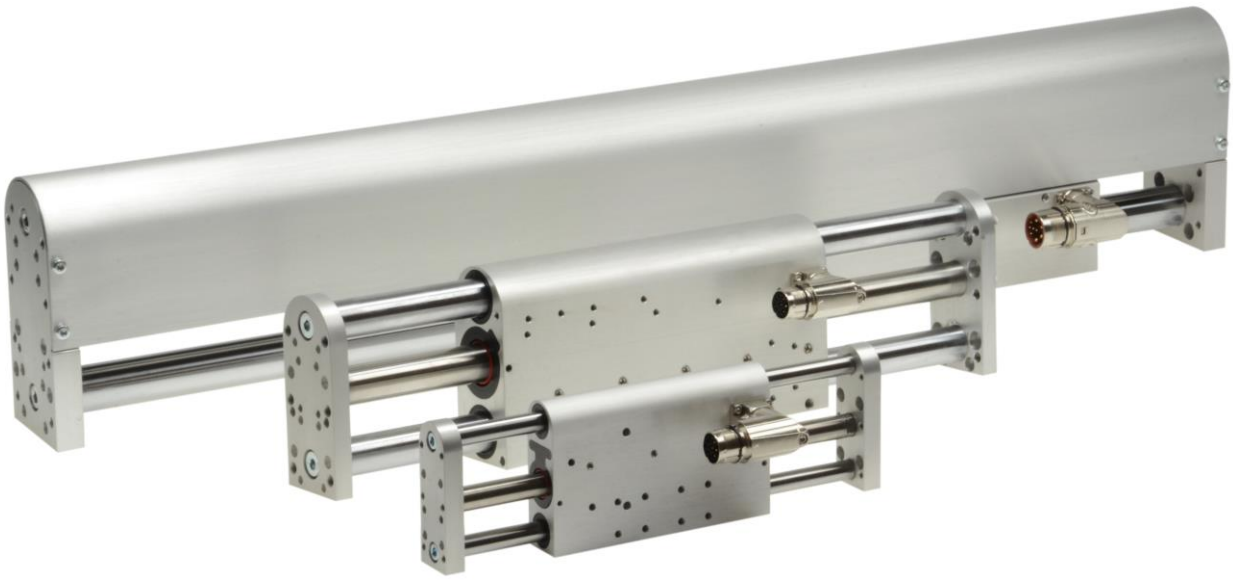
LinMot®

Installation Guide
Linear Modules

ENG

DM01-23 / 37 / 48



Content

1 General Information

1.1 Introduction

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

1.5 Copyright

2 Safety Instructions

Contusions
Sliders contain neodynium 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 cricumstances!
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.

2S Stators
Series 2S stators correspond mechanically to the respective standard stators and are to be handled in exactly the same way in terms of assembly.
For special features, please refer to the safety manual (Item-No. 0185-1174).

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 Installation Instructions

3.1 Operating Conditions

- The ambient temperature limit is enclosed: -10 °C...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.

3.2 Installation Options

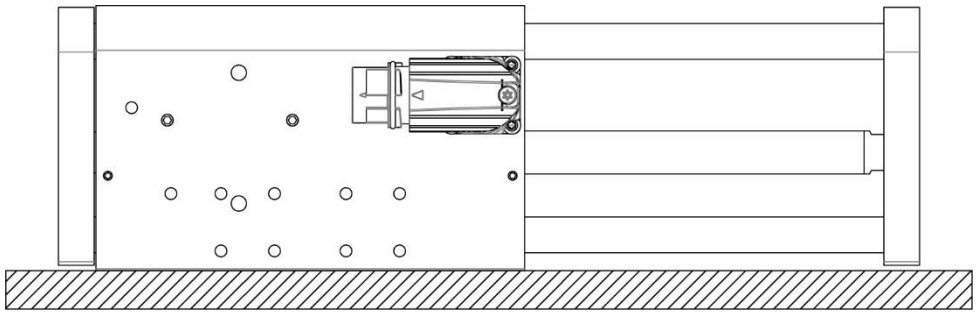
Always observe the safety instructions in chapter 2 during installation!

3.2.1 DM01-23x80 / DM01-23x160

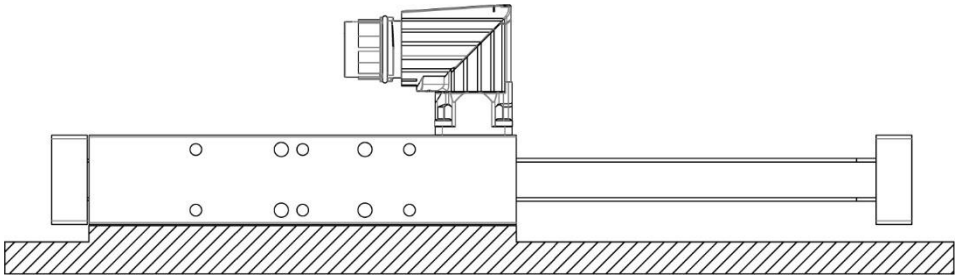
For easy mounting of the linear module, the guide block is provided with fits for cylindrical pins, through holes and threaded holes. The exact positions are given in chapter 11.

The linear module can be mounted in 2 ways. Standing on the lower mounting surface using the tapped holes and fits provided or lying on the side mounting surface using the through holes provided.

Mounted on lower mounting surface



Mounted on side mounting surface



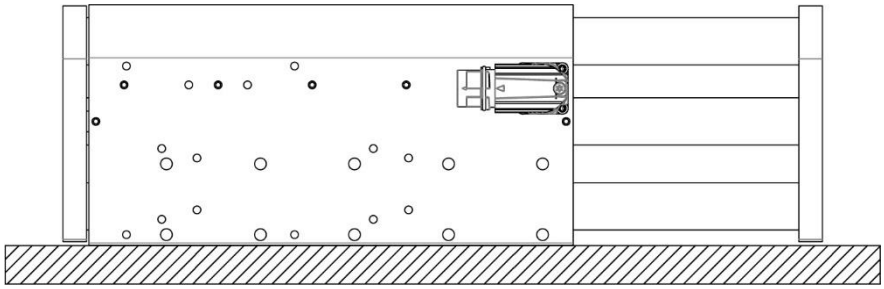
Additional threaded holes on the side face of the guide block are available to the user for attaching an additional component or for implementing a portal.

The DM01-23x80 linear module with MagSpring® vertical load compensation can only be mounted on the lower mounting surface.

3.2.2 DM01-37x120

For easy mounting of the linear module, the guide block is provided with fits for cylindrical pins and threaded holes. The exact positions are given in chapter 11.
The linear module is mounted upright on the lower mounting surface using the tapped holes and fits provided.
Additional tapped holes on the side face of the guide block are available to the user for mounting an additional component or for implementing a gantry.

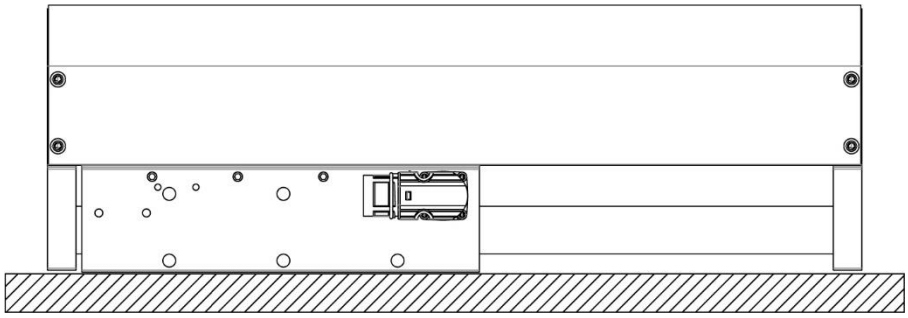
Mounted on lower mounting surface



3.2.3 DM01-48x150

For easy mounting of the linear module, the guide block is provided with fits for cylindrical pins and threaded holes. The exact positions are given in chapter 11.
The linear module is mounted upright on the lower mounting surface using the tapped holes and fits provided.
Additional tapped holes on the side face of the guide block are available to the user for mounting an additional component or for implementing a gantry.

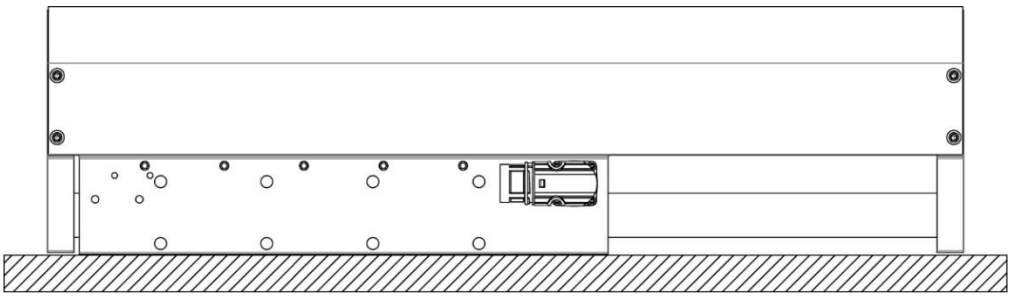
Mounted on lower mounting surface



3.2.4 DM01-48x240

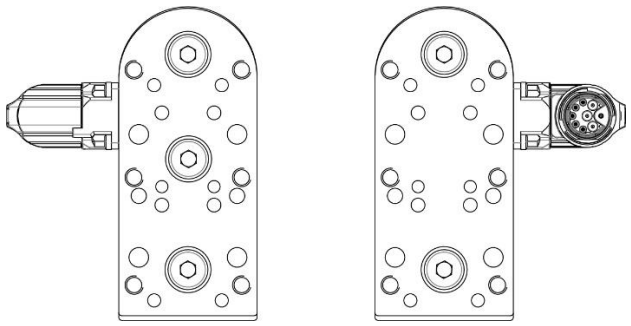
For easy mounting of the linear module, the guide block is provided with fits for cylindrical pins and threaded holes. The exact positions are given in chapter 11.
The linear module is mounted upright on the lower mounting surface using the tapped holes and fits provided.
Additional tapped holes on the side face of the guide block are available to the user for mounting an additional component or for implementing a gantry.

Mounted on lower mounting surface



3.2.5 Mounting the Load

The linear modules have a mounting plate at the front and rear for mounting the load. The slider of the linear module is screwed to the front mounting plate. At the rear mounting plate, the slider is inserted without screw connection. Both mounting plates are listed below as examples.



Front mounting plate Rear mounting plate

The front and rear mounting plates must not be interchanged!

As far as the application permits, the load must be attached to the front mounting plate, as the direct force is applied by the motor.
The mounting plate is provided with several threaded holes and fits for dowel pins.
The hole pattern for fastening the load is identical between the front mounting plate and the rear mounting plate. The complete dimensions of the mounting plates as well as the positions and specifications of the threaded holes and fits can be found in chapter 11.
The center of gravity of the mounted load mass should be centred and the load should be placed as close as possible to the mounting plate. This ensures even distribution of the mass and minimizes the maximum load on the LM Guide.

3.3 Material Specifications

Component	Material
Case (For DM01-48)	Anodized Aluminum
Front Mounting Plate	Anodized Aluminum
Rear Mounting Plate	Anodized Aluminum
Guide Shafts	Hardened steel, hard chrome-plated
Brake Shaft	Hardened steel
Guide Block	Anodized Aluminum
Bearing	Linear Ball Bearing
Wiper	H-ECOPUR
MagSpring Flange	Anodized Aluminum
Holding Brake Flange	Anodized Aluminum

3.4 Vertical Load Balancing MagSpring®

In vertical mounting position, linear modules and other direct drives must permanently apply a constant force to counteract the weight force. A magnetic spring, MagSpring®, installed parallel to the linear motor can be used to passively compensate for the weight force. The drive is only used for the actual positioning operation or for applying the dynamic forces and can be dimensioned accordingly smaller.

3.4.1 Installation Arrangement

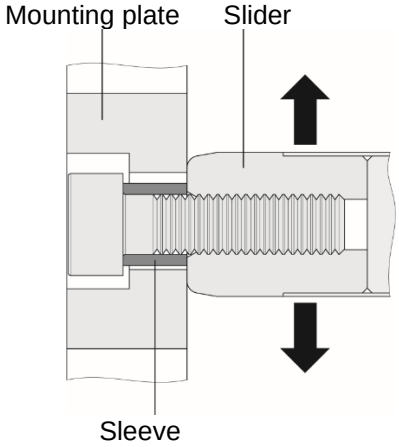
The DM01 linear modules are optionally available with permanently installed MagSpring (MSxx option). These include various strength classes from 10 N to 60 N constant force. In addition to the commonly used

pulling arrangement of the load axis, it is also possible to implement a pushing arrangement. To do this, the module is simply rotated, resulting in a slight overhang of the MagSpring, depending on the type.

Pulling Arrangement

Pushing Arrangement

3.4.2 MagSpring slider replacement

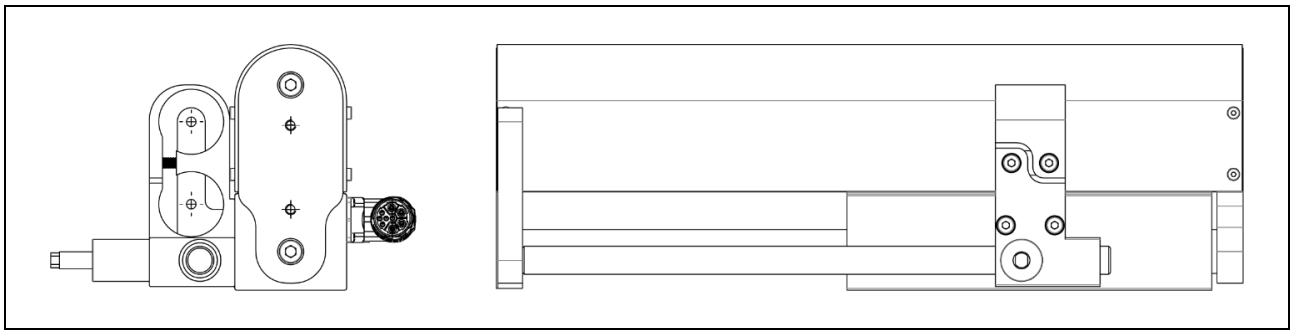


When handling with sliders, there are sometimes large magnetic forces of attraction.
Observe warning instructions in section 2!

In order to avoid statically overdetermined bearing of the MagSpring slider, it is movably attached to the mounting plate. This is ensured by the built-in sleeve.

Make sure to reinstall the sleeve every time you assemble the unit!

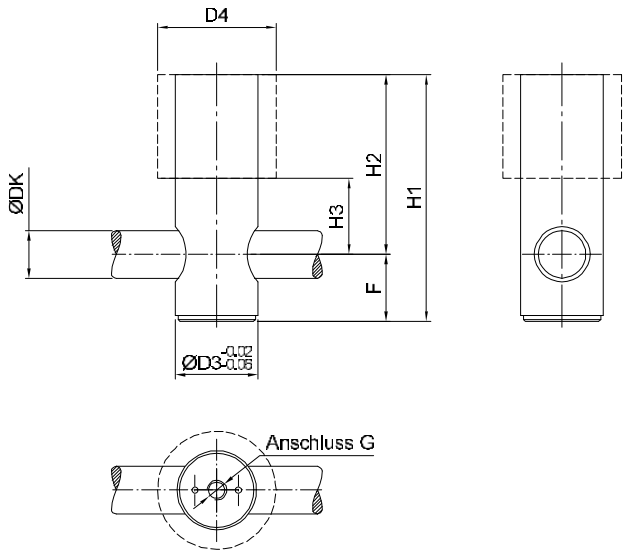
3.5 Pneumatic Holding Brake



The product family of DM01 linear modules has product variants with already integrated pneumatic holding brake. This is controlled by the Servo Drive. To open and close the brake, an additional electrical solenoid valve is required. The brake acts on a brake shaft arranged parallel to the slider and is released by means of compressed air.

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

3.5.1 Dimensions



Brake	Holding Force [N]	Ø D3 [mm]	Ø D4 [mm]	F [mm]	G	H1 [mm]	H2 [mm]	H3 [mm]
HB01-48	1000	24	-	19.5	G 1/8“	81	61.5	-

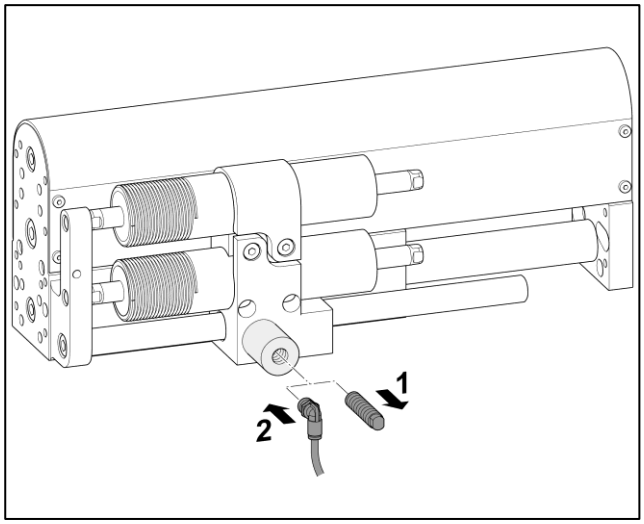
3.5.2 Material Specifications

Component	Material
Housing	Aluminium, black anodized
Clamp jaws	High quality brass
Piston	POM
Spring	Spring steel
Seals	NBR/Ultrathan

3.5.3 Operating Conditions

- Medium: Filtered compressed air (40 µm), unlubricated or lubricated
- Operating pressure: 4 - 6 bar
- Ambient temperature: 10 °C…80 °C

3.5.4 Air Connection

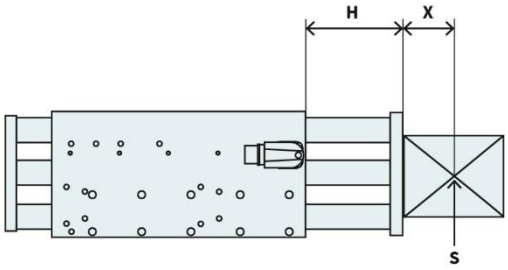


The mounting screw leaves the spring-applied holding brake in an open state. As soon as the mounting screw is removed, the holding force of the holding brake sets in. The shaft is then clamped. Instead of the mounting screw, a compressed air connection is now made. The connection thread for this is G 1/8".
When pressure is applied, the brake is released and the shaft can be moved again.
The air pressure for the brake can be controlled by means of the LinMot servo drives and an electric solenoid valve.

Before moving the linear module, make sure that the brake is completely bled!
The brake may only be actuated when the movement is stopped!

4 Load Data

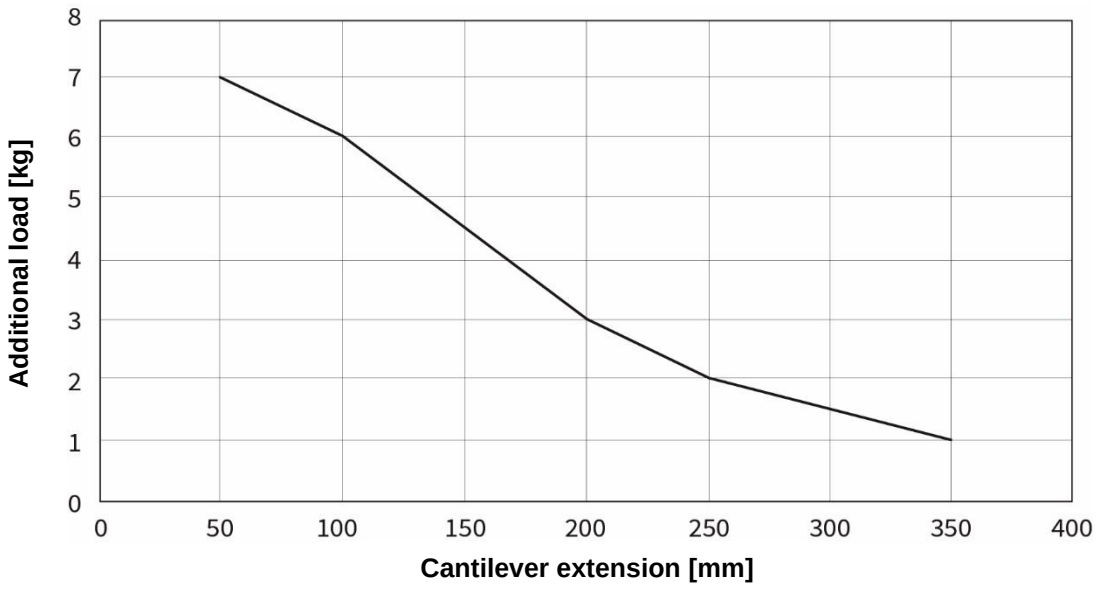
4.1 Maximum Load



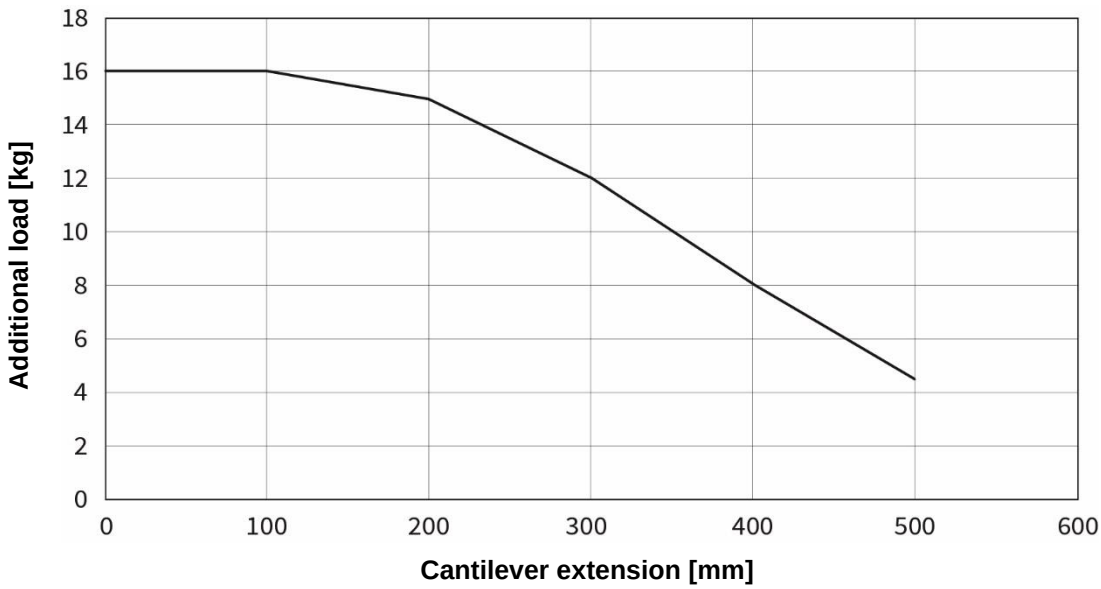
H = Stroke + Plate thickness
X = Distance to center of gravity
S = Center of gravity
Cantilever extension = H + X

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).

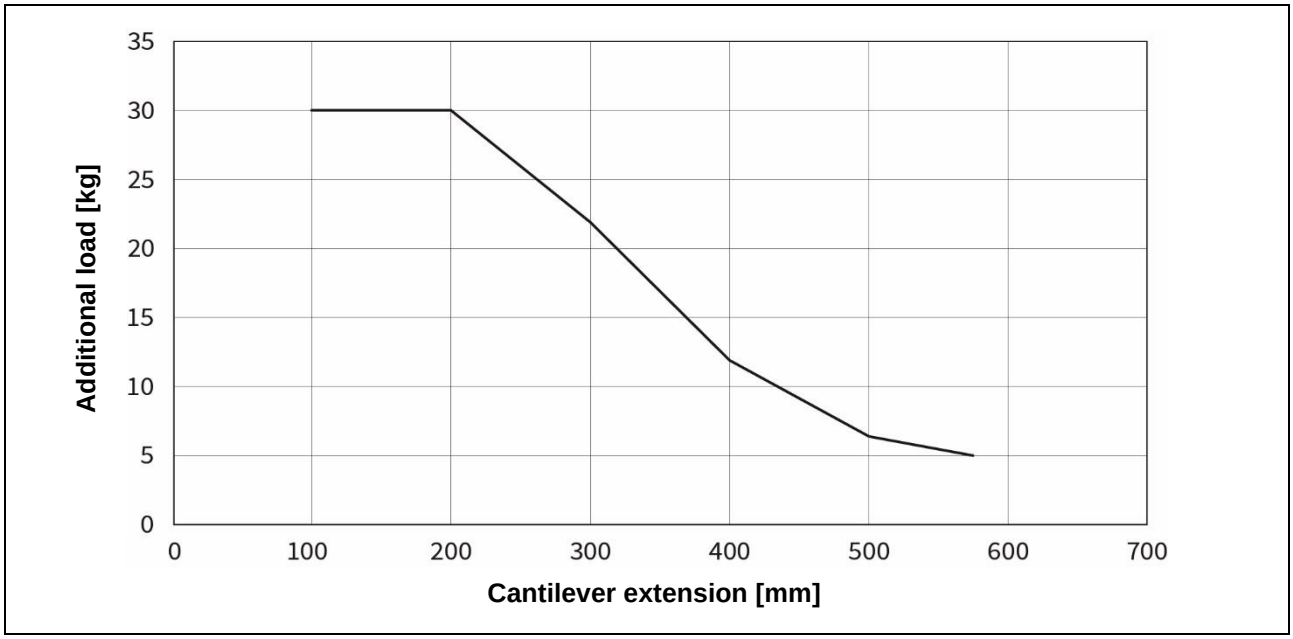
4.1.1 DM01-23x80 / DM01-23x160



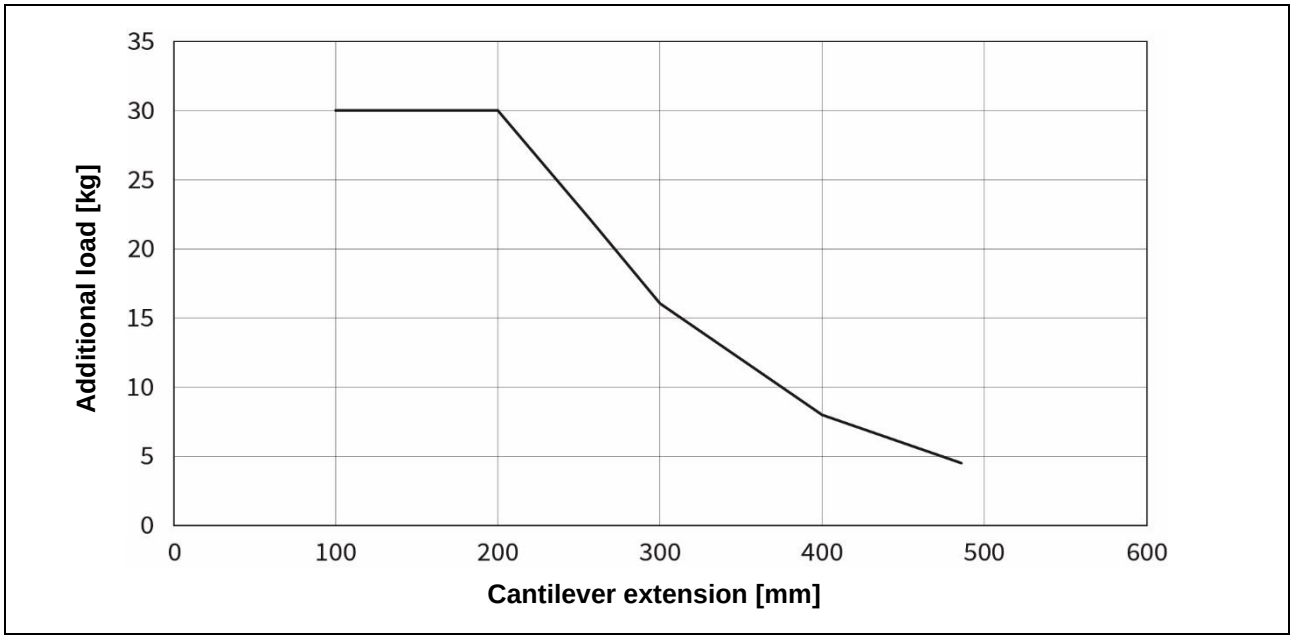
4.1.2 DM01-37x120



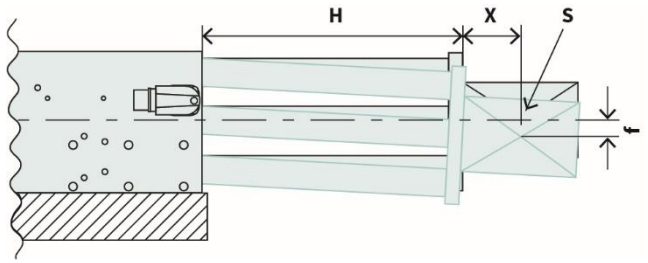
4.1.3 DM01-48x150



4.1.4 DM01-48x240



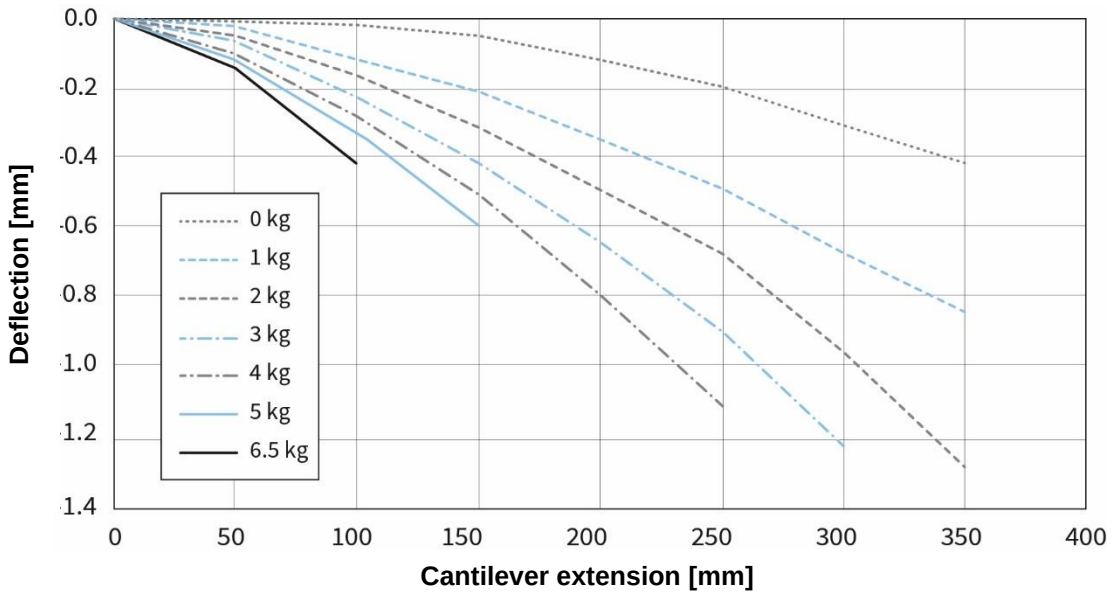
4.2 Vertical Deflection



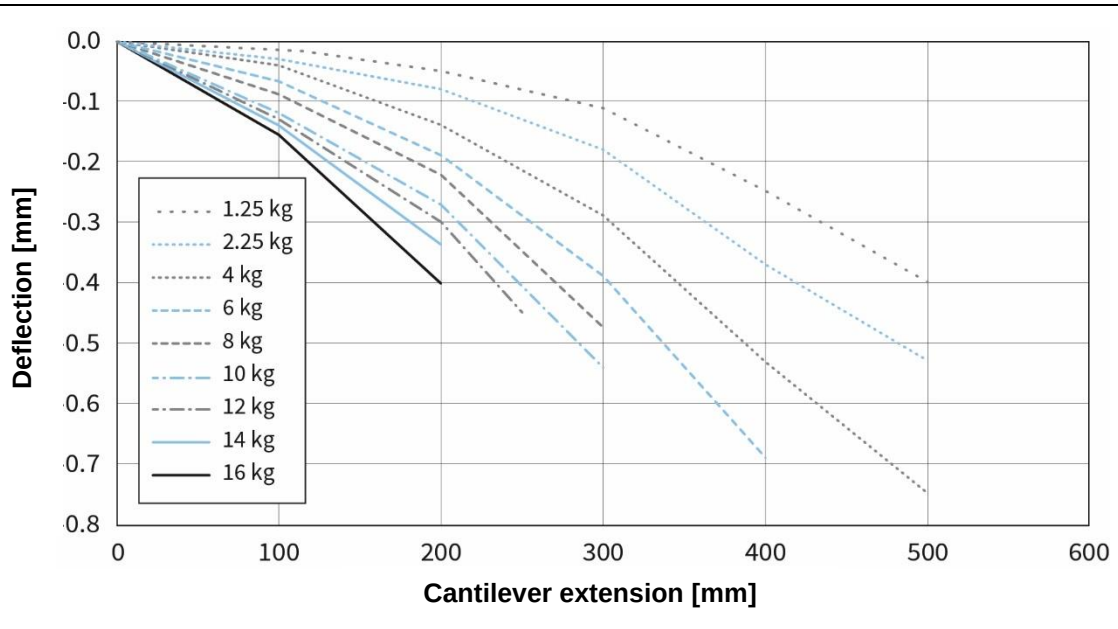
H = Stroke + Plate thickness
S = Center of gravity
X = Distance to center of gravity
f = Deflection of theoretical axis

