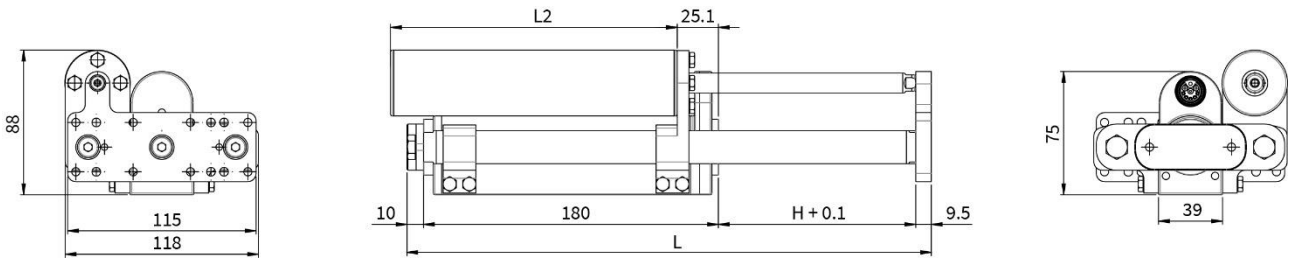
	X-POS.	Y-POS.	
D1	-25	14	M6x10
D2	25	14	

12.7.3 Guide Block



ETIKETT	X-POS.	Y-POS.	GRÖSSE
E1	22	-15	M5x7
E2	22	15	
E3	74	-15	
E4	74	15	
E5	100	-15	
E6	100	15	
E7	152	-15	
E8	152	15	
F1	22	0	+0.012
F2	152	0	∅ 4 H7 0 x3

12.8 Linear Modules SM01-37Sx120_BE01_MSxx_SSCP

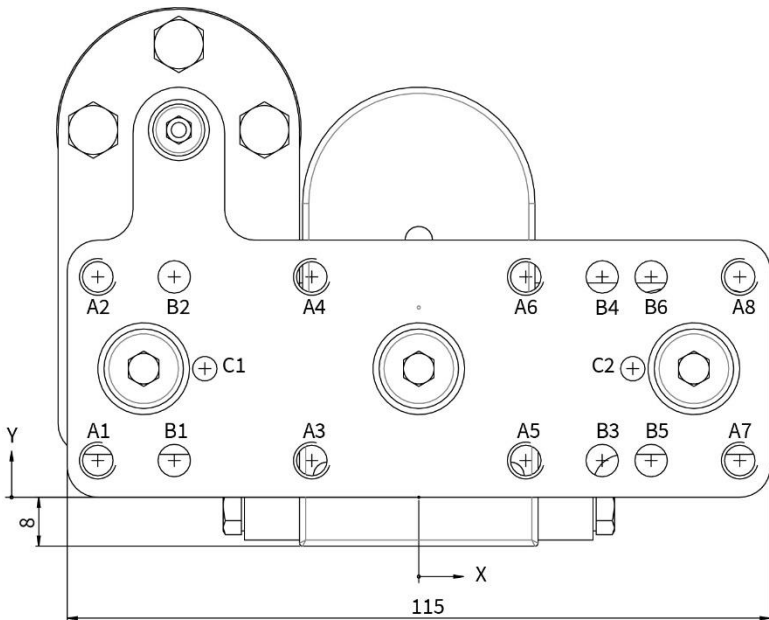


Linear Module with MagSpring SM01-37Sx120F-HP-R...	Stroke H [mm (inch)]		MS Stator Length L2 [mm (inch)]		Carriage Length L [mm (inch)]		Moving Mass ¹⁾ [g (lb)]		Total Mass [g (lb)]	
...-120_BE01_MSxx_SSCP ²⁾	120	(4.72)	175	(6.89)	320	(12.60)	1985	(4.38)	4745	(10.46)
...-220_BE01_MSxx_SSCP ²⁾	220	(8.66)	325	(12.8)	420	(16.54)	2535	(5.59)	6115	(13.48)

¹⁾ Mass: Slider, Shafts, Front plate, Back plate, MagSpring slider

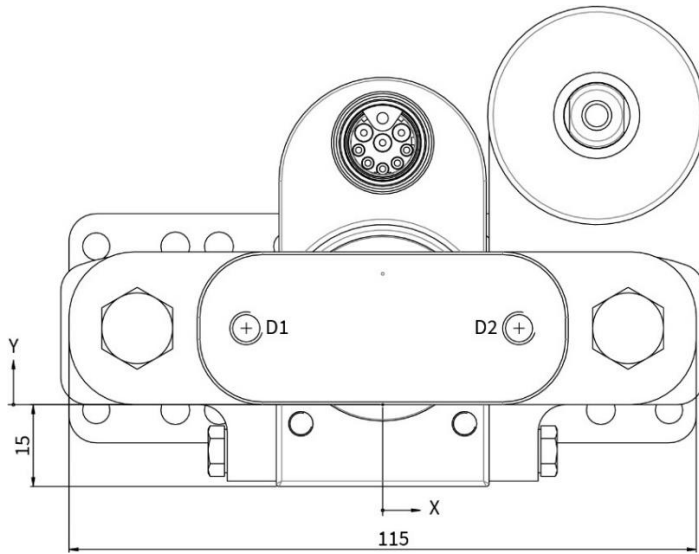
²⁾ MagSpring variants with different constant forces: MS02 (40N); MS03 (50N); MS04 (60N)

12.8.1 Front Plate



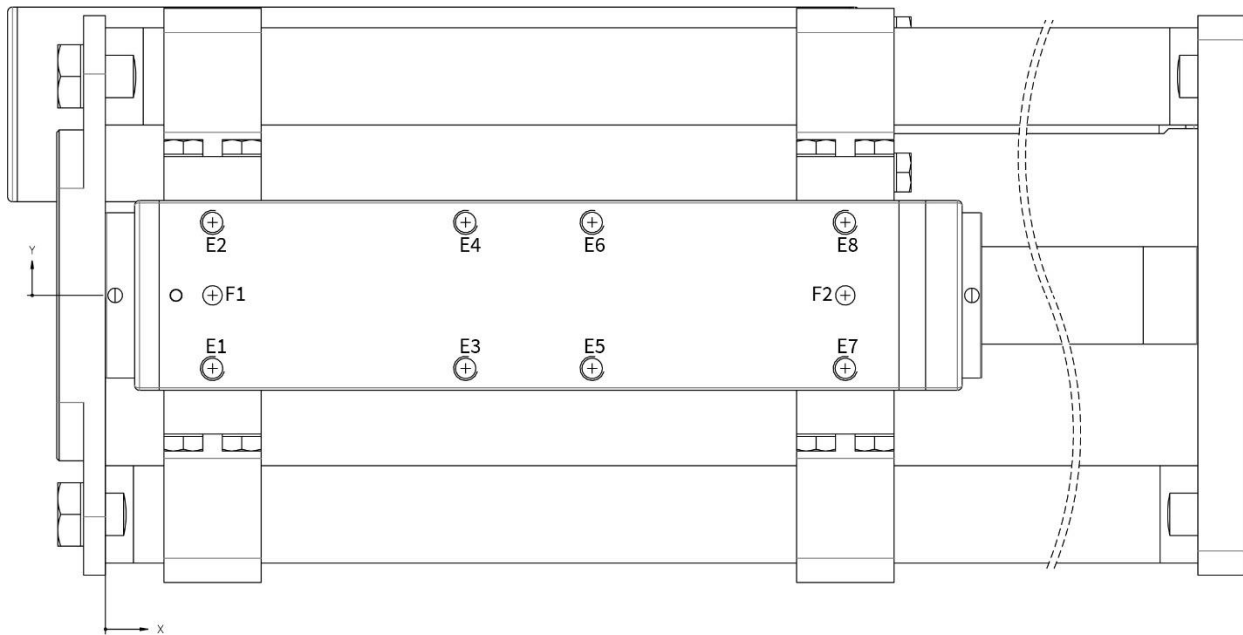
	X-POS.	Y-POS.	
A1	-52.5	6	M6x9.5
A2	-52.5	36	
A3	-17.5	6	
A4	-17.5	36	
A5	17.5	6	
A6	17.5	36	
A7	52.5	6	
A8	52.5	36	
B1	-40	6	Ø 5.3x9.5
B2	-40	36	
B3	30	6	
B4	30	36	
B5	38	6	
B6	38	36	
C1	-35	21	Ø 4 H7 0 ^{+0.012} x6
C2	35	21	

12.8.2 Back Plate



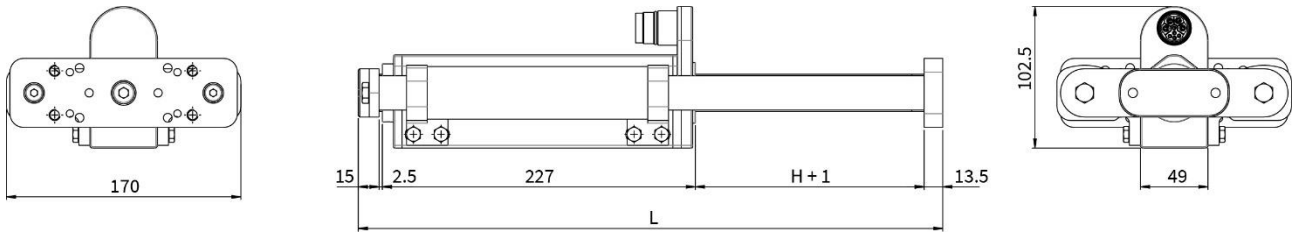
	X-POS.	Y-POS.	
D1	-25	14	M6x10
D2	25	14	

