

STAINLESS STEEL LINEAR MODULES SM01



- ✓ Especially for pharmaceutical applications and the food sector
- ✓ Suitable for "wash-down" with protection class IP69
- ✓ High resistance to chemicals
- ✓ Motor housing and mounting parts made of stainless steel 1.4404 (AISI 316L)
- ✓ Guide rods optionally in surface-hardened stainless steel 1.4404 (AISI 316L)
- ✓ Guide with stainless linear ball bearings and food-grade lubricant (NSF H1) or plain guide with FDA-approved polymer bearings
- ✓ Equipped with "plug and play" technology
- ✓ Simple load simulation by LinMot Designer software
- ✓ Optional with "stainless steel" MagSpring® for vertical load balancing

LINEAR MODULES SM01

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1. Front plate with counterbore holes for precise load mounting
2. Optional hardened stainless steel shafts with high corrosion resistance or hard chrome-plated shafts
3. Stainless linear ball bearings with food grade lubricant (NSF H1) or polymer bearings
4. Guide block with built-in linear ball bearings or plain bearings
5. Back plate for higher mechanical stiffness of the linear guide
6. Stainless steel linear motor with integrated temperature and position sensors and mounting flange
7. Guide tube (only for linear ball bearing version)
8. Magnetic slider of the linear motor (Magnets are protected in a chrome steel tube.)
9. Magnetic spring MagSpring® for vertical load compensation (Optional)

Linearmodules SM01

The SM01 linear modules are complete drive solutions consisting of linear guides with integrated "LinMot" linear motors and optionally attached vertical load compensation elements "MagSpring". The modules have been specially developed for applications in the pharmaceutical or food industry which require a solution made of stainless steel with a high degree of protection. Guide variants based on linear ball bearings with food-grade lubricant (NSF H1) are available as well as plain bearings completely manufactured in stainless steel

(1.4404 / AISI 316L) with FDA approved polymer bearings. Each SM01 linear module is supplied to the customer fully assembled and does not have to be assembled from individual parts. Only one article number is required to order. The commissioning of the drives is very easy as all SM01 linear modules are equipped with the "Plug and Play" technology. The required type parameters do not have to be selected manually, but are read in automatically by the servo drive.

SM01 linear modules with vertical load compensation «MagSpring®»

In the vertical mounting position, linear modules and other direct drives must constantly apply a constant force to counteract the weight force. A magnetic spring, MagSpring®, installed parallel to the linear motor, can passively compensate for the weight load. The motor is only used for the actual positioning operation or for applying the dynamic forces and can be sized accordingly smaller. Since MagSprings are purely passive elements, a defined function or position of a device can be ensured in the de-energized state. Examples are the lifting of a gripper or print head in vertical arrangements.

The mode of operation is based on the attractive force of permanent magnets. Accordingly, no energy source (electricity, compressed air, etc.) is needed. The special design of the flow-guiding components and the magnets translates the strongly non-linear relationship between force and displacement in magnet-iron arrangements into a constant force

curve. Depending on the strength class of the MagSpring, the permanent magnets are either in the stator, in the slider, or in both components. The slider is guided by an integrated plain bearing, so that MagSprings can be used comparably to gas pressure springs in a design. The effective force is in the range of +/- 10% of the nominal force, due to material and manufacturing tolerances.

The SM01 linear modules are optionally available with permanently installed MagSpring (MSxx option). These cover various strength classes from 40 N to 60 N constant force and are arranged in such a way that a pulling action is exerted on the load axis.



Bearing variants of the SM01 linear modules

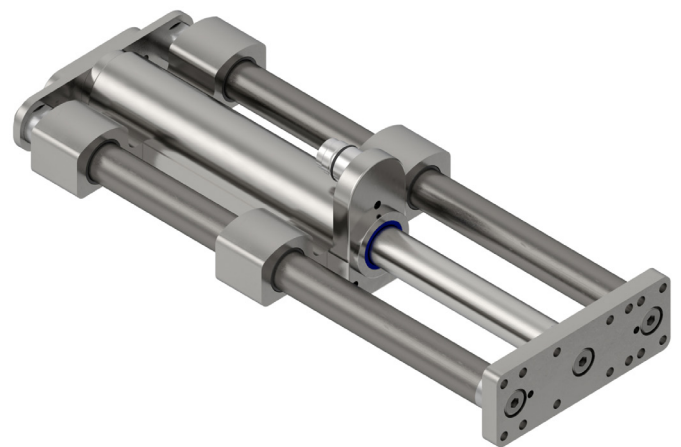
Guide systems based on rolling elements such as linear ball bearings are superior to plain bearings in general with regard to guiding accuracy, load capacity and friction. This is also shown in the respective load diagrams. The stainless steel linear ball bearings used in the SM01 linear modules require lubrication of the balls, which is why seals are necessary in practice to achieve an appropriate degree of protection. The lubricant used is a food grade lubricant (NSF H1) based on medical white oil.

The advantages of slide bearing technology are the higher maximum permissible acceleration compared to linear ball bearings.

In addition, the guide rods can also be made of chromium steel 1.4404 (AISI 316L), which means that they can also be used under extremely corrosive conditions. Due to the simple design of linear bearings, they are very easy to clean and can, with certain restrictions, also be operated in dry running, i.e. without grease. The polymer bearings used in the SM01 linear modules conform to FDA regulations and should be selected if frequent cleaning with water or cleaning agents is planned and less emphasis is placed on high guidance accuracy or load capacity.

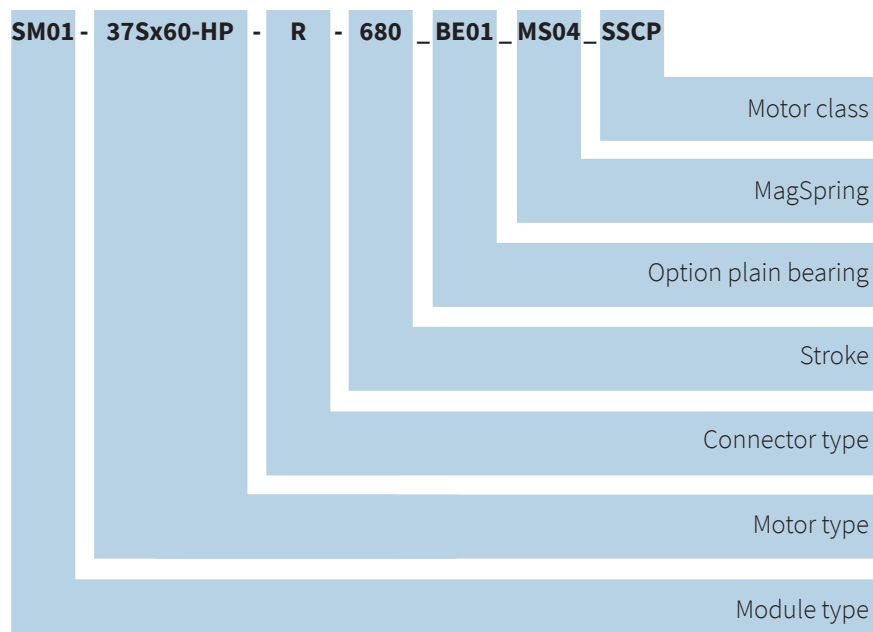


Linear ball bearing variant



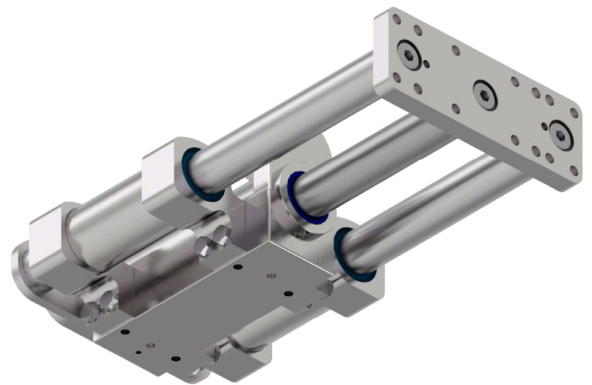
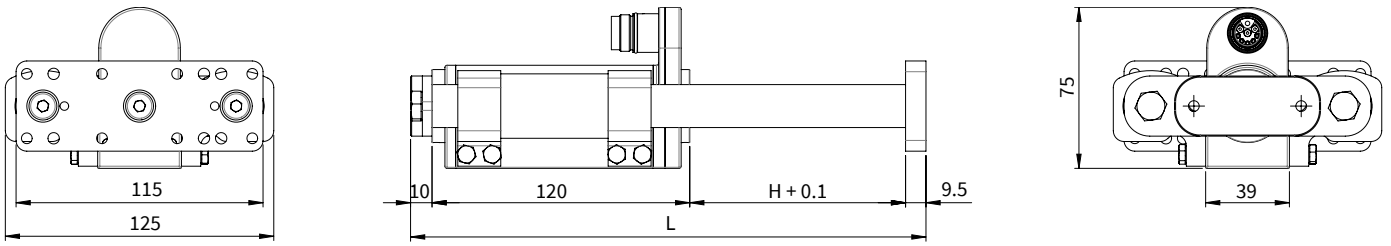
Plain bearing variant

Designation Code Linear Modules SM01



The SM01 linear module product family currently offers more than 40 product variants. Each variant has its own article number and is delivered fully assembled. The large variety of sizes, strokes, forces and features opens up a very comprehensive range of applications for the user.