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

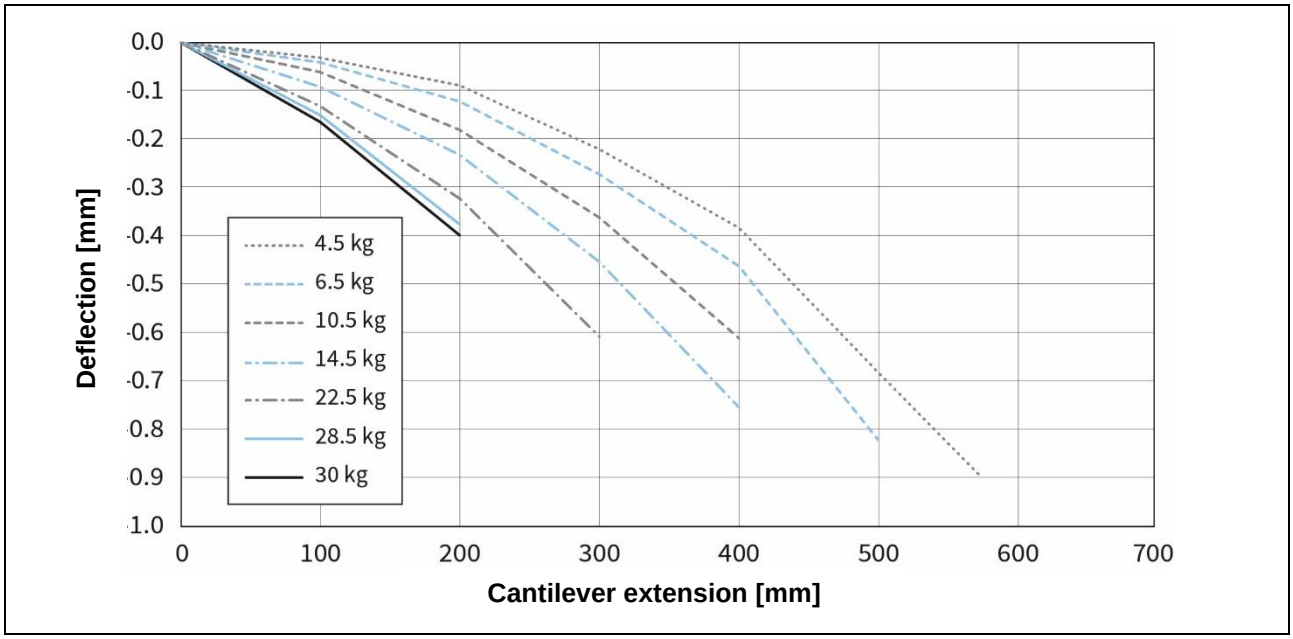
4.2.1 DM01-23x80 / DM01-23x160



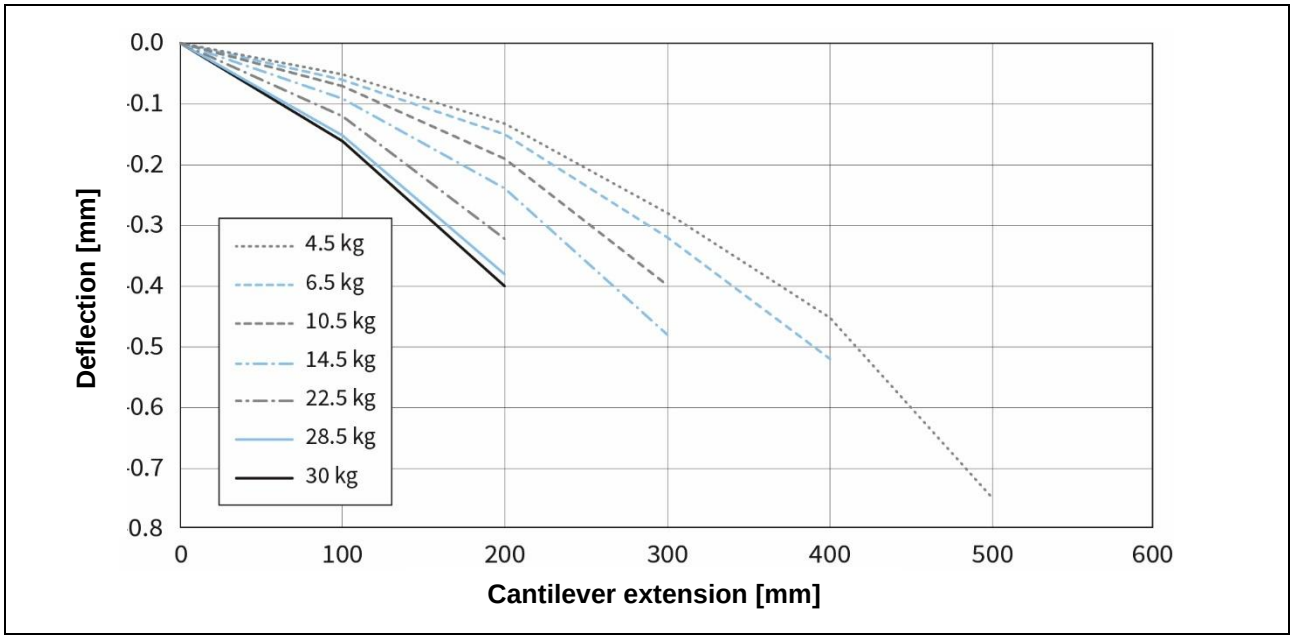
4.2.2 DM01-37x120



4.2.3 DM01-48x150



4.2.4 DM01-48x240



5 Electrical Connection

5.1 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 the C and R connectors must be tightened up to the stop.
Three types of cables are available for linear modules. The cable attached to the stator is not a high flex cable. For moving cable applications please use the special LinMot KS high flex (suitable for cable tracks) or KR robot cable.

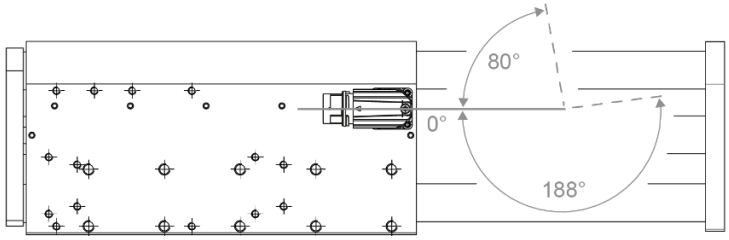
5.1.1 Technical Data

	Standard Cable		High-Flex Cable				Robot Cable	
Cable name	K05-04/05	K15-04/05	KS03-09*	KS05-09*	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)	25 mm (1 in)	25 mm (1 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		50 mm (2 in) No Torsion	50 mm (2 in) No Torsion	60 mm (2.4 in) No Torsion	100 mm (4 in) No Torsion	80 mm (3.2 in) Max. Torsion: ±270° per 0.5 m	100 mm (4 in) Max. Torsion: ±270° per 0.5 m
Shielding	double		single		double		double	
Approval	UL / CSA 300V		UL / CSA 300V				UL / CSA 300V	
Material wire insulation	TPE-U		TPE-E	TPE	TPE-E		TPE-E	
Material cable sheath	PUR		PUR	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 resistance (to acids, alkalis, solvents, hydraulic fluid)	good		good				good	

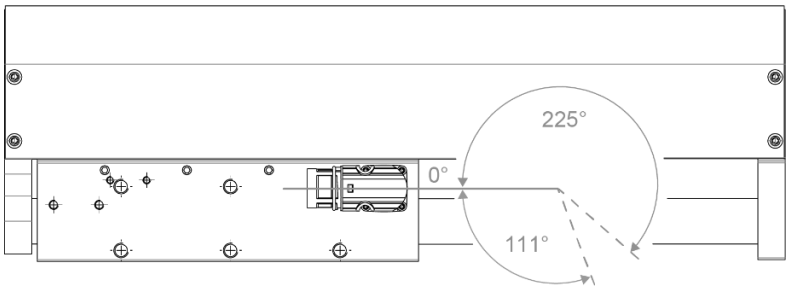
* Single shielded cables with small bending radius for confined installation situations. The cable length of these cable types must not exceed 6 m. An extension of the total cable length between motor and Servo Drive with double shielded cables is permissible.

5.1.2 Rotatability of Motor Connector

R-Connector

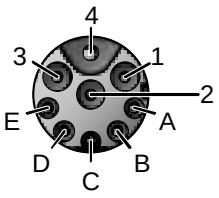
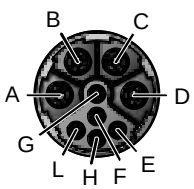


C-Connector



5.2 Stator Connector Assignment

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

Stator Connector Assignment	DM01-23x80 DM01-37x120 R-Connector	DM01-48x150 DM01-48x240 C- Connector	Wire Color Motor Cable
Phase1+	PIN 1	PIN A	Red
Phase1-	PIN 2	PIN B	Pink
Phase2+	PIN 3	PIN C	Blue
Phase2-	PIN 4	PIN D	Grey
+5V	PIN A	PIN E	White
GROUND*	PIN B	PIN F	Brown or inner shield
Sensor Sin.	PIN C	PIN G	Yellow
Sensor Cos.	PIN D	PIN H	Green
Temp. Sensor	PIN E	PIN L	Black
SHIELD* of stator and stator cable	Case	Case	Outer shield
Stator Connector			

Motor extension cable with double shielding:
The two shields of the extension cable are insulated from each other. The inner shield of the extension cable may only be connected to ground* (no contact to the outer shield). Only the outer shield must be connected to the shield* of the connector.

6 Start-up

6.1 Plug and Play

LinMot DM01 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.

6.2 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.

6.2.1 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.

6.2.2 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.

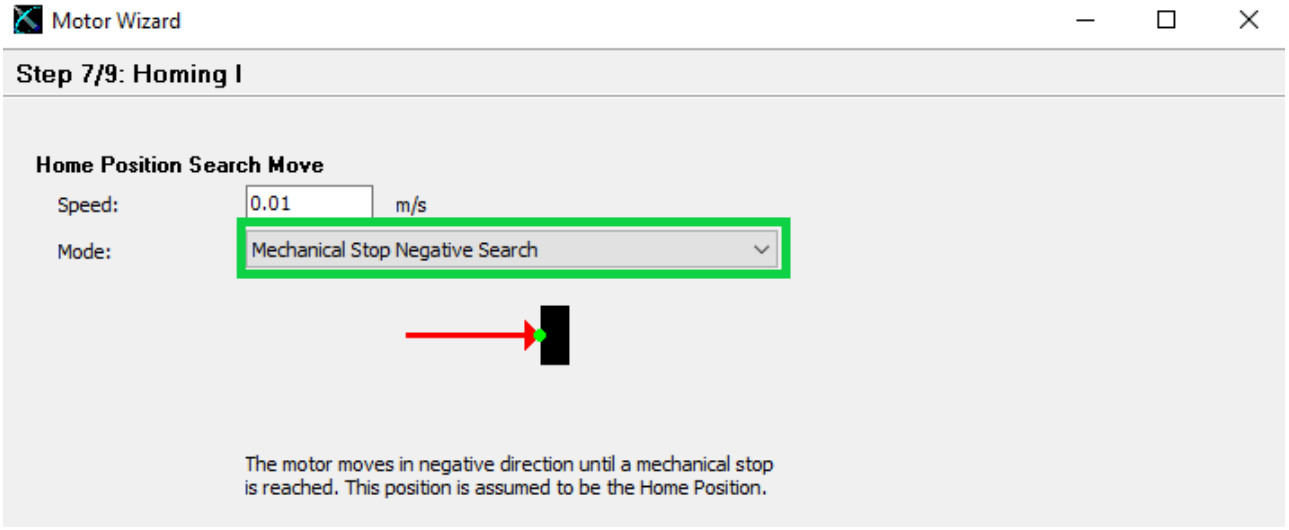


Figure: Selection of reference run linear module

7 Spare Parts

7.1 Linear Ball Bearings

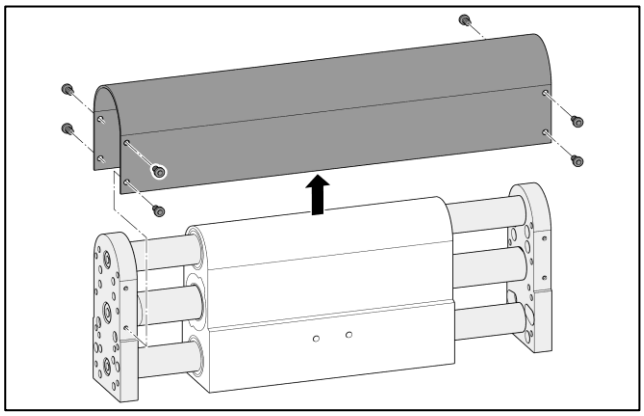
LinMot offers the respective replacement bearings for the DM01 linear modules. The linear ball bearings are greased at the factory with the food-compatible lubricant SKF LGFP2 (NSF approval for H1). The replacement interval of the bearings is determined by the functional test performed on the LM Guide. See chapter 9.1.

Ordering information

Item	Description	Item-No.
Linear Ball Bearing LBBR 10-LS-LGFP	Linear Ball Bearing for DM01-23 Food Grade	0230-0691
Linear Ball Bearing LBBR 20-LS-LGFP	Linear Ball Bearing for DM01-37 Food Grade	0230-0692
Linear Ball Bearing LBBR 25-LS-LGFP	Linear Ball Bearing for DM01-48 Food Grade	0230-0693

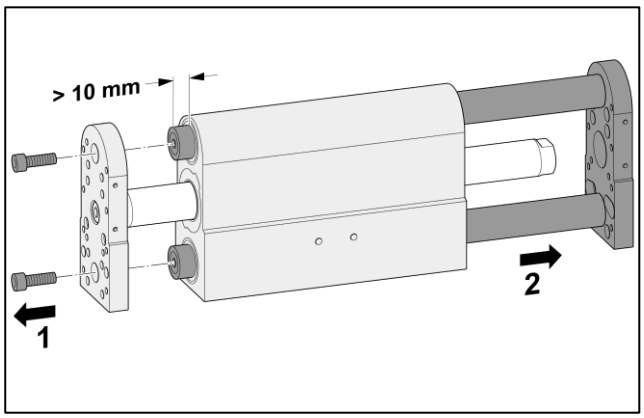
7.1.1 Installation

Always observe the safety instructions in chapter 2 during installation!

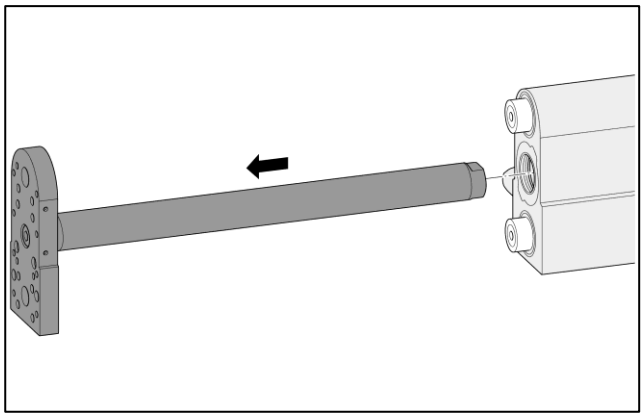


1. Remove the cover

The cover only needs to be removed for types DM01-48. All other DM01 sizes have no cover.

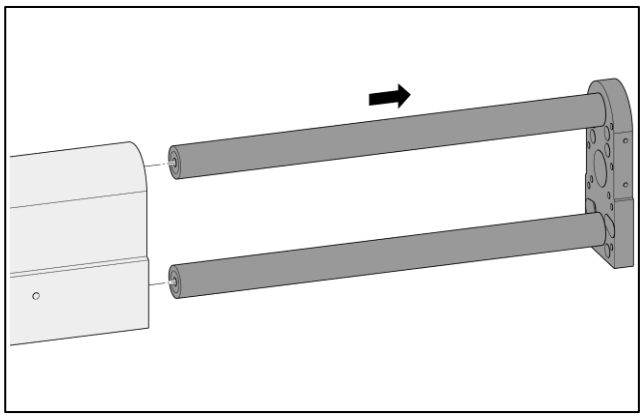


2. Release guide shafts
Loosen the screws of the guide shafts on the front mounting plate.
Then push the guide shafts into the guide block, but do not pull them out completely.

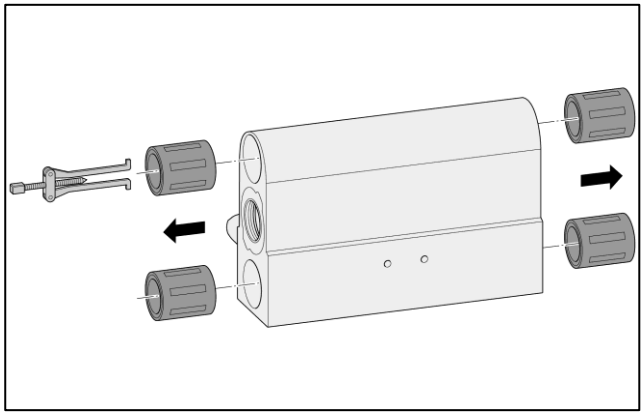


3. Remove the slider
Now the slider can be removed together with the front mounting plate.

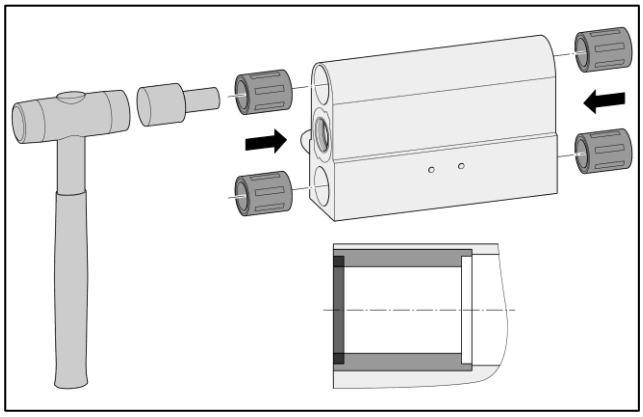
When handling with sliders, there are sometimes large magnetic forces of attraction.
Observe the warnings in section 2! If necessary, cover nearby iron structures with non-magnetic material (e.g. wood).



4. Remove guide shafts
The guide shafts are pulled out together with the rear mounting plate.

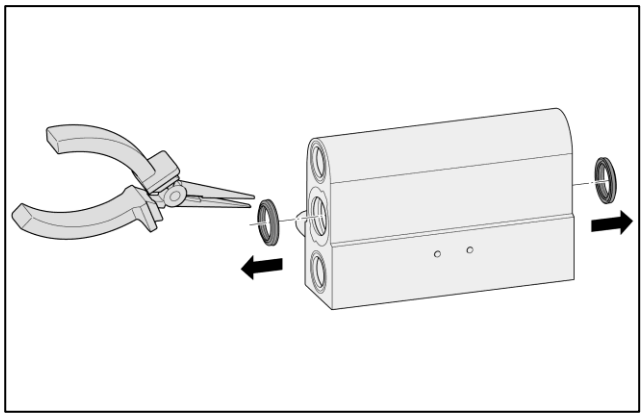


5. Disassemble old linear ball bearing
Pull the old bearings with the help of a universal puller such as Kukko 27-A.

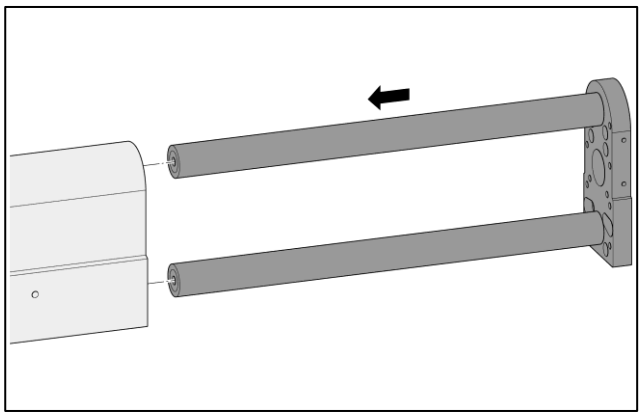


6. Insert new linear ball bearings
The new bearings are inserted using a hand press or a press pin.

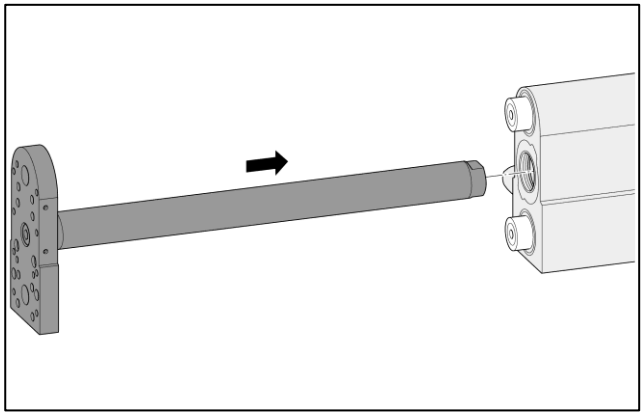
Ensure that the linear ball bearings are pointing away from the housing with the sealing ring after mounting. The bearings are already initially lubricated.



7. Replace wiper (optional)
Remove the old wipers using pointed pliers and insert the new ones manually at both ends of the stator.

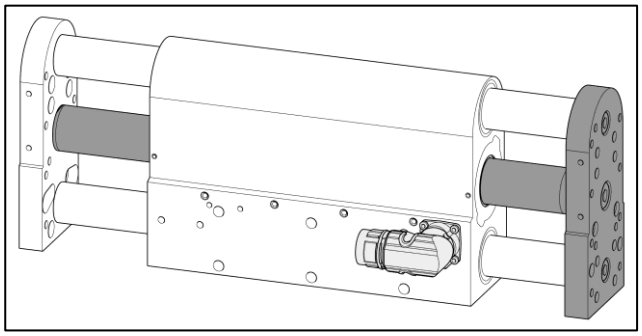


8. Insert guide shafts
The guide shafts are reinserted together with the rear mounting plate on the side without connector.



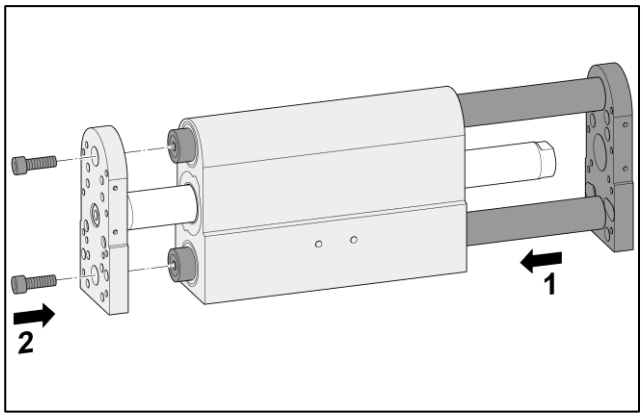
9. Insert the slider
The slider is inserted together with the front mounting plate on the side of the connector.

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

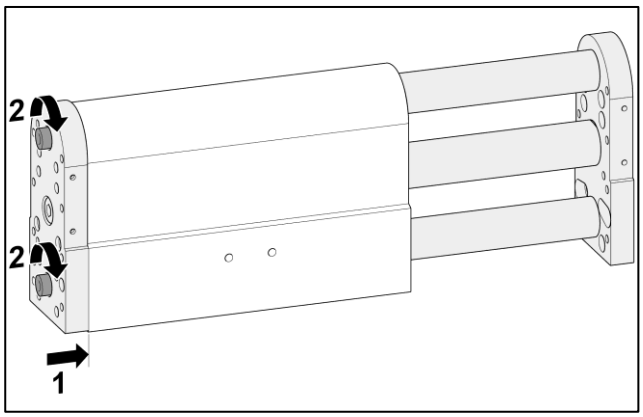


10. Observe installation position of the mounting plates

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



11. Fix the guide shafts
Put Loctite 243 into the threaded hole of the guide shaft.
Then lightly screw the front mounting plate to the guide shafts.

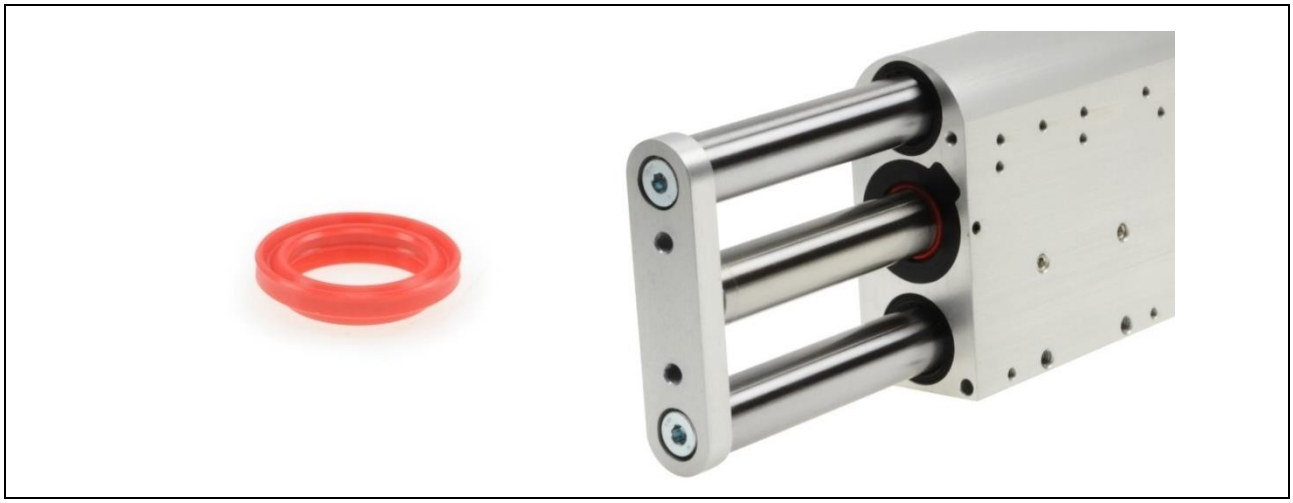


12. Screw guide shafts tight
Push the guide shafts to the stop of the guide block and tighten the screws.

Tightening torque for DM01-23: 5 Nm
Tightening torque for DM01-37: 21 Nm
Tightening torque for DM01-48: 21 Nm

If the guide does not run smoothly, the screws should be loosened again and point 12 repeated.

7.2 Wiper



The DM01 linear guides are equipped with wipers for the sliders. The inside of the stator is kept free of external foreign particles or contamination by means of the wiper rings.

Ordering information

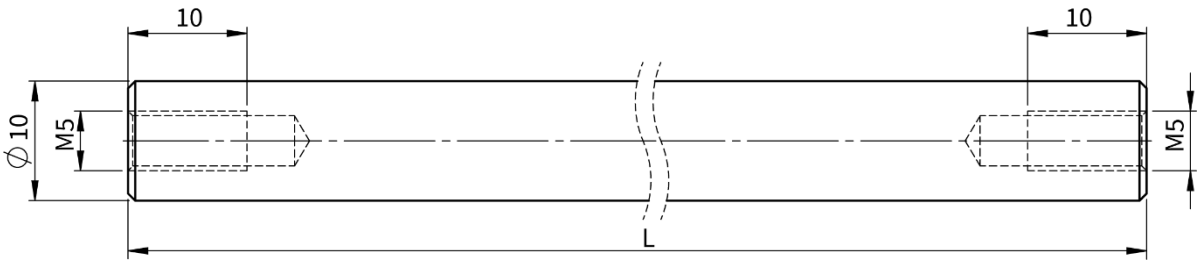
Item	Description	Item-No.
PAW01-12-LF	Wiper for DM01-23	0150-4086
PAW01-20-LF	Wiper for DM01-37	0150-4038
PAW01-28-LF	Wiper for DM01-48	0160-1885

7.2.1 Assembly

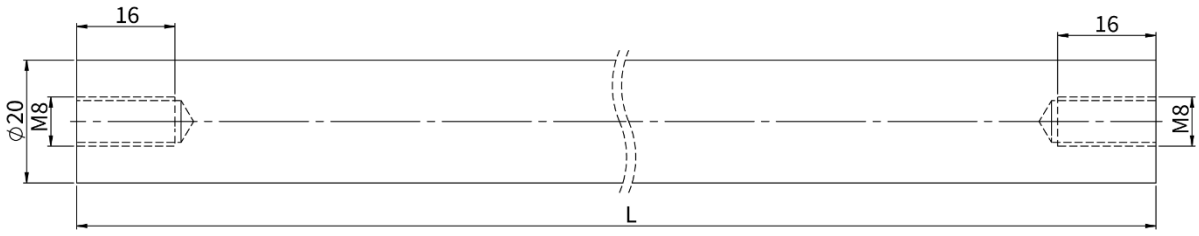
Follow the assembly steps 1 to 4 and 7 to 12 from chapter 7.1.1.

7.3 Guide Shafts

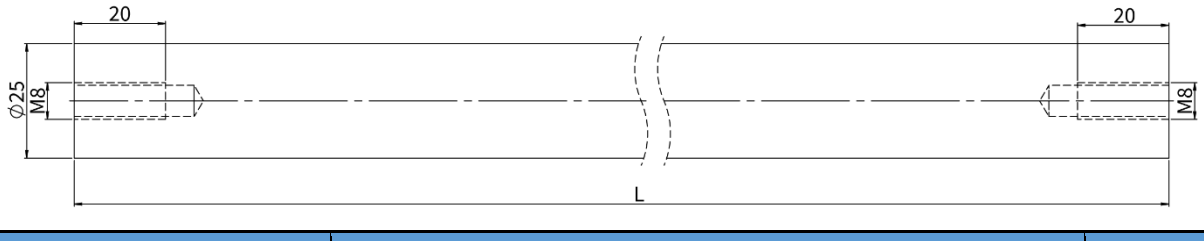
Hardened and hard chrome-plated shafts ensure precise guidance. As a rule, these do not need to be replaced. Only in case of damage should the guide shafts be replaced.