12.8.3 Guide Block



ETIKETT	X-POS.	Y-POS.	GRÖSSE
E1	22	-15	M5x7
E2	22	15	
E3	74	-15	
E4	74	15	
E5	100	-15	
E6	100	15	
E7	152	-15	
E8	152	15	
F1	22	0	∅ 4 H7 0 ^{+0.012} x3
F2	152	0	

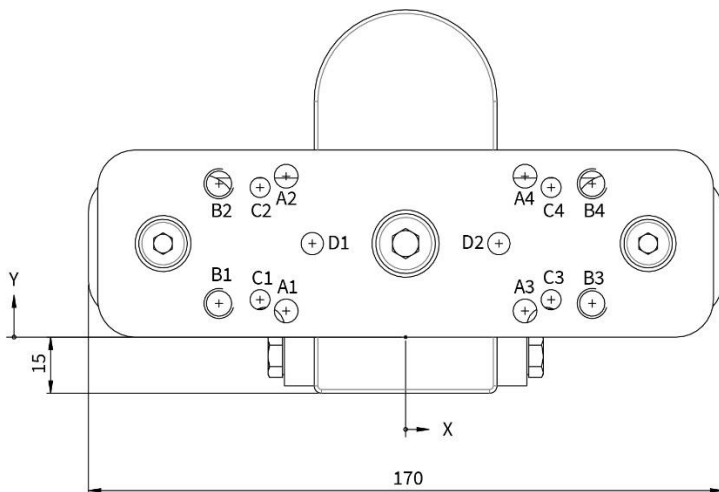
12.9 Linear Modules SM01-48x150_SSCP



Linear Module	Stroke H [mm (inch)]		Carriage Length L [mm (inch)]		Moving Mass ¹⁾ [g (lb)]		Total Mass [g (lb)]	
SM01-48x150G-HP-C-105_SSCP	105	(4.13)	363	(14.29)	4209	(9.28)	8949	(19.73)
SM01-48x150G-HP-C-165_SSCP	165	(6.5)	423	(16.65)	4748	(10.47)	9488	(20.92)
SM01-48x150G-HP-C-255_SSCP	255	(10.04)	513	(20.2)	5565	(12.27)	10305	(22.72)
SM01-48x150G-HP-C-375_SSCP	375	(14.76)	633	(24.92)	6648	(14.66)	11388	(25.11)
SM01-48x150G-HP-C-465_SSCP	465	(18.31)	723	(28.46)	7465	(16.46)	12205	(26.91)
SM01-48x150G-HP-C-555_SSCP	555	(21.85)	813	(32.01)	8274	(18.24)	13014	(28.69)

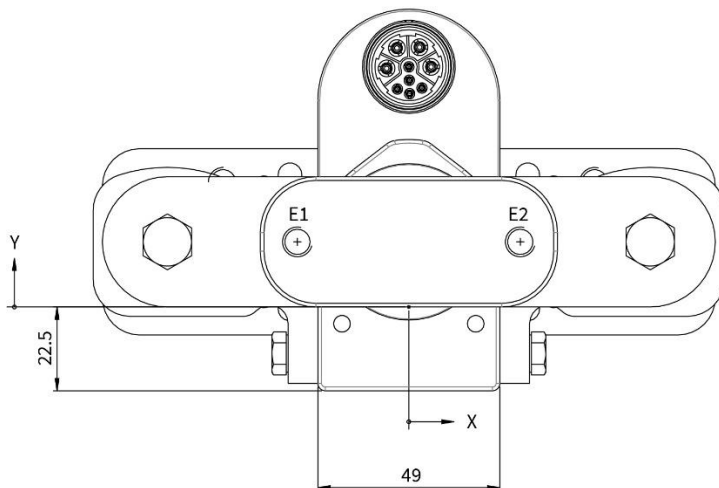
¹⁾ Mass: Slider, Shafts, Front plate, Back plate

12.9.1 Front Plate



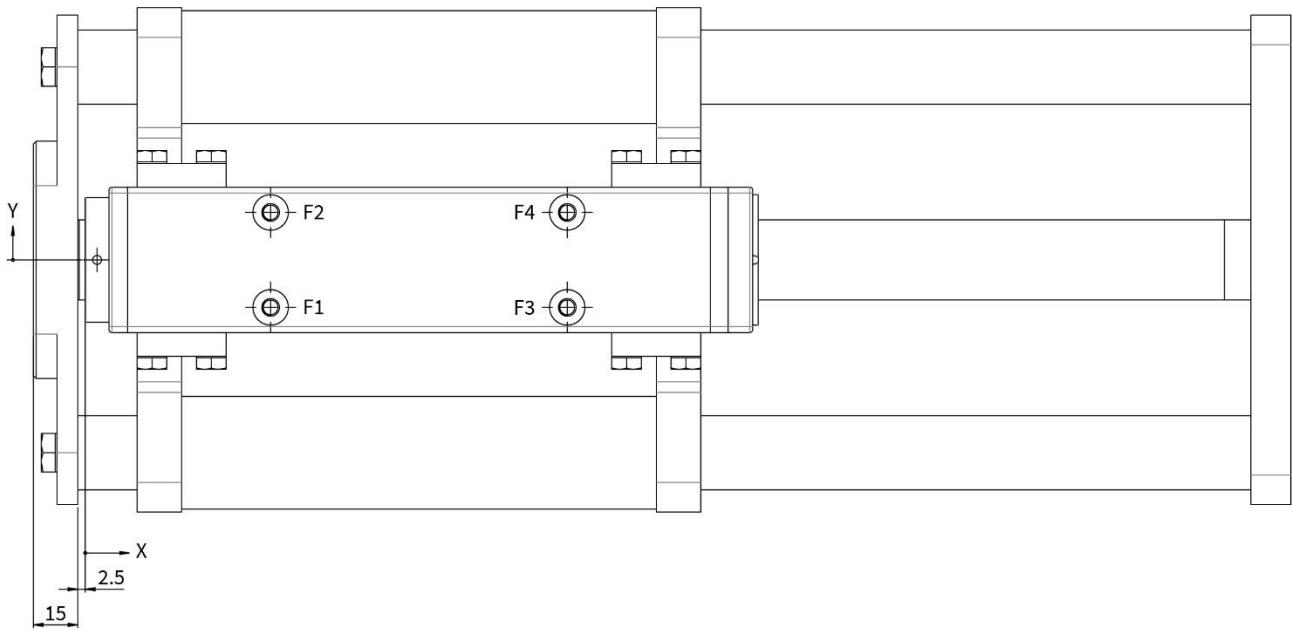
	X-POS.	Y-POS.	
A1	-32	7	∅ 6.4x13.5
A2	-32	43	
A3	32	7	
A4	32	43	
B1	-50	9	M8x13.5
B2	-50	41	
B3	50	9	
B4	50	41	
C1	-39	10	∅ 5.4x13.5
C2	-39	40	
C3	39	10	
C4	39	40	
D1	-25	25	∅ 6 H7 0 x8
D2	25	25	

12.9.2 Back Plate



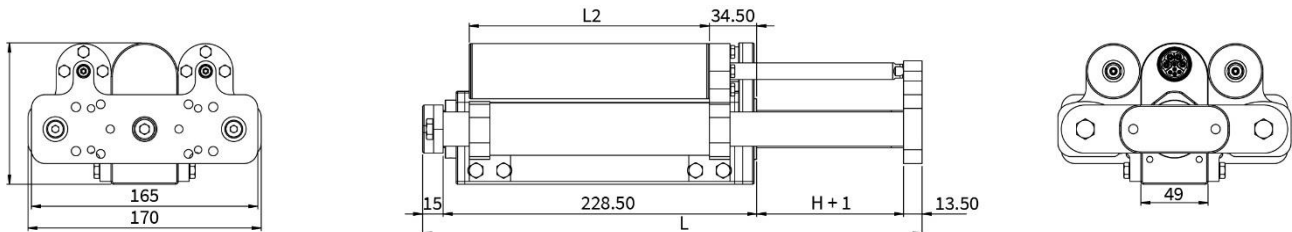
	X-POS.	Y-POS.	
E1	-30	17.50	M8x15
E2	30	17.50	

12.9.3 Guide Block



	X-POS.	Y-POS.	
F1	62.50	-16	M6x12
F2	62.50	16	
F3	162.50	-16	
F4	162.50	16	

12.10 Linearmodule SM01-48x150_MSxx_SSCP

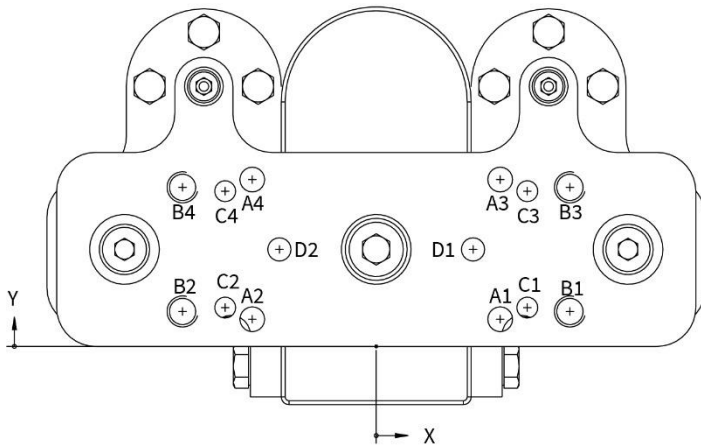


Linear Module with MagSpring SM01-48x150G-HP-C...	Stroke H [mm (inch)]		MS Stator Length L2 [mm (inch)]		Carriage Length L [mm (inch)]		Moving Mass ¹⁾ [g (lb)]		Total Mass [g (lb)]	
...-105_MS08_SSCP ²⁾	105	(4.13)	175	(6.89)	363	(14.29)	4535	(10)	11235	(24.77)
...-165_MS08_SSCP ²⁾	165	(6.5)	250	(9.84)	423	(16.65)	5242	(11.56)	12622	(27.83)