SM01-37Sx60_SSCP WITH LINEAR BALL BEARINGS



Dimensions mm

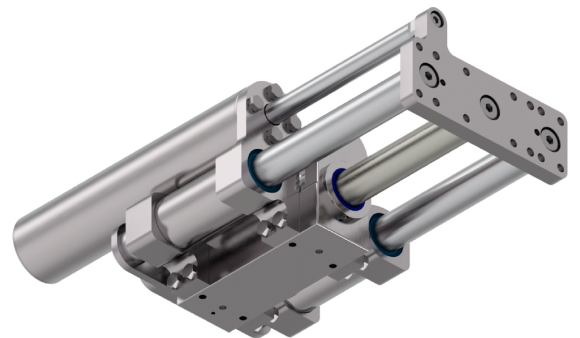
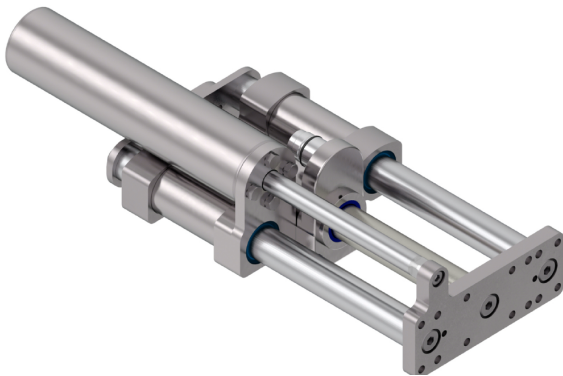
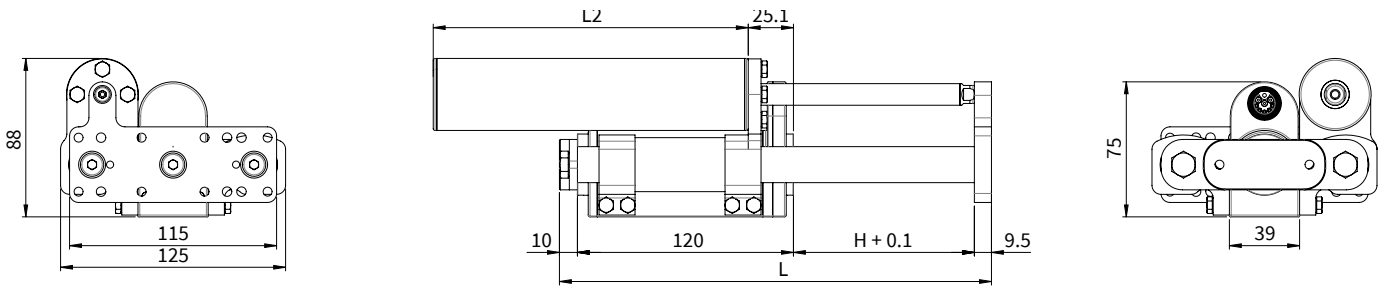
Linear Module	Stroke H [mm (inch)]	Carriage length L [mm (inch)]	Moving mass ¹⁾ [g (lb)]	Total weight [g (lb)]
SM01-37Sx60-HP-R-100_SSCP	100 (3.94)	240 (9.45)	1615 (3.56)	2852 (6.29)
SM01-37Sx60-HP-R-180_SSCP	180 (7.09)	320 (12.60)	1997 (4.4)	3234 (7.13)
SM01-37Sx60-HP-R-280_SSCP	280 (11.02)	420 (16.54)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

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

MATERIALS

Guide Block & Front Plate	Guide Shaft	Bearing	Wipers
Stainless Steel Mat. 1.4404 / 316 L	Hard chrome-plated	Linear ball bearing (stainless)	NBR (FDA conform)

SM01-37Sx60_MSxx_SSCP WITH LINEAR BALL BEARINGS AND VERTICAL LOAD COMPENSATION MAGSPRING®



Dimensions mm

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

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

²⁾ MagSpring variants with different constant forces

MS11: Constant force 40N

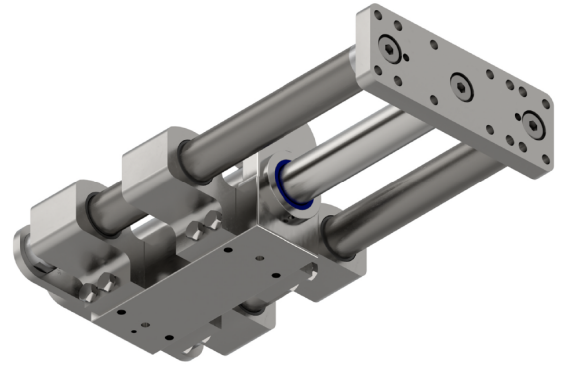
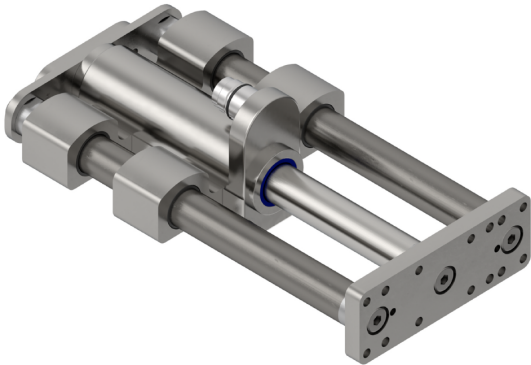
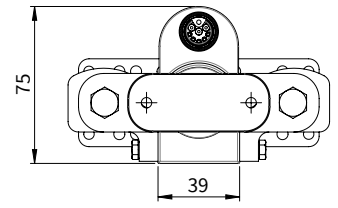
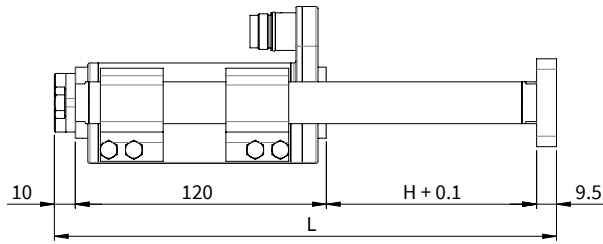
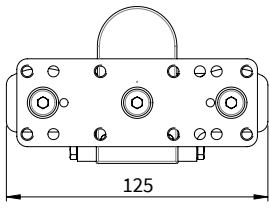
MS12: Constant force 50N

MS13: Constant force 60N

MATERIALS

Guide Block & Front Plate	Guide Shaft	Bearing	Wipers
Stainless Steel Mat. 1.4404 / 316 L	Hard chrome-plated	Linear ball bearing (stainless)	NBR (FDA conform)

SM01-37Sx60_BE01_SSCP WITH PLAIN BEARINGS



Dimensions mm

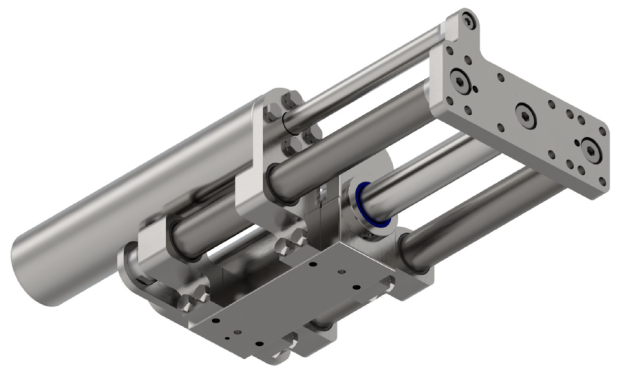
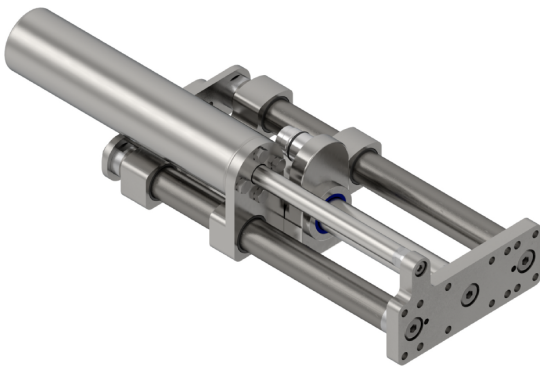
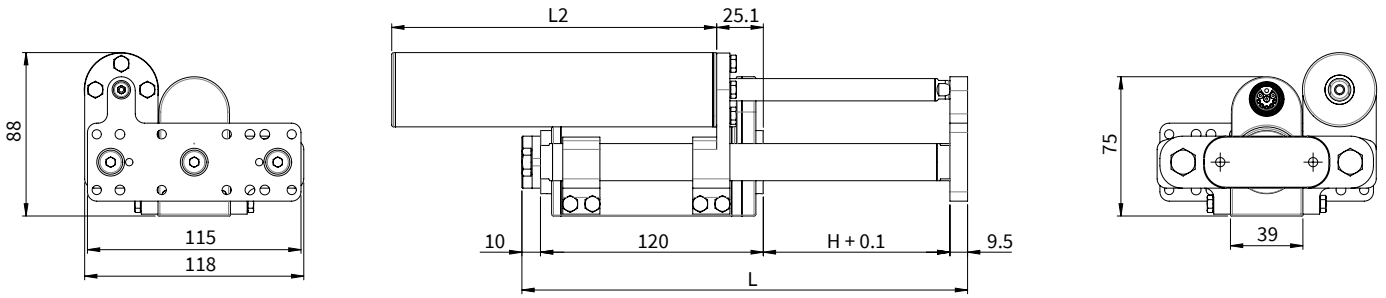
Linear Module	Stroke H [mm (inch)]	Carriage length L [mm (inch)]	Moving mass ¹⁾ [g (lb)]	Total weight [g (lb)]
SM01-37Sx60-HP-R-100_BE01_SSCP	100 (3.94)	240 (9.45)	1501 (3.31)	3137 (6.92)
SM01-37Sx60-HP-R-180_BE01_SSCP	180 (7.09)	320 (12.60)	1831 (4.04)	3467 (7.64)

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

MATERIALS

Guide Block & Front Plate	Guide Shaft	Bearing	Wipers
Stainless Steel Mat. 1.4404 / 316 L	Stainless Steel Mat. 1.4404 / 316 L	Polymer plain bearings FDA conform	None

SM01-37Sx60_BE01_MSxx_SSCP WITH PLAIN BEARINGS AND VERTICAL LOAD COMPENSATION MAGSPRING®



Dimensions mm

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

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

²⁾ MagSpring variants with different constant forces

MS11: Constant force 40N

MS12: Constant force 50N

MS13: Constant force 60N

MATERIALS

Guide Block & Front Plate	Guide Shaft	Bearing	Wipers
Stainless Steel Mat. 1.4404 / 316 L	Stainless Steel Mat. 1.4404 / 316 L	Polymer plain bearings FDA conform	None

PERFORMANCE DATA SM01-37Sx60

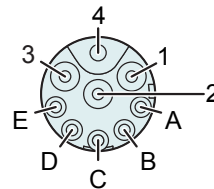
Performance Data Linear Module SM01-37Sx60			
Stroke			
Maximum Stroke	mm (in)		580 (22.83)
Force			
Max. Force @ 48VDC	N (lbf)		128 (28.8)
Max. Force @ 72VDC	N (lbf)		128 (28.8)
Max. Cont. Force [Passive cooling/ Passive mounted ¹ / Cold Plate ²]	N (lbf)		25 / 33 / 39 (5.6 / 7.4 / 8.8)
Force Constant	N/A _{pk} (lbf/A _{pk})		13.4 (3.01)
Position Detection			
Position Resolution	mm (in)		0.005 (0.0002)
Repeatability	mm (in)		±0.05 (±0.002)
Position Resolution with ES	mm (in)		- (-)
Repeatability with ES	mm (in)		- (-)
Linearity with ES	mm (in)		- (-)
Electrical Data			
Max. Current @ 48VDC	A _{pk}		9.4
Max. Current @ 72VDC	A _{pk}		9.4
Max. Cont. Current [Passive cooling/ Passive mounted ¹ / Cold Plate ²]	A _{pk}		1.9 / 2.5 / 2.9
Terminal Resistance 25 °C / 150 °C	Ohm		3.2 / 4.7
Terminal Inductivity	mH		1.6
Magnetic Period	mm (in)		40 (1.57)
Thermal Data			
Max. Winding Temperature (Sensor)	°C		120
Thermal Resistance [Passive cooling/ Passive mounted ¹ / Cold Plate ²]	K/W		4.7 / 3 / 2.2
Thermal Time Constant [Passive cooling/ Passive mounted ¹ / Cold Plate ²]	s		1300 / 3200 / 800
Mechanical Data			
Stator Diameter	mm (in)		39 (1.5)
Slider Diameter	mm (in)		20 (0.79)
IP Code [Plain Bearing / Linear Ball Bearing]			IP 69 / IP 67S

1) Motor is mounted on a stainless steel surface of 0.02 m².
 2) Motor is mounted on a 20°C cold plate.