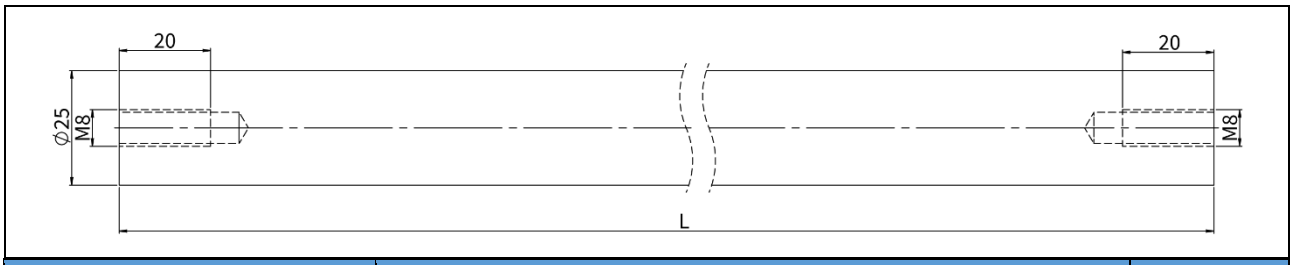
Item	Description	Item-No.
DL01-10x185	Guide shaft for DM01-23, Stroke 60 mm, L= 185 mm	0150-4033
DL01-10x225	Guide shaft for DM01-23, Stroke 100 mm, L= 225 mm	0150-4034
DL01-10x285	Guide shaft for DM01-23, Stroke 160 mm, L= 285 mm	0150-4035
DL01-10x345	Guide shaft for DM01-23, Stroke 220 mm, L= 345 mm	0150-4036
DL01-10x415	Guide shaft for DM01-23, Stroke 290 mm, L= 415 mm	0150-4037
DL01-10x475	Guide shaft for DM01-23, Stroke 350 mm, L= 475 mm	0150-4093



Item	Description	Item-No.
DL01h-20-14x307-M16/M8	Guide shaft for DM01-37, Stroke 95 mm, L= 307 mm	0160-1689
DL01h-20-14x407-M16/M8	Guide shaft for DM01-37, Stroke 195 mm, L= 407 mm	0160-1690
DL01h-20-14x507-M16/M8	Guide shaft for DM01-37, Stroke 295 mm, L= 507 mm	0160-1691
DL01h-20-14x607-M16/M8	Guide shaft for DM01-37, Stroke 395 mm, L= 607 mm	0160-1692
DL01h-20-14x707-M16/M8	Guide shaft for DM01-37, Stroke 495 mm, L= 707 mm	0160-1693



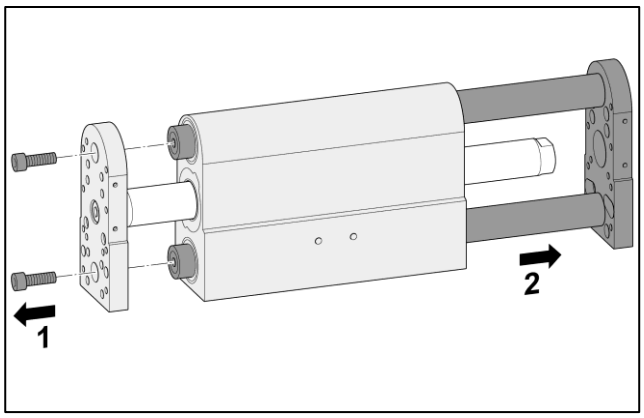
Item	Description	Item-No.
DL01h-25-15.6x342-M18/M8	Guide shaft for DM01-48x150, Stroke 125 mm, L= 342 mm	0160-1437
DL01h-25-15.6x402-M18/M8	Guide shaft for DM01-48x150, Stroke 185 mm, L= 402 mm	0160-1438
DL01h-25-15.6x492-M18/M8	Guide shaft for DM01-48x150, Stroke 275 mm, L= 492 mm	0160-1440
DL01h-25-15.6x612-M18/M8	Guide shaft for DM01-48x150, Stroke 395 mm, L= 612 mm	0160-1442
DL01h-25-15.6x702-M18/M8	Guide shaft for DM01-48x150, Stroke 485 mm, L= 702 mm	0160-1444
DL01h-25-15.6x792-M18/M8	Guide shaft for DM01-48x150, Stroke 575 mm, L= 792 mm	0160-1447



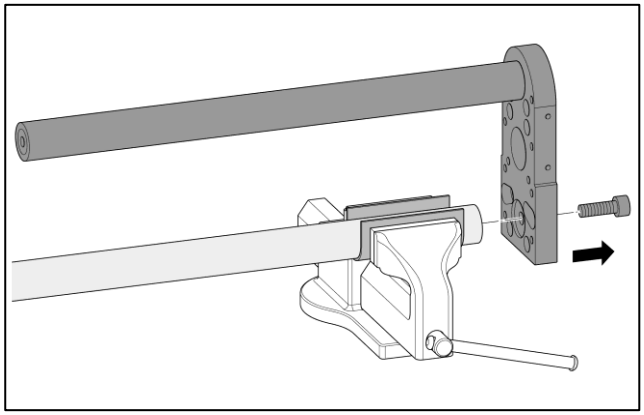
Item	Description	Item-No.
DL01h-25-15.6x402-M18/M8	Guide shaft for DM01-48x240, Stroke 95 mm, L= 95 mm	0160-1438
DL01h-25-15.6x492-M18/M8	Guide shaft for DM01-48x240, Stroke 185 mm, L= 185 mm	0160-1440
DL01h-25-15.6x612-M18/M8	Guide shaft for DM01-48x240, Stroke 305 mm, L= 305 mm	0160-1442
DL01h-25-15.6x702-M18/M8	Guide shaft for DM01-48x240, Stroke 395 mm, L= 395 mm	0160-1444
DL01h-25-15.6x792-M18/M8	Guide shaft for DM01-48x240, Stroke 485 mm, L= 485 mm	0160-1447

7.3.1 Installation

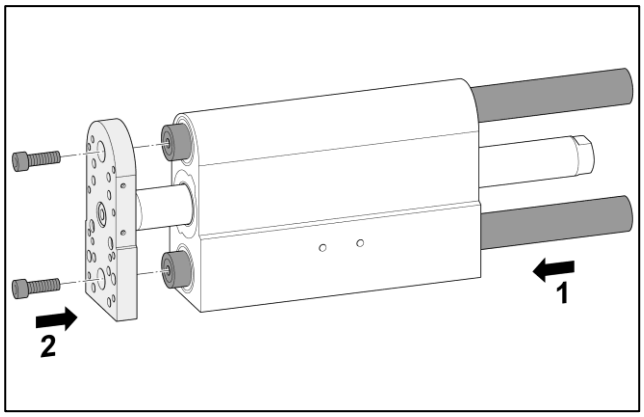
Always observe the safety instructions in chapter 2 during installation!



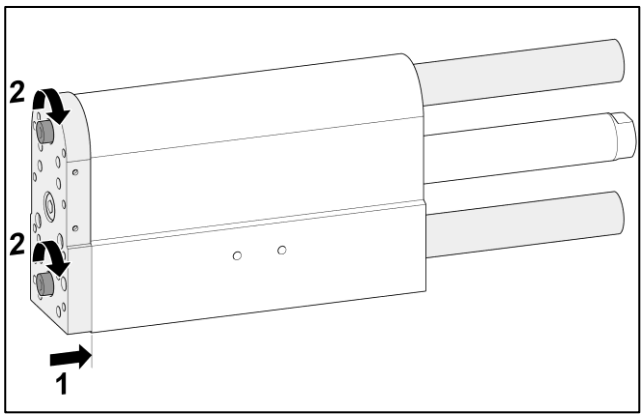
1. **Remove guide shafts**
   Loosen the screws of the guide shafts on the front mounting plate.
   Then pull out the guide shafts together with the rear mounting plate.



2. **Remove rear mounting plate from guide shafts**
   Clamp the guide unit and completely loosen the screws of the guide shafts on the rear mounting plate.

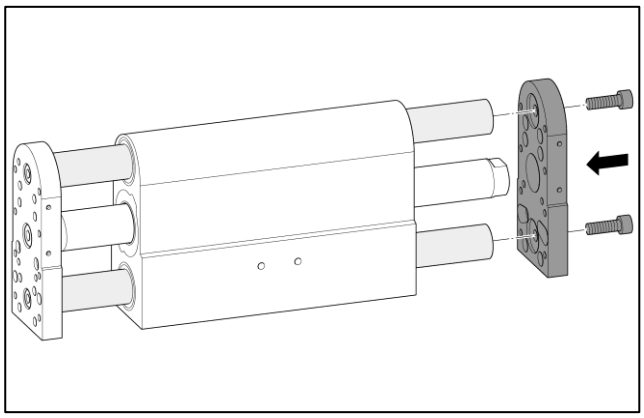


3. Fix new guide shafts to the front mounting plate
Put Loctite 243 into the threaded hole of the guide shafts.
Then lightly screw the front mounting plate to the guide shafts.

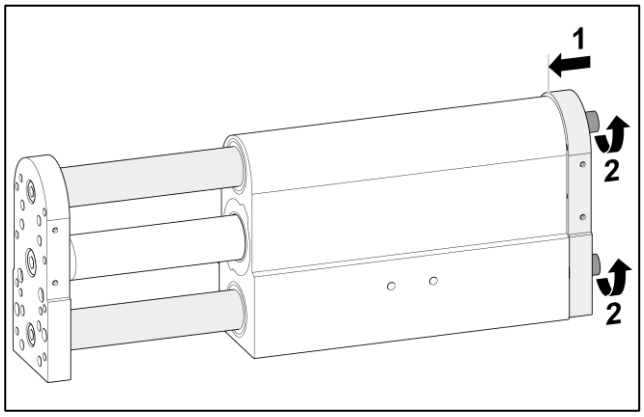


4. Screw new guide shafts firmly to the front mounting plate
Push the front mounting plate to the stop of the guide block and tighten the screws.

Tightening torque for DM01-23:	5 Nm
Tightening torque for DM01-37:	21 Nm
Tightening torque for DM01-48:	21 Nm



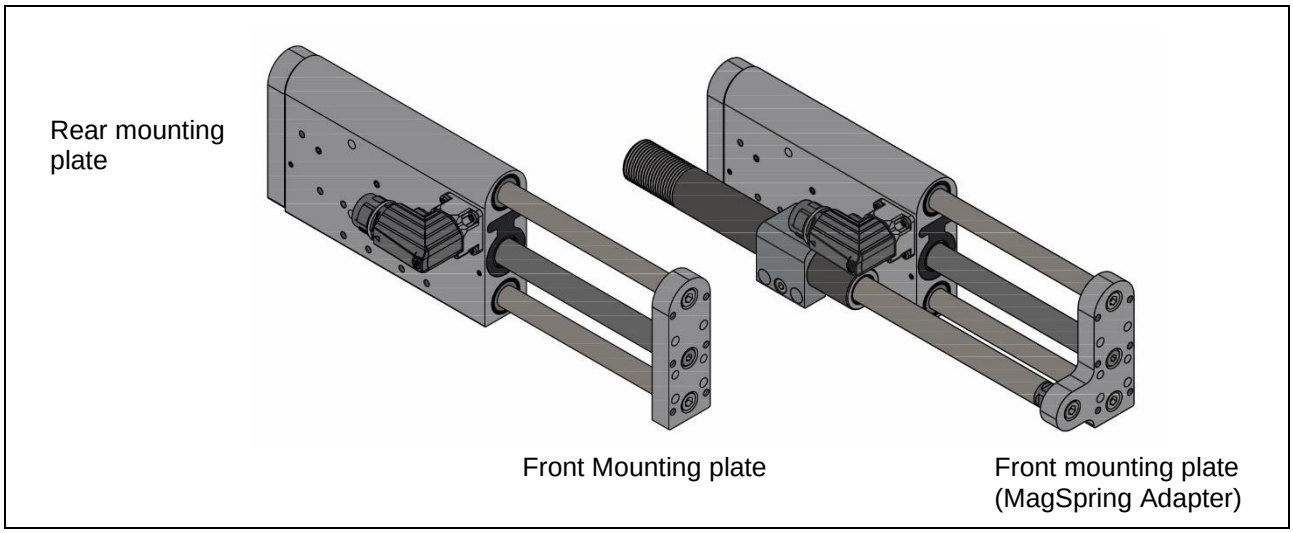
5. Fix new guide shafts to the rear mounting plate
Put Loctite 243 into the threaded hole of the guide shafts.
Then lightly screw the rear mounting plate to the guide shafts.



6. Screw new guide shafts firmly to the rear mounting plate.
Push the rear mounting plate to the stop of the guide block and tighten the screws.

Tightening torque for DM01-23:	5 Nm
Tightening torque for DM01-37:	21 Nm
Tightening torque for DM01-48:	21 Nm

7.4 Mounting Plates

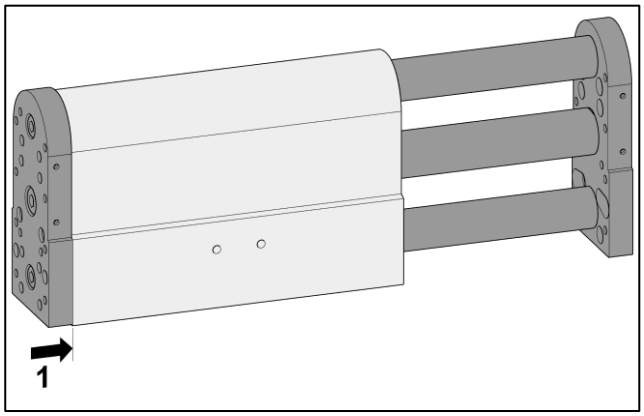


The front and rear mounting plates, to which the load can be attached, can be reordered in case of damage. LinMot offers the appropriate article for each DM01 linear module. The dimensions can be taken from chapter 11.

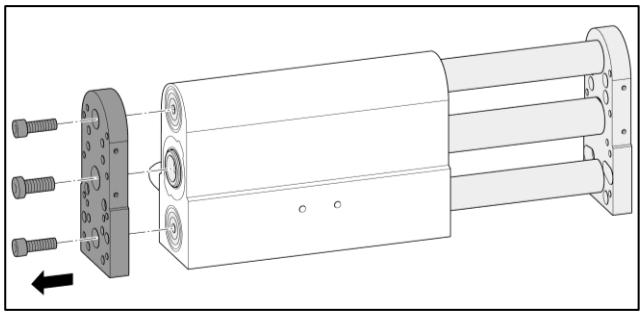
Ordering information

Item	Description	Item-No.
DF01k-23	Front mounting plate D01-23	0160-1833
DF01k-23-H	Rear mounting plate D01-23	0160-2984
DF01k-23-MagSpring	Front mounting plate with MagSpring connection D01-23	0260-0060
DF01k-37	Front mounting plate D01-37	0160-1281
DF01k-37-H	Rear mounting plate D01-37	0160-1936
DF01k-37-MagSpring	Front mounting plate with MagSpring connection D01-37	0260-0057
DF01k-48	Front mounting plate D01-48	0160-1203
DF01k-48-H	Rear mounting plate D01-48	0160-2985
DF01k-48-MagSpring	Front mounting plate with MagSpring connection D01-48	0260-0063

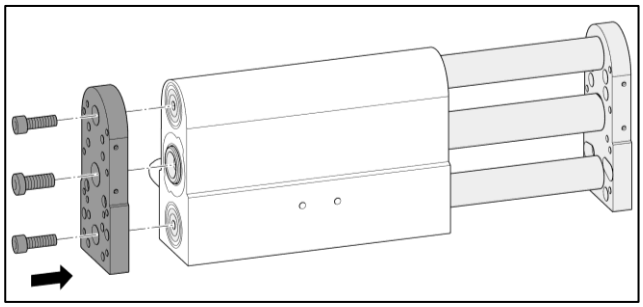
7.4.1 Mounting the front mounting plate



1. **Push the front mounting plate to the stop of the guide block**



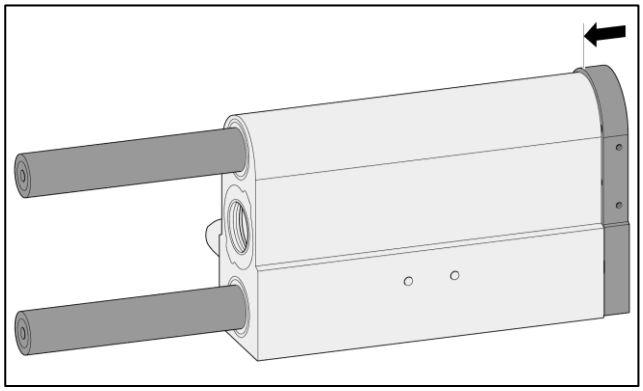
2. Remove the front mounting plate
Loosen screws of guide shafts and slider and remove plate.



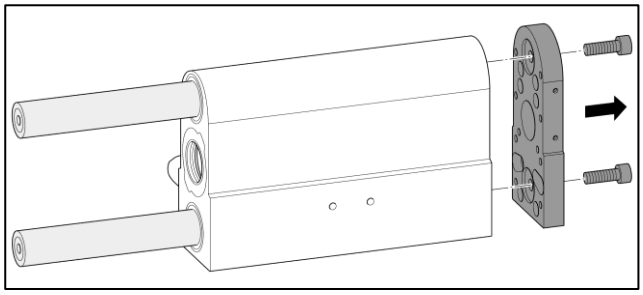
3. Mount the front mounting plate
Put Loctite 243 into the tapped hole of the guide shafts and the slider.
Screw the new front mounting plate tight.

Tightening torque for DM01-23:	5 Nm
Tightening torque for DM01-37:	21 Nm
Tightening torque for DM01-48:	
- Guide shafts:	21 Nm
- Slider:	40 Nm

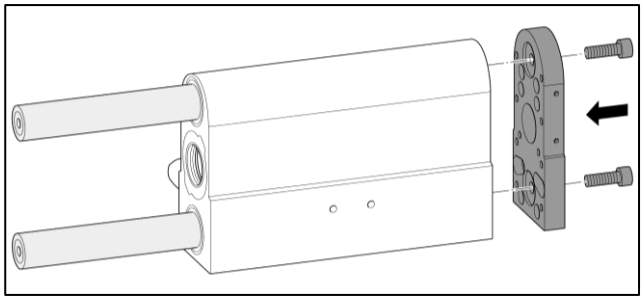
7.4.2 Mounting the rear mounting plate



1. Slide the rear mounting plate to the stop of the guide block



2. Remove the rear mounting plate
Loosen the screws of the guide shafts and remove the plate.



3. Mount the rear mounting plate
Put Loctite 243 into the threaded hole of the guide shafts.
Screw the new rear mounting plate tight.

Tightening torque for DM01-23:	5 Nm
Tightening torque for DM01-37:	21 Nm
Tightening torque for DM01-48:	21 Nm

8 Accessories

8.1 Motor Cables for DM01-23

Standard Cable

Item	Description	Item-No.
K05-W/R-2	Motor Cable W/R, 2 m	0150-2119
K05-W/R-4	Motor Cable W/R, 4 m	0150-2120
K05-W/R-6	Motor Cable W/R, 6 m	0150-2121
K05-W/R-8	Motor Cable W/R, 8 m	0150-2122
K05-W/R-	Motor Cable K05-W/R, Custom length	0150-3262

Item	Description	Item-No.
K05-Y/R-2	Motor Cable Y/R, 2 m	0150-2421
K05-Y/R-4	Motor Cable Y/R, 4 m	0150-2422
K05-Y/R-6	Motor Cable Y/R, 6 m	0150-2423
K05-Y/R-8	Motor Cable Y/R, 8 m	0150-2424
K05-Y-Fe/R-	Motor Cable K05-Y-Fe/R, Custom length	0150-3501

Trailing Chain Cable

Item	Description	Item-No.
KS03-R/R-1.5	Trailing Chain Cable R/R, 1.5 m	0150-3566
KS03-R/R-2	Trailing Chain Cable R/R, 2 m	0150-3567
KS03-R/R-3	Trailing Chain Cable R/R, 3 m	0150-3568

Item	Description	Item-No.
KS05-W/R-4	Trailing Chain Cable W/R, 4 m	0150-2106
KS05-W/R-6	Trailing Chain Cable W/R, 6 m	0150-2131
KS05-W/R-8	Trailing Chain Cable W/R, 8 m	0150-2107
KS05-W/R-	Trailing Chain Cable KS05-W/R, Custom length	0150-3256

Item	Description	Item-No.
KS05-Y/R-4	Trailing Chain Cable Y/R, 4 m	0150-2433
KS05-Y/R-6	Trailing Chain Cable Y/R, 6 m	0150-2434
KS05-Y/R-8	Trailing Chain Cable Y/R, 8 m	0150-2435
KS05-Y-Fe/R-	Trailing Chain Cable KS05-Y-Fe/R, Custom length	0150-3507

Robot Cable

Item	Description	Item-No.
KR05-W/R-	Robot Cable KR05-W/R, Custom length	0150-3336
KR05-Y-Fe/R-	Robot Cable KR05-Y-Fe/R, Custom length	0150-3512

8.2 Motor Cables for DM01-37

Standard Cable

Item	Description	Item-No.
K05-W/R-2	Motor Cable W/R, 2 m	0150-2119
K05-W/R-4	Motor Cable W/R, 4 m	0150-2120
K05-W/R-6	Motor Cable W/R, 6 m	0150-2121
K05-W/R-8	Motor Cable W/R, 8 m	0150-2122
K05-W/R-	Motor Cable K05-W/R, Custom length	0150-3262

Item	Description	Item-No.
K05-Y/R-2	Motor Cable Y/R, 2 m	0150-2421
K05-Y/R-4	Motor Cable Y/R, 4 m	0150-2422
K05-Y/R-6	Motor Cable Y/R, 6 m	0150-2423
K05-Y/R-8	Motor Cable Y/R, 8 m	0150-2424
K05-Y-Fe/R-	Motor Cable K05-Y-Fe/R, Custom length	0150-3501

Trailing Chain Cable

Item	Description	Item-No.
KS05-09-R/R-1.5	Trailing Chain Cable R/R, 1.5 m	0150-3883
KS05-09-R/R-2	Trailing Chain Cable R/R, 2 m	0150-3884
KS05-09-R/R-3	Trailing Chain Cable R/R, 3 m	0150-3885

Item	Description	Item-No.
KS05-W/R-4	Trailing Chain Cable W/R, 4 m	0150-2106
KS05-W/R-6	Trailing Chain Cable W/R, 6 m	0150-2131
KS05-W/R-8	Trailing Chain Cable W/R, 8 m	0150-2107
KS05-W/R-	Trailing Chain Cable KS05-W/R, Custom length	0150-3256

Item	Description	Item-No.
KS05-Y/R-4	Trailing Chain Cable Y/R, 4 m	0150-2433
KS05-Y/R-6	Trailing Chain Cable Y/R, 6 m	0150-2434
KS05-Y/R-8	Trailing Chain Cable Y/R, 8 m	0150-2435
KS05-Y-Fe/R-	Trailing Chain Cable KS05-Y-Fe/R, Custom length	0150-3507

Robot Cable

Item	Description	Item-No.
KR05-W/R-	Robot Cable KR05-W/R, Custom length	0150-3336
KR05-Y-Fe/R-	Robot Cable KR05-Y-Fe/R, Custom length	0150-3512

8.3 Motor Cables for DM01-48

Standard Cable

Item	Description	Item-No.
K15-W/C-2	Motor Cable W/C, 2 m	0150-1811
K15-W/C-4	Motor Cable W/C, 4 m	0150-1801
K15-W/C-6	Motor Cable W/C, 6 m	0150-1802
K15-W/C-8	Motor Cable W/C, 8 m	0150-1803
K15-W/C-	Motor Cable W/C, Custom length	0150-3131

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

Trailing Chain Cable

Item	Description	Item-No.
KS10-W/C-4	Trailing Chain Cable W/C, 4 m	0150-1807
KS10-W/C-6	Trailing Chain Cable W/C, 6 m	0150-1858
KS10-W/C-8	Trailing Chain Cable W/C, 8 m	0150-1808
KS10-W/C-	Trailing Chain Cable W/C, Custom length	0150-3139

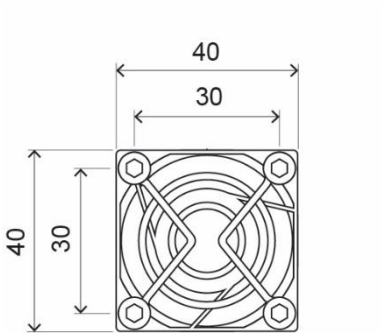
Item	Description	Item-No.
KS10-Y/C-4	Trailing Chain Cable Y/C, 4 m	0150-2439
KS10-Y/C-6	Trailing Chain Cable Y/C, 6 m	0150-2440
KS10-Y/C-8	Trailing Chain Cable Y/C, 8 m	0150-2441
KS10-Y/C-	Trailing Chain Cable Y-Fe/C, Custom length	0150-3511

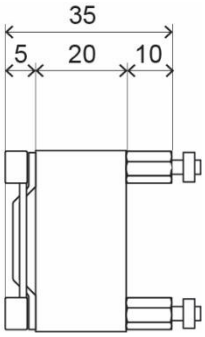
Robot Cable

Item	Description	Item-No.
KR10-W/C-	Robot Cable KR10-W/C, Custom length	0150-3199
KR10-Y-Fe/C-	Robot Cable KR10-Y-Fe/C, Custom length	0150-3515

8.4 Fan Kits

For DM01-37 linear modules without MagSpring, the threaded holes (P1-P4, see section "Dimensions & Weights") can be used to mount the fan HV01-37/48 (Item-No. 0150-5051). Fans cannot be mounted directly on all other DM01 linear modules. It is recommended that the customer design his own adapters for external mounting.

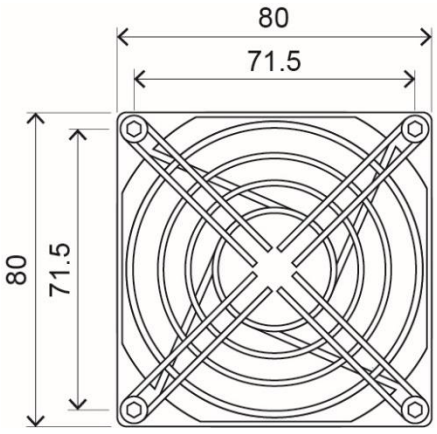


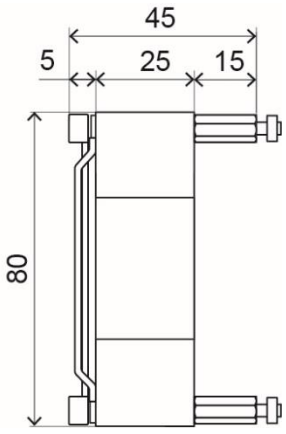


Power Supply Fan:
24VDC, 70mA

Air flow:
15 m³/h

Item	Description	Item-No.
HV01-23	Fan kit 23	0150-5050





Power Supply Fan:
24VDC, 120mA

Air flow:
80 m³/h

Item	Description	Item-No.
HV01-37/48	Fan kit 37/48, Suitable for direct mounting on DM01-37 without MagSpring	0150-5051

9 Maintenance and Test Instructions

The linear ball bearings of DM01 linear modules are provided with initial lubrication at the factory. Lubrication and inspection intervals depend mainly on the average travel speed, operating temperature and grease quality. The following table with the inspection intervals is based on normal industrial, central European conditions (5 days week with 8 hours operating time per day) and the use of the recommended bearing grease SKF LGFP 2.

Velocity [v]	Lubrication and inspection interval [km]
v < 1 m/s	5000
1 m/s < v < 1.5 m/s	2500
v > 1.5 m/s	1200

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

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

9.1 Inspection

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

9.1.1 Linear Module

a) Do the guide shafts have too much clearance? If yes -> Replace bearing.
b) Do the guide shafts show signs of wear or grooves? -> If yes -> Replace guide shafts and the bearing.
c) Have the shaft bearings been relubricated? If no -> Cleaning + Lubrication
d) Is it easy to move the guide unit? If no -> Align mounting plates
e) Is the wiper without visible wear? If no -> Replace wiper

9.1.2 MagSpring

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

9.1.3 Pneumatic Holding Brake

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

9.1.4 Noise Signature for DM01-48 Linear Modules

Depending on the environmental conditions, DM01-48 guides may produce a 'clicking' sound when moving very slowly and in a quiet environment. This is due to the internal residual magnetic attraction on the unloaded balls of the linear ball bearings and can be amplified in resonance depending on the module length. This clicking noise is therefore system-related and has no influence on the technical functionality.

9.2 Cleaning

9.2.1 Guide Shafts

- Remove the guide shafts according to chapter 7.3.
- Clean the guide shafts with a soft disposable paper, possibly with the aid of a grease-dissolving cleaning agent (e.g. benzine).

9.2.2 MagSpring

- Pull the slider carefully out of the stator.
  Attention! High magnetic attraction forces (note warnings on chapter 2)! It may be necessary to 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 methylated spirits or alcohol).

9.3 Lubrication

9.3.1 Linear Ball Bearings

- First carry out cleaning instructions according to the above section.
- Grease bearings with 2-3 g of grease SKF LGFP 2, whereby a brush can be used for even application.
  Important! Avoid overgreasing!
- The guide shafts are inserted into the guide without lubrication.

9.3.2 MagSpring

- First carry out cleaning instructions according to the above section.
- Then grease the stator bore with 2-3 g of LU02 grease, whereby only a light film of grease should be present on the inside.
  Important! Avoid overgreasing!
- Grease the slider lightly, whereby only a light film of grease should be present on the slider tube.

9.3.3 Pneumatic Holding Brake

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

If you use oiled compressed air once, you must always use oiled compressed air. Adding too much oil can lead to malfunctions.

9.4 Cleaning agent / Lubricant

The LU06 cleaning spray is recommended for cleaning MagSpring stators and sliders.
To improve the sliding properties between MagSpring slider and stator, the food-compatible LinMot grease LU02 is prescribed. The food-compatible lubricant SKF LGFP 2 is prescribed for greasing the linear ball bearings.

Ordering information

Item	Description	Item-No.
LU06-250	Klüberfood NH1 4-002 Spray* (250 ml)	0150-2394
LU02-50	Lubricant for linear motors** (50 g)	0150-1954
LU02-1000	Lubricant for linear motors** (1000 g)	0150-1955
SKF LGFP 2/1	Food Grade Lubricant*** (1 kg)	0260-0061

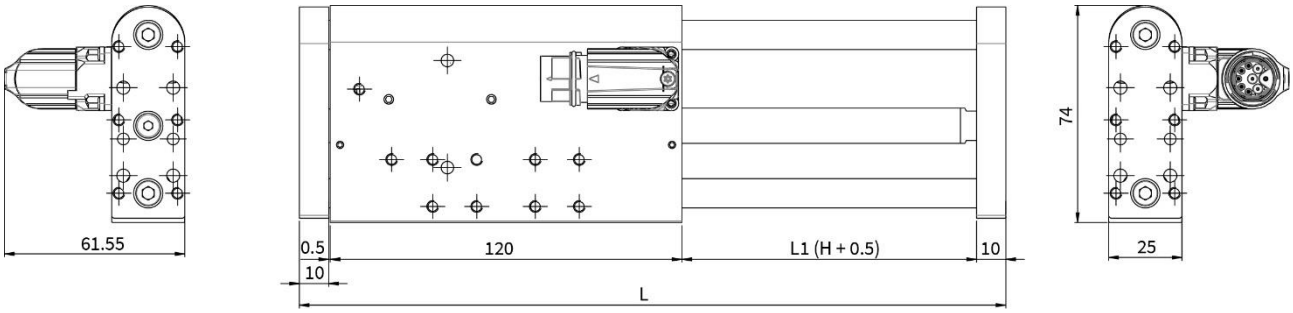
** LinMot Spray LU06 corresponds to KLÜBERFOOD NH1 4-002 which was developed for the food processing industry.*
*** LinMot LU02 Lubricant corresponds to KLÜBERSYNTH UH1 14-31 which was developed for the food processing industry.*
**** Food grade H1 approval*

10 Transport and Storage

- LinMot linear guides may only be transported and stored in their original packaging.
- The linear guides should not be removed from their packaging until they are installed.
- The storage room must be dry, dust-free, frost-free and vibration-free.
- The relative humidity should be less than 60%.
- Prescribed storage temperature: -15 °C...70 °C
- The linear guides must be protected from extreme weather conditions.
- The room air must not contain any aggressive gases.