¹⁾ Mass: Slider, Shafts, Front plate, Back plate, MagSpring slider

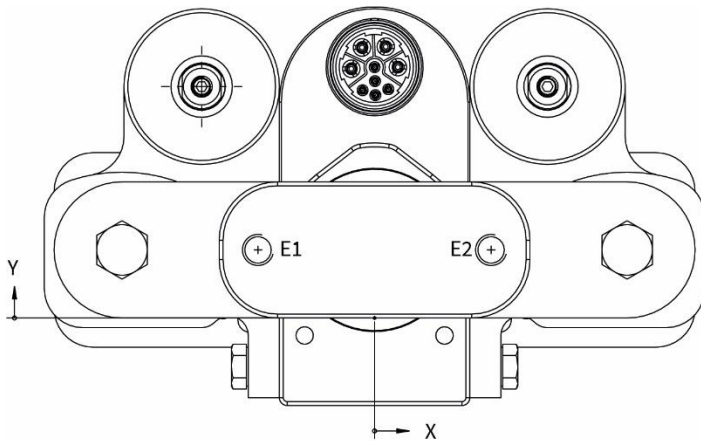
²⁾ MagSpring with constant force MS08 (120N)

12.10.1 Front Plate



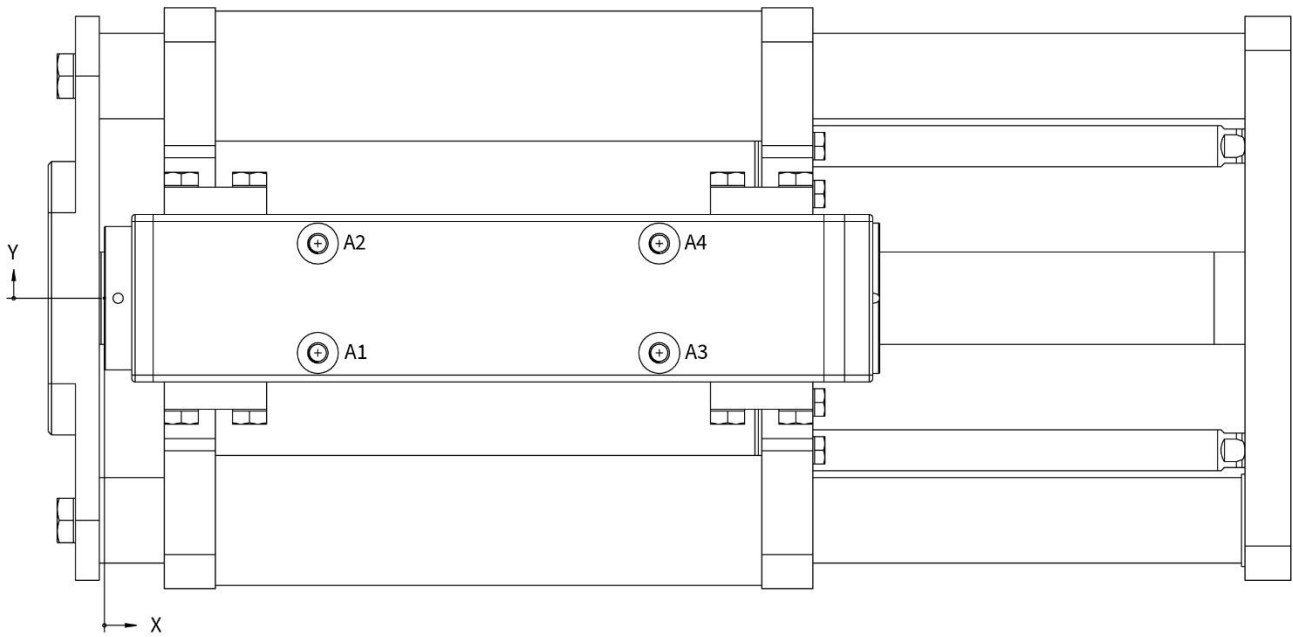
	X-POS.	Y-POS.	
A1	32	7	∅ 6.40x13.5
A2	-32	7	
A3	32	43	
A4	-32	43	
B1	50	9	M8x13.5
B2	-50	9	
B3	50	41	
B4	-50	41	
C1	39	10	∅ 5.40x13.5
C2	-39	10	
C3	39	40	
C4	-39	40	
D1	25	25	∅ 6 H7 ^{+0.012} / ₀ x8
D2	-25	25	

12.10.2 Back Plate



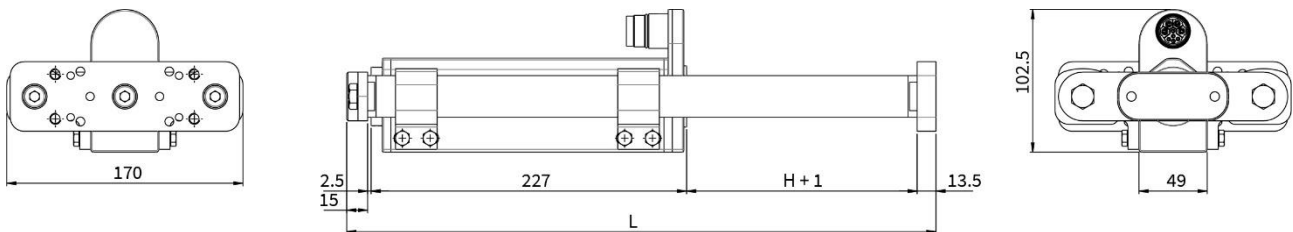
	X-POSITION	Y-POSITION	
E1	-30	17.50	M8x15
E2	30	17.50	

12.10.3 Guide Block



	X-POS.	Y-POS.	
A1	62.50	-16	M6x12
A2	62.50	16	
A3	162.50	-16	
A4	162.50	16	

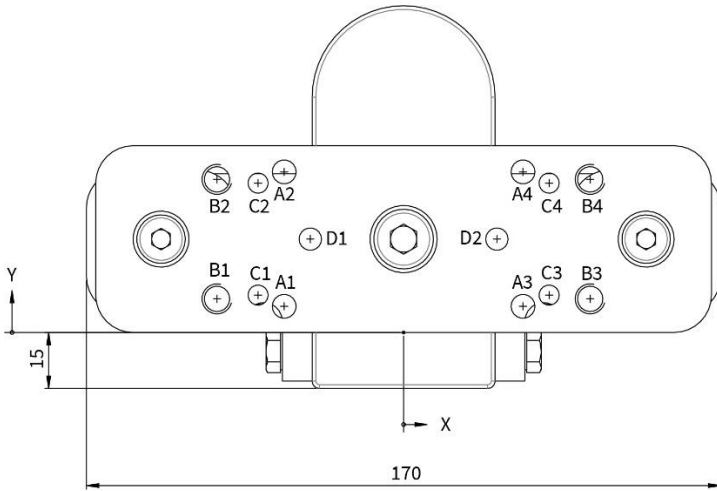
12.11 Linear Modules SM01-48x150_BE01_SSCP



Linear Module	Stroke H [mm (inch)]		Carriage Length L [mm (inch)]		Moving Mass ¹⁾ [g (lb)]		Total Mass [g (lb)]	
	mm	(inch)	mm	(inch)	g	(lb)	g	(lb)
SM01-48x150G-HP-C-105_BE01_SSCP	105	(4.13)	363	(14.29)	4227	(9.32)	8967	(19.77)
SM01-48x150G-HP-C-165_BE01_SSCP	165	(6.5)	423	(16.65)	4794	(10.57)	9534	(21.02)
SM01-48x150G-HP-C-255_BE01_SSCP	255	(10.04)	513	(20.2)	5591	(12.33)	10331	(22.78)
SM01-48x150G-HP-C-375_BE01_SSCP	375	(14.76)	633	(24.92)	6418	(14.15)	11158	(24.6)

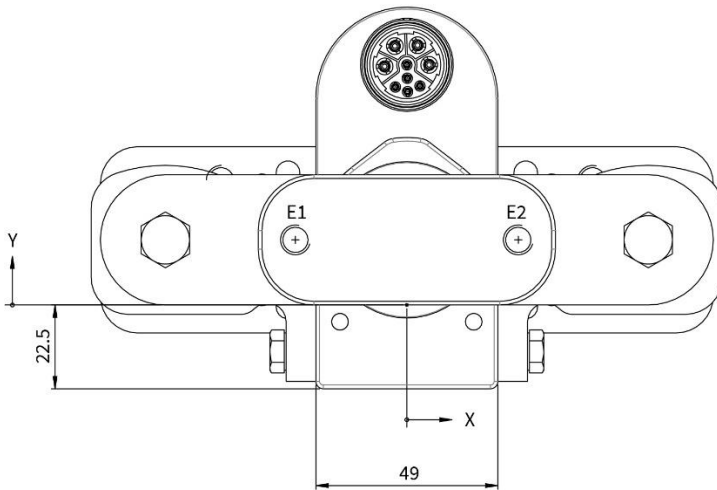
¹⁾ Mass: Slider, Shafts, Front plate, Back plate