CONNECTOR

Motor Connector Wiring	R-Connector	Wire Color Motor Cable
Ph 1+	1	red
Ph 1-	2	pink
Ph 2+	3	blue
Ph 2-	4	grey
+5VDC	A	white
GND	B	inner Shield
Sinus	C	yellow
Cosinus	D	green
Temp.	E	black
Shield	Case	outer Shield

R-Connector

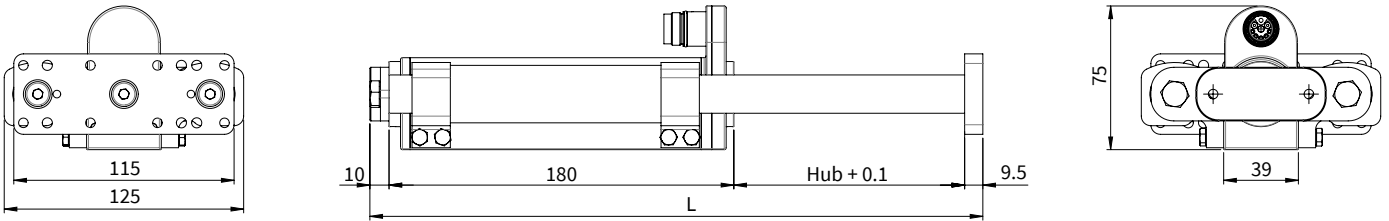


View: Motor connector, plug side

ORDERING INFORMATION

Item	Description	Item-No.
SM01-375x60-HP-R-100_SSCP	Linear Module SSCP, Linear Ball Bearing, Stroke max 100mm	0150-4413
SM01-375x60-HP-R-100_MS02_SSCP	Linear Module SSCP, Linear Ball Bearing, MagSpring 40N, stroke max 100mm	0150-4437
SM01-375x60-HP-R-100_MS03_SSCP	Linear Module SSCP, Linear Ball Bearing, MagSpring 50N, stroke max 100mm	0150-4438
SM01-375x60-HP-R-100_MS04_SSCP	Linear Module SSCP, Linear Ball Bearing, MagSpring 60N, stroke max 100mm	0150-4439
SM01-375x60-HP-R-180_SSCP	Linear Module SSCP, Linear Ball Bearing, Stroke max 180mm	0150-4414
SM01-375x60-HP-R-180_MS02_SSCP	Linear Module SSCP, Linear Ball Bearing, MagSpring 40N, stroke max 180mm	0150-4440
SM01-375x60-HP-R-180_MS03_SSCP	Linear Module SSCP, Linear Ball Bearing, MagSpring 50N, stroke max 180mm	0150-4441
SM01-375x60-HP-R-180_MS04_SSCP	Linear Module SSCP, Linear Ball Bearing, MagSpring 60N, stroke max 180mm	0150-4442
SM01-375x60-HP-R-280_SSCP	Linear Module SSCP, Linear Ball Bearing, Stroke max 280mm	0150-4415
SM01-375x60-HP-R-380_SSCP	Linear Module SSCP, Linear Ball Bearing, Stroke max 380mm	0150-4416
SM01-375x60-HP-R-480_SSCP	Linear Module SSCP, Linear Ball Bearing, Stroke max 480mm	0150-4417
SM01-375x60-HP-R-580_SSCP	Linear Module SSCP, Linear Ball Bearing, Stroke max 580mm	0150-4418
SM01-375x60-HP-R-100_BE01_SSCP	Linear Module SSCP, Plain Bearing, Stroke max 100mm	0150-4351
SM01-375x60-HP-R-100_BE01_MS02_SSCP	Linear Module SSCP, Plain Bearing, MagSpring 40N, Stroke max 100mm	0150-4352
SM01-375x60-HP-R-100_BE01_MS03_SSCP	Linear Module SSCP, Plain Bearing, MagSpring 50N, Stroke max 100mm	0150-4353
SM01-375x60-HP-R-100_BE01_MS04_SSCP	Linear Module SSCP, Plain Bearing, MagSpring 60N, Stroke max 100mm	0150-4354
SM01-375x60-HP-R-180_BE01_SSCP	Linear Module SSCP, Plain Bearing, Stroke max 180mm	0150-4210
SM01-375x60-HP-R-180_BE01_MS02_SSCP	Linear Module SSCP, Plain Bearing, MagSpring 40N, Stroke max 180mm	0150-4355
SM01-375x60-HP-R-180_BE01_MS03_SSCP	Linear Module SSCP, Plain Bearing, MagSpring 50N, Stroke max 180mm	0150-4356
SM01-375x60-HP-R-180_BE01_MS04_SSCP	Linear Module SSCP, Plain Bearing, MagSpring 60N, Stroke max 180mm	0150-4357

SM01-37Sx120_SSCP WITH LINEAR BALL BEARINGS



Dimensions mm

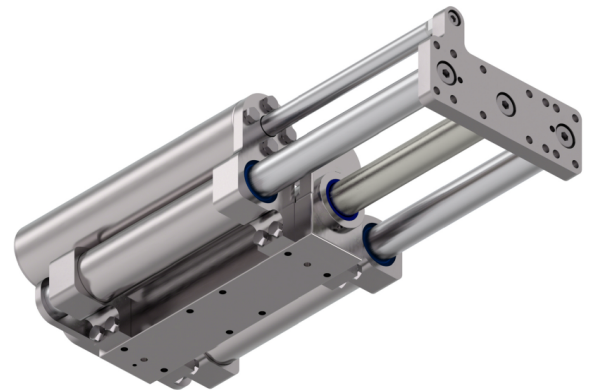
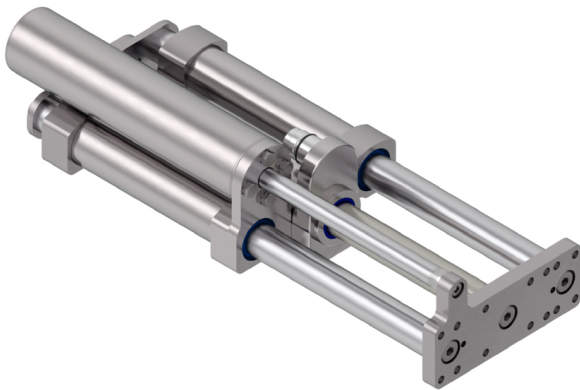
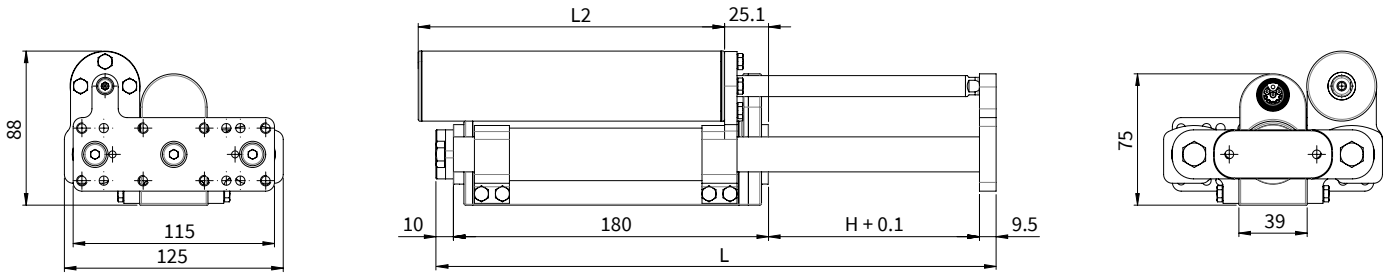
Linear Module	Stroke H [mm (inch)]	Carriage length L [mm (inch)]	Moving mass ¹⁾ [g (lb)]	Total weight [g (lb)]
SM01-37Sx120F-HP-R-120_SSCP	120 (4.72)	320 (12.60)	1997 (4.4)	4142 (9.13)
SM01-37Sx120F-HP-R-220_SSCP	220 (8.66)	420 (16.54)	2485 (5.48)	4630 (10.21)
SM01-37Sx120F-HP-R-320_SSCP	320 (12.60)	520 (20.47)	2973 (6.55)	5118 (11.28)
SM01-37Sx120F-HP-R-420_SSCP	420 (16.54)	620 (24.41)	3461 (7.63)	5606 (12.36)
SM01-37Sx120F-HP-R-520_SSCP	520 (20.47)	720 (28.35)	3949 (8.71)	6094 (13.43)

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

MATERIALS

Guide Block & Front Plate	Guide Shaft	Bearing	Wipers
Stainless Steel Mat. 1.4404 / 316 L	Hard chrome-plated	Linear ball bearing (stainless)	NBR (FDA conform)

SM01-37Sx120_MSxx_SSCP WITH LINEAR BALL BEARINGS AND VERTICAL LOAD COMPENSATION MAGSPRING®



Dimensions mm

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

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

²⁾ MagSpring variants with different constant forces

MS11: Constant force 40N

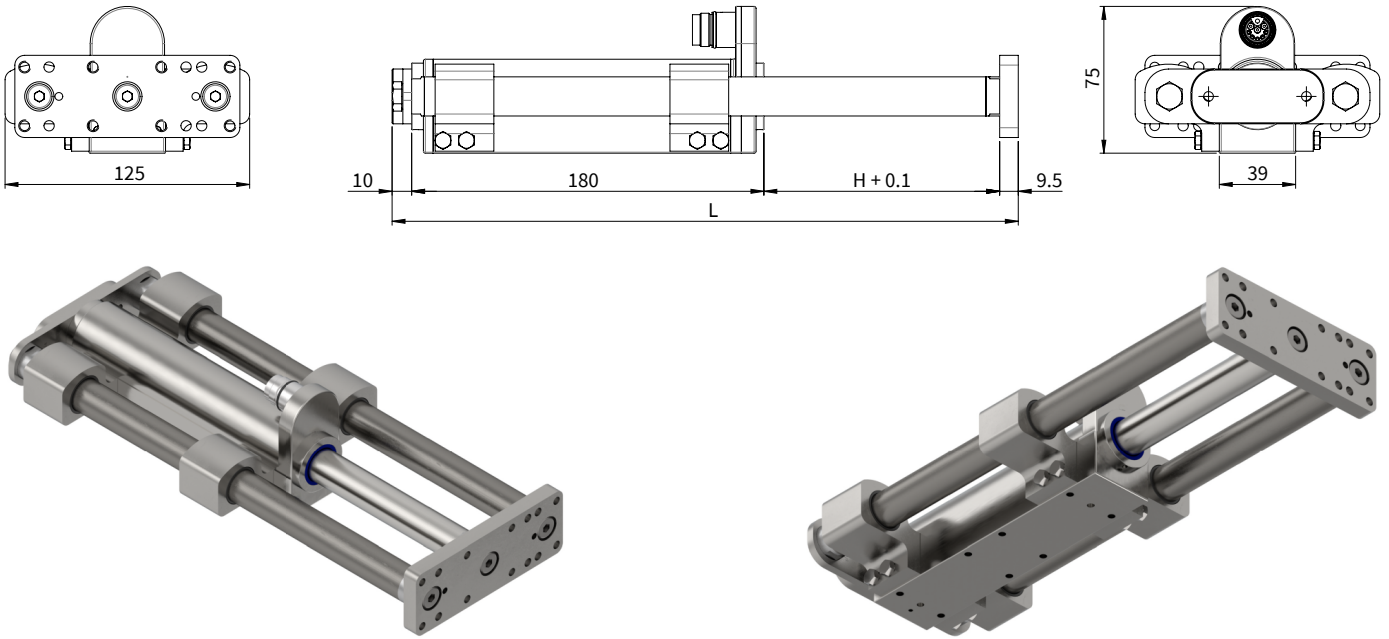
MS12: Constant force 50N

MS13: Constant force 60N

MATERIALS

Guide Block & Front Plate	Guide Shaft	Bearing	Wipers
Stainless Steel Mat. 1.4404 / 316 L	Hard chrome-plated	Linear ball bearing (stainless)	NBR (FDA conform)