11 Dimensions & Weights

11.1 Linear Modules DM01-23x80

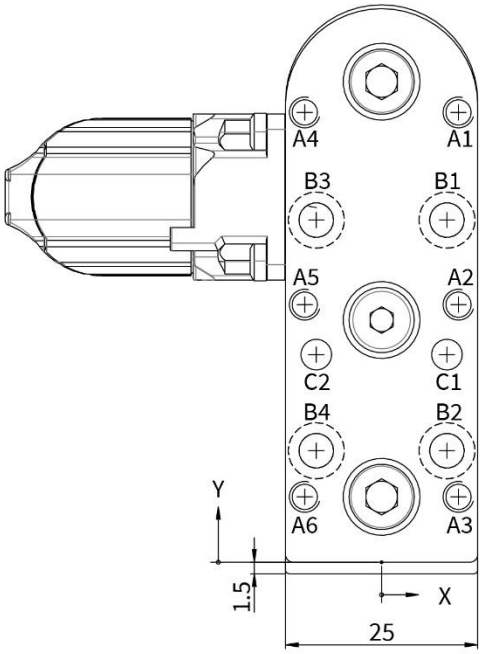


Linear Module	Stroke H [mm (inch)]		Carriage length L [mm (inch)]		Moving mass [1] [g (lb)]		Total weight [g (lb)]	
DM01-23x80F-HP-R-60	60	(2.36)	201	(7.91)	460	(1.01)	1039	(2.29)
DM01-23x80F-HP-R-100	100	(3.93)	241	(9.49)	542	(1.19)	1121	(2.47)
DM01-23x80F-HP-R-160	160	(6.30)	301	(11.85)	666	(1.47)	1245	(2.74)
DM01-23x80F-HP-R-220	220	(8.66)	361	(14.21)	774	(1.71)	1353	(2.98)
DM01-23x80F-HP-R-290	290	(11.42)	431	(16.97)	915	(2.02)	1494	(3.29)
DM01-23x80F-HP-R-350	350	(13.78)	491	(19.33)	1037	(2.29)	1616	(3.56)

[1] Mass: Slider, Shafts, Front mounting plate, Rear mounting plate

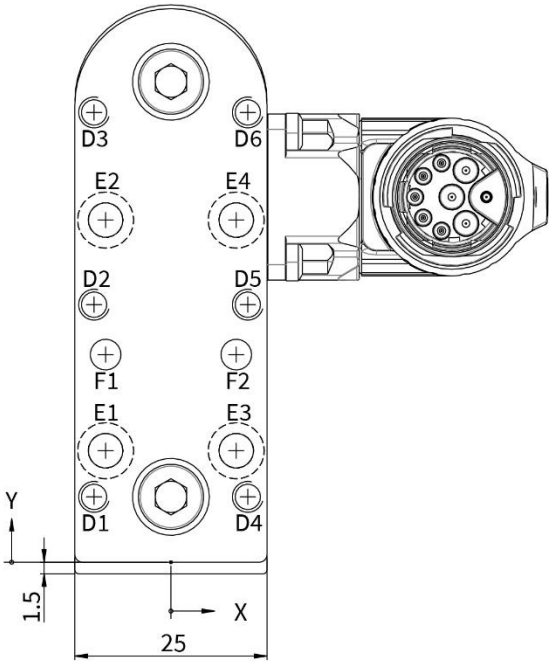
11.1.1 Mounting Plates

DF01k-23



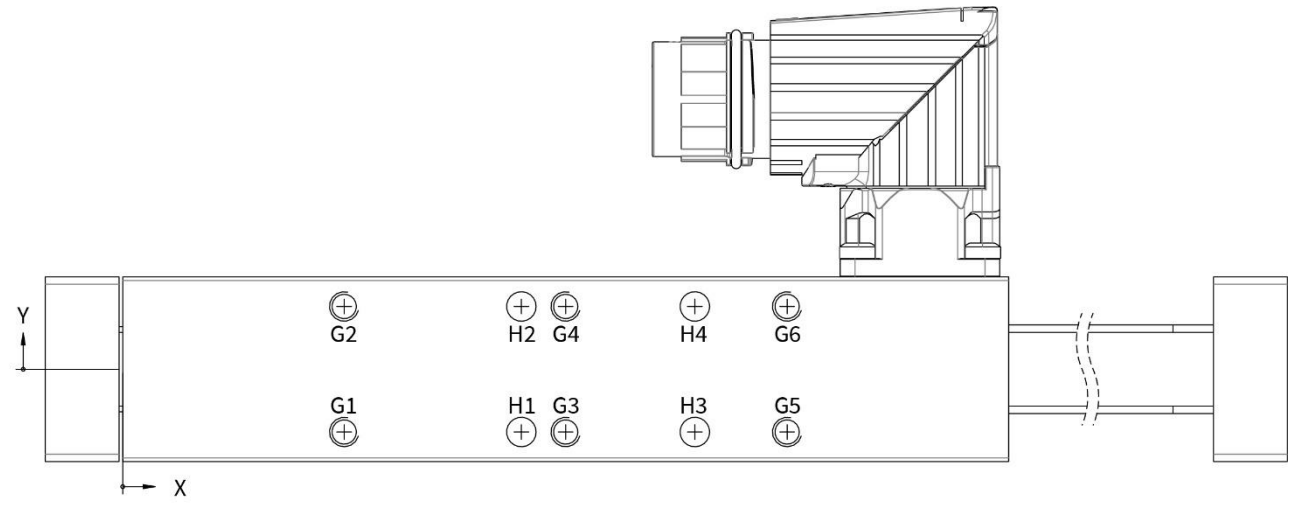
	X-POS.	Y-POS.	SIZE
A1	10	58.5	M4x10
A2	10	33.5	
A3	10	8.5	
A4	-10	58.5	
A5	-10	33.5	
A6	-10	8.5	
B1	8.5	44.5	∅ 7.3x4.4U ∅ 4.5x10
B2	8.5	14.5	
B3	-8.5	44.5	
B4	-8.5	14.5	
C1	8.5	27	+0.012 ∅ 4 H7 0 x8
C2	-8.5	27	

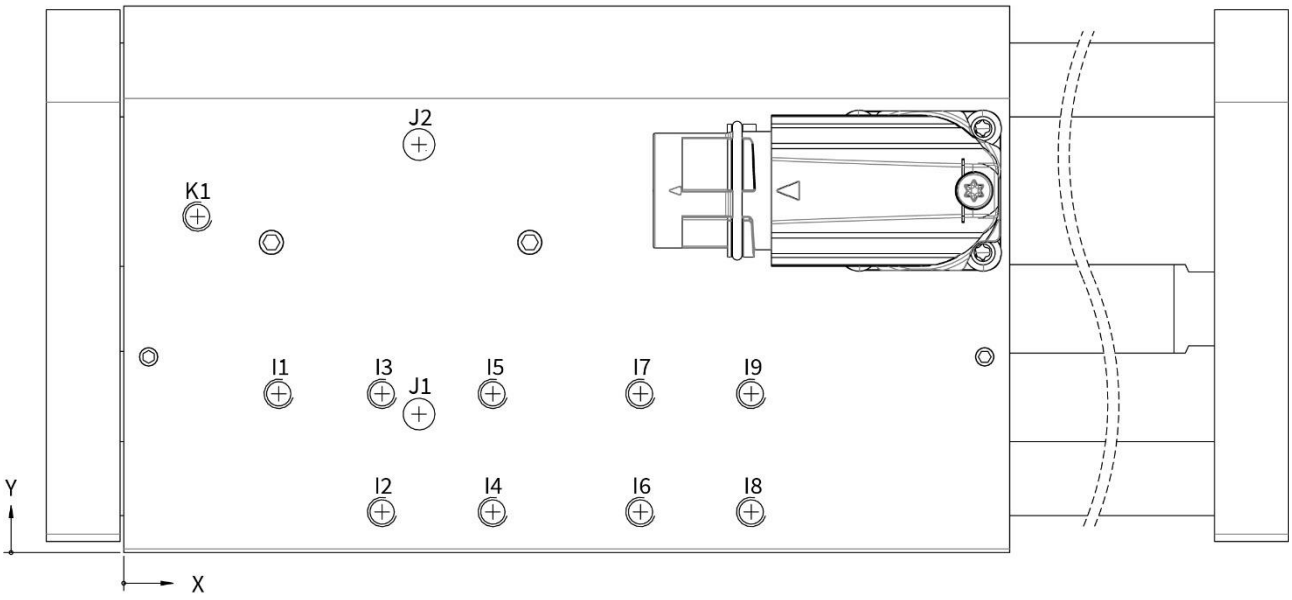
DF01k-23-H



	X-POS.	Y-POS.	SIZE
D1	-10	8.5	M4x10
D2	-10	33.5	
D3	-10	58.5	
D4	10	8.5	
D5	10	33.5	
D6	10	58.5	
E1	-8.5	14.5	∅ 7.3x4.4U ∅ 4.5x10
E2	-8.5	44.5	
E3	8.5	14.5	
E4	8.5	44.5	
F1	-8.5	27	+0.012 ∅ 4 H7 0 x8
F2	8.5	27	

11.1.2 Guide Block



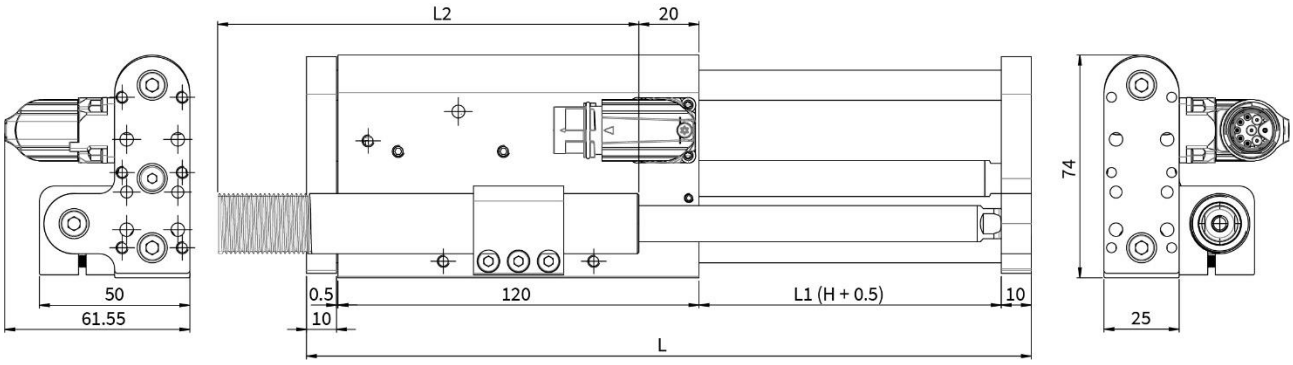


	X-POS.	Y-POS.	SIZE
G1	30	-8.5	M4x8
G2	30	8.5	
G3	60	-8.5	
G4	60	8.5	
G5	90	-8.5	
G6	90	8.5	
H1	54	-8.5	Ø 4 H7 +0.012 0 x5
H2	54	8.5	
H3	77.5	-8.5	
H4	77.5	8.5	

	X-POS.	Y-POS.	SIZE
I1	21	21.5	M4x4
I2	35	5.5	
I3	35	21.5	
I4	50	5.5	
I5	50	21.5	
I6	70	5.5	
I7	70	21.5	
I8	85	5.5	
I9	85	21.5	
J1	40	18.75	Ø 4.3x25
J2	40	55.25	
K1	10	45.5	M4x8

Reserved for mounting cable guide: K1, I1

11.2 Linear Modules DM01-23x80_MSxx

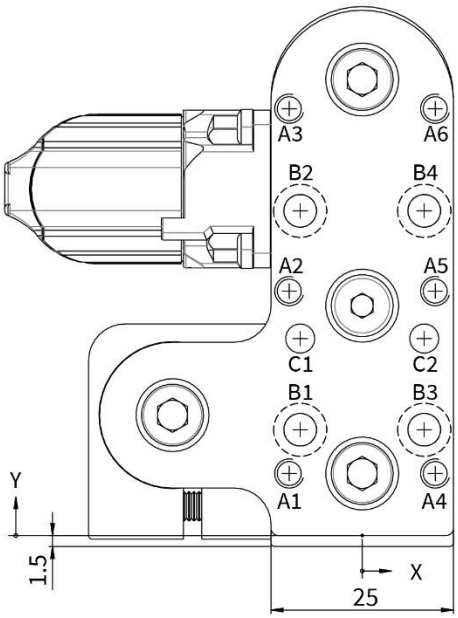


Linear Module with MagSpring DM01-23x80F-HP-R…	Stroke H [mm (inch)]		MS Stator length L2 [mm (inch)]		Carriage length L [mm (inch)]		Moving mass [1] [g (lb)]		Total weight [g (lb)]	
...-60_MSxx [2]	60	(2.36)	82	(3.23)	201	(7.91)	580	(1.28)	1293	(2.85)
…-100_MSxx [2]	100	(3.93)	140	(5.51)	241	(9.49)	728	(1.60)	1441	(3.18)
…-160_MSxx [2]	160	(6.30)	220	(8.66)	301	(11.85)	926	(2.04)	1639	(3.61)
…-220_MSxx [2]	220	(8.66)	300	(11.81)	361	(14.21)	1034	(2.28)	1747	(3.85)
…-290_MSxx [2]	290	(11.42)	300	(11.81)	431	(16.97)	1275	(2.81)	1988	(4.38)

[1] Mass: Slider, Shafts, Front mounting plate, Rear mounting plate, MagSpring slider
[2] MagSpring variants with different constant forces: MS11 (11N); MS12 (17N); MS13 (22N)

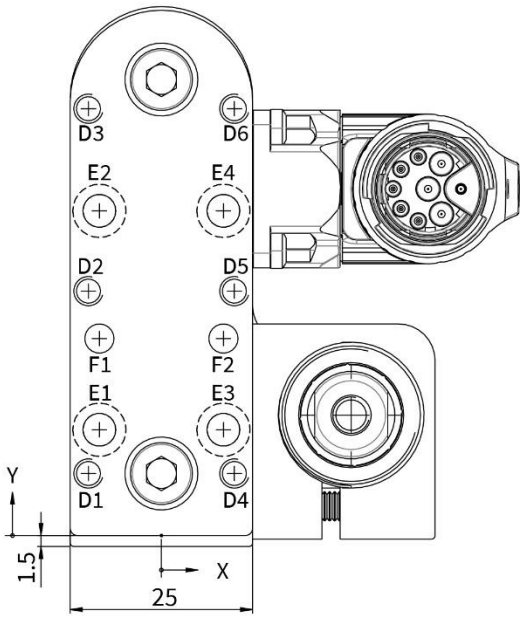
11.2.1 Mounting Plates

MA01k-20!D01-23



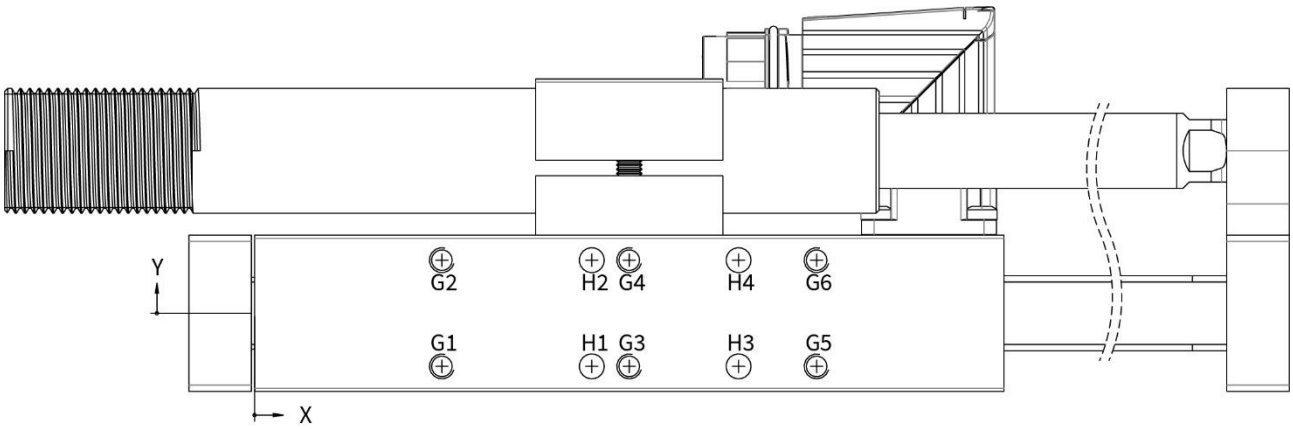
	X-POS.	Y-POS.	SIZE
A1	-10	8.5	M4x10
A2	-10	33.5	
A3	-10	58.5	
A4	10	8.5	
A5	10	33.5	
A6	10	58.5	
B1	-8.5	14.5	∅ 7.3x4.4U ∅ 4.5x10
B2	-8.5	44.5	
B3	8.5	14.5	
B4	8.5	44.5	
C1	-8.5	27	∅ 4 H7 +0.012 0 x8
C2	8.5	27	

DF01k-23-H



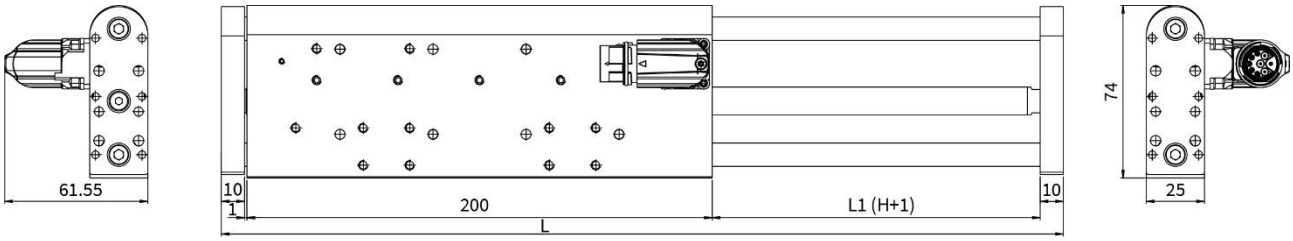
	X-POS.	Y-POS.	SIZE
D1	-10	8.5	M4x10
D2	-10	33.5	
D3	-10	58.5	
D4	10	8.5	
D5	10	33.5	
D6	10	58.5	
E1	-8.5	14.5	∅ 7.3x4.4U ∅ 4.5x10
E2	-8.5	44.5	
E3	8.5	14.5	
E4	8.5	44.5	
F1	-8.5	27	∅ 4 H7 +0.012 0 x8
F2	8.5	27	

11.2.2 Guide Block



	X-POS.	Y-POS.	SIZE
G1	30	-8.5	M4x8
G2	30	8.5	
G3	60	-8.5	
G4	60	8.5	
G5	90	-8.5	
G6	90	8.5	
H1	54	-8.5	∅ 4 H7 +0.012 0 x5
H2	54	8.5	
H3	77.5	-8.5	
H4	77.5	8.5	

11.3 Linear Modules DM01-23x160

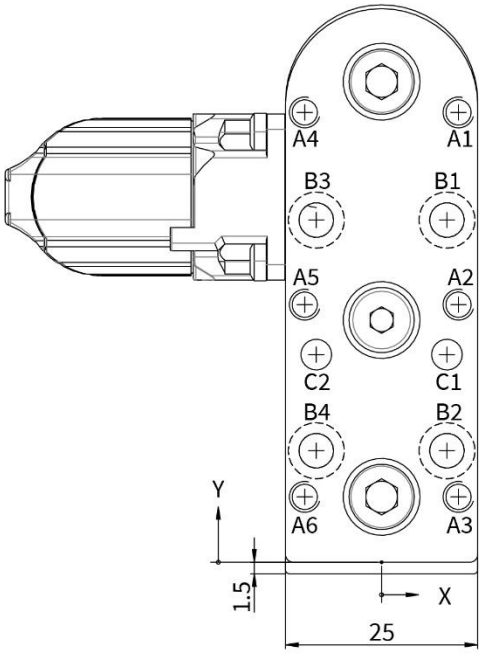


Linear Module	Stroke H [mm (inch)]		Carriage length L [mm (inch)]		Moving mass [1] [g (lb)]		Total weight [g (lb)]	
DM01-23x160H-XP-R-80	80	(3.15)	302	(11.89)	670	(1.48)	1640	(3.62)
DM01-23x160H-XP-R-140	140	(5.51)	362	(14.25)	800	(1.76)	1770	(3.90)
DM01-23x160H-XP-R-210	210	(8.27)	432	(17.00)	940	(2.07)	1910	(4.21)
DM01-23x160H-XP-R-270	270	(10.63)	492	(19.37)	1060	(2.34)	2030	(4.48)

[1] Mass: Slider, Shafts, Front mounting plate, Rear mounting plate

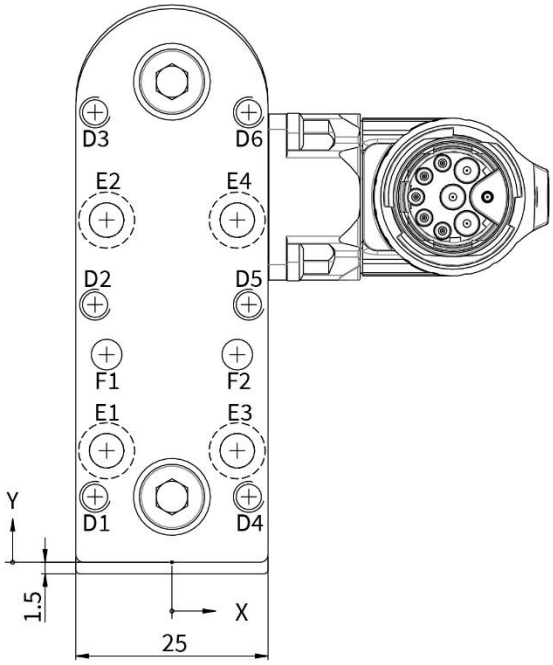
11.3.1 Mounting Plates

DF01k-23



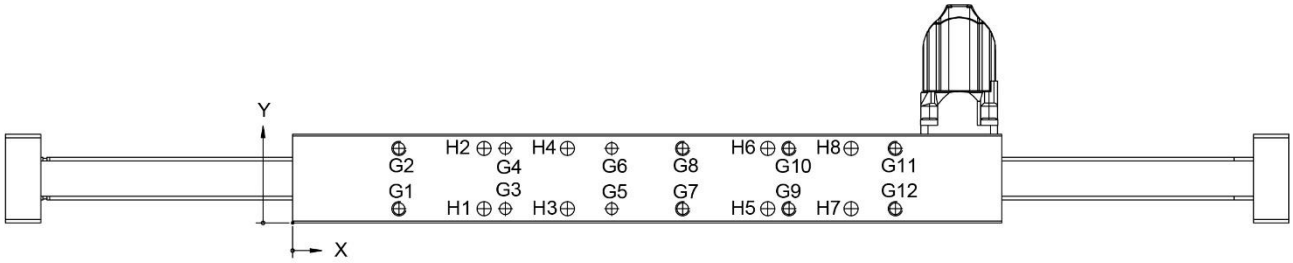
	X-POS.	Y-POS.	SIZE
A1	10	58.5	M4x10
A2	10	33.5	
A3	10	8.5	
A4	-10	58.5	
A5	-10	33.5	
A6	-10	8.5	
B1	8.5	44.5	∅ 7.3x4.4U ∅ 4.5x10
B2	8.5	14.5	
B3	-8.5	44.5	
B4	-8.5	14.5	
C1	8.5	27	+0.012 ∅ 4 H7 0 x8
C2	-8.5	27	

DF01k-23-H



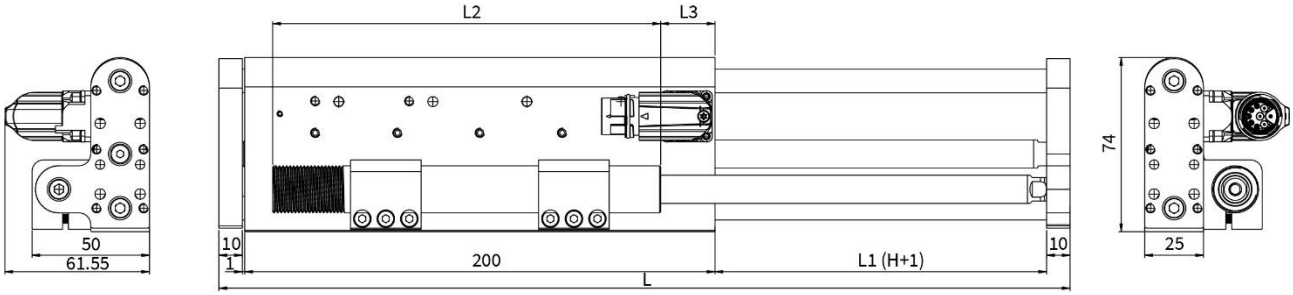
	X-POS.	Y-POS.	SIZE
D1	-10	8.5	M4x10
D2	-10	33.5	
D3	-10	58.5	
D4	10	8.5	
D5	10	33.5	
D6	10	58.5	
E1	-8.5	14.5	∅ 7.3x4.4U ∅ 4.5x10
E2	-8.5	44.5	
E3	8.5	14.5	
E4	8.5	44.5	
F1	-8.5	27	+0.012 ∅ 4 H7 0 x8
F2	8.5	27	

11.3.2 Guide Block



	X-POS.	Y-POS.	
G1	30	4	M4-6H ↧8
G2	30	21	
G3	60	4	
G4	60	21	
G5	90	4	
G6	90	21	
G7	110	4	
G8	110	21	
G9	140	4	
G10	140	21	
G11	170	4	
G12	170	21	
H1	54	4	⌀4 H7 +0.012 0 ↧5
H2	54	21	
H3	77.50	4	
H4	77.50	21	
H5	134	4	
H6	134	21	
H7	157.50	4	
H8	157.50	21	

11.4 Linear Modules DM01-23x160_MSxx

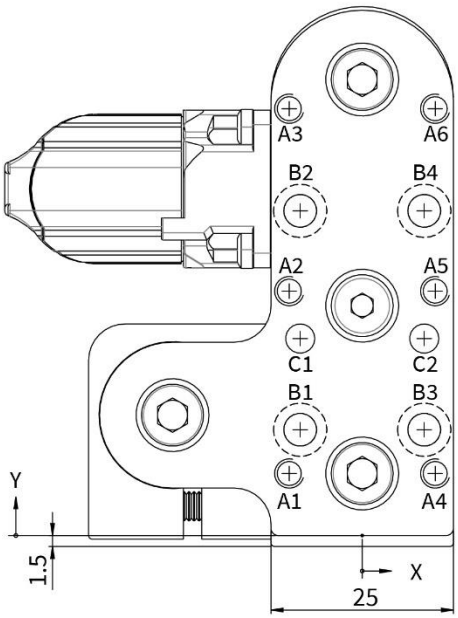


Linear Module with MagSpring DM01-23x160H-XP-R…	Stroke H [mm (inch)]		L3 [mm (inch)]		L2 [mm (inch)]		L [mm (inch)]		Moving mass [1] [g (lb)]		Total weight [g (lb)]	
...-80_MSxx [2]	80	(3.15)	23	(0.91)	110	(4.33)	301	(11.85)	790	(1.74)	1940	(4.28)
…-140_MSxx [2]	140	(5.51)	23	(0.91)	165	(5.51)	361	(14.21)	960	(2.12)	2170	(4.78)
…-210_MSxx [2]	210	(8.27)	39	(1.54)	220	(8.66)	431	(16.97)	1170	(2.58)	2490	(5.49)
…-270_MSxx [2]	270	(10.63)	40	(1.57)	300	(11.81)	491	(19.33)	1360	(3.00)	2780	(6.13)

[1] Mass: Slider, Shafts, Front mounting plate, Rear mounting plate, MagSpring slider
[2] MagSpring variants with different constant forces: MS11 (11N); MS12 (17N); MS13 (22N)

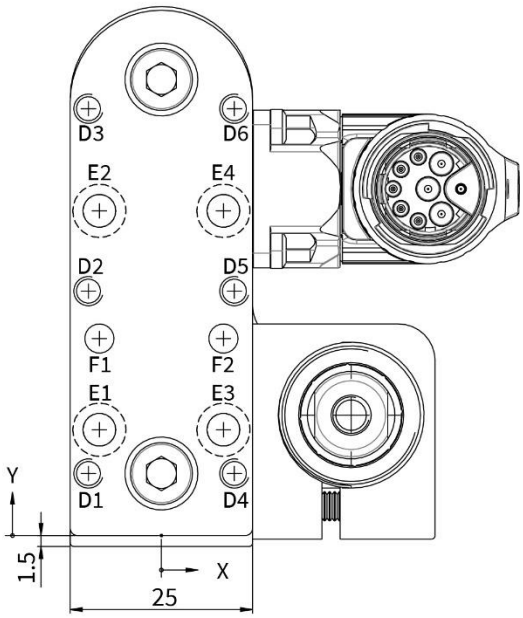
11.4.1 Mounting Plates

MA01k-20!D01-23



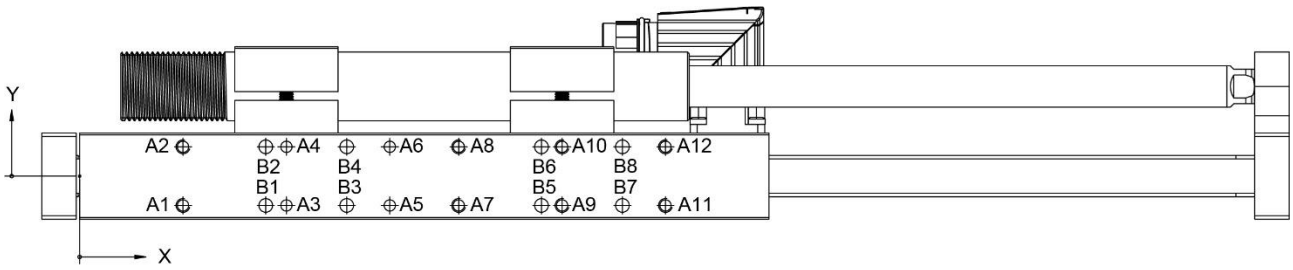
	X-POS.	Y-POS.	SIZE
A1	-10	8.5	M4x10
A2	-10	33.5	
A3	-10	58.5	
A4	10	8.5	
A5	10	33.5	
A6	10	58.5	
B1	-8.5	14.5	∅ 7.3x4.4U ∅ 4.5x10
B2	-8.5	44.5	
B3	8.5	14.5	
B4	8.5	44.5	
C1	-8.5	27	∅ 4 H7 +0.012 0 x8
C2	8.5	27	

DF01k-23-H



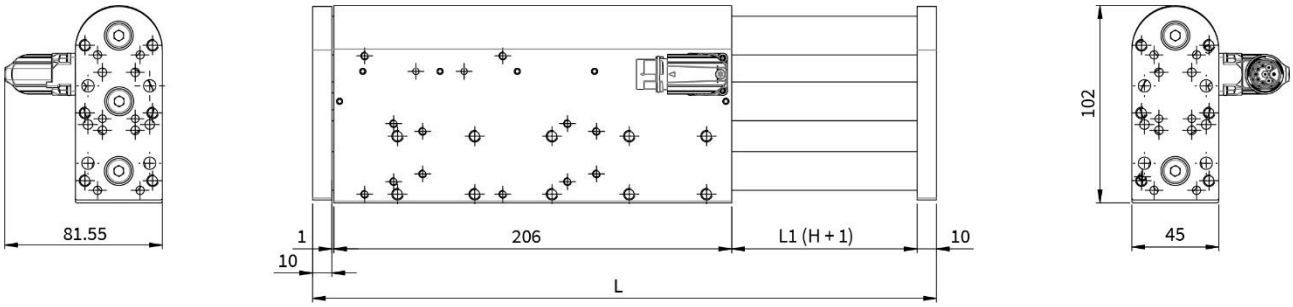
	X-POS.	Y-POS.	SIZE
D1	-10	8.5	M4x10
D2	-10	33.5	
D3	-10	58.5	
D4	10	8.5	
D5	10	33.5	
D6	10	58.5	
E1	-8.5	14.5	∅ 7.3x4.4U ∅ 4.5x10
E2	-8.5	44.5	
E3	8.5	14.5	
E4	8.5	44.5	
F1	-8.5	27	∅ 4 H7 +0.012 0 x8
F2	8.5	27	