12.11.1 Front Plate



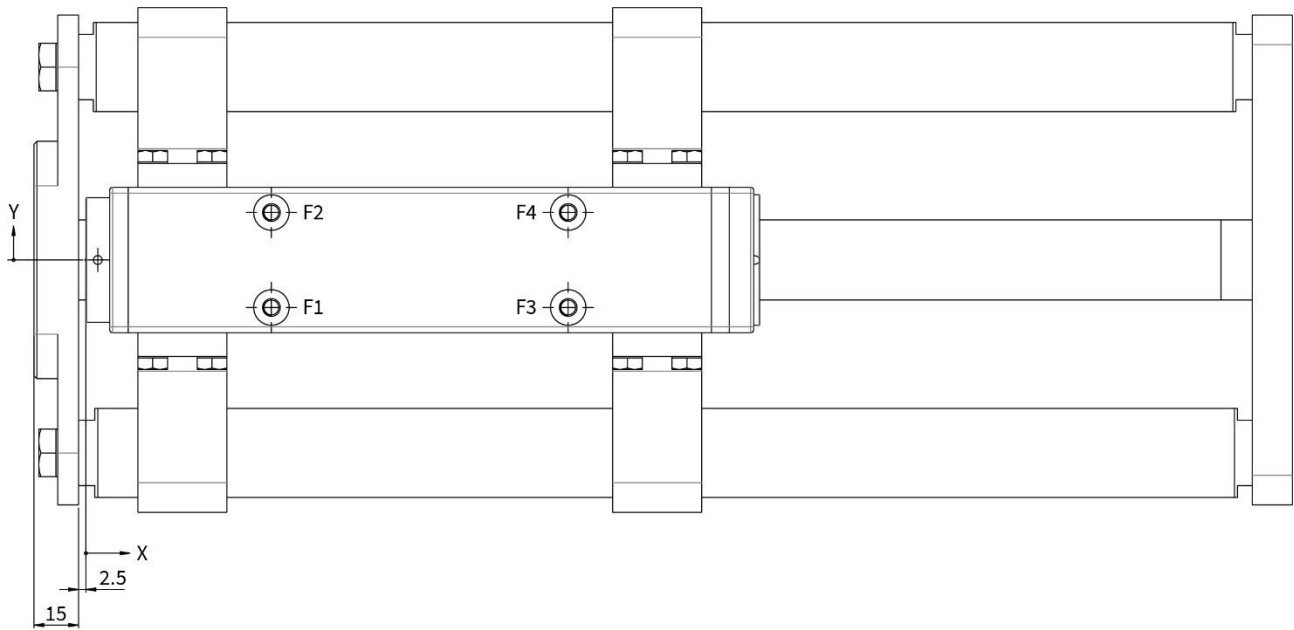
	X-POS.	Y-POS.	
A1	-32	7	∅ 6.4x13.5
A2	-32	43	
A3	32	7	
A4	32	43	
B1	-50	9	M8x13.5
B2	-50	41	
B3	50	9	
B4	50	41	
C1	-39	10	∅ 5.4x13.5
C2	-39	40	
C3	39	10	
C4	39	40	
D1	-25	25	∅ 6 H7 0 x8 +0.012
D2	25	25	

12.11.2 Back Plate



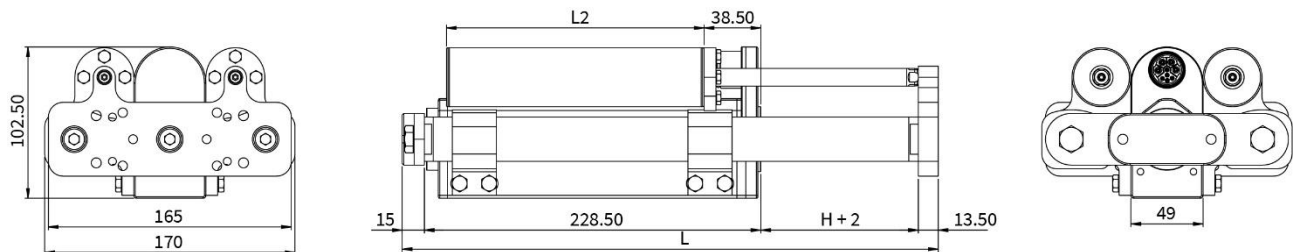
	X-POS.	Y-POS.	
E1	-30	17.50	M8x15
E2	30	17.50	

12.11.3 Guide Block



	X-POS.	Y-POS.	
F1	62.50	-16	M6x12
F2	62.50	16	
F3	162.50	-16	
F4	162.50	16	

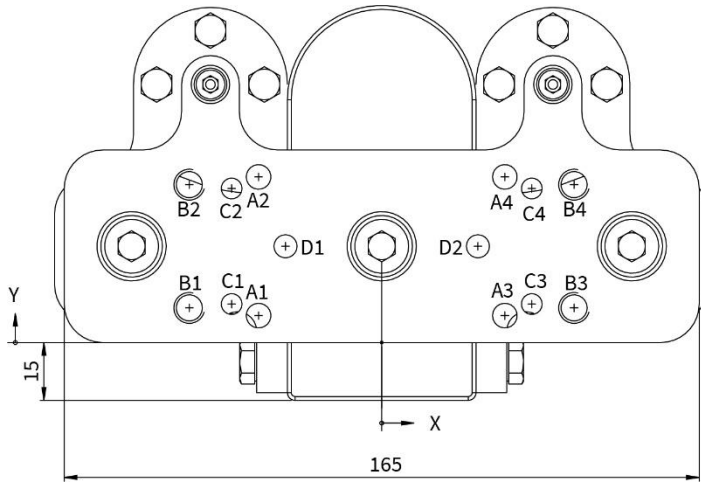
12.12 Linearmodule SM01-48x150_BE01_MSxx_SSCP



Linear Module with MagSpring SM01-48x150G-HP-C...	Stroke H [mm (inch)]		MS Stator Length L2 [mm (inch)]		Carriage Length L [mm (inch)]		Moving Mass ¹⁾ [g (lb)]		Total Mass [g (lb)]	
	...-105_BE01_MS08_SSCP ²⁾	105	(4.13)	175	(6.89)	363	(14.29)	4535	(10)	11235
...-165_BE01_MS08_SSCP ²⁾	165	(6.5)	250	(9.84)	423	(16.65)	5242	(11.56)	12622	(27.83)

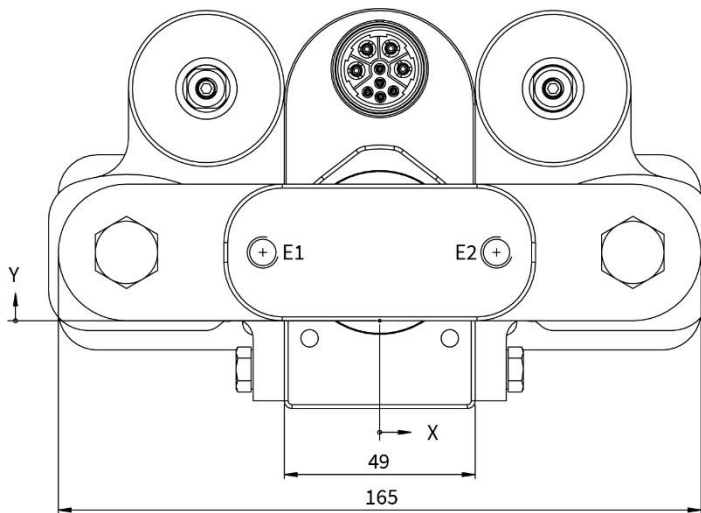
¹⁾ Mass: Slider, Shafts, Front plate, Back plate, MagSpring slider
²⁾ MagSpring with constant force MS08 (120N)

12.12.1 Front Plate



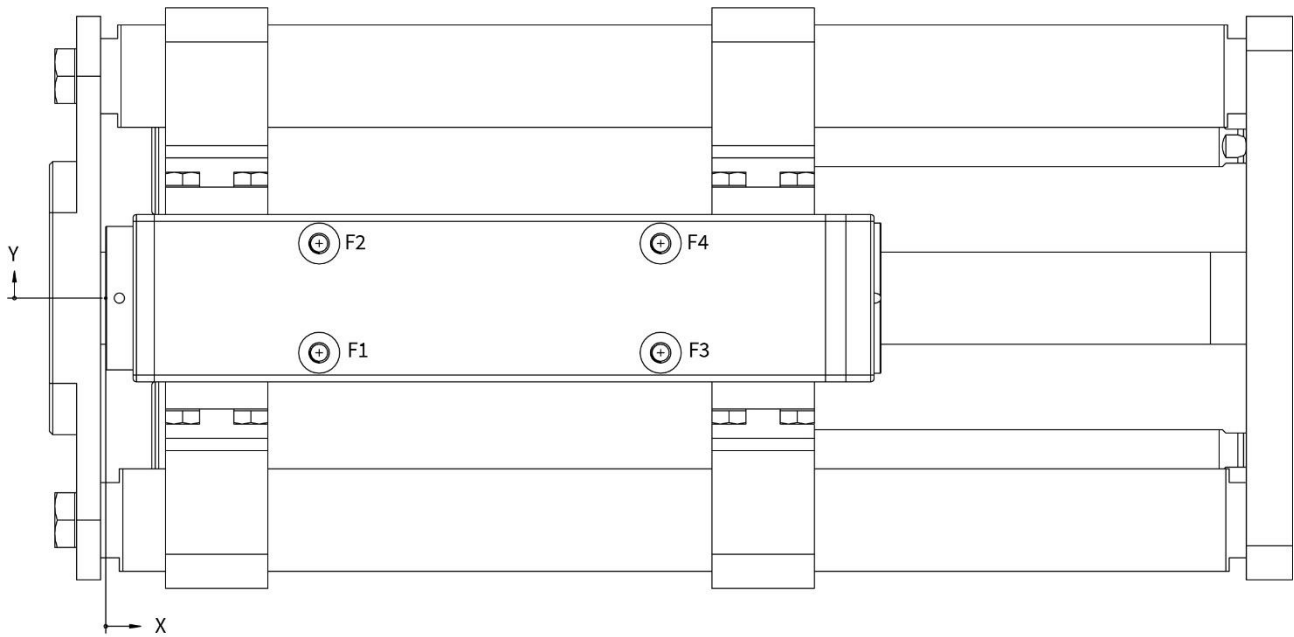
	X-POS.	Y-POS.	
A1	-32	7	Ø 6.40x13.5
A2	-32	43	
A3	32	7	
A4	32	43	
B1	-50	9	M8x13.5
B2	-50	41	
B3	50	9	
B4	50	41	
C1	-39	10	Ø 5.40x13.5
C2	-39	40	
C3	39	10	
C4	39	40	
D1	-25	25	Ø 6 H7 ^{+0.012} / ₀ x8
D2	25	25	