SM01-37Sx120_BE01_SSCP WITH PLAIN BEARINGS



Dimensions mm

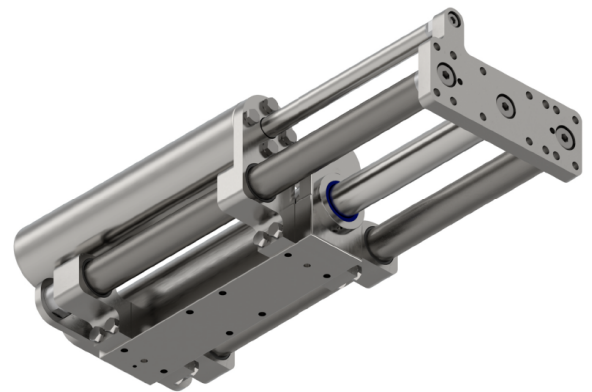
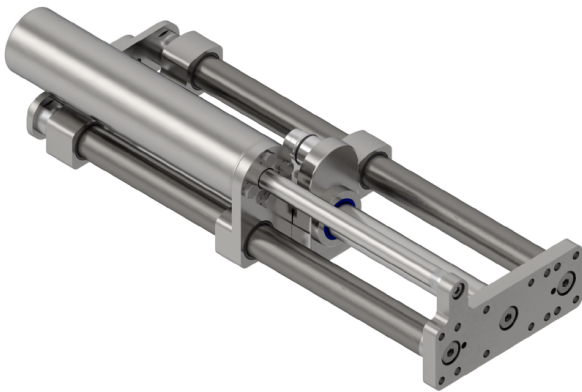
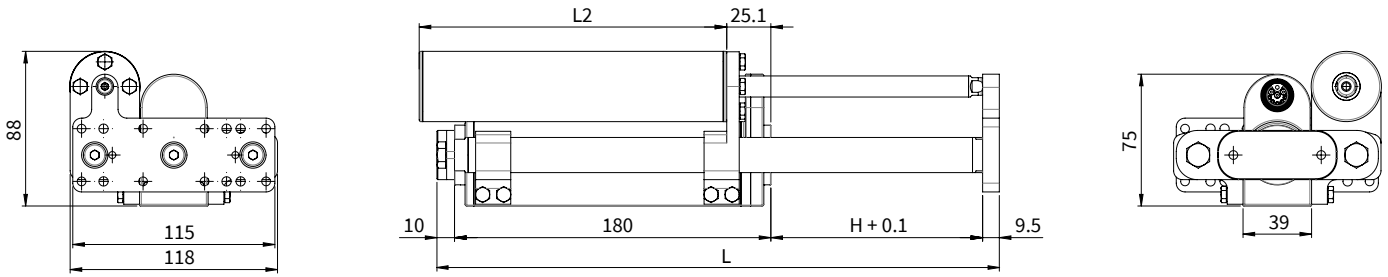
Linear Module	Stroke H [mm (inch)]	Carriage length L [mm (inch)]	Moving mass ¹⁾ [g (lb)]	Total weight [g (lb)]
SM01-37Sx120F-HP-R-120_BE01_SSCP	120 (4.72)	320 (12.60)	1831 (4.04)	3917 (8.64)
SM01-37Sx120F-HP-R-220_BE01_SSCP	220 (8.66)	420 (16.54)	2249 (4.96)	4335 (9.56)
SM01-37Sx120F-HP-R-320_BE01_SSCP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

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

MATERIALS

Guide Block & Front Plate	Guide Shaft	Bearing	Wipers
Stainless Steel Mat. 1.4404 / 316 L	Stainless Steel Mat. 1.4404 / 316 L	Polymer plain bearings FDA conform	None

SM01-37Sx120_BE01_MSxx_SSCP WITH PLAIN BEARINGS AND VERTICAL LOAD COMPENSATION MAGSPRING®



Dimensions mm

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

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

²⁾ MagSpring variants with different constant forces

MS11: Constant force 40N

MS12: Constant force 50N

MS13: Constant force 60N

MATERIALS

Guide Block & Front Plate	Guide Shaft	Bearing	Wipers
Stainless Steel Mat. 1.4404 / 316 L	Stainless Steel Mat. 1.4404 / 316 L	Polymer plain bearings FDA conform	None

PERFORMANCE DATA SM01-37Sx120

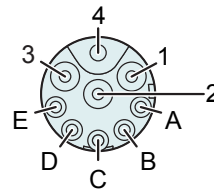
Performance Data Linear Module SM01-37Sx120				
Stroke				
Maximum Stroke	mm (in)		520 (20.47)	
Force				
Max. Force @ 48VDC	N (lbf)		255 (57.3)	
Max. Force @ 72VDC	N (lbf)		255 (57.3)	
Max. Cont. Force [Passive cooling/ Passive mounted ¹ / Cold Plate ²]	N (lbf)		46 / 58 / 78 (10.2 / 12.9 / 17.4)	
Force Constant	N/A _{pk} (lbf/A _{pk})		17 (3.82)	
Position Detection				
Position Resolution	mm (in)		0.005 (0.0002)	
Repeatability	mm (in)		±0.05 (±0.002)	
Position Resolution with ES	mm (in)		- (-)	
Repeatability with ES	mm (in)		- (-)	
Linearity with ES	mm (in)		- (-)	
Electrical Data				
Max. Current @ 48VDC	A _{pk}		14.9	
Max. Current @ 72VDC	A _{pk}		14.9	
Max. Cont. Current [Passive cooling/ Passive mounted ¹ / Cold Plate ²]	A _{pk}		2.7 / 3.4 / 4.6	
Terminal Resistance 25 °C / 150 °C	Ohm		2.4 / 3.5	
Terminal Inductivity	mH		1.6	
Magnetic Period	mm (in)		40 (1.57)	
Thermal Data				
Max. Winding Temperature (Sensor)	°C		120	
Thermal Resistance [Passive cooling/ Passive mounted ¹ / Cold Plate ²]	K/W		3 / 2 / 1.1	
Thermal Time Constant [Passive cooling/ Passive mounted ¹ / Cold Plate ²]	s		1000 / 2700 / 800	
Mechanical Data				
Stator Diameter	mm (in)		39 (1.5)	
Slider Diameter	mm (in)		20 (0.79)	
IP Code [Plain Bearing / Linear Ball Bearing]			IP 69 / IP 67S	

1) Motor is mounted on a stainless steel surface of 0.03 m².
 2) Motor is mounted on a 20°C cold plate.

CONNECTOR

Motor Connector Wiring	R-Connector	Wire Color Motor Cable
Ph 1+	1	red
Ph 1-	2	pink
Ph 2+	3	blue
Ph 2-	4	grey
+5VDC	A	white
GND	B	inner Shield
Sinus	C	yellow
Cosinus	D	green
Temp.	E	black
Shield	Case	outer Shield