11.4.2 Guide Block



	X-POS.	Y-POS.	
A1	30	-8.50	M4 ↧ 8
A2	30	8.50	
A3	60	-8.50	
A4	60	8.50	
A5	90	-8.50	
A6	90	8.50	
A7	110	-8.50	
A8	110	8.50	
A9	140	-8.50	
A10	140	8.50	
A11	170	-8.50	
A12	170	8.50	
B1	54	-8.50	∅4 H7 +0.012 0 ↧5
B2	54	8.50	
B3	77.50	-8.50	
B4	77.50	8.50	
B5	134	-8.50	
B6	134	8.50	
B7	157.50	-8.50	
B8	157.50	8.50	

11.5 Linear Modules DM01-37x120

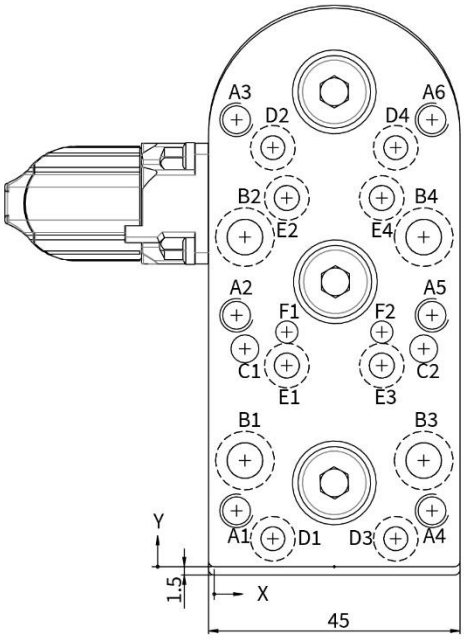


Linear Module	Stroke H [mm (inch)]		Carriage length L [mm (inch)]		Moving mass [1] [g (lb)]		Total weight [g (lb)]	
DM01-37x120F-HP-R-95	95	(3.74)	323	(12.72)	1740	(3.83)	3700	(8.16)
DM01-37x120F-HP-R-195	195	(7.68)	423	(16.65)	2192	(4.83)	4172	(9.20)
DM01-37x120F-HP-R-295	295	(11.62)	523	(20.59)	2678	(5.90)	4658	(10.27)
DM01-37x120F-HP-R-395	395	(15.55)	623	(24.53)	3163	(6.97)	5144	(11.34)
DM01-37x120F-HP-R-495	495	(19.49)	723	(28.46)	3649	(8.04)	5630	(12.41)

[1] Mass: Slider, Shafts, Front mounting plate, Rear mounting plate

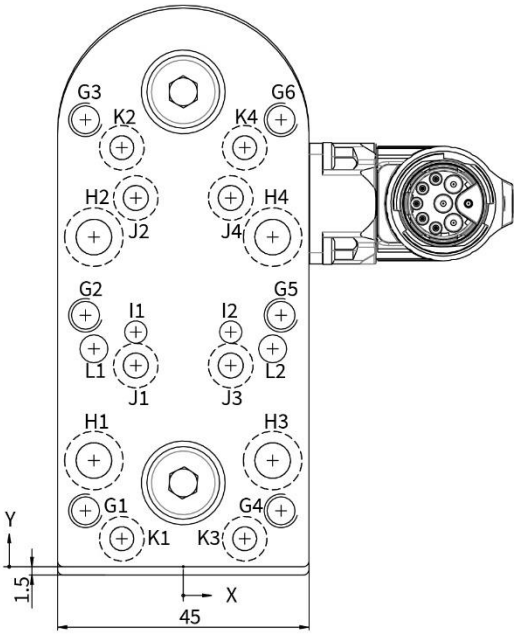
11.5.1 Mounting Plates

DF01k-37



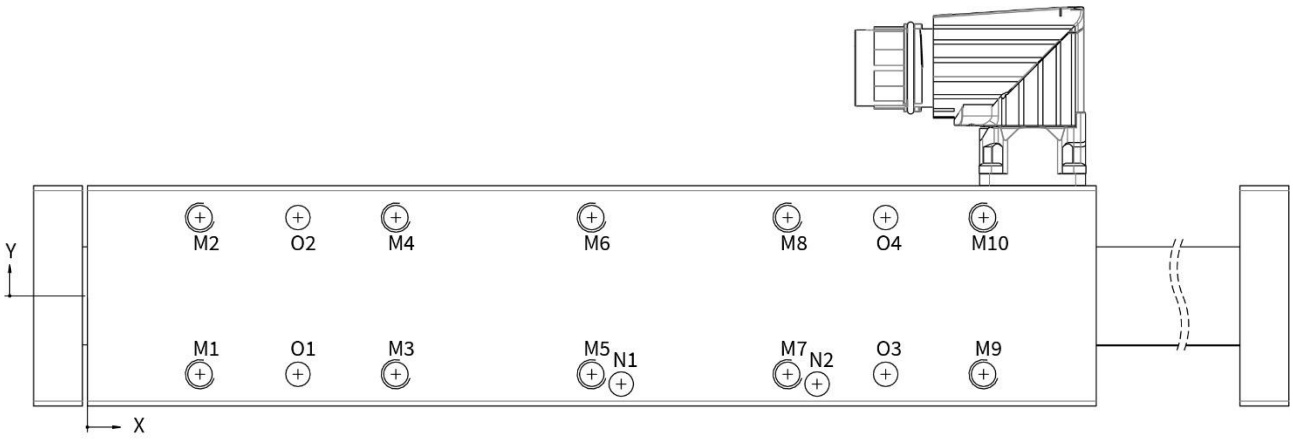
	X-POS.	Y-POS.	SIZE
A1	4	10	M6x10
A2	4	45	
A3	4	80	
A4	39	10	
A5	39	45	
A6	39	80	
B1	5.5	19	Ø 10.5x6.4U Ø 6.4x10
B2	5.5	59	
B3	37.5	19	
B4	37.5	59	
C1	5.5	39	+0.012 Ø 5 H7 0 x8
C2	37.5	39	
D1	10.5	5	Ø 8x4.4U Ø 4.3x10
D2	10.5	75	
D3	32.5	5	
D4	32.5	75	
E1	13	36	Ø 8x4.4U Ø 4.5x10
E2	13	66	
E3	30	36	
E4	30	66	
F1	13	42	+0.012 Ø 4 H7 0 x5
F2	30	42	

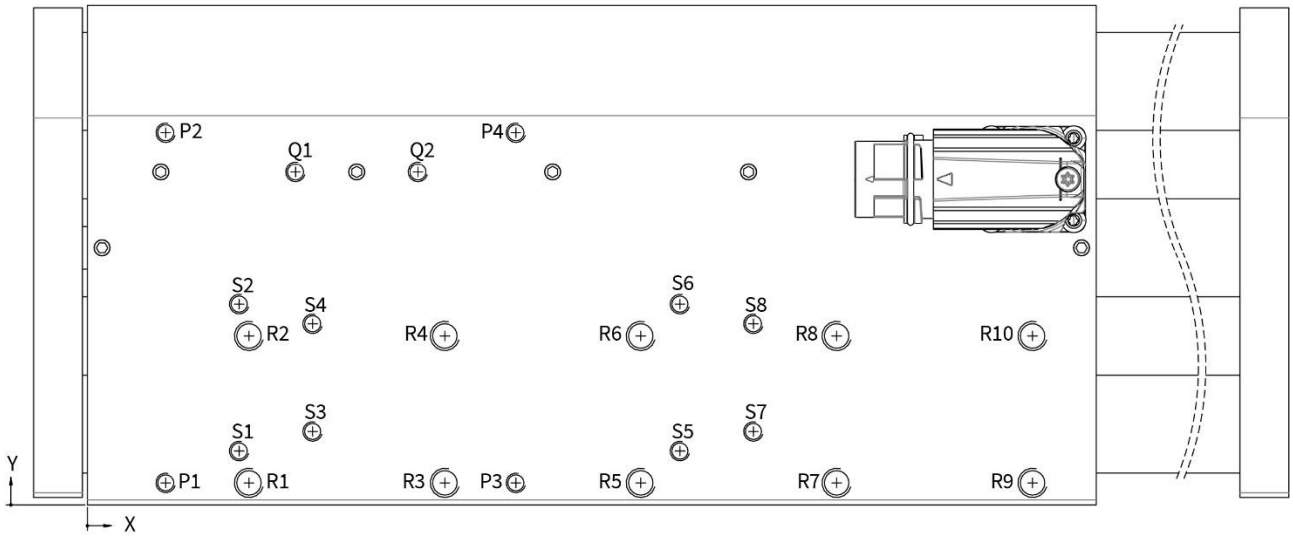
DF01k-37-H



	X-POS.	Y-POS.	SIZE
G1	-17.5	10	M6x10
G2	-17.5	45	
G3	-17.5	80	
G4	17.5	10	
G5	17.5	45	
G6	17.5	80	
H1	-16	19	Ø 10.5x6.4U Ø 6.4x10
H2	-16	59	
H3	16	19	
H4	16	59	
I1	-8.5	42	+0.012 Ø 4 H7 0 x5
I2	8.5	42	
J1	-8.5	36	Ø 8x4.4U Ø 4.5x10
J2	-8.5	66	
J3	8.5	36	
J4	8.5	66	
K1	-11	5	Ø 8x4.4U Ø 4.3x10
K2	-11	75	
K3	11	5	
K4	11	75	
L1	-16	39	+0.012 Ø 5 H7 0 x8
L2	16	39	

11.5.2 Guide Block



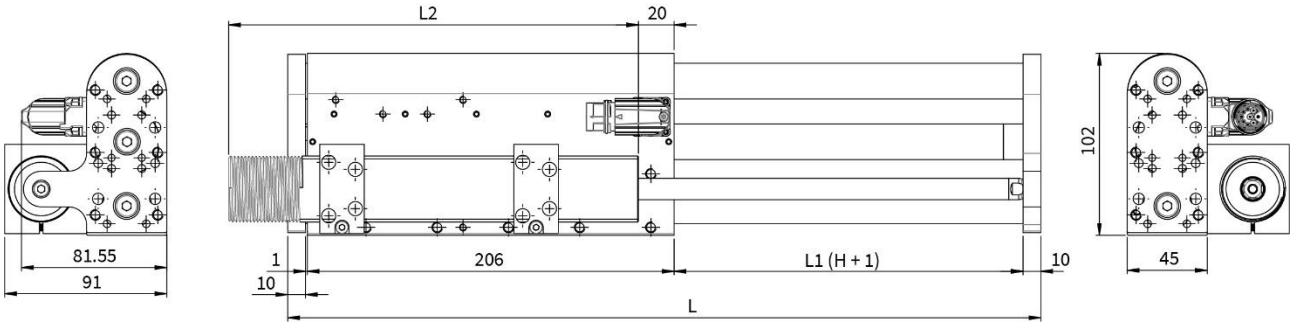


	X-POS.	Y-POS.	SIZE
M1	23	-16	M6x10
M2	23	16	
M3	63	-16	
M4	63	16	
M5	103	-16	
M6	103	16	
M7	143	-16	
M8	143	16	
M9	183	-16	
M10	183	16	
N1	109	-18	Ø 5 H7 +0.012 0 x6.25
N2	149	-18	
O1	43	-16	Ø 5 H7 +0.012 0 x10
O2	43	16	
O3	163	-16	
O4	163	16	

	X-POS.	Y-POS.	SIZE
P1	16	4.5	M4x8
P2	16	76	
P3	87.5	4.5	
P4	87.5	76	
Q1	42.5	68	M4x8
Q2	67.5	68	
R1	33	4.5	M6x10
R2	33	34.5	
R3	73	4.5	
R4	73	34.5	
R5	113	4.5	
R6	113	34.5	
R7	153	4.5	
R8	153	34.5	
R9	193	4.5	
R10	193	34.5	
S1	31	11	M4x6
S2	31	41	
S3	46	15	
S4	46	37	
S5	121	11	
S6	121	41	
S7	136	15	
S8	136	37	

Reserved for mounting cable guide: S1, S2

11.6 Linear Modules DM01-37x120_MSxx

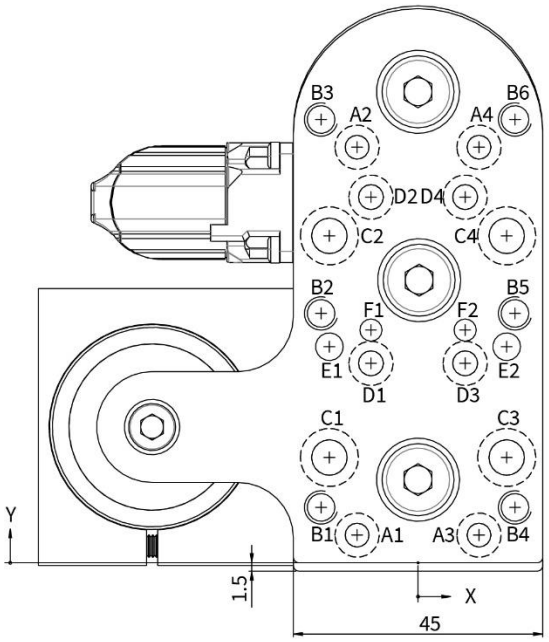


Linear Module with MagSpring DM01-37x120F-HP-R…	Stroke H [mm (inch)]		MS Stator length L2 [mm (inch)]		Carriage length L [mm (inch)]		Moving mass [1] [g (lb)]		Total weight [g (lb)]	
...-95_MSxx [2]	95	(3.74)	155	(6.10)	323	(12.72)	1857	(4.09)	4858	(10.71)
…-195_MSxx [2]	195	(7.68)	230	(9.05)	423	(16.65)	2469	(5.44)	6009	(13.24)
…-295_MSxx [2]	295	(11.62)	305	(12.01)	523	(20.59)	3055	(6.73)	7037	(15.51)

[1] Mass: Slider, Shafts, Front mounting plate, Rear mounting plate, MagSpring slider
[2] MagSpring variants with different constant forces: MS02 (40N); MS03 (50N); MS04 (60N)

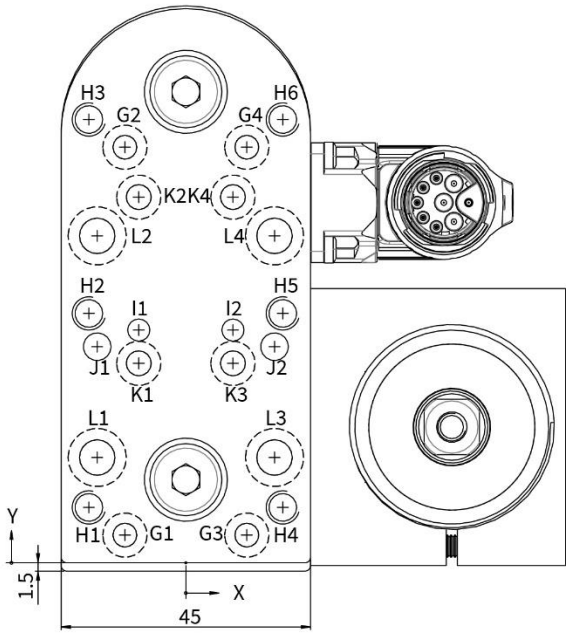
11.6.1 Mounting Plates

MA01k-37!D01-37



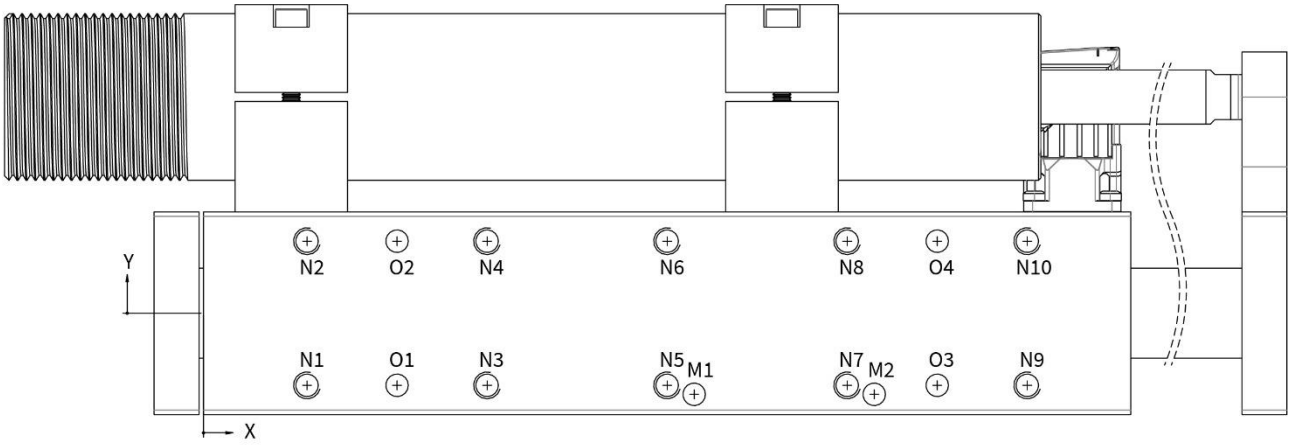
	X-POS.	Y-POS.	SIZE
A1	-11	5	∅ 8x4.4U ∅ 4.3x10
A2	-11	75	
A3	11	5	
A4	11	75	
B1	-17.5	10	M6x10
B2	-17.5	45	
B3	-17.5	80	
B4	17.5	10	
B5	17.5	45	
B6	17.5	80	
C1	-16	19	∅ 10.5x6.4U ∅ 6.4x10
C2	-16	59	
C3	16	19	
C4	16	59	
D1	-8.5	36	∅ 8x4.4U ∅ 4.5x10
D2	-8.5	66	
D3	8.5	36	
D4	8.5	66	
E1	-16	39	∅ 5 H7 +0.012 0 x8
E2	16	39	
F1	-8.5	42	∅ 4 H7 +0.012 0 x5
F2	8.5	42	

DF01k-37-H



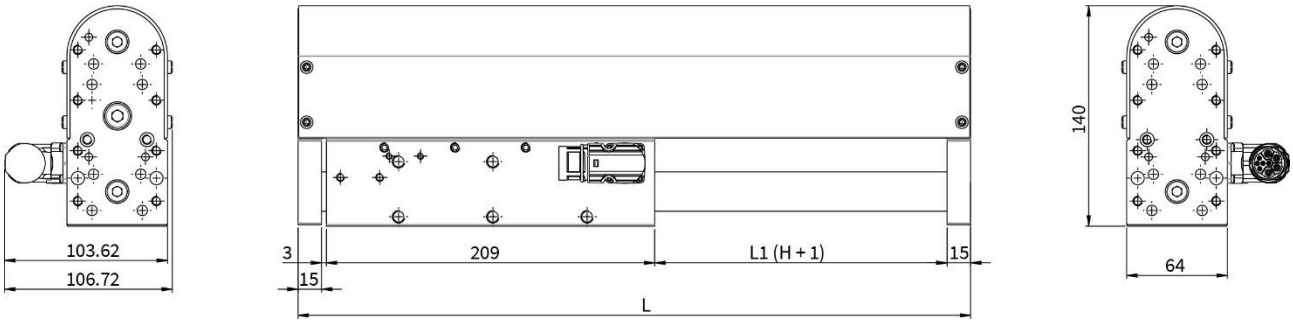
	X-POS.	Y-POS.	SIZE
G1	-11	5	∅ 8x4.4U ∅ 4.3x10
G2	-11	75	
G3	11	5	
G4	11	75	
H1	-17.5	10	M6x10
H2	-17.5	45	
H3	-17.5	80	
H4	17.5	10	
H5	17.5	45	
H6	17.5	80	
I1	-8.5	42	∅ 4 H7 +0.012 0 x5
I2	8.5	42	
J1	-16	39	∅ 5 H7 +0.012 0 x8
J2	16	39	
K1	-8.5	36	∅ 8x4.4U ∅ 4.5x10
K2	-8.5	66	
K3	8.5	36	
K4	8.5	66	
L1	-16	19	∅ 10.5x6.4U ∅ 6.4x10
L2	-16	59	
L3	16	19	
L4	16	59	

11.6.2 Guide Block



	X-POS.	Y-POS.	SIZE
M1	109	-18	+0.012 Ø 5 H7 0 x6.25
M2	149	-18	
N1	23	-16	M6x10
N2	23	16	
N3	63	-16	
N4	63	16	
N5	103	-16	
N6	103	16	
N7	143	-16	
N8	143	16	
N9	183	-16	
N10	183	16	
O1	43	-16	+0.012 Ø 5 H7 0 x10
O2	43	16	
O3	163	-16	
O4	163	16	

11.7 Linear Modules DM01-48x150_CS01

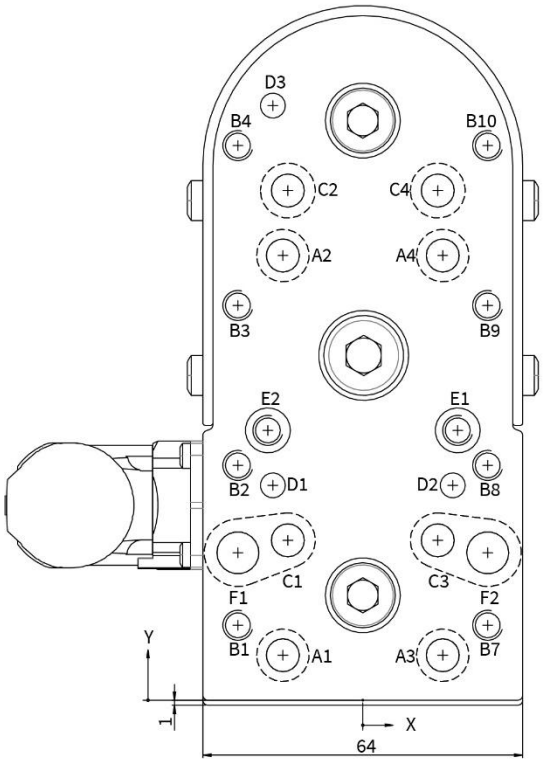


Linear Module	Stroke H [mm (inch)]		Carriage length L [mm (inch)]		Moving mass [1] [g (lb)]		Total weight [g (lb)]	
DM01-48x150G-HP-C-125_CS01	125	(4.92)	368	(14.49)	4158	(9.16)	8033	(17.71)
DM01-48x150G-HP-C-185_CS01	185	(7.28)	428	(16.85)	4668	(10.29)	8542	(18.83)
DM01-48x150G-HP-C-275_CS01	275	(10.83)	518	(20.39)	5577	(12.29)	9451	(20.83)
DM01-48x150G-HP-C-395_CS01	395	(15.55)	638	(25.12)	6790	(14.97)	10664	(23.51)
DM01-48x150G-HP-C-485_CS01	485	(19.09)	728	(28.66)	7702	(19.98)	11576	(25.52)
DM01-48x150G-HP-C-575_CS01	575	(22.64)	818	(32.20)	8608	(18.97)	12483	(27.52)

[1] Mass: Slider, Shafts, Front mounting plate, Rear mounting plate

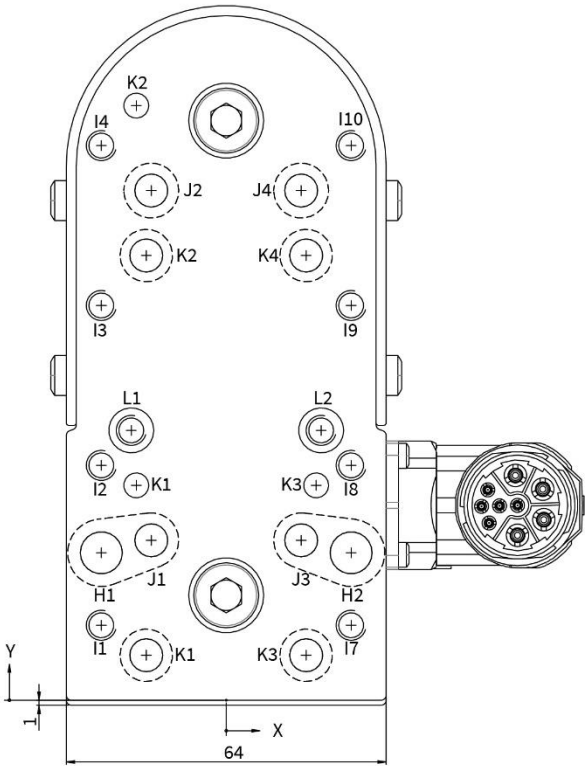
11.7.1 Mounting Plates

DF01k-48-H



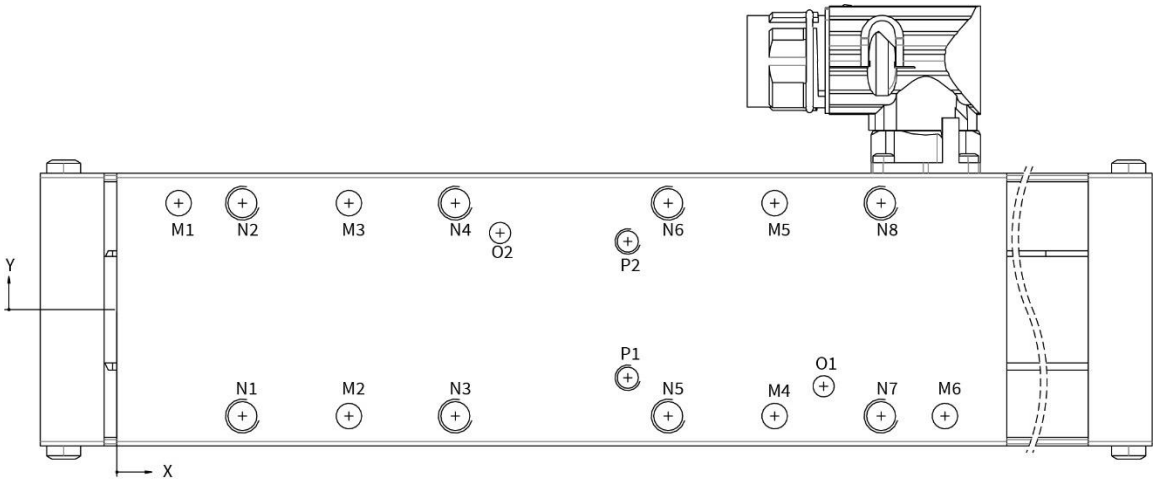
	X-POS.	Y-POS.	SIZE
A1	-16	9	Ø 10.5x6.4U Ø 6.6x15
A2	-16	89	
A3	16	9	
A4	16	89	
B1	-25	15	M6x15
B2	-25	47	
B3	-25	79	
B4	-25	111	
B7	25	15	
B8	25	47	
B9	25	79	
B10	25	111	
C1	-15	32	Ø 11x6.4U Ø 6.6x15
C2	-15	102	
C3	15	32	
C4	15	102	
D1	-18	43	Ø 5 H7 +0.012 0 x10
D2	18	43	
D3	-18	119	
E1	19	54	Ø 9 H7 +0.015 0 x2U M6x13
E2	-19	54	
F1	-25	29.5	Ø 13.5x6.4U Ø 8.4x15
F2	25	29.5	

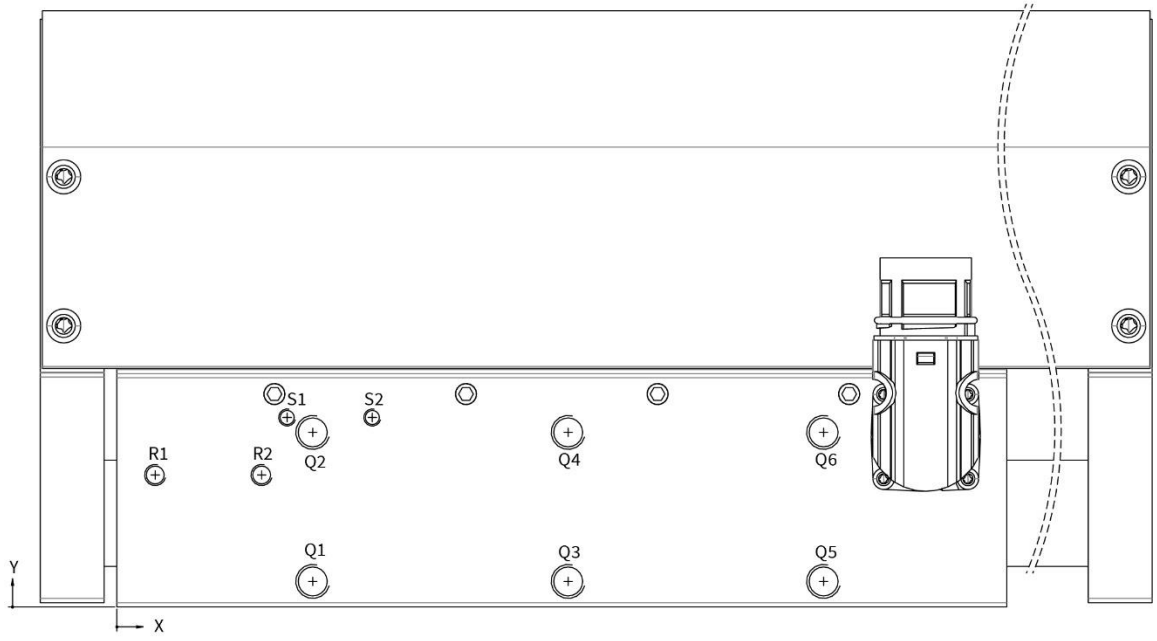
DF01k-48



	X-POS.	Y-POS.	SIZE
K1	-16	9	Ø 10.5x6.4U Ø 6.6x15
K2	-16	89	
K3	16	9	
K4	16	89	
H1	-25	29.5	Ø 13.5x6.4U Ø 8.4x15
H2	25	29.5	
I1	-25	15	M6x15
I2	-25	47	
I3	-25	79	
I4	-25	111	
I7	25	15	
I8	25	47	
I9	25	79	
I10	25	111	
J1	-15	32	Ø 11x6.4U Ø 6.6x15
J2	-15	102	
J3	15	32	
J4	15	102	
K1	-18	43	Ø 5 H7 +0.012 0 x10
K2	-18	119	
K3	18	43	
L1	-19	54	Ø 9 H7 +0.015 0 x2U M6x13
L2	19	54	