12.12.2 Back Plate



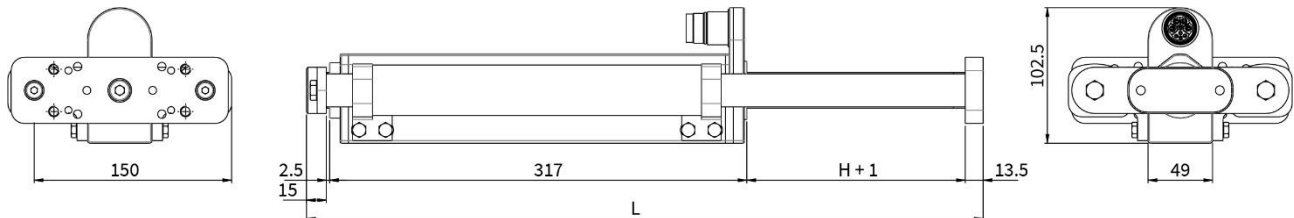
	X-POS.	Y-POS.	
E1	-30	17.50	M8x15
E2	30	17.50	

12.12.3 Guide Block



	X-POS.	Y-POS.	
F1	62.50	-16	M6x12
F2	62.50	16	
F3	162.50	-16	
F4	162.50	16	

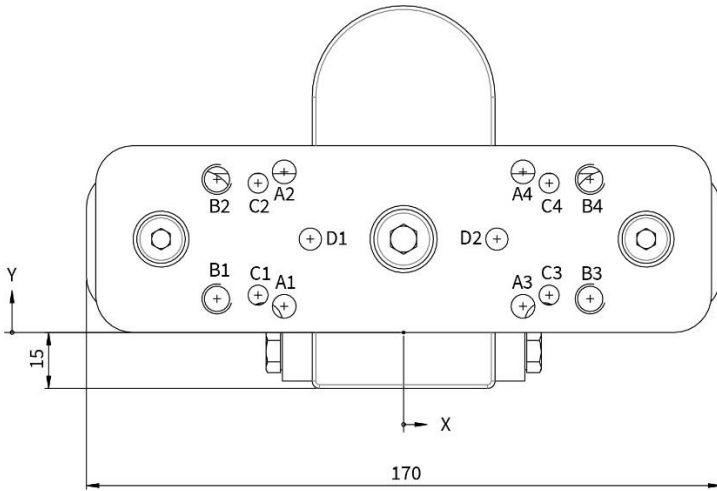
12.13 Linear Modules SM01-48x240_SSCP



Linear Module	Stroke H [mm (inch)]		Carriage Length L [mm (inch)]		Moving Mass ¹⁾ [g (lb)]		Total Mass [g (lb)]	
	mm	(inch)	mm	(inch)	g	(lb)	g	(lb)
SM01-48x240F-HP-C-75_SSCP	75	(2.95)	423	(16.65)	4748	(10.47)	9960	(21.96)
SM01-48x240F-HP-C-165_SSCP	165	(6.5)	513	(20.2)	5565	(12.27)	10777	(23.76)
SM01-48x240F-HP-C-285_SSCP	285	(11.22)	633	(24.92)	6648	(14.66)	11860	(26.15)
SM01-48x240F-HP-C-375_SSCP	375	(14.76)	723	(28.46)	7465	(16.46)	12677	(27.95)
SM01-48x240F-HP-C-465_SSCP	465	(18.31)	813	(32.01)	8274	(18.24)	13486	(29.73)

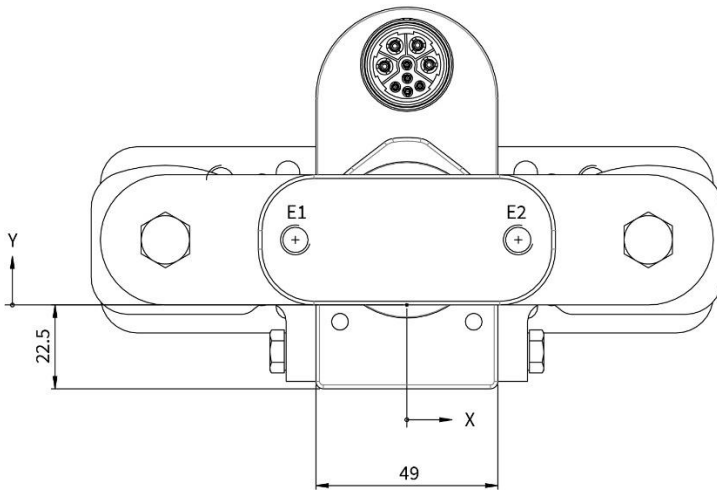
¹⁾ Mass: Slider, Shafts, Front plate, Back plate

12.13.1 Front Plate



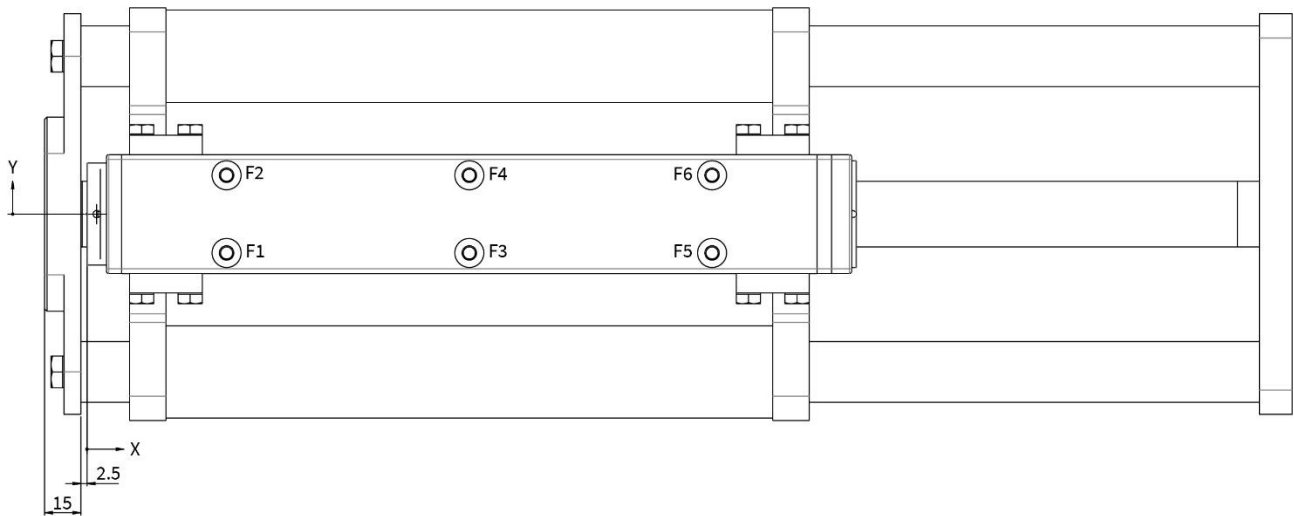
	X-POS.	Y-POS.	
A1	-32	7	∅ 6.4x13.5
A2	-32	43	
A3	32	7	
A4	32	43	
B1	-50	9	M8x13.5
B2	-50	41	
B3	50	9	
B4	50	41	
C1	-39	10	∅ 5.4x13.5
C2	-39	40	
C3	39	10	
C4	39	40	
D1	-25	25	∅ 6 H7 0 x8 +0.012
D2	25	25	

12.13.2 Back Plate



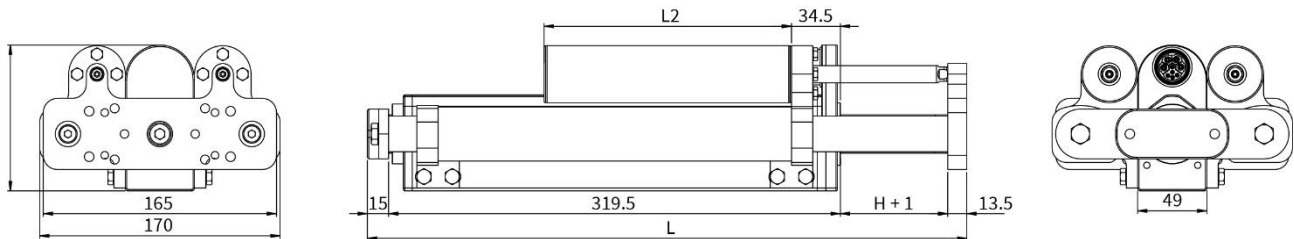
	X-POS.	Y-POS.	
E1	-30	17.50	M8x15
E2	30	17.50	