R-Connector

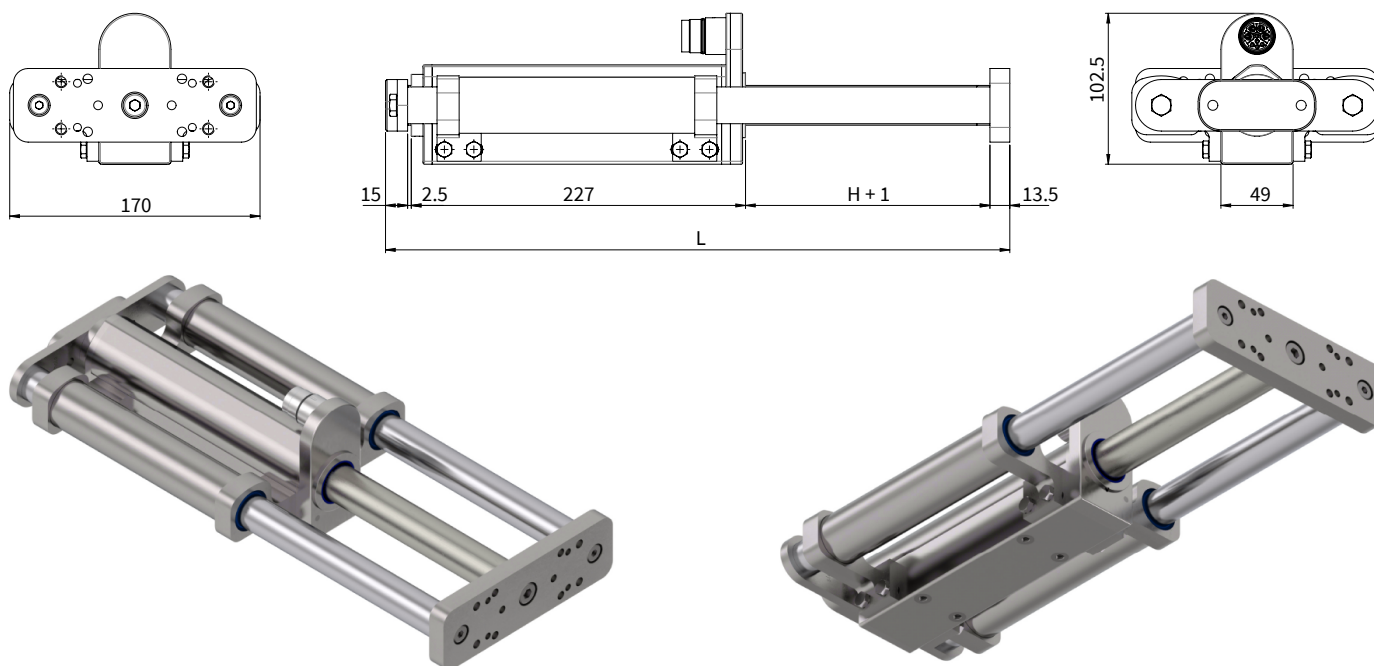


View: Motor connector, plug side

ORDERING INFORMATION

Item	Description	Item-No.
SM01-375x120F-HP-R-120_SSCP	Linear Module SSCP, Linear Ball Bearing, Stroke max 120mm	0150-4402
SM01-375x120F-HP-R-120_MS02_SSCP	Linear Module SSCP, Linear Ball Bearing, MagSpring 40N, Stroke max 120mm	0150-4431
SM01-375x120F-HP-R-120_MS03_SSCP	Linear Module SSCP, Linear Ball Bearing, MagSpring 50N, Stroke max 120mm	0150-4432
SM01-375x120F-HP-R-120_MS04_SSCP	Linear Module SSCP, Linear Ball Bearing, MagSpring 60N, Stroke max 120mm	0150-4433
SM01-375x120F-HP-R-220_SSCP	Linear Module SSCP, Linear Ball Bearing, Stroke max 220mm	0150-4405
SM01-375x120F-HP-R-220_MS02_SSCP	Linear Module SSCP, Linear Ball Bearing, MagSpring 40N, Stroke max 220mm	0150-4434
SM01-375x120F-HP-R-220_MS03_SSCP	Linear Module SSCP, Linear Ball Bearing, MagSpring 50N, Stroke max 220mm	0150-4435
SM01-375x120F-HP-R-220_MS04_SSCP	Linear Module SSCP, Linear Ball Bearing, MagSpring 60N, Stroke max 220mm	0150-4436
SM01-375x120F-HP-R-320_SSCP	Linear Module SSCP, Linear Ball Bearing, Stroke max 320mm	0150-4406
SM01-375x120F-HP-R-420_SSCP	Linear Module SSCP, Linear Ball Bearing, Stroke max 420mm	0150-4407
SM01-375x120F-HP-R-520_SSCP	Linear Module SSCP, Linear Ball Bearing, Stroke max 520mm	0150-4412
SM01-375x120F-HP-R-120_BE01_SSCP	Linear Module SSCP, Plain Bearing, Stroke max 120mm	0150-3879
SM01-375x120F-HP-R-120_BE01_MS02_SSCP	Linear Module SSCP, Plain Bearing, MagSpring 40N, Stroke max 120mm	0150-4344
SM01-375x120F-HP-R-120_BE01_MS03_SSCP	Linear Module SSCP, Plain Bearing, MagSpring 50N, Stroke max 120mm	0150-4345
SM01-375x120F-HP-R-120_BE01_MS04_SSCP	Linear Module SSCP, Plain Bearing, MagSpring 60N, Stroke max 120mm	0150-4346
SM01-375x120F-HP-R-220_BE01_SSCP	Linear Module SSCP, Plain Bearing, Stroke max 220mm	0150-4307
SM01-375x120F-HP-R-220_BE01_MS02_SSCP	Linear Module SSCP, Plain Bearing, MagSpring 40N, Stroke max 220mm	0150-4347
SM01-375x120F-HP-R-220_BE01_MS03_SSCP	Linear Module SSCP, Plain Bearing, MagSpring 50N, Stroke max 220mm	0150-4348
SM01-375x120F-HP-R-220_BE01_MS04_SSCP	Linear Module SSCP, Plain Bearing, MagSpring 60N, Stroke max 220mm	0150-4349
SM01-375x120F-HP-R-320_BE01_SSCP	Linear Module SSCP, Plain Bearing, Stroke max 320mm	0150-4308

SM01-48x150 _SSCP WITH LINEAR BALL BEARINGS



Dimensions mm

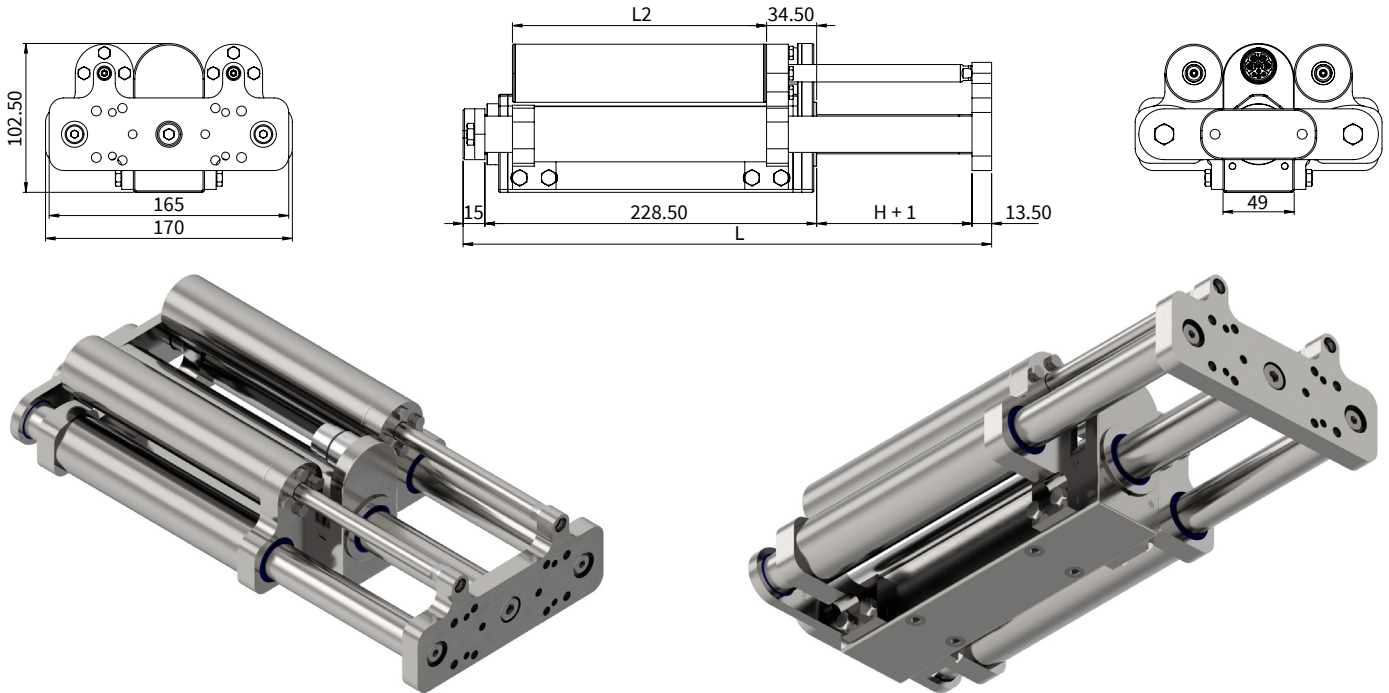
Linear Module	Stroke H [mm (inch)]	Carriage length L [mm (inch)]	Moving mass ¹⁾ [g (lb)]	Total weight [g (lb)]
SM01-48x150G-HP-C-105_SSCP	105 (4.13)	363 (14.29)	4209 (9.28)	8949 (19.73)
SM01-48x150G-HP-C-165_SSCP	165 (6.5)	423 (16.65)	4748 (10.47)	9488 (20.92)
SM01-48x150G-HP-C-255_SSCP	255 (10.04)	513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

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

MATERIALS

Guide Block & Front Plate	Guide Shaft	Bearing	Wipers
Stainless Steel Mat. 1.4404 / 316 L	Hard chrome-plated	Linear ball bearing (stainless)	NBR (FDA conform)

SM01-48x150_MSxx_SSCP WITH LINEAR BALL BEARINGS AND VERTICAL LOAD COMPENSATION MAGSPRING®



Dimensions mm

Linear Module with MagSpring	Stroke H [mm (inch)]	MS Stator length L2 [mm (inch)]	Carriage length L [mm (inch)]	Moving mass ¹⁾ [g (lb)]	Total weight [g (lb)]
SM01-48x150G-HP-C-105_MS08_SSCP ²⁾	105 (4.13)	175 (6.89)	363 (14.29)	4517 (9.96)	11217 (24.73)
SM01-48x150G-HP-C-165_MS08_SSCP ²⁾	165 (6.5)	250 (9.84)	423 (16.65)	5196 (11.46)	12576 (27.73)

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

²⁾ MagSpring variants with different constant forces

MS05: Constant force 80N (on request)

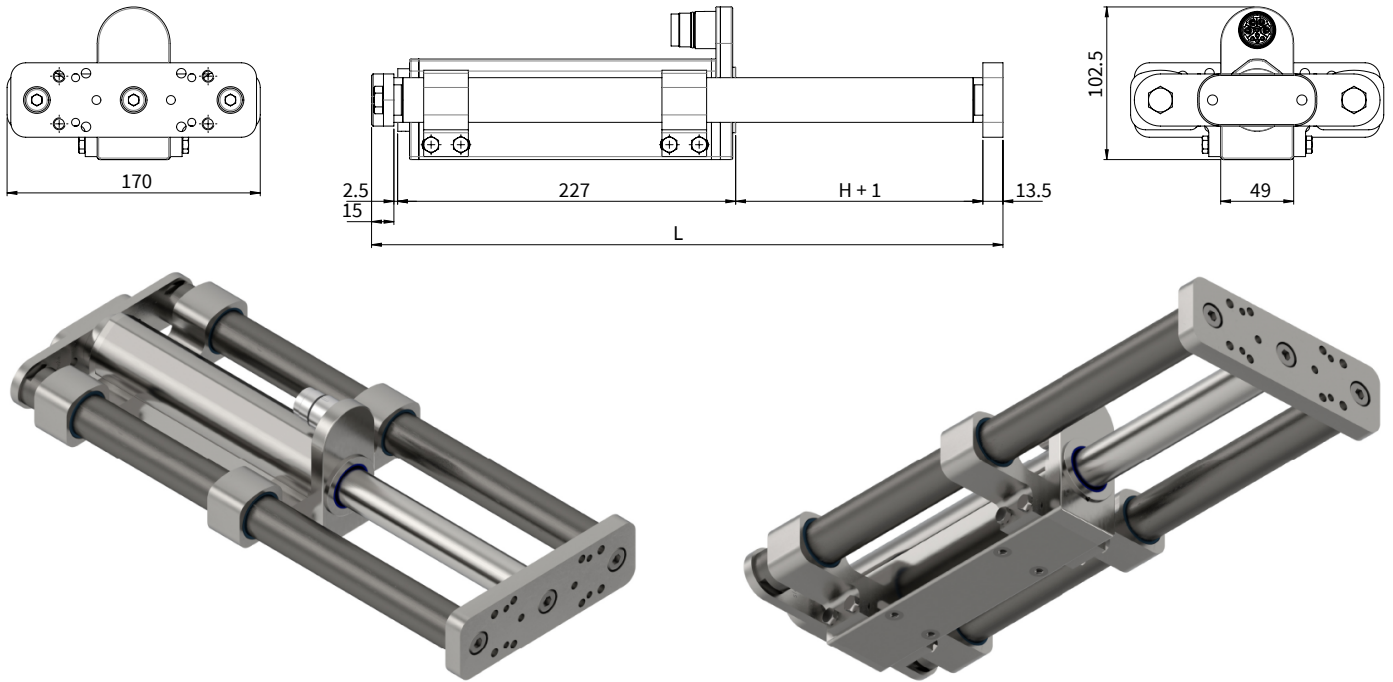
MS06: Constant force 100N (on request)