11.7.2 Guide Block



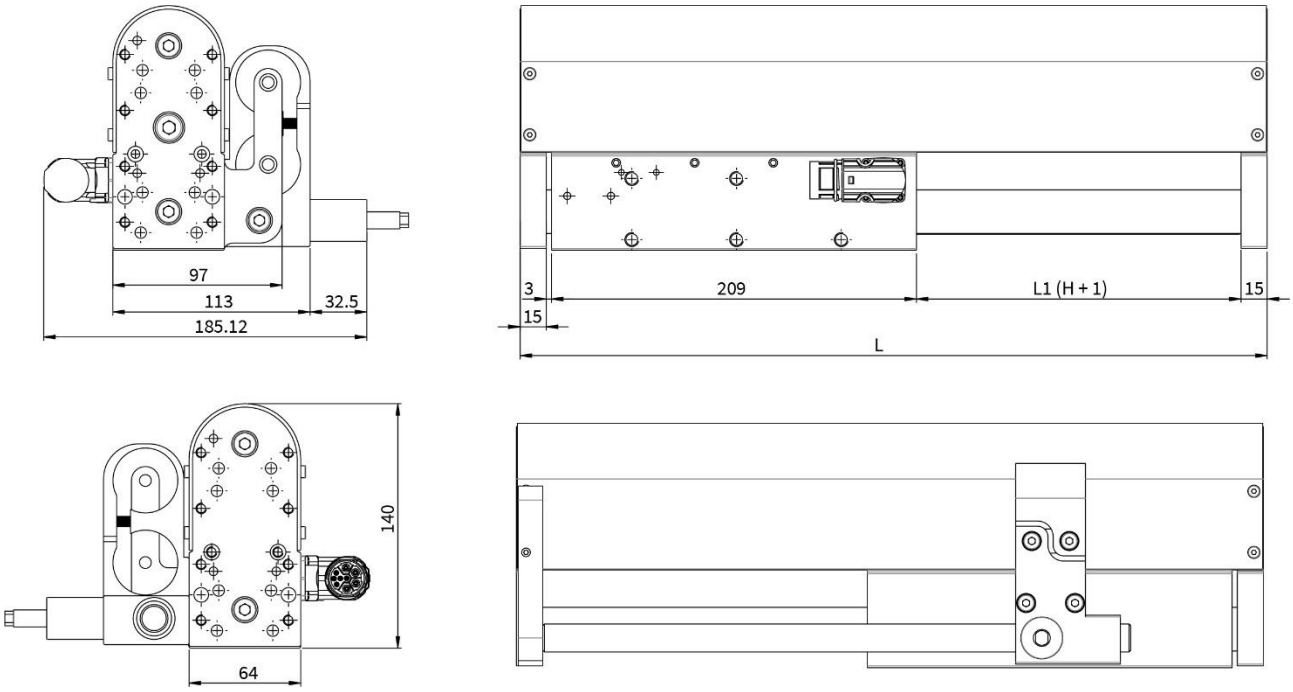


	X-POS.	Y-POS.	SIZE
M1	14.5	25	∅ 6 H7 +0.012 0 x7
M2	54.5	-25	
M3	54.5	25	
M4	154.5	-25	
M5	154.5	25	
M6	194.5	-25	
N1	29.5	-25	M8x12
N2	29.5	25	
N3	79.5	-25	
N4	79.5	25	
N5	129.5	-25	
N6	129.5	25	
N7	179.5	-25	
N8	179.5	25	
O1	166	-18	∅ 5 H7 +0.012 0 x10
O2	90	18	
P1	120	-16	M6x9
P2	120	16	

	X-POS.	Y-POS.	SIZE
Q1	46	6	M8x12
Q2	46	41	
Q3	106	6	
Q4	106	41	
Q5	166	6	
Q6	166	41	
R1	9	31	M5x10
R2	34	31	
S1	40	44.5	M4x8
S2	60	44.5	

Reserved for mounting cable guide: R1, R2, S1, S2,

11.8 Linear Modules DM01-48x150_CS01_BK01

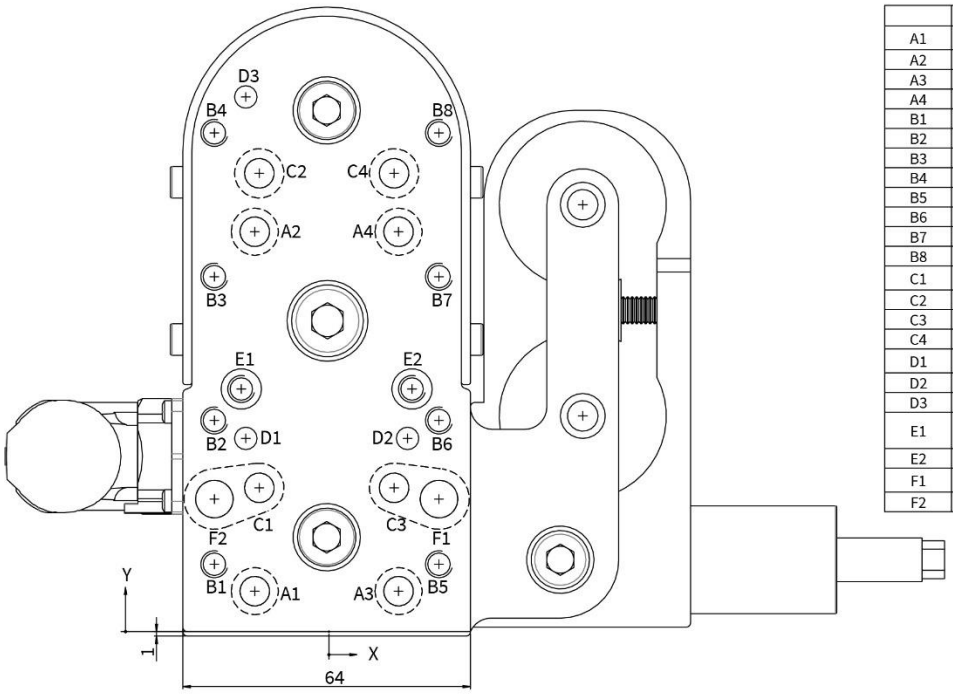


Linear module with holding brake	Stroke H [mm (inch)]		Carriage length L [mm (inch)]		Moving mass [1] [g (lb)]		Total weight [g (lb)]	
DM01-48x150G-HP-C-125_CS01_BK01 [2]	125	(4.92)	368	(14.49)	4688	(10.33)	8957	(19.74)
DM01-48x150G-HP-C-185_CS01_BK01 [2]	185	(7.28)	428	(16.85)	5307	(11.69)	9576	(21.11)
DM01-48x150G-HP-C-275_CS01_BK01 [2]	275	(10.83)	518	(20.39)	6407	(14.12)	10676	(23.53)

[1] Mass: Slider, Shafts, Front mounting plate, Rear mounting plate, Brake shaft
[2] Pneumatic holding brake with max. holding force 1000 N

11.8.1 Mounting Plates

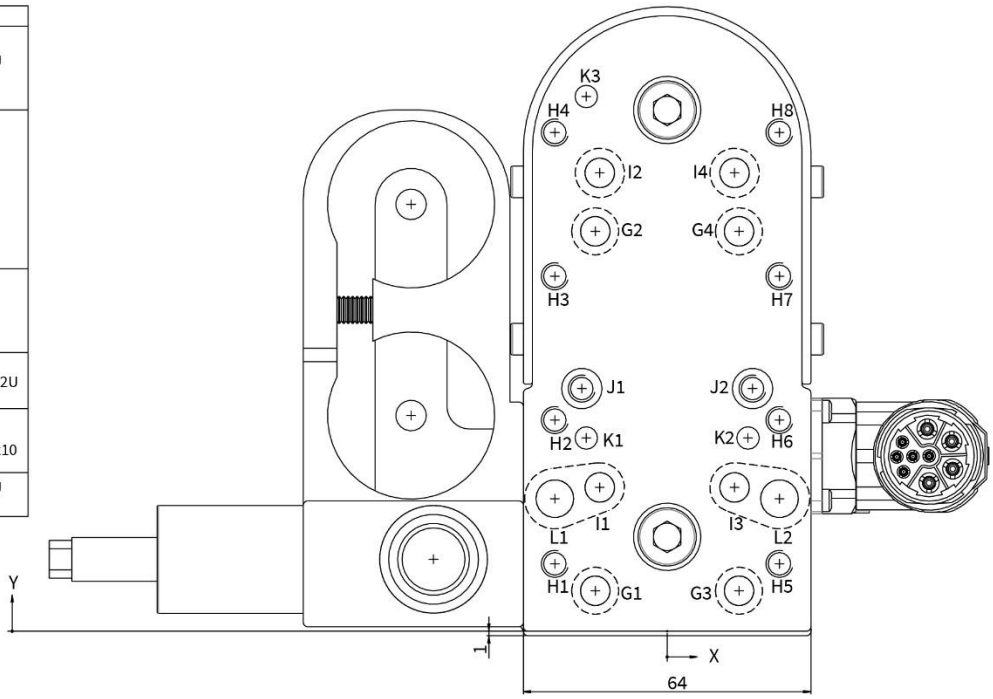
MA01k-DM01-48!37-2



	X-POS.	Y-POS.	SIZE
A1	-16.5	9	Ø 10.5x6.4U Ø 6.6 x15
A2	-16.5	89	
A3	15.5	9	
A4	15.5	89	
B1	-25.5	15	M6x15
B2	-25.5	47	
B3	-25.5	79	
B4	-25.5	111	
B5	24.5	15	
B6	24.5	47	
B7	24.5	79	
B8	24.5	111	
C1	-15.5	32	Ø 11x6.4U Ø 6.6 x15
C2	-15.5	102	
C3	14.5	32	
C4	14.5	102	
D1	-18.5	43	+0.012 Ø 5 H7 0 x10
D2	17.5	43	
D3	-18.5	119	
E1	-19.5	54	+0.015 Ø 9 H7 0 x2 M6x13
E2	18.5	54	
F1	24.5	29.5	Ø 13.5x6.4U Ø 8.4 x15
F2	-25.5	29.5	

DF01k-48-H

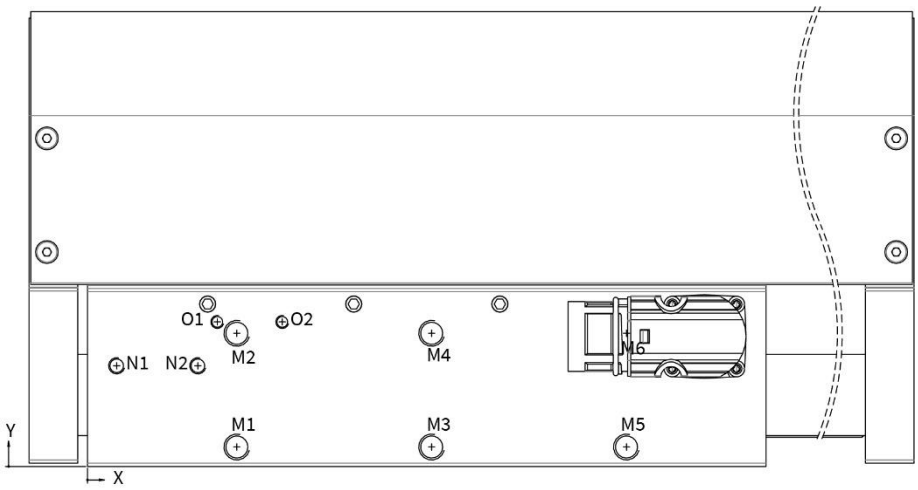
	X-POS.	Y-POS.	SIZE
G1	-16	9	Ø 10.5x6.4U Ø 6.6 x15
G2	-16	89	
G3	16	9	
G4	16	89	
H1	-25	15	M6x15
H2	-25	47	
H3	-25	79	
H4	-25	111	
H5	25	15	
H6	25	47	
H7	25	79	
H8	25	111	
I1	-15	32	Ø 11x6.4U Ø 6.6 x15
I2	-15	102	
I3	15	32	
I4	15	102	
J1	-19	54	+0.015 Ø 9 H7 0 x2U M6x13
J2	19	54	
K1	-18	43	+0.012 Ø 5 H7 0 x10
K2	18	43	
K3	-18	119	
L1	-25	29.5	Ø 13.5x6.4U Ø 8.4 x15
L2	25	29.5	



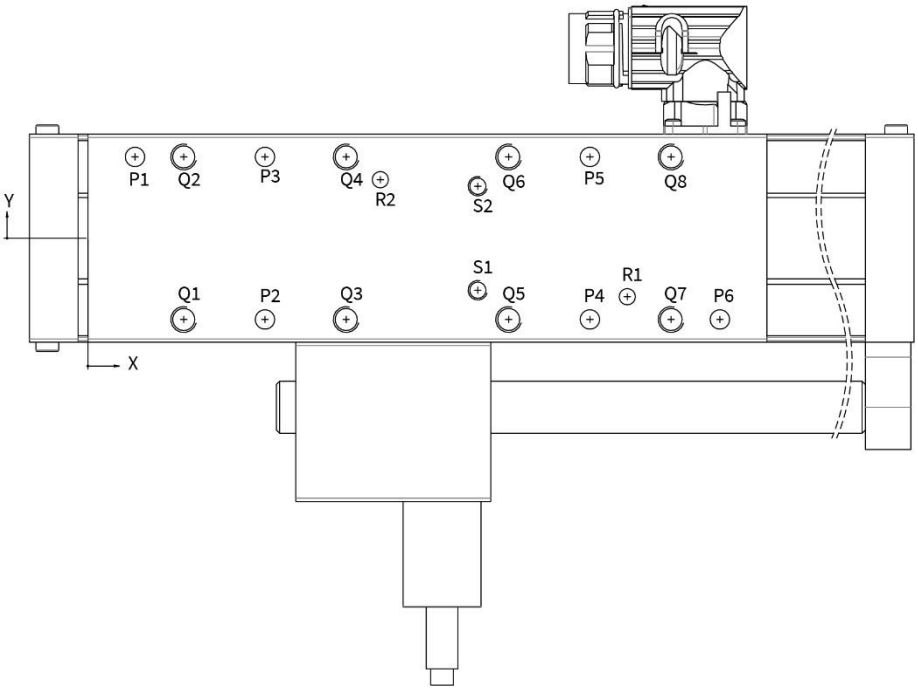
11.8.2 Guide Block

	X-POS.	Y-POS.	SIZE
M1	46	6	M8x12
M2	46	41	
M3	106	6	
M4	106	41	
M5	166	6	
M6	166	41	
N1	9	31	M5x10
N2	34	31	
O1	40	44.5	M4x8
O2	60	44.5	

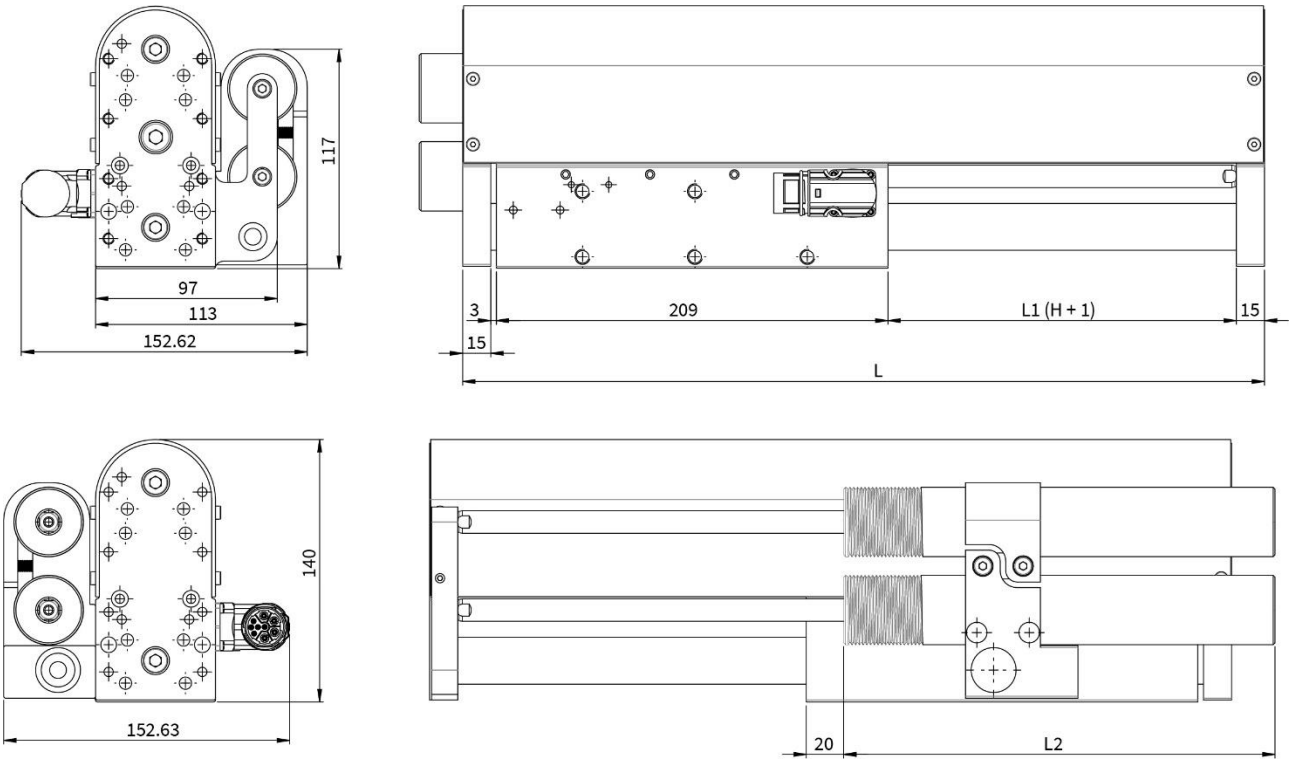
Reserved for mounting cable guide:
N1, N2, O1, O2



	X-POS.	Y-POS.	SIZE
P1	14.5	25	Ø 6 H7 +0.012 0 x7
P2	54.5	-25	
P3	54.5	25	
P4	154.5	-25	
P5	154.5	25	
P6	194.5	-25	
Q1	29.5	-25	M8x12
Q2	29.5	25	
Q3	79.5	-25	
Q4	79.5	25	
Q5	129.5	-25	
Q6	129.5	25	
Q7	179.5	-25	
Q8	179.5	25	
R1	166	-18	Ø 5 H7 +0.012 0 x10
R2	90	18	
S1	120	-16	M6x9
S2	120	16	



11.9 Linear Modules DM01-48x150_CS01_MS08

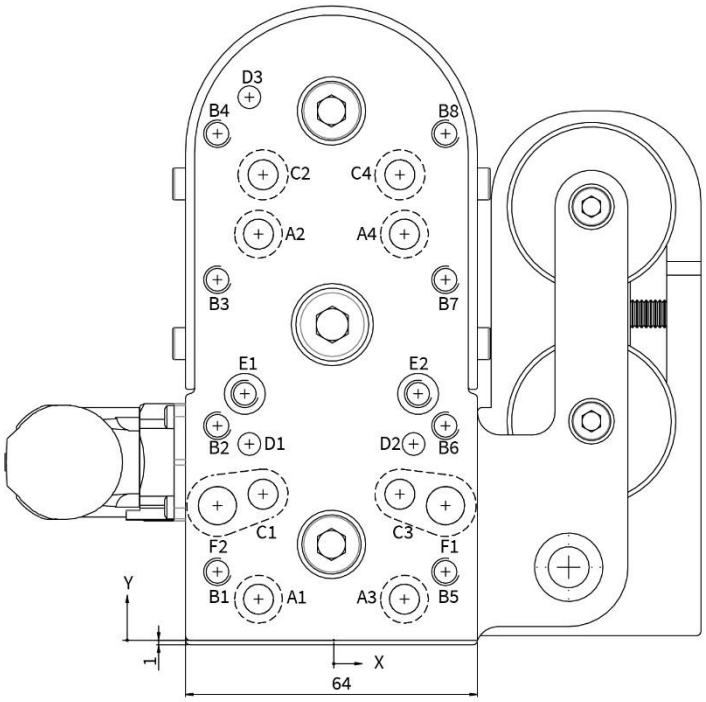


Linear module with MagSpring DM01-48x150G-HP-C…	Stroke H [mm (inch)]		MS Stator length L2 [mm (inch)]		Carriage length L [mm (inch)]		Moving mass [1] [g (lb)]		Total weight [g (lb)]	
...-125_CS01_MS08 [2]	125	(4.92)	155	(6.10)	368	(14.49)	4690	(10.34)	10699	(23.59)
...-185_CS01_MS08 [2]	185	(7.28)	230	(9.06)	428	(16.85)	5407	(11.92)	12276	(27.06)
...-275_CS01_MS08 [2]	275	(10.83)	305	(12.0)	518	(20.39)	6517	(14.37)	14266	(31.45)

[1] Mass: Slider, Shafts, Front mounting plate, Rear mounting plate, MagSpring slider
[2] MagSpring with constant force 120 N

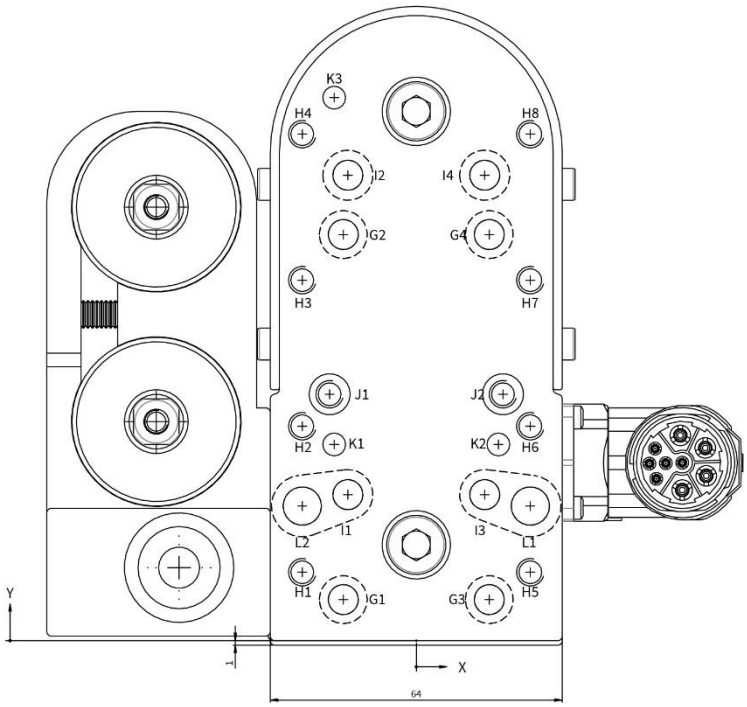
11.9.1 Mounting Plates

MA01k-DM01-48!37-2



	X-POS.	Y-POS.	SIZE
A1	-16.5	9	∅ 10.5x6.4U ∅ 6.6 x15
A2	-16.5	89	
A3	15.5	9	
A4	15.5	89	
B1	-25.5	15	M6x15
B2	-25.5	47	
B3	-25.5	79	
B4	-25.5	111	
B5	24.5	15	
B6	24.5	47	
B7	24.5	79	
B8	24.5	111	
C1	-15.5	32	∅ 11x6.4U ∅ 6.6 x15
C2	-15.5	102	
C3	14.5	32	
C4	14.5	102	
D1	-18.5	43	+0.012 ∅ 5 H7 0 x10
D2	17.5	43	
D3	-18.5	119	
E1	-19.5	54	+0.015 ∅ 9 H7 0 x2 M6x13
E2	18.5	54	
F1	24.5	29.5	∅ 13.5x6.4U ∅ 8.4 x15
F2	-25.5	29.5	

DF01k-48-H

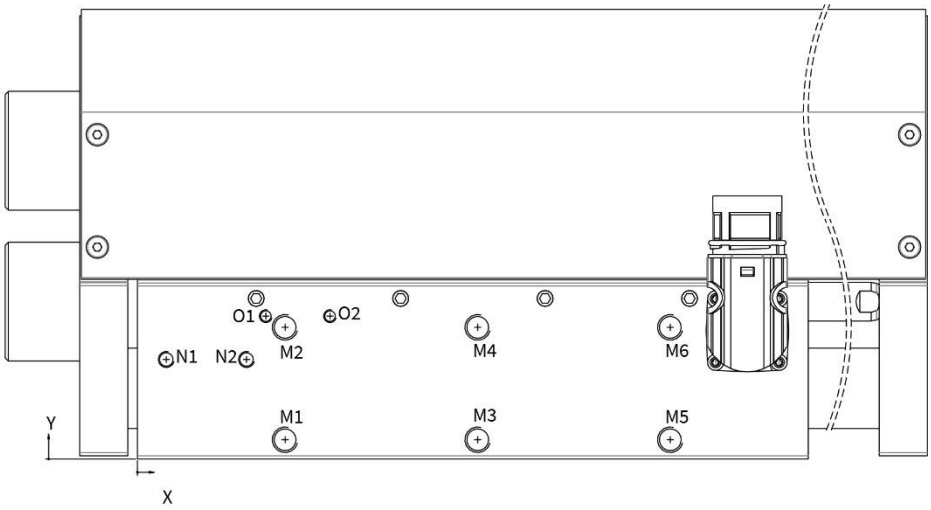


	X-POS.	Y-POS.	SIZE
G1	-16	9	∅ 10.5x6.4U ∅ 6.6 x15
G2	-16	89	
G3	16	9	
G4	16	89	
H1	-25	15	M6x15
H2	-25	47	
H3	-25	79	
H4	-25	111	
H5	25	15	
H6	25	47	
H7	25	79	
H8	25	111	
I1	-15	32	∅ 11x6.4U ∅ 6.6 x15
I2	-15	102	
I3	15	32	
I4	15	102	
J1	-19	54	+0.015 ∅ 9 H7 0 x2U M6x13
J2	19	54	
K1	-18	43	+0.012 ∅ 5 H7 0 x10
K2	18	43	
K3	-18	119	
L1	25	29.5	∅ 13.5x6.4U ∅ 8.4 x15
L2	-25	29.5	

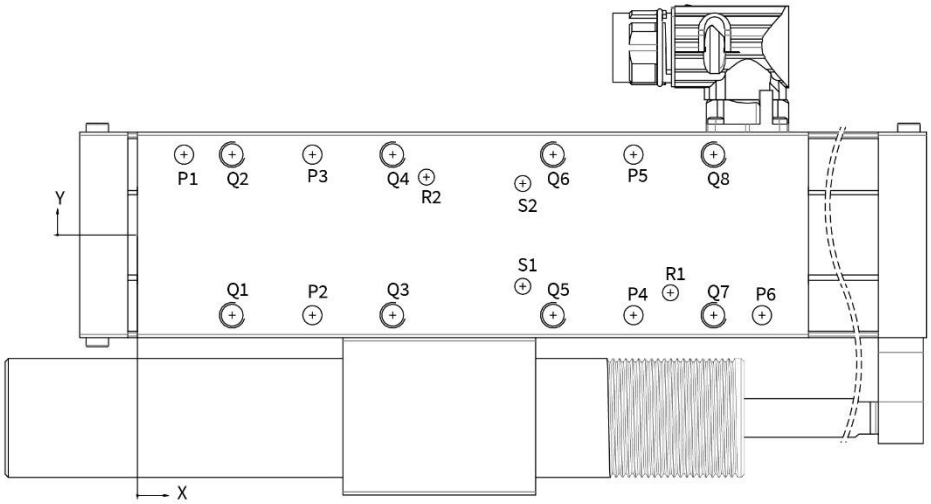
11.9.2 Guide Block

	X-POS.	Y-POS.	SIZE
M1	46	6	M8x12
M2	46	41	
M3	106	6	
M4	106	41	
M5	166	6	
M6	166	41	
N1	9	31	M5x10
N2	34	31	
O1	40	44.5	M4x8
O2	60	44.5	

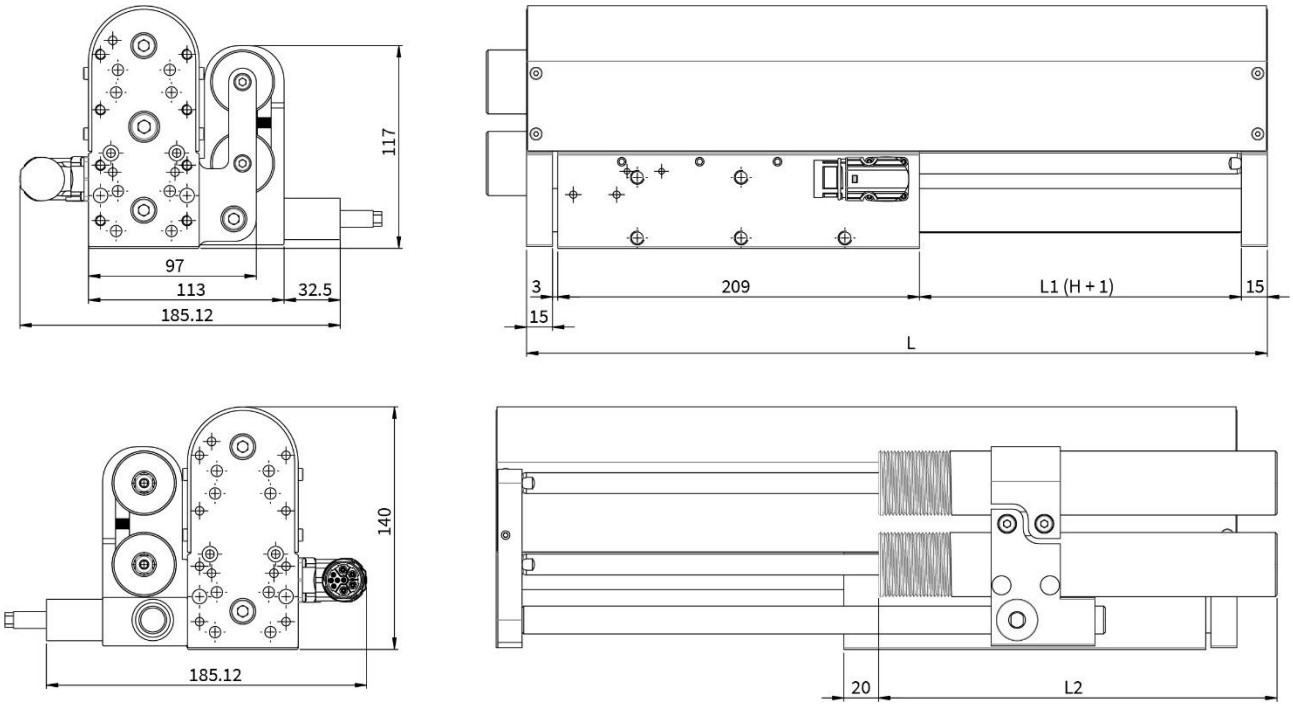
Reserved for mounting cable guide:
N1, N2, O1, O2



	X-POS.	Y-POS.	SIZE
P1	14.5	25	∅ 6 H7 +0.012 0 x7
P2	54.5	-25	
P3	54.5	25	
P4	154.5	-25	
P5	154.5	25	
P6	194.5	-25	
Q1	29.5	-25	M8x12
Q2	29.5	25	
Q3	79.5	-25	
Q4	79.5	25	
Q5	129.5	-25	
Q6	129.5	25	
Q7	179.5	-25	
Q8	179.5	25	
R1	166	-18	∅ 5 H7 +0.012 0 x10
R2	90	18	
S1	120	-16	M6x9
S2	120	16	



11.10 Linear Modules DM01-48x150_CS01_MS08_BK01

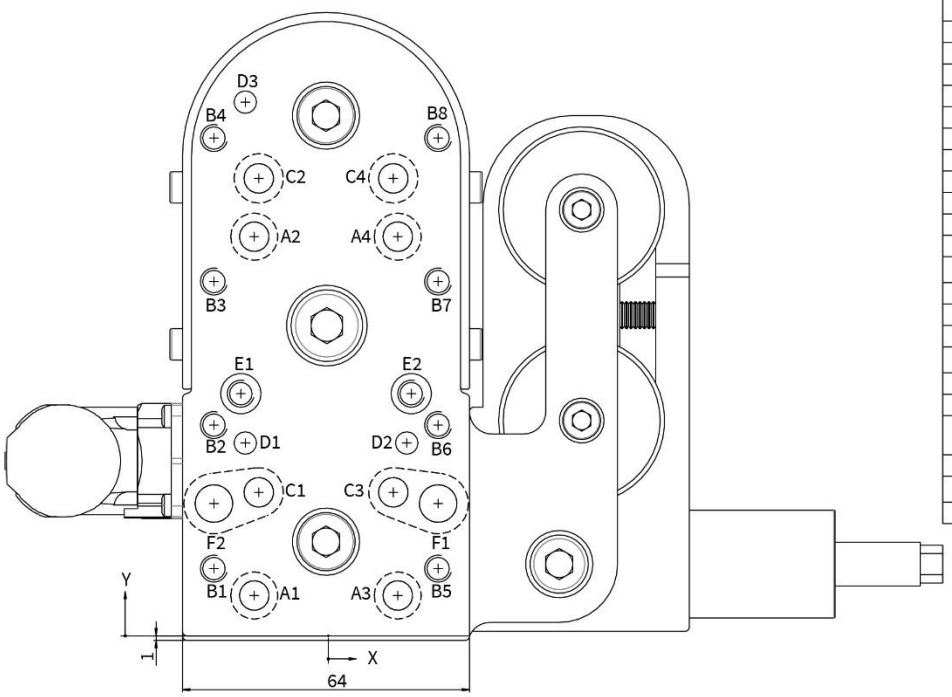


Linear module with MagSpring DM01-48x150G-HP-C…	Stroke H [mm (inch)]		MS Stator length L2 [mm (inch)]		Carriage length L [mm (inch)]		Moving mass [1] [g (lb)]		Total weight [g (lb)]	
...- 125_CS01_MS08_BK01 [2]	125	(4.92)	155	(6.10)	368	(14.49)	5120	(11.29)	11229	(24.75)
...- 185_CS01_MS08_BK01 [2]	185	(7.28)	230	(9.06)	428	(16.85)	5947	(13.11)	12936	(28.52)
...- 275_CS01_MS08_BK01 [2]	275	(10.83)	305	(12.0)	518	(20.39)	7247	(15.97)	15116	(33.32)