12.13.3 Guide Block



	X-POS.	Y-POS.	
F1	57.5	-16	M6x12
F2	57.5	16	
F3	157.5	-16	
F4	157.5	16	
F5	257.5	-16	
F6	257.5	16	

12.14 Linearmodule SM01-48x240_MSxx_SSCP

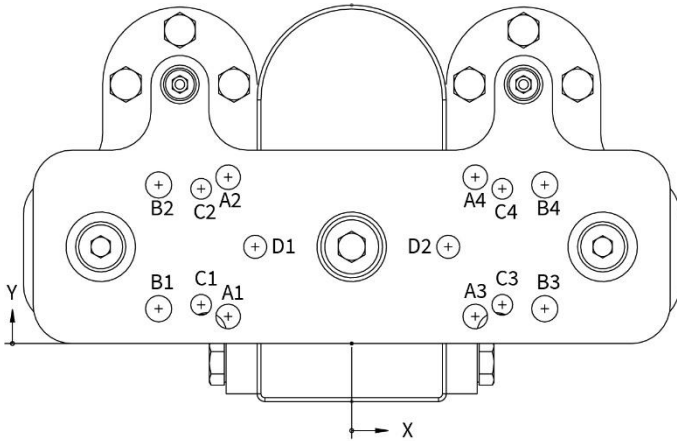


Linear Module with MagSpring SM01-48x240F-HP-C...	Stroke H [mm (inch)]		MS Stator Length L2 [mm (inch)]		Carriage Length L [mm (inch)]		Moving Mass ¹⁾ [g (lb)]		Total Mass [g (lb)]	
...-75_MS08_SSCP ²⁾	75	(2.95)	175	(6.89)	423	(16.65)	5056	(11.15)	13246	(29.2)
...-165_MS08_SSCP ²⁾	165	(6.5)	250	(9.84)	513	(20.2)	6013	(13.26)	14883	(32.81)

¹⁾ Mass: Slider, Shafts, Front plate, Back plate, MagSpring slider

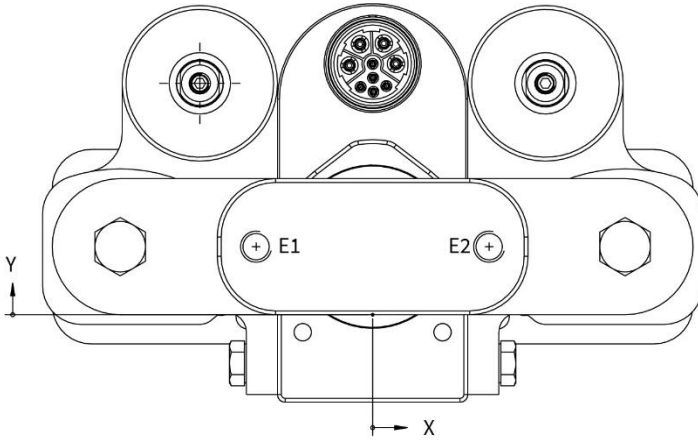
²⁾ MagSpring with constant force MS08 (120N)

12.14.1 Front Plate



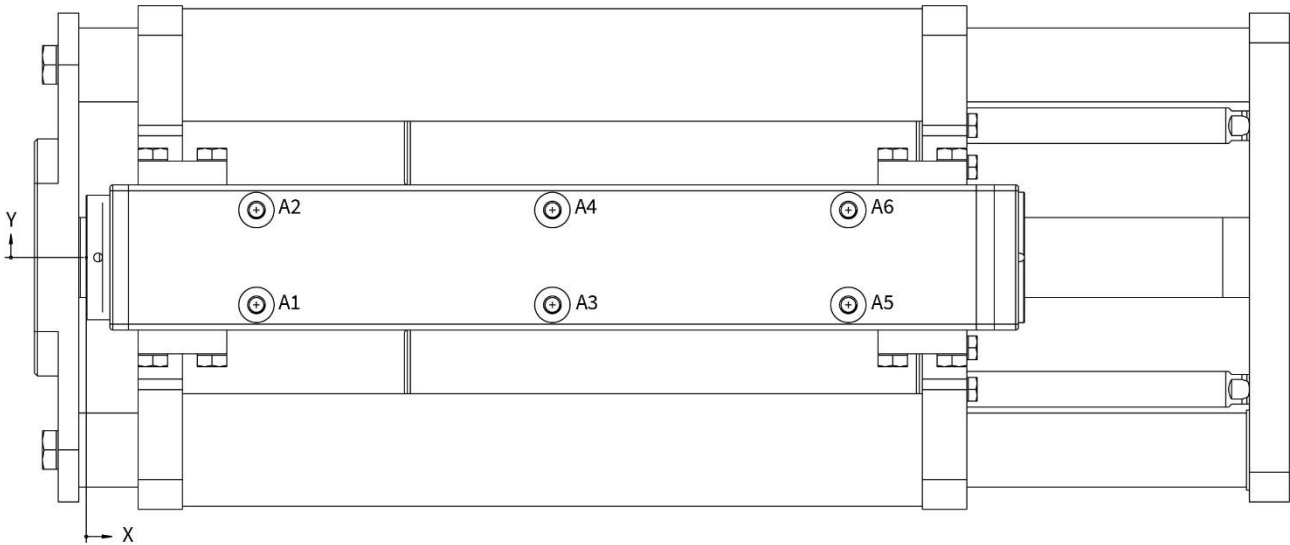
	X-POS.	Y-POS.	
A1	-32	7	∅ 6.4x13.5
A2	-32	43	
A3	32	7	
A4	32	43	
B1	-50	9	M8x13.5
B2	-50	41	
B3	50	9	
B4	50	41	
C1	-39	10	∅ 5.4x13.5
C2	-39	40	
C3	39	10	
C4	39	40	
D1	-25	25	∅ 6 H7 ^{+0.012} / ₀ x8
D2	25	25	

12.14.2 Back Plate



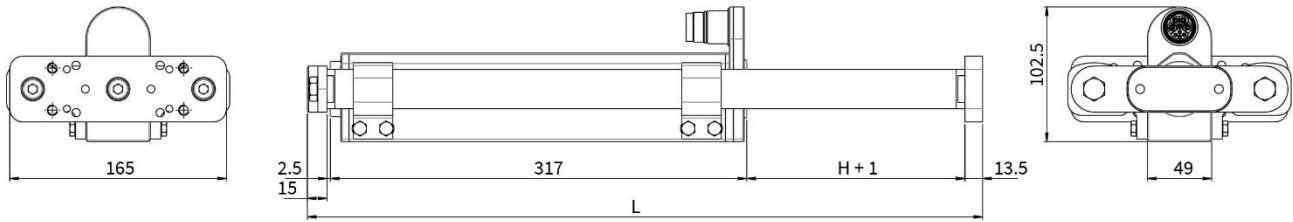
	X-POSITION	Y-POSITION	
E1	-30	17.50	M8x15
E2	30	17.50	

12.14.3 Guide Block



	X-POS.	Y-POS.	
A1	57.50	-16	M6x12
A2	57.50	16	
A3	157.50	-16	
A4	157.50	16	
A5	257.50	-16	
A6	257.50	16	

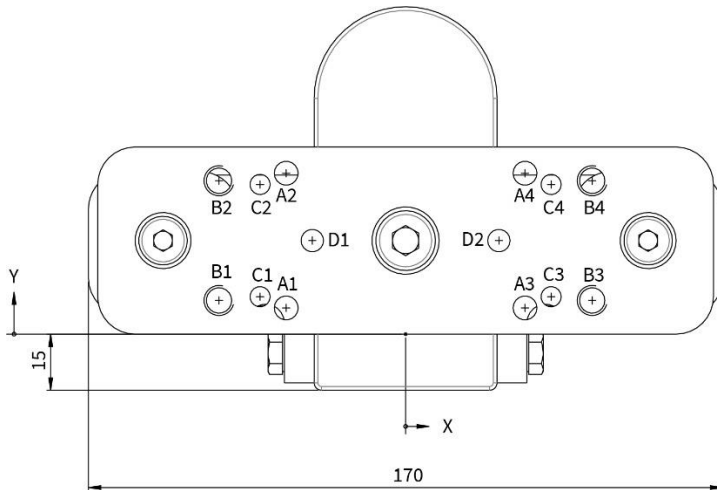
12.15 Linear Modules SM01-48x240_BE01_SSCP



Linear Module	Stroke H [mm (inch)]		Carriage Length L [mm (inch)]		Moving Mass ¹⁾ [g (lb)]		Total Mass [g (lb)]	
SM01-48x240F-HP-C-75_BE01_SSCP	75	(2.95)	423	(16.65)	4794	(10.57)	1000	(22.06)
SM01-48x240F-HP-C-165_BE01_SSCP	165	(6.5)	513	(20.2)	5591	(12.33)	1080	(23.82)
SM01-48x240F-HP-C-285_BE01_SSCP	285	(11.22)	633	(24.92)	6418	(14.15)	1163	(25.64)
SM01-48x240F-HP-C-375_BE01_SSCP	375	(14.76)	723	(28.46)	7111	(15.68)	1232	(27.17)