MS08: Constant force 120N

MATERIALS

Guide Block & Front Plate	Guide Shaft	Bearing	Wipers
Stainless Steel Mat. 1.4404 / 316 L	Hard chrome-plated	Linear ball bearing (stainless)	NBR (FDA conform)

SM01-48x150_BE01_SSCP WITH PLAIN BEARINGS



Dimensions mm

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

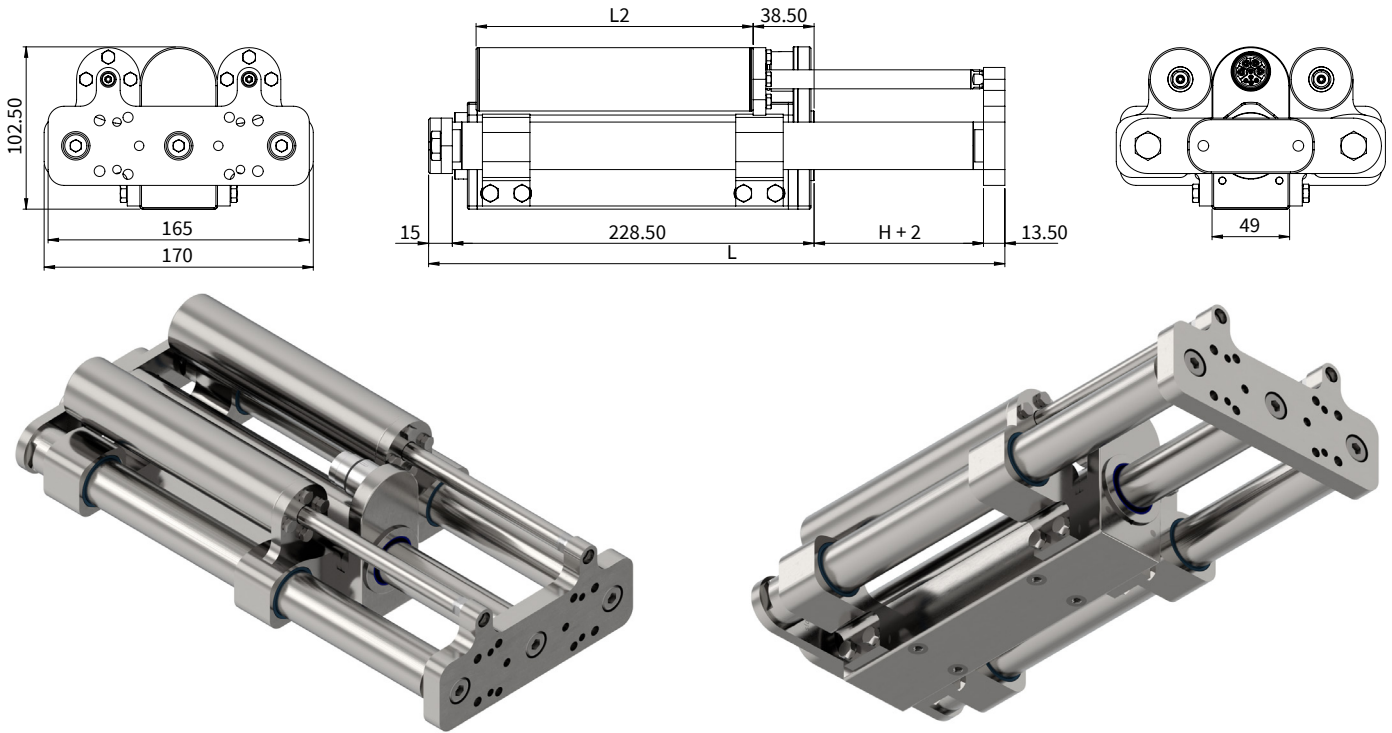
¹⁾ Mass: Slider, Shafts, Front plate, Back plate

MATERIALS

Guide Block & Front Plate	Guide Shaft	Bearing	Wipers
Stainless Steel Mat. 1.4404 / 316 L	Stainless Steel Mat. 1.4404 / 316 L	Polymer plain bearings FDA conform	None

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SM01-48x150_BE01_MSxx_SSCP WITH PLAIN BEARINGS AND VERTICAL LOAD COMPENSATION MAGSPRING®



Dimensions mm

Linear Module with MagSpring	Stroke H [mm (inch)]	MS Stator length L2 [mm (inch)]	Carriage length L [mm (inch)]	Moving mass ¹⁾ [g (lb)]	Total weight [g (lb)]
SM01-48x150G-HP-C-105_BE01_MS08_SSCP ²⁾	105 (4.13)	175 (6.89)	363 (14.29)	4535 (10)	11235 (24.77)
SM01-48x150G-HP-C-165_BE01_MS08_SSCP ²⁾	165 (6.5)	250 (9.84)	423 (16.65)	5242 (11.56)	12622 (27.83)

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

²⁾ MagSpring variants with different constant forces

MS05: Constant force 80N (on request)

MS06: Constant force 100N (on request)

MS08: Constant force 120N

MATERIALS

Guide Block & Front Plate	Guide Shaft	Bearing	Wipers
Stainless Steel Mat. 1.4404 / 316 L	Stainless Steel Mat. 1.4404 / 316 L	Polymer plain bearings FDA conform	None

PERFORMANCE DATA SM01-48x150

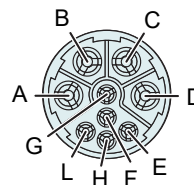
Performance Data Linear Module SM01-48x150			
Stroke			
Maximum Stroke	mm (in)	555 (21.85)	
Force			
Max. Force @ 48VDC	N (lbf)	312 (69.64)	
Max. Force @ 72VDC	N (lbf)	312 (69.64)	
Max. Cont. Force [Passive cooling/ Passive mounted ¹ / Cold Plate ²]	N (lbf)	75 / 87 / 120 (16.9 / 19.6 / 27)	
Force Constant	N/A _{pk} (lbf/A _{pk})	15.65 (3.52)	
Position Detection			
Position Resolution	mm (in)	0.007 (0.0003)	
Repeatability	mm (in)	±0.05 (0.002)	
Position Resolution with ES	mm (in)	- (-)	
Repeatability with ES	mm (in)	- (-)	
Linearity with ES	mm (in)	- (-)	
Electrical Data			
Max. Current @ 48VDC	A _{pk}	23	
Max. Current @ 72VDC	A _{pk}	23	
Max. Cont. Current [Passive cooling/ Passive mounted ¹ / Cold Plate ²]	A _{pk}	5.5 / 6.6 / 8.8	
Terminal Resistance 25 °C / 150 °C	Ohm	0.81 / 1.2	
Terminal Inductivity	mH	0.7	
Magnetic Period	mm (in)	60 (2.36)	
Thermal Data			
Max. Winding Temperature (Sensor)	°C	120	
Thermal Resistance [Passive cooling/ Passive mounted ¹ / Cold Plate ²]	K/W	2.3 / 1.7 / 0.95	
Thermal Time Constant [Passive cooling/ Passive mounted ¹ / Cold Plate ²]	s	1400 / 1.7 / 0.95	
Mechanical Data			
Stator Diameter	mm (in)	49 (1.93)	
Slider Diameter	mm (in)	27 (1.06)	
IP Code [Plain Bearing / Linear Ball Bearing]		IP 69 / IP 67S	

1) Motor ist auf einer Edelstahloberfläche von 0.03 m² montiert.
 2) Motor ist auf einer Kühlplatte (Temp. 20 °C) montiert.

CONNECTOR

Motor Connector Wiring	C-Connector	Wire Color Motor Cable
Ph 1+	A	red
Ph 1-	B	pink
Ph 2+	C	blue
Ph 2-	D	grey
+5VDC	E	white
GND	F	inner Shield
Sinus	G	yellow
Cosinus	H	green
Temp.	L	black
Shield	Case	outer Shield

C-Connector

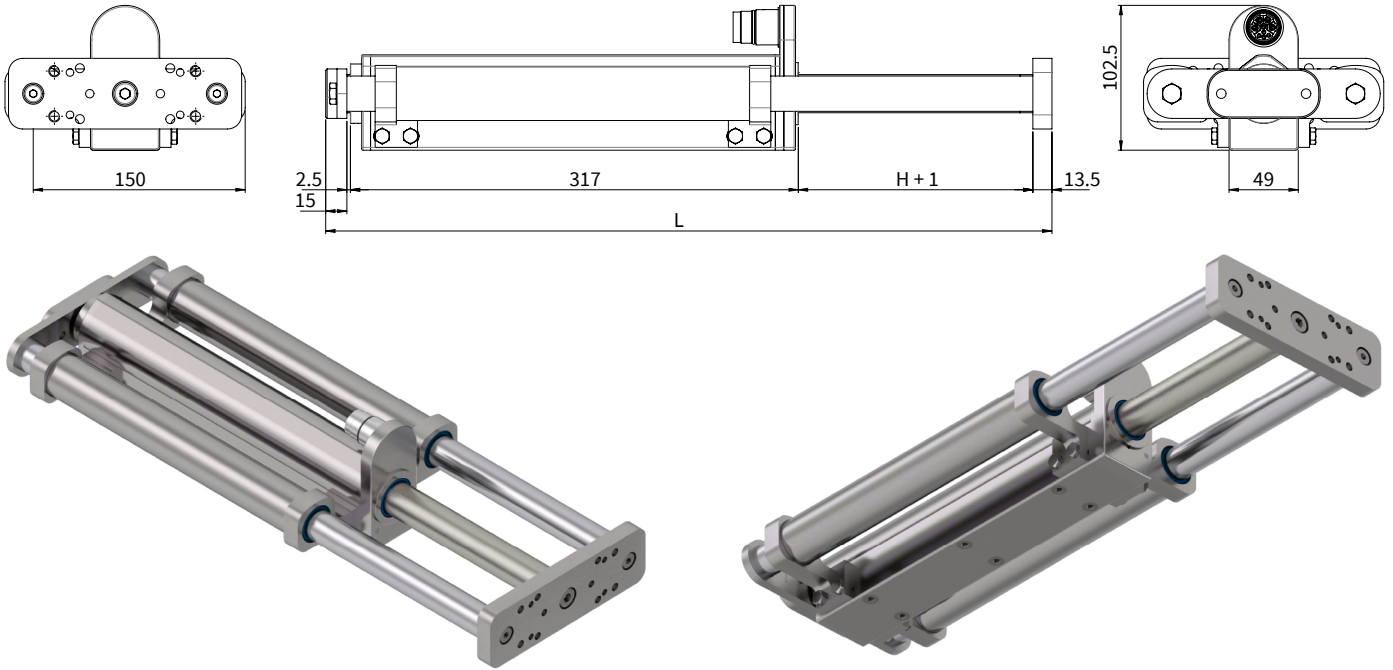


View: Motor connector, plug side
 Material: Stainless steel (Housing)
 IP Code: IP 69K