[1] Mass: Slider, Shafts, Front mounting plate, Rear mounting plate, Brake shaft, MagSpring slider
[2] MagSpring with constant force 120 N, Pneumatic holding brake with max. holding force 1000 N

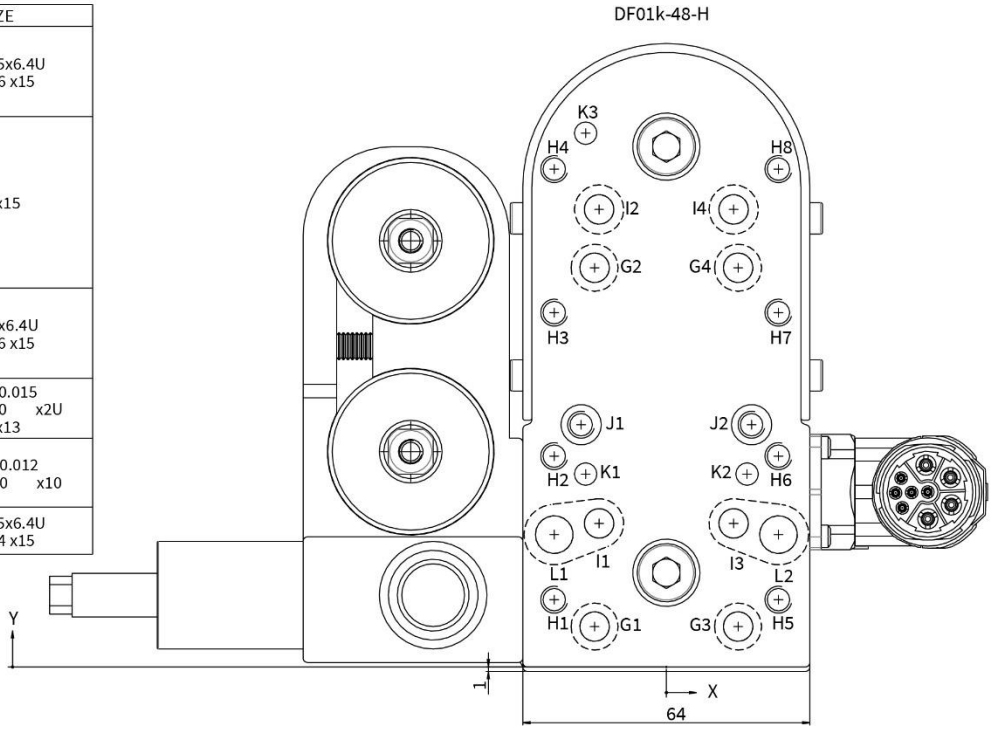
11.10.1 Mounting Plates

MA01k-DM01-48!37-2



	X-POS.	Y-POS.	SIZE
A1	-16.5	9	Ø 10.5x6.4U Ø 6.6 x15
A2	-16.5	89	
A3	15.5	9	
A4	15.5	89	
B1	-25.5	15	M6x15
B2	-25.5	47	
B3	-25.5	79	
B4	-25.5	111	
B5	24.5	15	
B6	24.5	47	
B7	24.5	79	
B8	24.5	111	
C1	-15.5	32	Ø 11x6.4U Ø 6.6 x15
C2	-15.5	102	
C3	14.5	32	
C4	14.5	102	
D1	-18.5	43	+0.012 Ø 5 H7 0 x10
D2	17.5	43	
D3	-18.5	119	
E1	-19.5	54	+0.015 Ø 9 H7 0 x2 M6x13
E2	18.5	54	
F1	24.5	29.5	Ø 13.5x6.4U Ø 8.4 x15
F2	-25.5	29.5	

DF01k-48-H

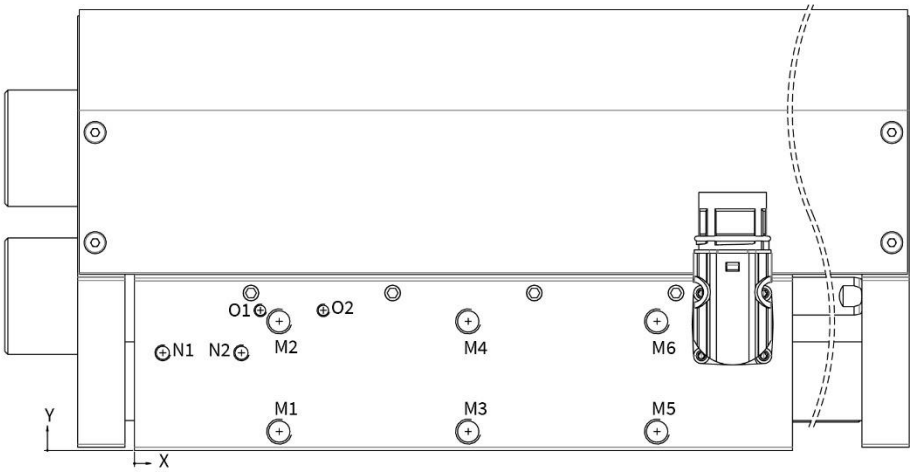


	X-POS.	Y-POS.	SIZE
G1	-16	9	Ø 10.5x6.4U Ø 6.6 x15
G2	-16	89	
G3	16	9	
G4	16	89	
H1	-25	15	M6x15
H2	-25	47	
H3	-25	79	
H4	-25	111	
H5	25	15	
H6	25	47	
H7	25	79	
H8	25	111	
I1	-15	32	Ø 11x6.4U Ø 6.6 x15
I2	-15	102	
I3	15	32	
I4	15	102	
J1	-19	54	+0.015 Ø 9 H7 0 x2U M6x13
J2	19	54	
K1	-18	43	+0.012 Ø 5 H7 0 x10
K2	18	43	
K3	-18	119	
L1	-25	29.5	Ø 13.5x6.4U Ø 8.4 x15
L2	25	29.5	

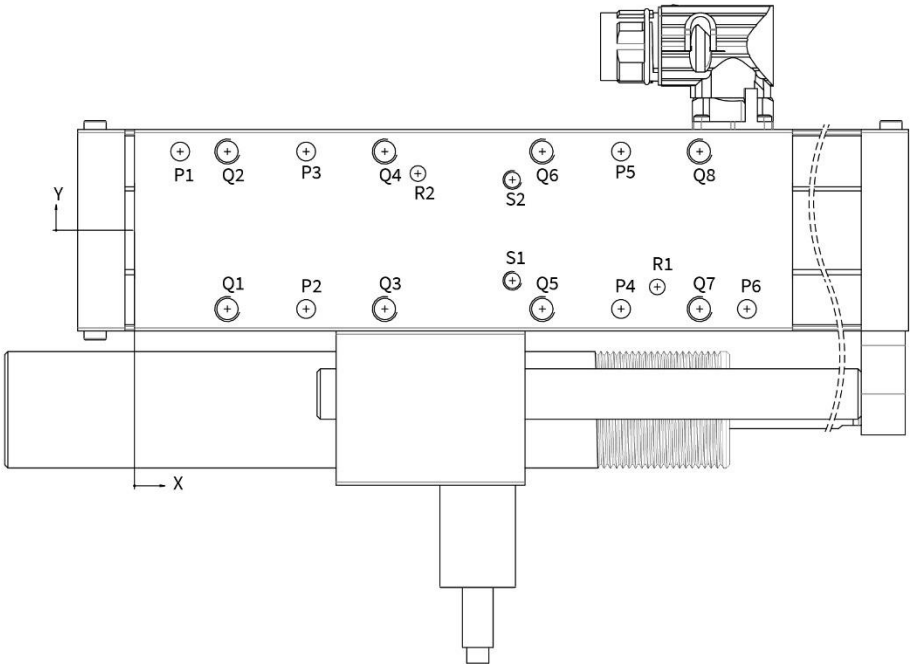
11.10.2 Guide Block

	X-POS.	Y-POS.	SIZE
M1	46	6	M8x12
M2	46	41	
M3	106	6	
M4	106	41	
M5	166	6	
M6	166	41	
N1	9	31	M5x10
N2	34	31	
O1	40	44.5	M4x8
O2	60	44.5	

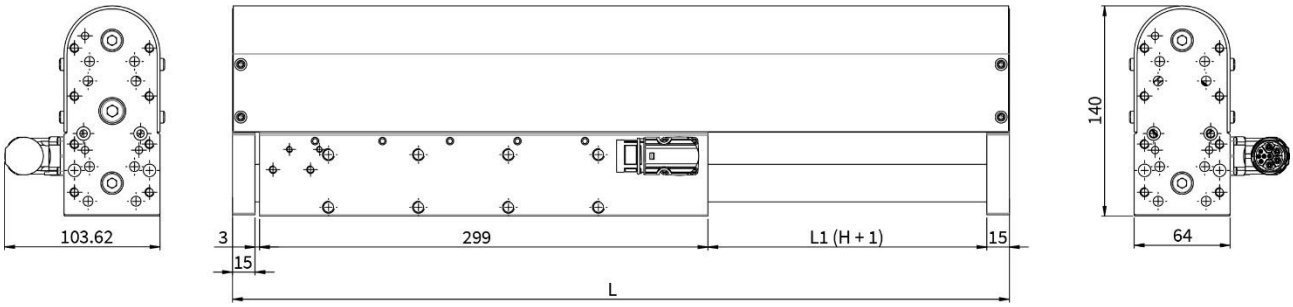
Reserved for mounting cable guide:
N1, N2, O1, O2



	X-POS.	Y-POS.	SIZE
P1	14.5	25	+0.012 ∅ 6 H7 0 x7
P2	54.5	-25	
P3	54.5	25	
P4	154.5	-25	
P5	154.5	25	
P6	194.5	-25	
Q1	29.5	-25	M8x12
Q2	29.5	25	
Q3	79.5	-25	
Q4	79.5	25	
Q5	129.5	-25	
Q6	129.5	25	
Q7	179.5	-25	
Q8	179.5	25	
R1	166	-18	+0.012 ∅ 5 H7 0 x10
R2	90	18	
S1	120	-16	M6x9
S2	120	16	



11.11 Linear Modules DM01-48x240_CS01

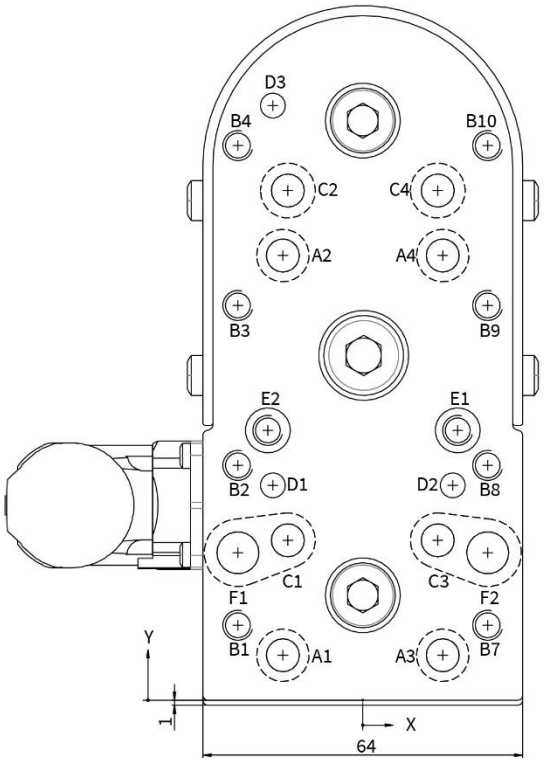


Linear module	Stroke H [mm (inch)]		Carriage length L [mm (inch)]		Moving mass [1] [g (lb)]		Total weight [g (lb)]	
DM01-48x240F-HP-C-95_CS01	95	(3.74)	428	(16.85)	4668	(10.29)	9978	(21.99)
DM01-48x240F-HP-C-185_CS01	185	(7.28)	518	(20.39)	5577	(12.29)	11874	(26.18)
DM01-48x240F-HP-C-305_CS01	305	(12.0)	638	(25.12)	6790	(14.96)	12100	(26.67)
DM01-48x240F-HP-C-395_CS01	395	(15.55)	728	(28.66)	7702	(16.98)	13013	(28.69)
DM01-48x240F-HP-C-485_CS01	485	(19.09)	818	(32.20)	8608	(18.98)	13914	(30.68)

[1] Mass: Slider, Shafts, Front mounting plate, Rear mounting plate

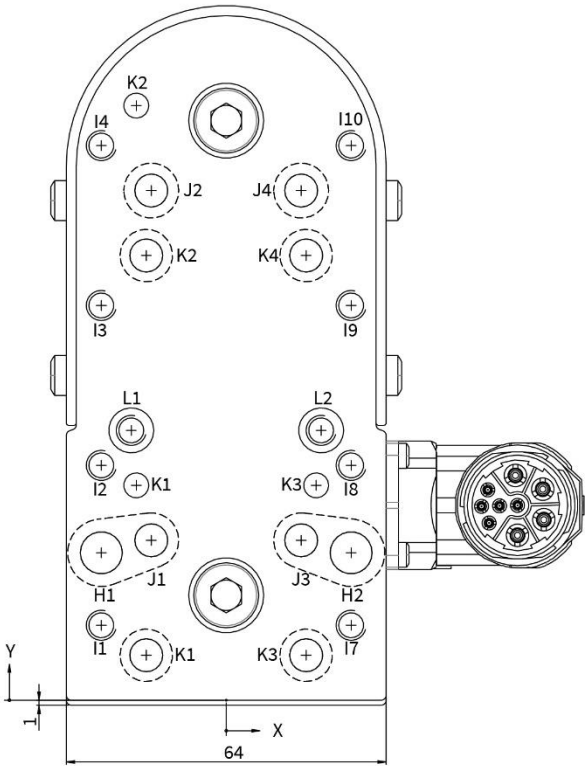
11.11.1 Mounting Plates

DF01k-48-H



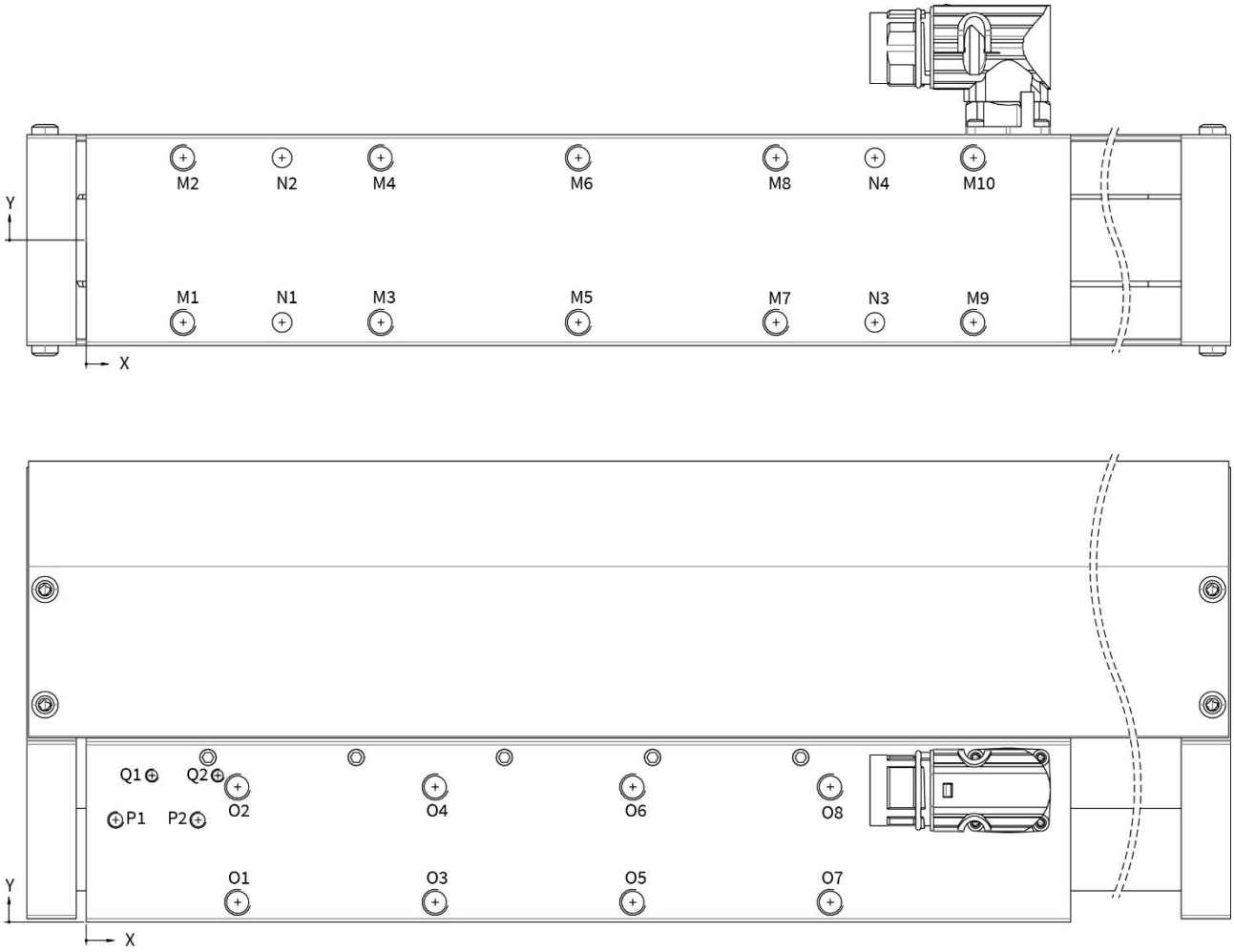
	X-POS.	Y-POS.	SIZE
A1	-16	9	Ø 10.5x6.4U Ø 6.6x15
A2	-16	89	
A3	16	9	
A4	16	89	
B1	-25	15	M6x15
B2	-25	47	
B3	-25	79	
B4	-25	111	
B7	25	15	
B8	25	47	
B9	25	79	
B10	25	111	
C1	-15	32	Ø 11x6.4U Ø 6.6x15
C2	-15	102	
C3	15	32	
C4	15	102	
D1	-18	43	Ø 5 H7 +0.012 0 x10
D2	18	43	
D3	-18	119	
E1	19	54	Ø 9 H7 +0.015 0 x2U M6x13
E2	-19	54	
F1	-25	29.5	Ø 13.5x6.4U Ø 8.4x15
F2	25	29.5	

DF01k-48



	X-POS.	Y-POS.	SIZE
K1	-16	9	Ø 10.5x6.4U Ø 6.6x15
K2	-16	89	
K3	16	9	
K4	16	89	
H1	-25	29.5	Ø 13.5x6.4U Ø 8.4x15
H2	25	29.5	
I1	-25	15	M6x15
I2	-25	47	
I3	-25	79	
I4	-25	111	
I7	25	15	
I8	25	47	
I9	25	79	
I10	25	111	
J1	-15	32	Ø 11x6.4U Ø 6.6x15
J2	-15	102	
J3	15	32	
J4	15	102	
K1	-18	43	Ø 5 H7 +0.012 0 x10
K2	-18	119	
K3	18	43	
L1	-19	54	Ø 9 H7 +0.015 0 x2U M6x13
L2	19	54	

11.11.2 Guide Block

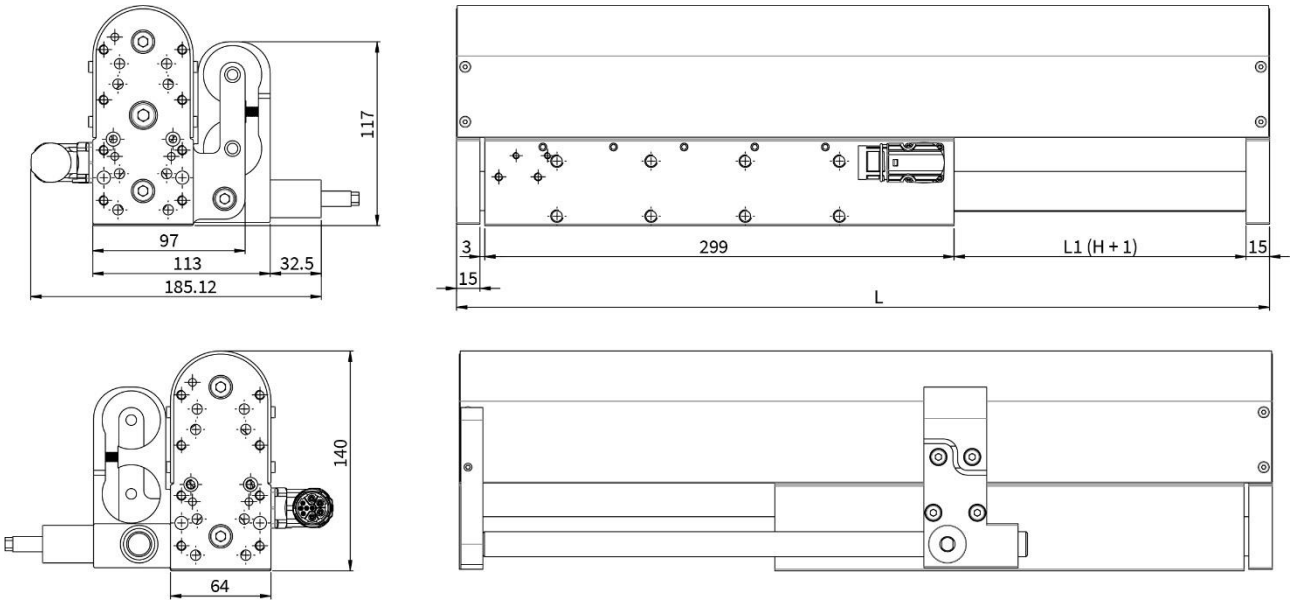


	X-POS.	Y-POS.	SIZE
M1	29.5	-25	M8x12
M2	29.5	25	
M3	89.5	-25	
M4	89.5	25	
M5	149.5	-25	
M6	149.5	25	
M7	209.5	-25	
M8	209.5	25	
M9	269.5	-25	
M10	269.5	25	
N1	59.5	-25	Ø 6 H7 +0.012 0 x7
N2	59.5	25	
N3	239.5	-25	
N4	239.5	25	

	X-POS.	Y-POS.	SIZE
O1	46	6	M8x12
O2	46	41	
O3	106	6	
O4	106	41	
O5	166	6	
O6	166	41	
O7	226	6	
O8	226	41	
P1	9	31	M5x10
P2	34	31	
Q1	20	44.5	M4x8
Q2	40	44.5	

Reserved for cable guide: N1, N2, O1, O2

11.12 Linear Modules DM01-48x240_CS01_BK01

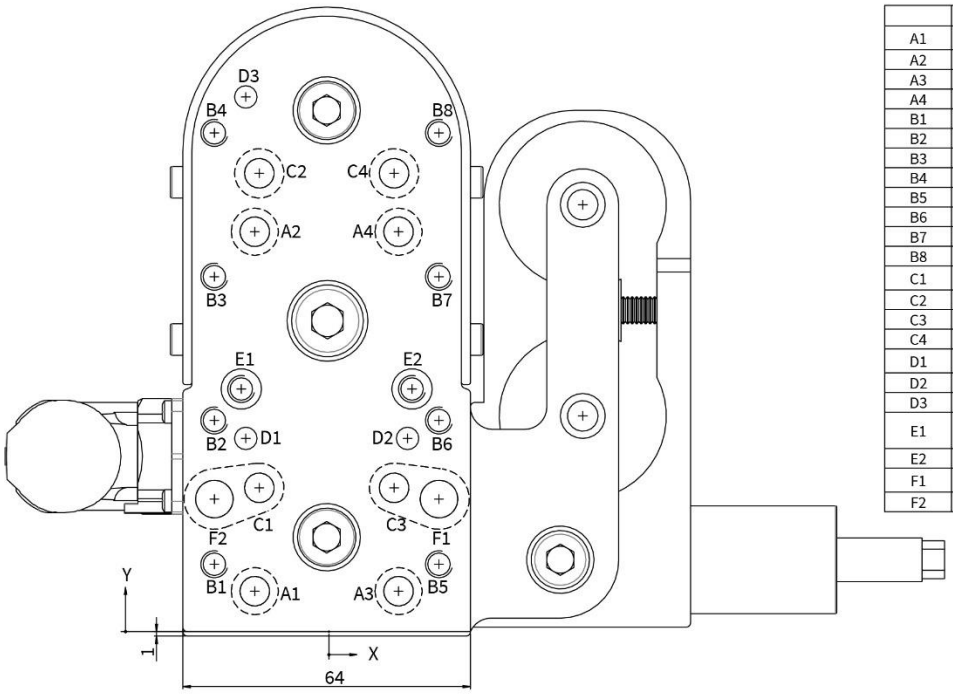


Linear module	Stroke H [mm (inch)]		Carriage length L [mm (inch)]		Moving mass [1] [g (lb)]		Total weight [g (lb)]	
DM01-48x240F-HP-C-95_CS01_BK01 [2]	95	(3.74)	155	(6.10)	428	(16.85)	4983	(10.98)
DM01-48x240F-HP-C-185_CS01_BK01 [2]	185	(7.28)	230	(9.06)	518	(20.39)	5997	(13.22)
DM01-48x240F-HP-C-305_CS01_BK01 [2]	305	(12.0)	380	(14.96)	638	(25.12)	7614	(16.79)

[1] Mass: Slider, Shafts, Front mounting plate, Rear mounting plate, Brake shaft
[2] Pneumatic holding brake with max. holding force 1000 N

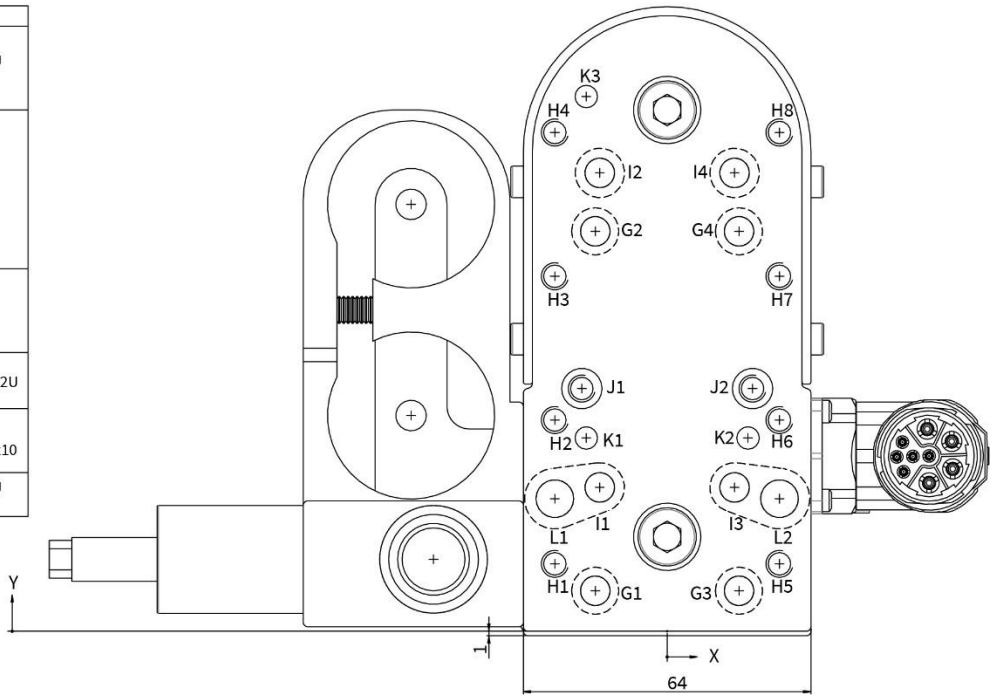
11.12.1 Mounting Plates

MA01k-DM01-48!37-2



	X-POS.	Y-POS.	SIZE
A1	-16.5	9	Ø 10.5x6.4U Ø 6.6 x15
A2	-16.5	89	
A3	15.5	9	
A4	15.5	89	
B1	-25.5	15	M6x15
B2	-25.5	47	
B3	-25.5	79	
B4	-25.5	111	
B5	24.5	15	
B6	24.5	47	
B7	24.5	79	
B8	24.5	111	
C1	-15.5	32	Ø 11x6.4U Ø 6.6 x15
C2	-15.5	102	
C3	14.5	32	
C4	14.5	102	
D1	-18.5	43	+0.012 Ø 5 H7 0 x10
D2	17.5	43	
D3	-18.5	119	
E1	-19.5	54	+0.015 Ø 9 H7 0 x2 M6x13
E2	18.5	54	
F1	24.5	29.5	Ø 13.5x6.4U Ø 8.4 x15
F2	-25.5	29.5	

DF01k-48-H

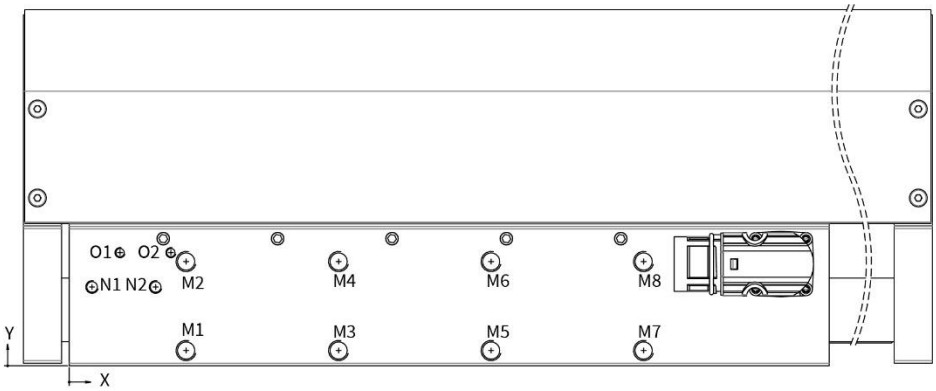


	X-POS.	Y-POS.	SIZE
G1	-16	9	Ø 10.5x6.4U Ø 6.6 x15
G2	-16	89	
G3	16	9	
G4	16	89	
H1	-25	15	M6x15
H2	-25	47	
H3	-25	79	
H4	-25	111	
H5	25	15	
H6	25	47	
H7	25	79	
H8	25	111	
I1	-15	32	Ø 11x6.4U Ø 6.6 x15
I2	-15	102	
I3	15	32	
I4	15	102	
J1	-19	54	+0.015 Ø 9 H7 0 x2U M6x13
J2	19	54	
K1	-18	43	+0.012 Ø 5 H7 0 x10
K2	18	43	
K3	-18	119	
L1	-25	29.5	Ø 13.5x6.4U Ø 8.4 x15
L2	25	29.5	