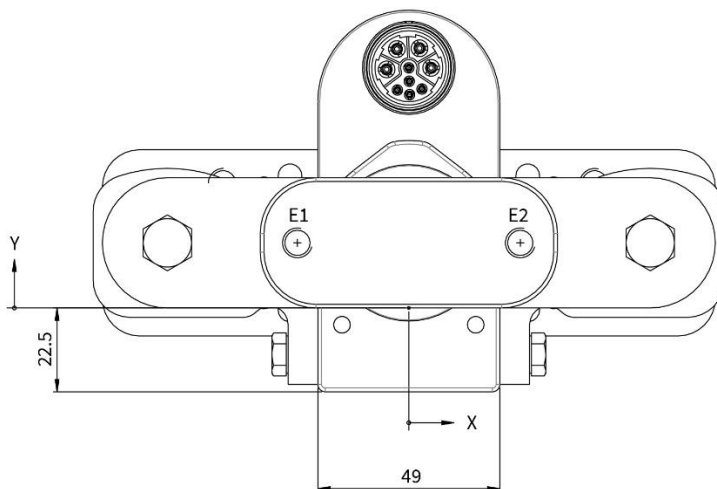
¹⁾ Mass: Slider, Shafts, Front plate, Back plate

12.15.1 Front Plate



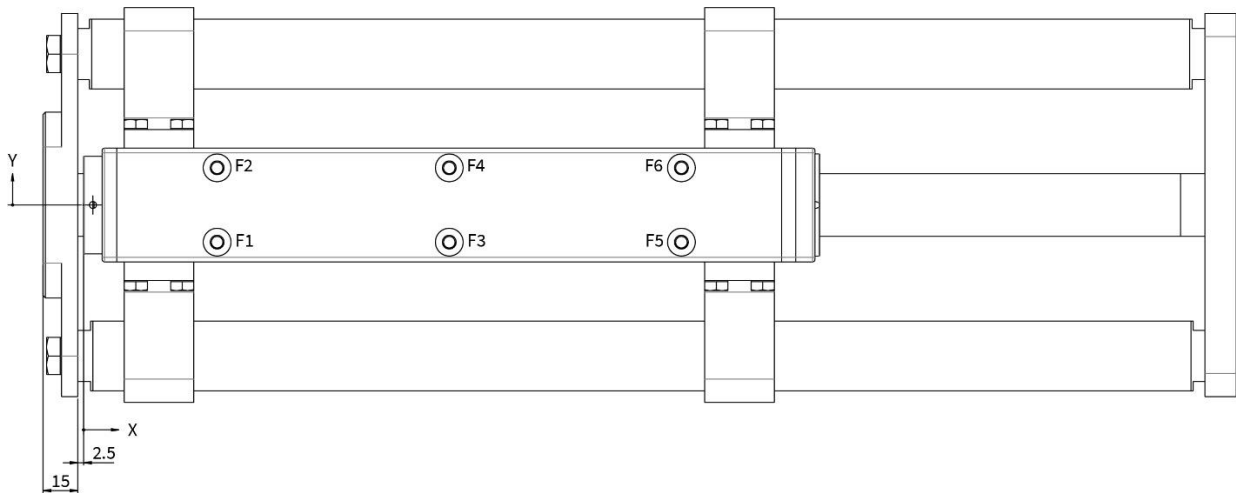
	X-POS.	Y-POS.	
A1	-32	7	∅ 6.4x13.5
A2	-32	43	
A3	32	7	
A4	32	43	
B1	-50	9	M8x13.5
B2	-50	41	
B3	50	9	
B4	50	41	
C1	-39	10	∅ 5.4x13.5
C2	-39	40	
C3	39	10	
C4	39	40	
D1	-25	25	∅ 6 H7 0 ^{+0.012} x8
D2	25	25	

12.15.2 Back Plate



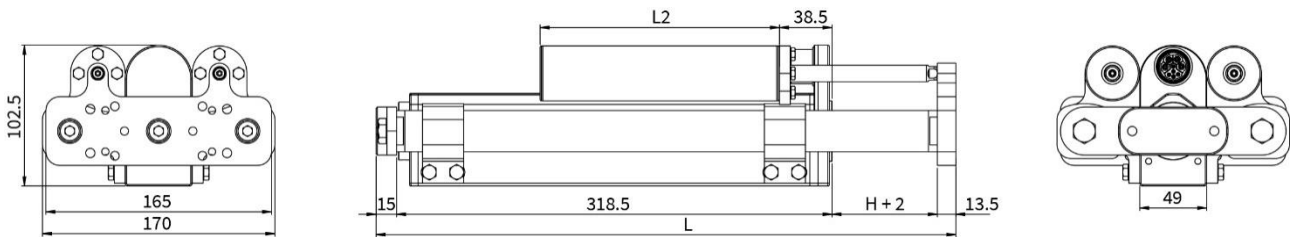
	X-POS.	Y-POS.	
E1	-30	17.50	M8x15
E2	30	17.50	

12.15.3 Guide Block



	X-POS.	Y-POS.	
F1	57.5	-16	M6x12
F2	57.5	16	
F3	157.5	-16	
F4	157.5	16	
F5	257.5	-16	
F6	257.5	16	

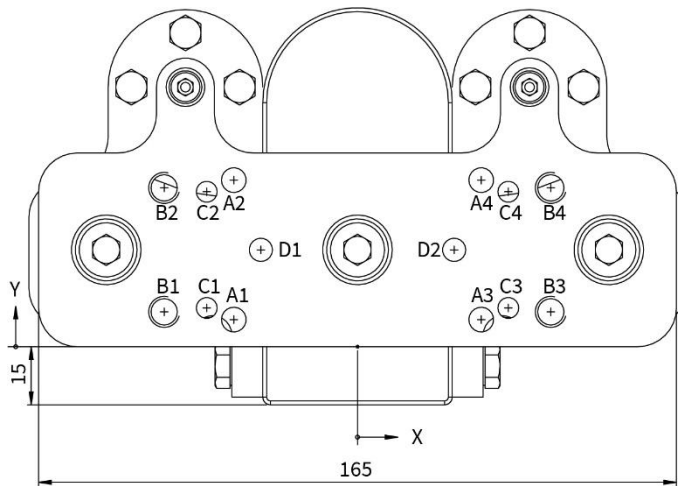
12.16 Linearmodule SM01-48x240_BE01_MSxx_SSCP



Linear Module with MagSpring SM01-48x240F-HP-C...	Stroke H [mm (inch)]		MS Stator Length L2 [mm (inch)]		Carriage Length L [mm (inch)]		Moving Mass ¹⁾ [g (lb)]		Total Mass [g (lb)]	
	...-75_BE01_MS08_SSCP ²⁾	75	(2.95)	175	(6.89)	423	(16.65)	5102	(11.25)	13292
...-165_BE01_MS08_SSCP ²⁾	165	(6.5)	250	(9.84)	513	(20.2)	6039	(13.31)	14909	(32.87)

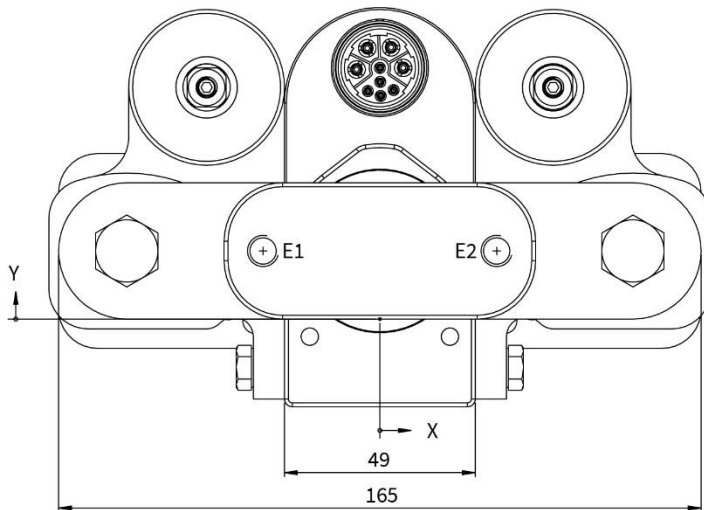
¹⁾ Mass: Slider, Shafts, Front plate, Back plate, MagSpring slider
²⁾ MagSpring with constant force MS08 (120N)