ORDERING INFORMATION

Item	Description	Item-No.
SM01-48x150G-HP-C-105_SSCP	Linear Module SSCP, Linear Ball Bearing, Stroke max. 105 mm	0150-4483
SM01-48x150G-HP-C-105_MS08_SSCP	Linear Module SSCP, Linear Ball Bearing, MagSpring 120N, Stroke max. 105 mm	0150-4834
SM01-48x150G-HP-C-105_BE01_SSCP	Linear Module SSCP, Plain Bearing, Stroke max. 105 mm	0150-4399
SM01-48x150G-HP-C-105_BE01_MS08_SSCP	Linear Module SSCP, Plain Bearing, MagSpring 120N, Stroke max. 105 mm	0150-4833
SM01-48x150G-HP-C-165_SSCP	Linear Module SSCP, Linear Ball Bearing, Stroke max. 165 mm	0150-4453
SM01-48x150G-HP-C-165_MS08_SSCP	Linear Module SSCP, Linear Ball Bearing, MagSpring 120N, Stroke max. 165 mm	0150-4836
SM01-48x150G-HP-C-165_BE01_SSCP	Linear Module SSCP, Plain Bearing, Stroke max. 165 mm	0150-4340
SM01-48x150G-HP-C-165_BE01_MS08_SSCP	Linear Module SSCP, Plain Bearing, MagSpring 120N, Stroke max. 165 mm	0150-4835
SM01-48x150G-HP-C-255_SSCP	Linear Module SSCP, Linear Ball Bearing, Stroke max. 255 mm	0150-4484
SM01-48x150G-HP-C-255_BE01_SSCP	Linear Module SSCP, Plain Bearing, Stroke max. 255 mm	0150-4393
SM01-48x150G-HP-C-375_SSCP	Linear Module SSCP, Linear Ball Bearing, Stroke max. 375 mm	0150-4485
SM01-48x150G-HP-C-375_BE01_SSCP	Linear Module SSCP, Plain Bearing, Stroke max. 375 mm	0150-4394
SM01-48x150G-HP-C-465_SSCP	Linear Module SSCP, Linear Ball Bearing, Stroke max. 465 mm	0150-4486
SM01-48x150G-HP-C-555_SSCP	Linear Module SSCP, Linear Ball Bearing, Stroke max. 555 mm	0150-4487

SM01-48x240 _SSCP WITH LINEAR BALL BEARINGS



Dimensions mm

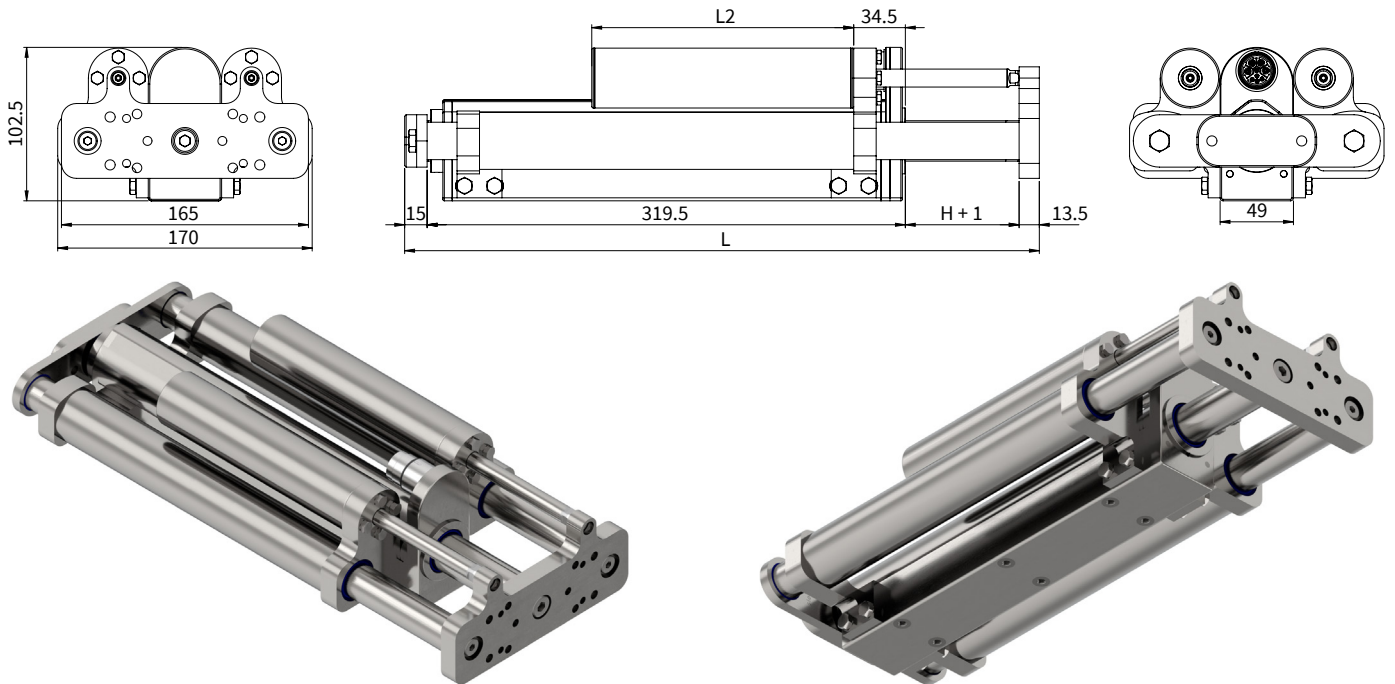
Linear Module	Stroke H [mm (inch)]	Carriage length L [mm (inch)]	Moving mass ¹⁾ [g (lb)]	Total weight [g (lb)]
SM01-48x240F-HP-C-75_SSCP	75 (2.95)	423 (16.65)	4748 (10.47)	9960 (21.96)
SM01-48x240F-HP-C-165_SSCP	165 (6.5)	513 (20.2)	5565 (12.27)	10777 (23.76)
SM01-48x240F-HP-C-285_SSCP	285 (11.22)	633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

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

MATERIALS

Guide Block & Front Plate	Guide Shaft	Bearing	Wipers
Stainless Steel Mat. 1.4404 / 316 L	Hard chrome-plated	Linear ball bearing (stainless)	NBR (FDA conform)

SM01-48x240_MSxx_SSCP WITH LINEAR BALL BEARINGS AND VERTICAL LOAD COMPENSATION MAGSPRING®



Dimensions mm

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

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

²⁾ MagSpring variants with different constant forces

MS05: Constant force 80N (on request)

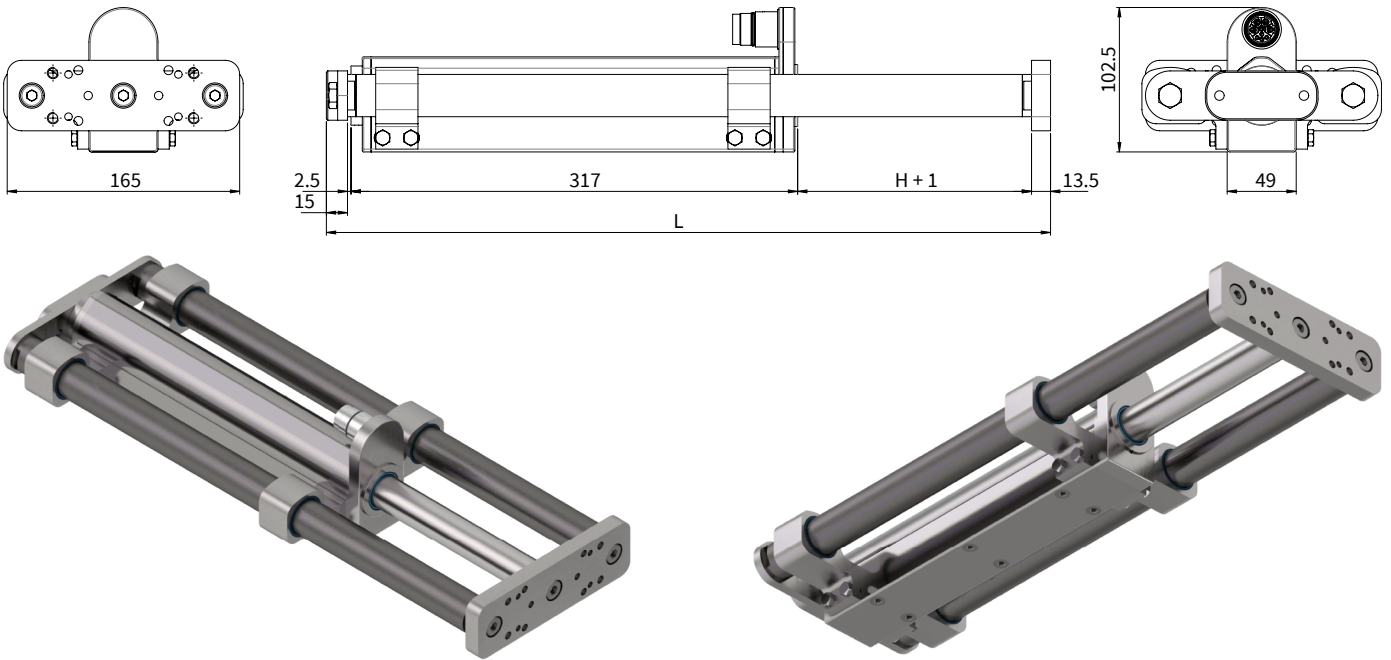
MS06: Constant force 100N (on request)

MS08: Constant force 120N

MATERIALS

Guide Block & Front Plate	Guide Shaft	Bearing	Wipers
Stainless Steel Mat. 1.4404 / 316 L	Hard chrome-plated	Linear ball bearing (stainless)	NBR (FDA conform)