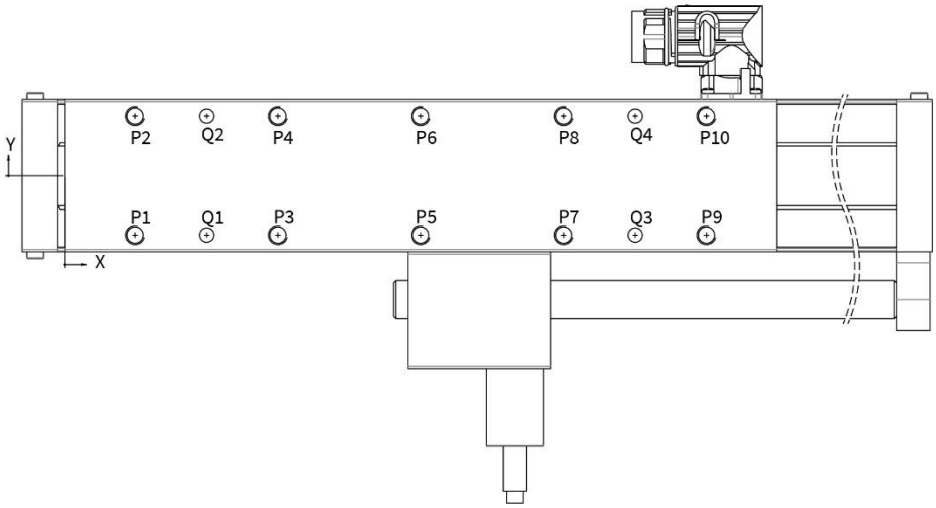
11.12.2 Guide Block

	X-POS.	Y-POS.	SIZE
M1	46	6	M8x12
M2	46	41	
M3	106	6	
M4	106	41	
M5	166	6	
M6	166	41	
M7	226	6	
M8	226	41	
N1	9	31	M5x10
N2	34	31	
O1	20	44.5	M4x8
O2	40	44.5	

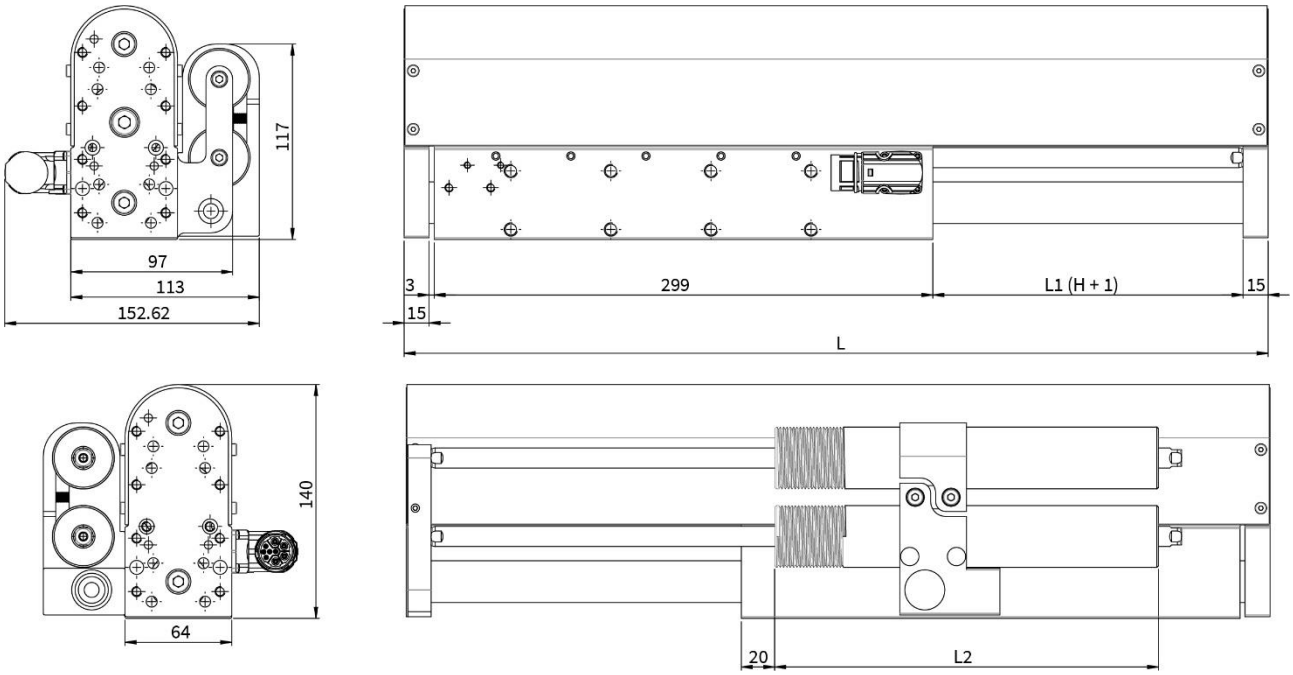
Reserved for mounting cable guide:
N1, N2, O1, O2



	X-POS.	Y-POS.	SIZE
P1	29.5	-25	M8x12
P2	29.5	25	
P3	89.5	-25	
P4	89.5	25	
P5	149.5	-25	
P6	149.5	25	
P7	209.5	-25	
P8	209.5	25	
P9	269.5	-25	
P10	269.5	25	
Q1	59.5	-25	Ø 6 H7 +0.012 0 x7
Q2	59.5	25	
Q3	239.5	-25	
Q4	239.5	25	



11.13 Linear Modules DM01-48x240_CS01_MS08

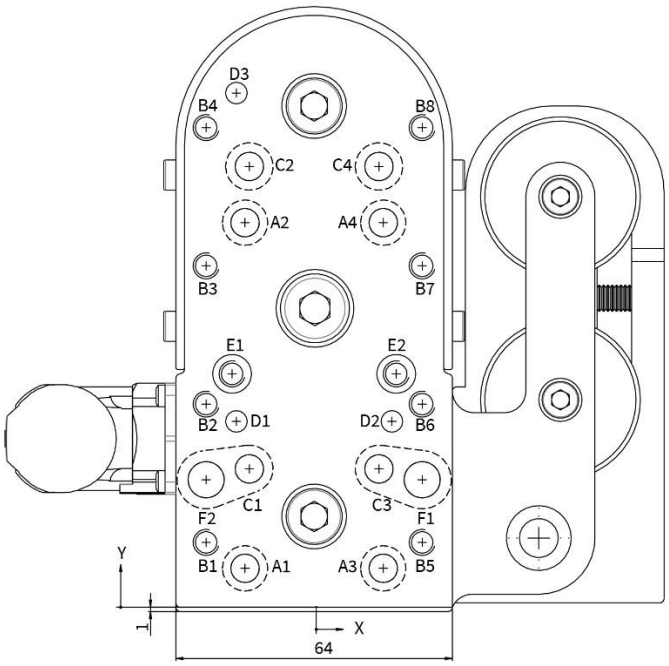


Linear module with MagSpring DM01-48x240F-HP-C…	Stroke H [mm (inch)]		MS Stator length L2 [mm (inch)]		Carriage length L [mm (inch)]		Moving mass [1] [g (lb)]		Total weight [g (lb)]	
...-95_CS01_MS08 [2]	95	(3.74)	155	(6.10)	428	(16.85)	5199	(11.46)	12625	(27.83)
...-185_CS01_MS08 [2]	185	(7.28)	230	(9.06)	518	(20.39)	6317	(13.93)	14623	(32.23)
...-305_CS01_MS08 [2]	305	(12.0)	380	(14.96)	638	(25.12)	7729	(17.04)	16915	(37.29)

[1] Mass: Slider, Shafts, Front mounting plate, Rear mounting plate, MagSpring slider
[2] MagSpring with constant force 120 N

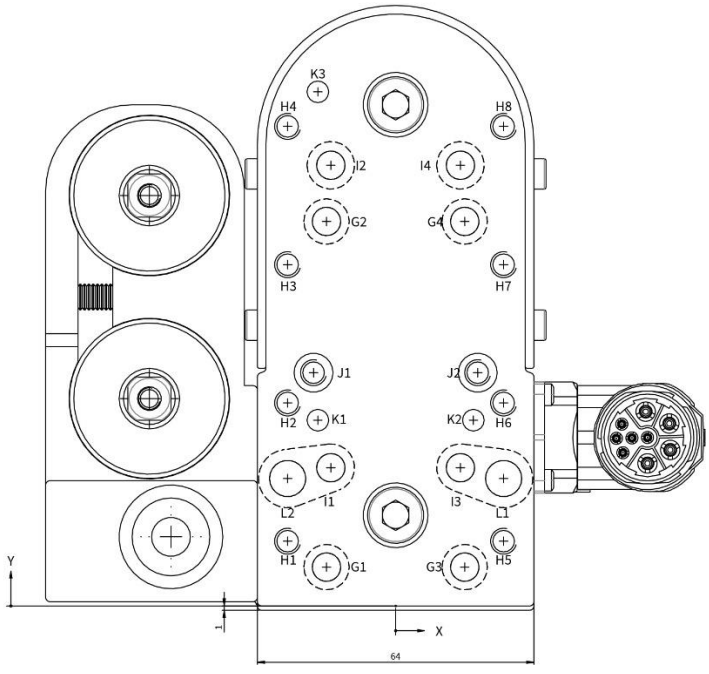
11.13.1 Mounting Plates

MA01k-DM01-48!37-2



	X-POS.	Y-POS.	SIZE
A1	-16.5	9	∅ 10.5x6.4U ∅ 6.6 x15
A2	-16.5	89	
A3	15.5	9	
A4	15.5	89	
B1	-25.5	15	M6x15
B2	-25.5	47	
B3	-25.5	79	
B4	-25.5	111	
B5	24.5	15	
B6	24.5	47	
B7	24.5	79	
B8	24.5	111	
C1	-15.5	32	∅ 11x6.4U ∅ 6.6 x15
C2	-15.5	102	
C3	14.5	32	
C4	14.5	102	
D1	-18.5	43	+0.012 ∅ 5 H7 0 x10
D2	17.5	43	
D3	-18.5	119	
E1	-19.5	54	+0.015 ∅ 9 H7 0 x2 M6x13
E2	18.5	54	
F1	24.5	29.5	∅ 13.5x6.4U ∅ 8.4 x15
F2	-25.5	29.5	

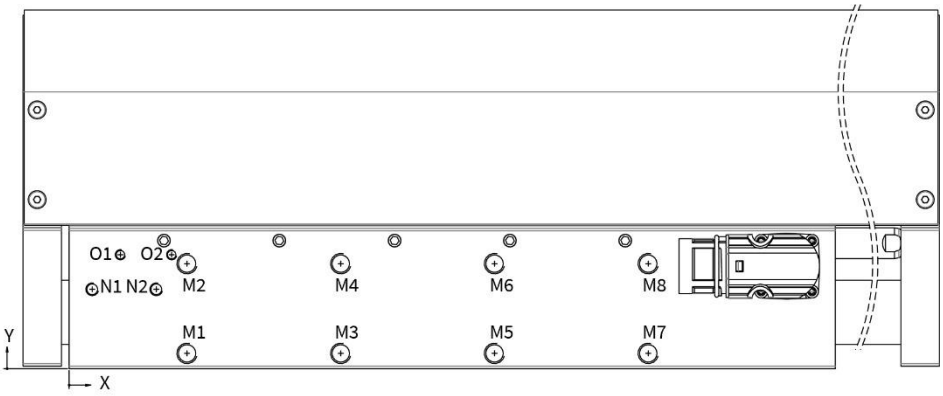
DF01k-48-H



	X-POS.	Y-POS.	SIZE
G1	-16	9	∅ 10.5x6.4U ∅ 6.6 x15
G2	-16	89	
G3	16	9	
G4	16	89	
H1	-25	15	M6x15
H2	-25	47	
H3	-25	79	
H4	-25	111	
H5	25	15	
H6	25	47	
H7	25	79	
H8	25	111	
I1	-15	32	∅ 11x6.4U ∅ 6.6 x15
I2	-15	102	
I3	15	32	
I4	15	102	
J1	-19	54	+0.015 ∅ 9 H7 0 x2U M6x13
J2	19	54	
K1	-18	43	+0.012 ∅ 5 H7 0 x10
K2	18	43	
K3	-18	119	
L1	25	29.5	∅ 13.5x6.4U ∅ 8.4 x15
L2	-25	29.5	

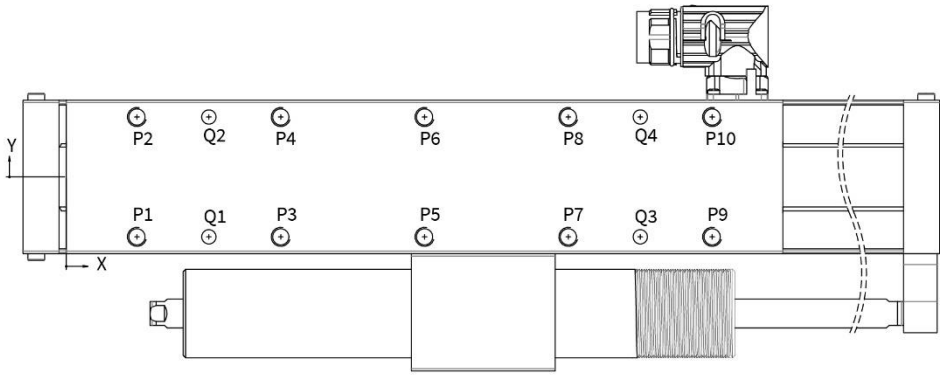
11.13.2 Guide Block

	X-POS.	Y-POS.	SIZE
M1	46	6	M8x12
M2	46	41	
M3	106	6	
M4	106	41	
M5	166	6	
M6	166	41	
M7	226	6	
M8	226	41	
N1	9	31	M5x10
N2	34	31	
O1	20	44.5	M4x8
O2	40	44.5	

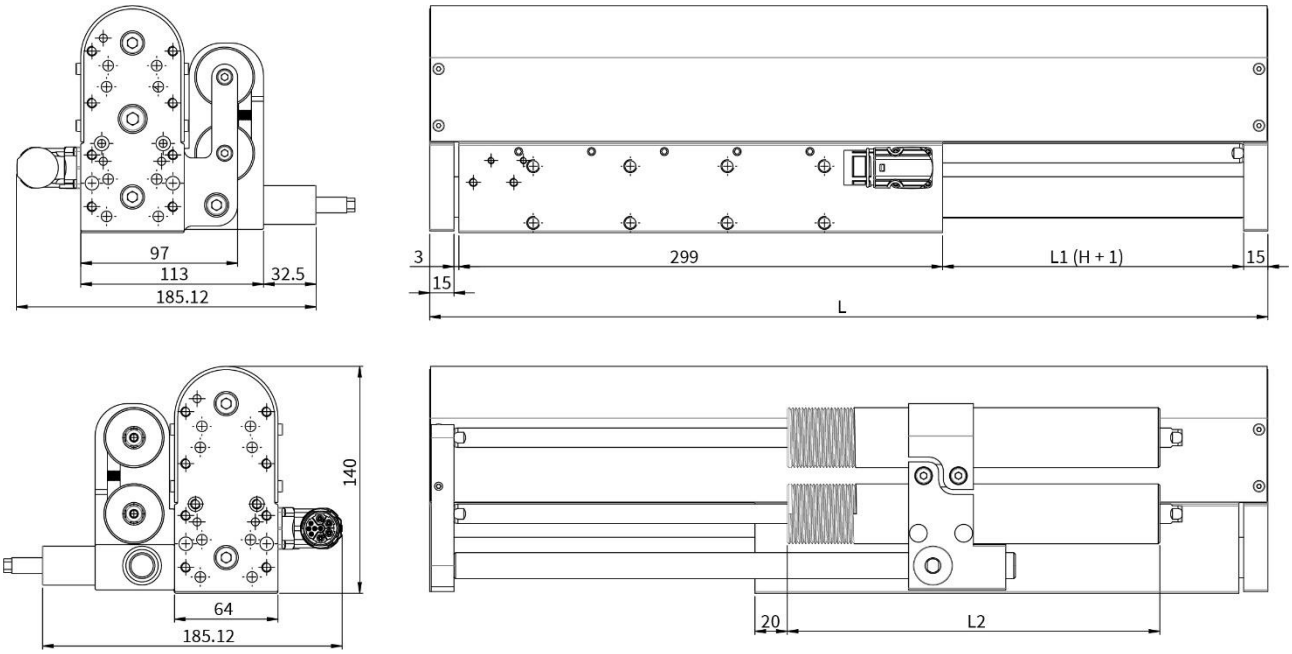


Reserved for mounting cable guide:
N1, N2, O1, O2

	X-POS.	Y-POS.	SIZE
P1	29.5	-25	M8x12
P2	29.5	25	
P3	89.5	-25	
P4	89.5	25	
P5	149.5	-25	
P6	149.5	25	
P7	209.5	-25	
P8	209.5	25	
P9	269.5	-25	
P10	269.5	25	
Q1	59.5	-25	$\emptyset$ 6 H7 $^{+0.012}_{0}$ x7
Q2	59.5	25	
Q3	239.5	-25	
Q4	239.5	25	



11.14 Linear Modules DM01-48x240_CS01_MS08_BK01

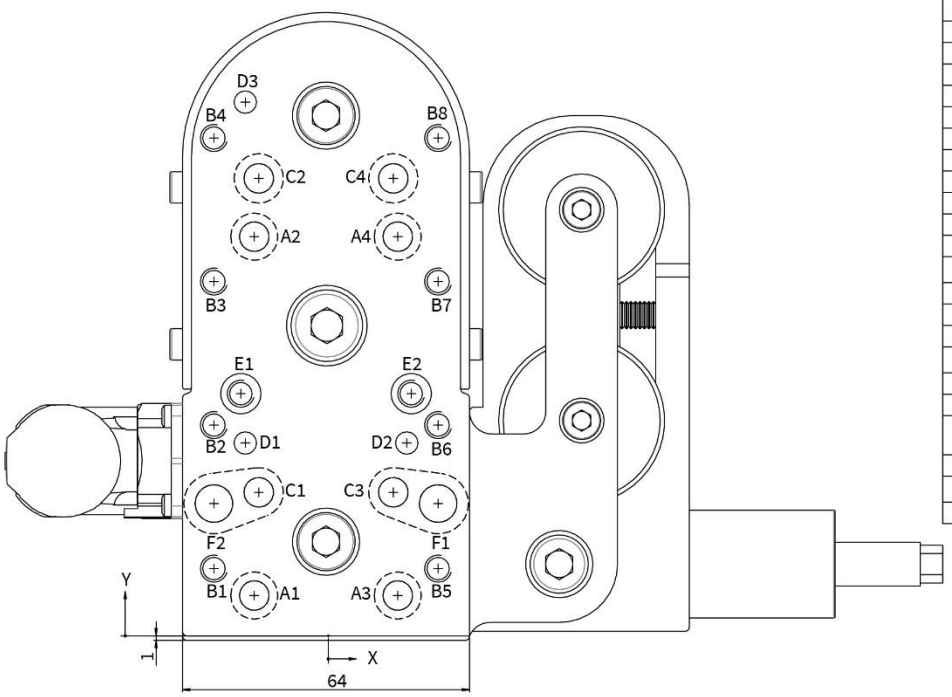


Linear module with MagSpring DM01-48x240F-HP-C…	Stroke H [mm (inch)]		MS Stator length L2 [mm (inch)]		Carriage length L [mm (inch)]		Moving mass [1] [g (lb)]		Total weight [g (lb)]	
...- 95_CS01_MS08_BK01 [2]	95	(3.74)	155	(6.10)	428	(16.85)	5598	(12.34)	13144	(28.98)
...- 185_CS01_MS08_BK01 [2]	185	(7.28)	230	(9.06)	518	(20.39)	6842	(15.08)	15267	(33.66)
...- 305_CS01_MS08_BK01 [2]	305	(12.0)	380	(14.96)	638	(25.12)	8459	(18.64)	17765	(39.17)

[1] Mass: Slider, Shafts, Front mounting plate, Rear mounting plate, Brake shaft, MagSpring slider
[2] MagSpring with constant force 120 N, Pneumatic holding brake with max. holding force 1000 N

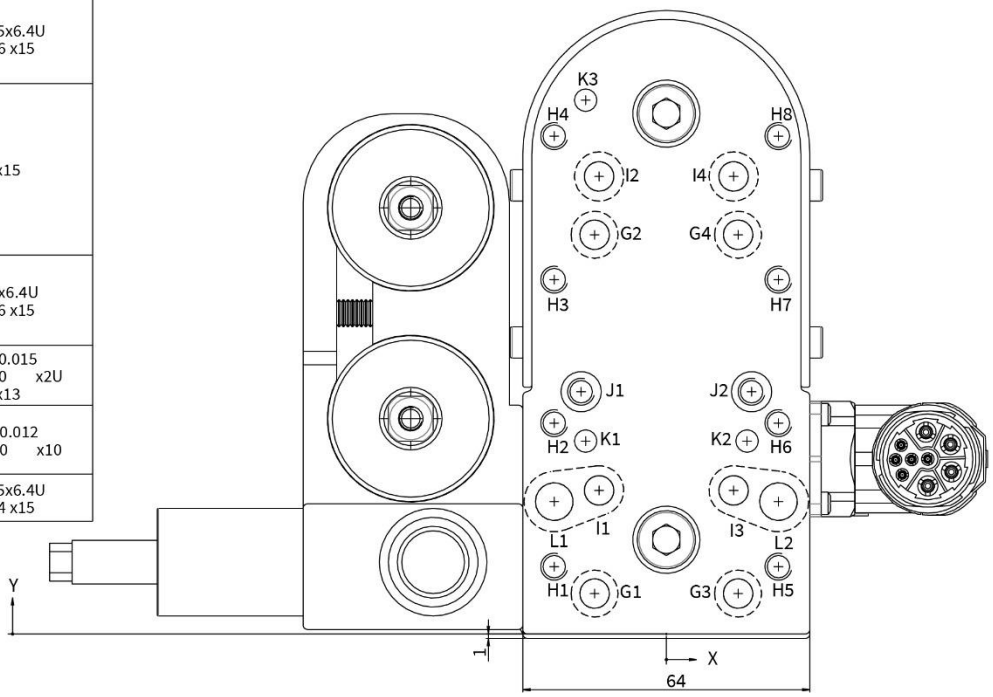
11.14.1 Mounting Plates

MA01k-DM01-48!37-2



	X-POS.	Y-POS.	SIZE
A1	-16.5	9	∅ 10.5x6.4U ∅ 6.6 x15
A2	-16.5	89	
A3	15.5	9	
A4	15.5	89	
B1	-25.5	15	M6x15
B2	-25.5	47	
B3	-25.5	79	
B4	-25.5	111	
B5	24.5	15	
B6	24.5	47	
B7	24.5	79	
B8	24.5	111	
C1	-15.5	32	∅ 11x6.4U ∅ 6.6 x15
C2	-15.5	102	
C3	14.5	32	
C4	14.5	102	
D1	-18.5	43	+0.012 ∅ 5 H7 0 x10
D2	17.5	43	
D3	-18.5	119	
E1	-19.5	54	+0.015 ∅ 9 H7 0 x2 M6x13
E2	18.5	54	
F1	24.5	29.5	∅ 13.5x6.4U ∅ 8.4 x15
F2	-25.5	29.5	

DF01k-48-H

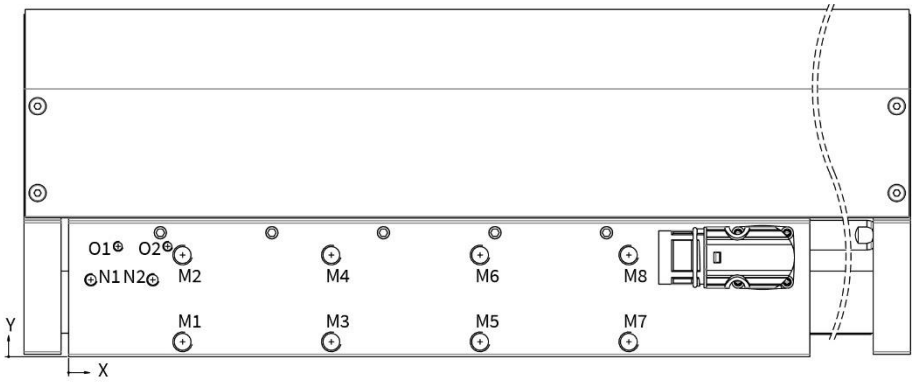


	X-POS.	Y-POS.	SIZE
G1	-16	9	∅ 10.5x6.4U ∅ 6.6 x15
G2	-16	89	
G3	16	9	
G4	16	89	
H1	-25	15	M6x15
H2	-25	47	
H3	-25	79	
H4	-25	111	
H5	25	15	
H6	25	47	
H7	25	79	
H8	25	111	
I1	-15	32	∅ 11x6.4U ∅ 6.6 x15
I2	-15	102	
I3	15	32	
I4	15	102	
J1	-19	54	+0.015 ∅ 9 H7 0 x2U M6x13
J2	19	54	
K1	-18	43	+0.012 ∅ 5 H7 0 x10
K2	18	43	
K3	-18	119	
L1	-25	29.5	∅ 13.5x6.4U ∅ 8.4 x15
L2	25	29.5	

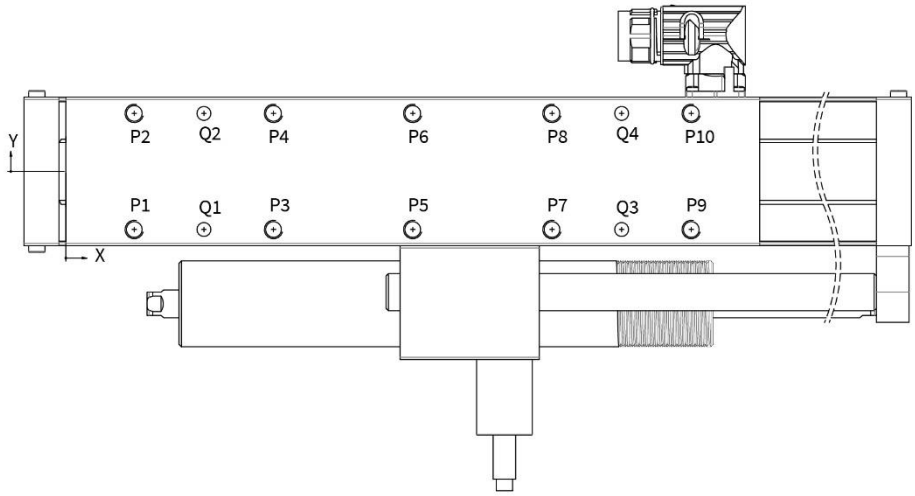
11.14.2 Guide Block

	X-POS.	Y-POS.	SIZE
M1	46	6	M8x12
M2	46	41	
M3	106	6	
M4	106	41	
M5	166	6	
M6	166	41	
M7	226	6	
M8	226	41	
N1	9	31	M5x10
N2	34	31	
O1	20	44.5	M4x8
O2	40	44.5	

Reserved for mounting cable guide:
N1, N2, O1, O2



	X-POS.	Y-POS.	SIZE
P1	29.5	-25	M8x12
P2	29.5	25	
P3	89.5	-25	
P4	89.5	25	
P5	149.5	-25	
P6	149.5	25	
P7	209.5	-25	
P8	209.5	25	
P9	269.5	-25	
P10	269.5	25	
Q1	59.5	-25	Ø 6 H7 +0.012 0 x7
Q2	59.5	25	
Q3	239.5	-25	
Q4	239.5	25	



12 International Certificates

Europe CE	See chapter “EU Declaration of Conformity CE-Marking”
UK UKCA	See chapter “UK Declaration of Conformity UKCA-Marking”
IECEE CB SCHEME	Ref. Certif. Nr. CH-8521 Ref. Certif. Nr. CH-11537
USA / Canada c UL us	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	Bodenäckerstrasse 2 SWITZERLAND 8957 Spreitenbach
Name and address of the manufacturer	NTI AG	Bodenäckerstrasse 2 SWITZERLAND 8957 Spreitenbach
Name and address of the factory	NTI AG	Bodenäckerstrasse 2 SWITZERLAND 8957 Spreitenbach
Note: When more than one factory, please report on page 2	☐ 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)	---	
	☐ Additional Information on page 2	
A sample of product was tested and found to be in conformity with IEC	IEC 61000-6-2:2016 IEC 61000-6-4:2006, IEC 61000-6-4:2006/AMD1:2010 IEC 61000-6-7:2014	
National differences	EU Group Differences; EU Special National Conditions; EU A-Deviations	
As shown in the Test Report Ref. No. which forms part of this Certificate	17-EL-0006.E01 + .E02 + .Z01	

This CB Test Certificate is issued by the National Certification Body

Electrosuisse
Luppmenstrasse 1
8320 Fehraltorf
SWITZERLAND

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

electro suisse

page 1 of 1

IEC IECEE CB SCHEME

Ref. Certif. No.

CH-11537

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 Bodenäckerstrasse 2, 8957 Spreitenbach Switzerland
Name and address of the manufacturer	NTI AG Bodenäckerstrasse 2, 8957 Spreitenbach Switzerland
Name and address of the factory *Note: When more than one factory, please report on page 2*	NTI AG Bodenäckerstrasse 2, 8957 Spreitenbach Switzerland
Ratings and principal characteristics	PS01-48x240F-HP-C-2S: 72V / 5.7A PS01-48x240F-C-2S: 72V / 4.7A PS01-48x150G-HP-C-2S: 72V / 5.0A PS01-37x120F-HP-C-2S: 72V / 2.1A PS01-23x160H-HP-R-2S: 72V / 1.8A PS01-23x80F-HP-R-2S: 72V / 1.2A
Trademark / Brand (if any)	LinMot
Customer Test Facility (CTF) Stage used	./.
Model / Type Ref.	PS01-48x240F-HP-C-2S PS01-48x240F-C-2S PS01-48x150G-HP-C-2S PS01-37x120F-HP-C-2S PS01-23x160H-HP-R-2S PS01-23x80F-HP-R-2S
Additional information (if necessary may also be reported on page 2)	National Differences specified in the CB Test Report
A sample of the product was tested and found to be in conformity with	IEC 61000-3-2:2018 IEC 61000-3-2:2018/AMD1:2020 IEC 61000-3-3:2013 IEC 61000-3-3:2013/AMD1:2017 IEC 61000-6-2:2016 IEC 61000-6-4:2018 IEC 61326-3-1:2017
As shown in the Test Report Ref. No. which forms part of this Certificate	21CH-00310.E01, .Z02

This CB Test Certificate is issued by the National Certification Body

eurofins

Eurofins Electric & Electronic Product Testing AG
Luppmenstrasse 3
8320 Fehraltorf
SWITZERLAND

Date: 2022-02-28

Signature: i.A. Martin Plüss

1/1

T01_V04

CERTIFICATE OF COMPLIANCE

Certificate Number	E354430
Report Reference	E354430-20200923
Issue Date	2020-SEPTEMBER-29
Issued to:	NTI AG Bodenaeckerstr 2 8957 SPREITENBACH SWITZERLAND
This certificate confirms that representative samples of	COMPONENT - INCOMPLETE ROTATING MACHINES AND ROTATING MACHINE PARTS Class A Insulated Linear Motor Series DM01. 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 Rotating electrical machines CSA C22.2 No. 100 Motors and Generators
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/

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13 EU Declaration of Conformity CE-Marking

NTI AG / LinMot ®
Bodenaeckerstrasse 2
8957 Spreitenbach

Switzerland

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

declares under sole responsibility the compliance of the products:

- Linear Modules of the Series **DM01-23**
- Linear Modules of the Series **DM01-37**
- Linear Modules of the Series **DM01-37 2S**
- Linear Modules of the Series **DM01-48**
- Linear Modules of the Series **DM01-48 2S**

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, 09.01.2025

Dr.-Ing. Ronald Rohner
CEO NTI AG

14 UK Declaration of Conformity UKCA-Marking

NTI AG / LinMot ®
Bodenaeckerstrasse 2
8957 Spreitenbach

Switzerland

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

declares under sole responsibility the compliance of the products:

- Linear Modules of the Series **DM01-23**
- Linear Modules of the Series **DM01-37**
- Linear Modules of the Series **DM01-37 2S**
- Linear Modules of the Series **DM01-48**
- Linear Modules of the Series **DM01-48 2S**

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.

Compliance of the regulation 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.

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Company: NTI AG
Spreitenbach, 09.01.2025

Dr.-Ing. Ronald Rohner
CEO NTI AG

ALL LINEAR MOTION
FROM A SINGLE SOURCE

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Web: https://www.linmot-usa.com/

Visit https://linmot.com/contact/ to find a distributor near you.