12.16.1 Front Plate



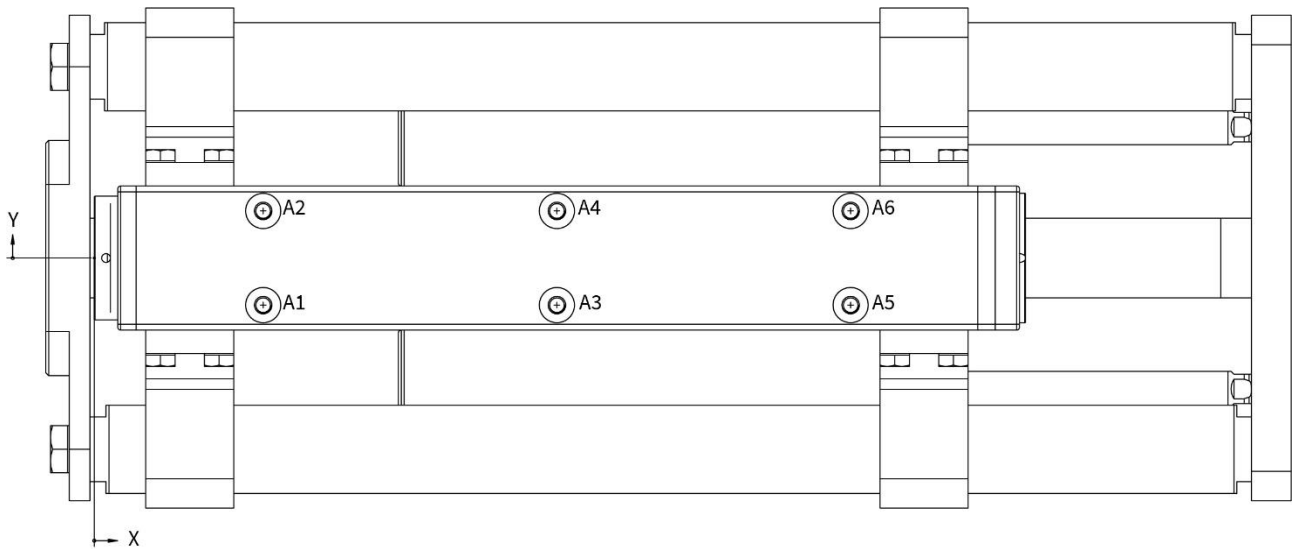
	X-POS.	Y-POS.	
A1	-32	7	∅ 6.4x13.5
A2	-32	43	
A3	32	7	
A4	32	43	
B1	-50	9	M8x13.5
B2	-50	41	
B3	50	9	
B4	50	41	
C1	-39	10	∅ 5.4x13.5
C2	-39	40	
C3	39	10	
C4	39	40	
D1	-25	25	∅ 6 H7 0 ^{+0.012} x8
D2	25	25	

12.16.2 Back Plate






	X-POS.	Y-POS.	
E1	-30	17.50	M8x15
E2	30	17.50	

12.16.3 Guide Block



	X-POS.	Y-POS.	
A1	57.50	-16	M6x12
A2	57.50	16	
A3	157.50	-16	
A4	157.50	16	
A5	257.50	-16	
A6	257.50	16	

13 International Certificates

Europe 	See chapter "EU Declaration of Conformity CE-Marking"
UK 	See chapter "UK Declaration of Conformity UKCA-Marking"
IECEE CB SCHEME	Ref. Certif. Nr. CH-8521
USA / Canada 	File Number E354430 Refers to cURus marked motors



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	
As shown in the Test Report Ref. No. which forms part of this Certificate	EU Group Differences; EU Special National Conditions; EU A-Deviations	
	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



page 1 of 1

CERTIFICATE OF COMPLIANCE

Certificate Number UL-US-2138367-0
Report Reference E354430-20210817
Date 23-Aug-2021

Issued to: NTI AG
Bodenaeckerstr 2 SPREITENBACH
Switzerland 8957

This is to certify that representative samples of NDMM2 - Incomplete Rotating Machines and Rotating Machine Parts - Component
See Addendum Page for Product Designation(s).

Have been investigated by UL in accordance with the component requirements in the Standard(s) indicated on this Certificate. UL Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for installation in complete equipment submitted for investigation to UL LLC.

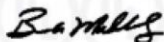
Standard(s) for Safety: UL 1004-1, 2nd Ed., Issue Date: 2012-09-19, Revision Date: 2020-11-05

Additional Information: See the UL Online Certifications Directory at <https://iq.ulprospector.com> for additional information

This *Certificate of Compliance* does not provide authorization to apply the UL Recognized Component Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Recognized Component Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Recognized Component Mark on the product.



Bruce Mahrenholz, Director North American Certification Program

UL LLC

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact a local UL Customer Service Representative at <http://ul.com/aboutul/locations/>




CERTIFICATE OF COMPLIANCE

Certificate Number UL-US-2138367-0
Report Reference E354430-20210817
Date 23-Aug-2021

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements

Model	Category Description
PS01 , PS01, Followed by 2 digits, Followed by "x" or "Sx", Followed by 2 or 3 digits, Followed by "-", "F", "H" or "G", Followed by HP, followed by "B" plus 2 digits, Followed by SSCP, followed by "G" plus 2 digits (optional), followed by R, C, H, M or MF, Followed by 2 or 3 digits (optional), followed by any alphanumeric digit (optional)	Incomplete Motor Parts
SM01 , SM01, Followed by 2 digits, Followed by "x" or "Sx", Followed by 2 or 3 digits, Followed by "-", "F", "H" or "G", Followed by HP, Followed by R, C, H, M or MF, Followed by 2 or 3 digits (Optional), Followed by 2 or 3 digits, Followed by "BE" plus 2 digits (Optional), Followed by "MS" plus 2 digits (Optional), Followed by "EN" plus 2 digits (Optional), Followed by "FS" plus 2 digits (Optional), Followed by "BK" plus 2 digits (Optional), Followed by SSCP, followed by "-" or any alphanumeric digit.	Incomplete Motor Parts
SM02 , SM02, Followed by 2 digits, Followed by "x" or "Sx", Followed by 2 or 3 digits, Followed by "-", "F", "H" or "G", Followed by HP, Followed by R, C, H, M or MF, Followed by 2 or 3 digits (Optional), Followed by 2 or 3 digits, Followed by "BE" plus 2 digits (Optional), Followed by "MS" plus 2 digits (Optional), Followed by "EN" plus 2 digits (Optional), Followed by "FS" plus 2 digits (Optional), Followed by "BK" plus 2 digits (Optional), Followed by SSCP, followed by "-" or any alphanumeric digit.	Incomplete Motor Parts



Bruce Mahrenholz, Director North American Certification Program

UL LLC

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact a local UL Customer Service Representative at <http://ul.com/aboutul/locations/>



CERTIFICATE OF COMPLIANCE

Certificate Number UL-CA-2128754-0
Report Reference E354430-20210817
Date 23-Aug-2021

Issued to: NTI AG
Bodenaeckerstr 2 SPREITENBACH
Switzerland 8957

This is to certify that representative samples of NDMM8 - Incomplete Rotating Machines and Rotating Machine Parts Certified for Canada - Component
See Addendum Page for Product Designation(s).

Have been investigated by UL in accordance with the component requirements in the Standard(s) indicated on this Certificate. UL Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for installation in complete equipment submitted for investigation to UL LLC.

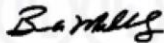
Standard(s) for Safety: CSA C22.2 NO. 100, 7th Ed., Issue Date: 2014-07-01, Revision Date: 2017-04-01

Additional Information: See the UL Online Certifications Directory at <https://iq.ulprospector.com> for additional information

This *Certificate of Compliance* does not provide authorization to apply the UL Recognized Component Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Recognized Component Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Recognized Component Mark on the product.



Bruce Mahrenholz, Director North American Certification Program
UL LLC



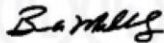
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CERTIFICATE OF COMPLIANCE

Certificate Number UL-CA-2128754-0
Report Reference E354430-20210817
Date 23-Aug-2021

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements

Model	Category Description
PS01 , PS01, Followed by 2 digits, Followed by "x" or "Sx", Followed by 2 or 3 digits, Followed by "-", "F", "H" or "G", Followed by HP, followed by "B" plus 2 digits, Followed by SSCP, followed by "G" plus 2 digits (optional), followed by R, C, H, M or MF, Followed by 2 or 3 digits (optional), followed by any alphanumeric digit (optional)	Incomplete Motor Parts
SM01 , SM01, Followed by 2 digits, Followed by "x" or "Sx", Followed by 2 or 3 digits, Followed by "-", "F", "H" or "G", Followed by HP, Followed by R, C, H, M or MF, Followed by 2 or 3 digits (Optional), Followed by 2 or 3 digits, Followed by "BE" plus 2 digits (Optional), Followed by "MS" plus 2 digits (Optional), Followed by "EN" plus 2 digits (Optional), Followed by "FS" plus 2 digits (Optional), Followed by "BK" plus 2 digits (Optional), Followed by SSCP, followed by "-" or any alphanumeric digit.	Incomplete Motor Parts
SM02 , SM02, Followed by 2 digits, Followed by "x" or "Sx", Followed by 2 or 3 digits, Followed by "-", "F", "H" or "G", Followed by HP, Followed by R, C, H, M or MF, Followed by 2 or 3 digits (Optional), Followed by 2 or 3 digits, Followed by "BE" plus 2 digits (Optional), Followed by "MS" plus 2 digits (Optional), Followed by "EN" plus 2 digits (Optional), Followed by "FS" plus 2 digits (Optional), Followed by "BK" plus 2 digits (Optional), Followed by SSCP, followed by "-" or any alphanumeric digit.	Incomplete Motor Parts



Bruce Mahrenholz, Director North American Certification Program

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14 EU Declaration of Conformity CE-Marking

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declares under sole responsibility the compliance of the products:

- Linear Modules of the Series **SM01**

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, 06.02.2024



Dr.-Ing. Ronald Rohner
CEO NTI AG

15 UK Declaration of Conformity UKCA-Marking

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declares under sole responsibility the compliance of the products:

- Linear Modules of the Series **SM01**

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

Applied designated 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 regulation, the listed devices are not independently operable products.

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The safety instructions of the manuals are to be considered.

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Company: NTI AG
Spreitenbach, 06.02.2024



Dr.-Ing. Ronald Rohner
CEO NTI AG

ALL LINEAR MOTION FROM A SINGLE SOURCE

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