SM01-48x240_BE01_SSCP WITH PLAIN BEARINGS



Dimensions mm

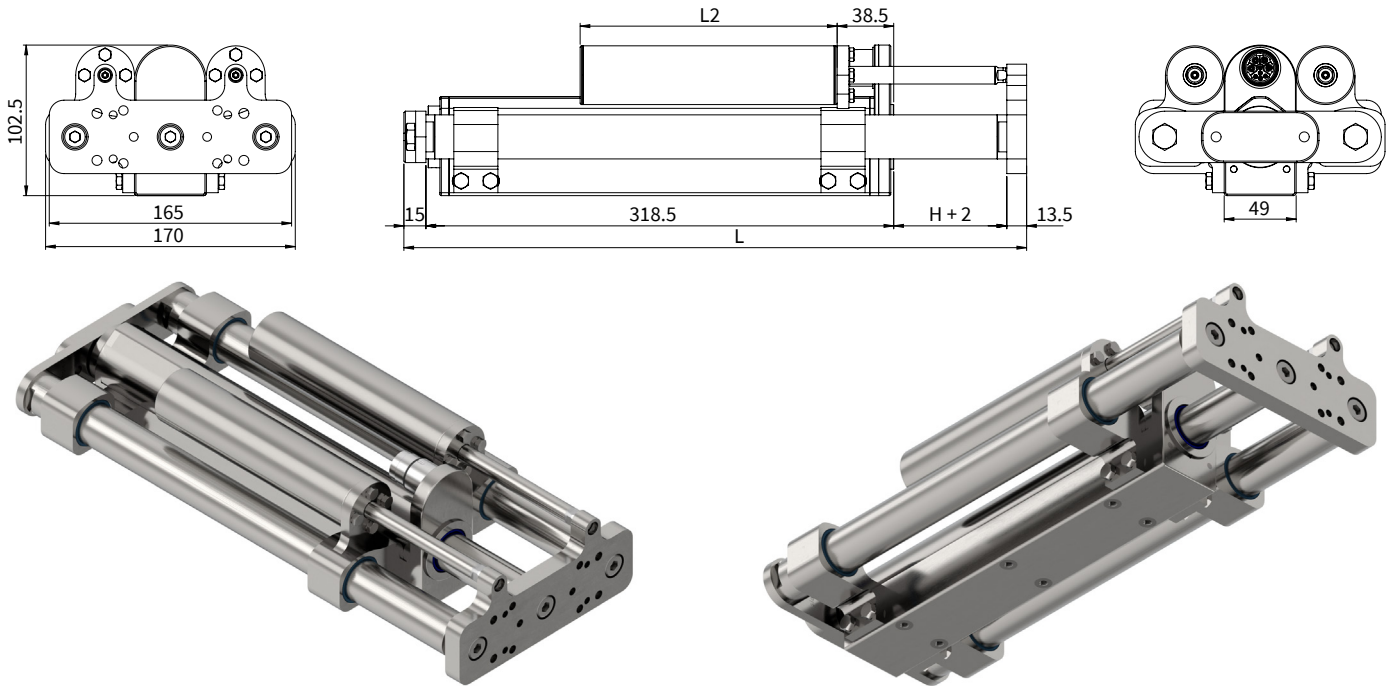
Linear Module	Stroke H [mm (inch)]	Carriage length L [mm (inch)]	Moving mass ¹⁾ [g (lb)]	Total weight [g (lb)]
SM01-48x240F-HP-C-75_BE01_SSCP	75 (2.95)	423 (16.65)	4794 (10.57)	10006 (22.06)
SM01-48x240F-HP-C-165_BE01_SSCP	165 (6.5)	513 (20.2)	5591 (12.33)	10803 (23.82)
SM01-48x240F-HP-C-285_BE01_SSCP	285 (11.22)	633 (24.92)	6418 (14.15)	11630 (25.64)
SM01-48x240F-HP-C-375_BE01_SSCP	375 (14.76)	723 (28.46)	7111 (15.68)	12323 (27.17)

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

MATERIALS

Führungsblock & Frontplatte	Führungswelle	Lager	Abstreifer
Edelstahl Mat. 1.4404 / 316 L	Edelstahl Mat. 1.4404 / 316 L	Polymergleitlager FDA konform	(-)

SM01-48x240_BE01_MSxx_SSCP WITH PLAIN BEARINGS AND VERTICAL LOAD COMPENSATION MAGSPRING®



Dimensions mm

Linear Module with MagSpring	Stroke H [mm (inch)]	MS Stator length L2 [mm (inch)]	Carriage length L [mm (inch)]	Moving mass ¹⁾ [g (lb)]	Total weight [g (lb)]
SM01-48x240F-HP-C-75_BE01_MS08_SSCP ²⁾	75 (2.95)	175 (6.89)	423 (16.65)	5102 (11.25)	13292 (29.3)
SM01-48x240F-HP-C-165_BE01_MS08_SSCP ²⁾	165 (6.5)	250 (9.84)	513 (20.2)	6039 (13.31)	14909 (32.87)

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

²⁾ MagSpring variants with different constant forces

MS05: Constant force 80N (on request)

MS06: Constant force 100N (on request)

MS08: Constant force 120N

MATERIALS

Guide Block & Front Plate	Guide Shaft	Bearing	Wipers
Stainless Steel Mat. 1.4404 / 316 L	Stainless Steel Mat. 1.4404 / 316 L	Polymer plain bearings FDA conform	None

PERFORMANCE DATA SM01-48x240

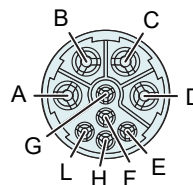
Performance Data Linear Module SM01-48x240			
Stroke			
Maximum Stroke	mm (in)	465 (18.31)	
Force			
Max. Force @ 48VDC	N (lbf)	477 (106.47)	
Max. Force @ 72VDC	N (lbf)	477 (106.47)	
Max. Cont. Force [Passive cooling/ Passive mounted ¹ / Cold Plate ²]	N (lbf)	115 / 139 / 172 (25.9 / 31.3 / 38.7)	
Force Constant	N/A _{pk} (lbf/A _{pk})	22 (4.95)	
Position Detection			
Position Resolution	mm (in)	0.007 (0.0003)	
Repeatability	mm (in)	±0.05 (0.002)	
Position Resolution with ES	mm (in)	- (-)	
Repeatability with ES	mm (in)	- (-)	
Linearity with ES	mm (in)	- (-)	
Electrical Data			
Max. Current @ 48VDC	A _{pk}	25.9	
Max. Current @ 72VDC	A _{pk}	25.9	
Max. Cont. Current [Passive cooling/ Passive mounted ¹ / Cold Plate ²]	A _{pk}	6 / 7.2 / 8.9	
Terminal Resistance 25 °C / 150 °C	Ohm	0.97 / 1.4	
Terminal Inductivity	mH	1.1	
Magnetic Period	mm (in)	60 (2.36)	
Thermal Data			
Max. Winding Temperature (Sensor)	°C	120	
Thermal Resistance [Passive cooling/ Passive mounted ¹ / Cold Plate ²]	K/W	1.6 / 1.1 / 0.72	
Thermal Time Constant [Passive cooling/ Passive mounted ¹ / Cold Plate ²]	s	1410 / 1.1 / 0.72	
Mechanical Data			
Stator Diameter	mm (in)	49 (1.93)	
Slider Diameter	mm (in)	27 (1.06)	
IP Code [Plain Bearing / Linear Ball Bearing]		IP 69 / IP 67S	

1) Motor ist auf einer Edelstahloberfläche von 0.03 m² montiert.
 2) Motor ist auf einer Kühlplatte (Temp. 20 °C) montiert.

CONNECTOR

Motor Connector Wiring	C-Connector	Wire Color Motor Cable
Ph 1+	A	red
Ph 1-	B	pink
Ph 2+	C	blue
Ph 2-	D	grey
+5VDC	E	white
GND	F	inner Shield
Sinus	G	yellow
Cosinus	H	green
Temp.	L	black
Shield	Case	outer Shield

C-Connector



View: Motor connector, plug side
 Material: Stainless steel (Housing)
 IP Code: IP 69K

ORDERING INFORMATION

Item	Description	Item-No.
SM01-48x240F-HP-C-75_SSCP	Linear Module SSCP, Linear Ball Bearing, Stroke max. 75 mm	0150-4454
SM01-48x240F-HP-C-75_MS08_SSCP	Linear Module SSCP, Linear Ball Bearing, MagSpring 120N, Stroke max. 75 mm	0150-4838
SM01-48x240F-HP-C-75_BE01_SSCP	Linear Module SSCP, Plain Bearing, Stroke max. 75 mm	0150-4395
SM01-48x240F-HP-C-75_BE01_MS08_SSCP	Linear Module SSCP, Plain Bearing, MagSpring 120N, Stroke max. 75 mm	0150-4837
SM01-48x240F-HP-C-165_SSCP	Linear Module SSCP, Linear Ball Bearing, Stroke max. 165 mm	0150-4490
SM01-48x240F-HP-C-165_MS08_SSCP	Linear Module SSCP, Linear Ball Bearing, MagSpring 120N, Stroke max. 165 mm	0150-4793
SM01-48x240F-HP-C-165_BE01_SSCP	Linear Module SSCP, Plain Bearing, Stroke max. 165 mm	0150-4396
SM01-48x240F-HP-C-165_BE01_MS08_SSCP	Linear Module SSCP, Plain Bearing, MagSpring 120N, Stroke max. 165 mm	0150-4788
SM01-48x240F-HP-C-285_SSCP	Linear Module SSCP, Linear Ball Bearing, Stroke max. 285 mm	0150-4491
SM01-48x240F-HP-C-285_BE01_SSCP	Linear Module SSCP, Plain Bearing, Stroke max. 285 mm	0150-4397
SM01-48x240F-HP-C-375_SSCP	Linear Module SSCP, Linear Ball Bearing, Stroke max. 375 mm	0150-4492
SM01-48x240F-HP-C-375_BE01_SSCP	Linear Module SSCP, Plain Bearing, Stroke max. 375 mm	0150-4398
SM01-48x240F-HP-C-465_SSCP	Linear Module SSCP, Linear Ball Bearing, Stroke max. 465 mm	0150-4493

SM01 LINEAR MODULES AS COMBINED YZ MOTION UNITS

SM01 linear modules can be directly screwed together using the LinMot mounting kit, so that any YZ combinations can be realized. In addition, a classic pillar system is available, with which the units can be flexibly adjusted in height if required.



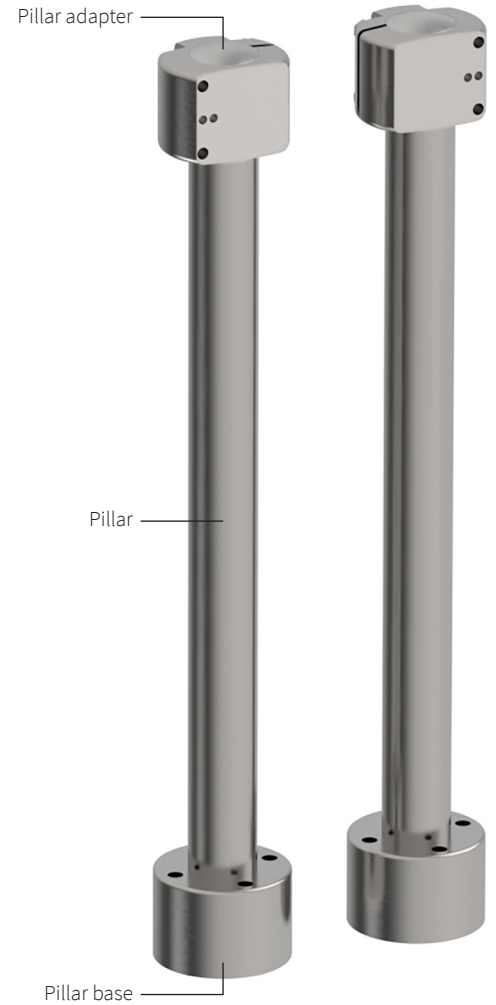
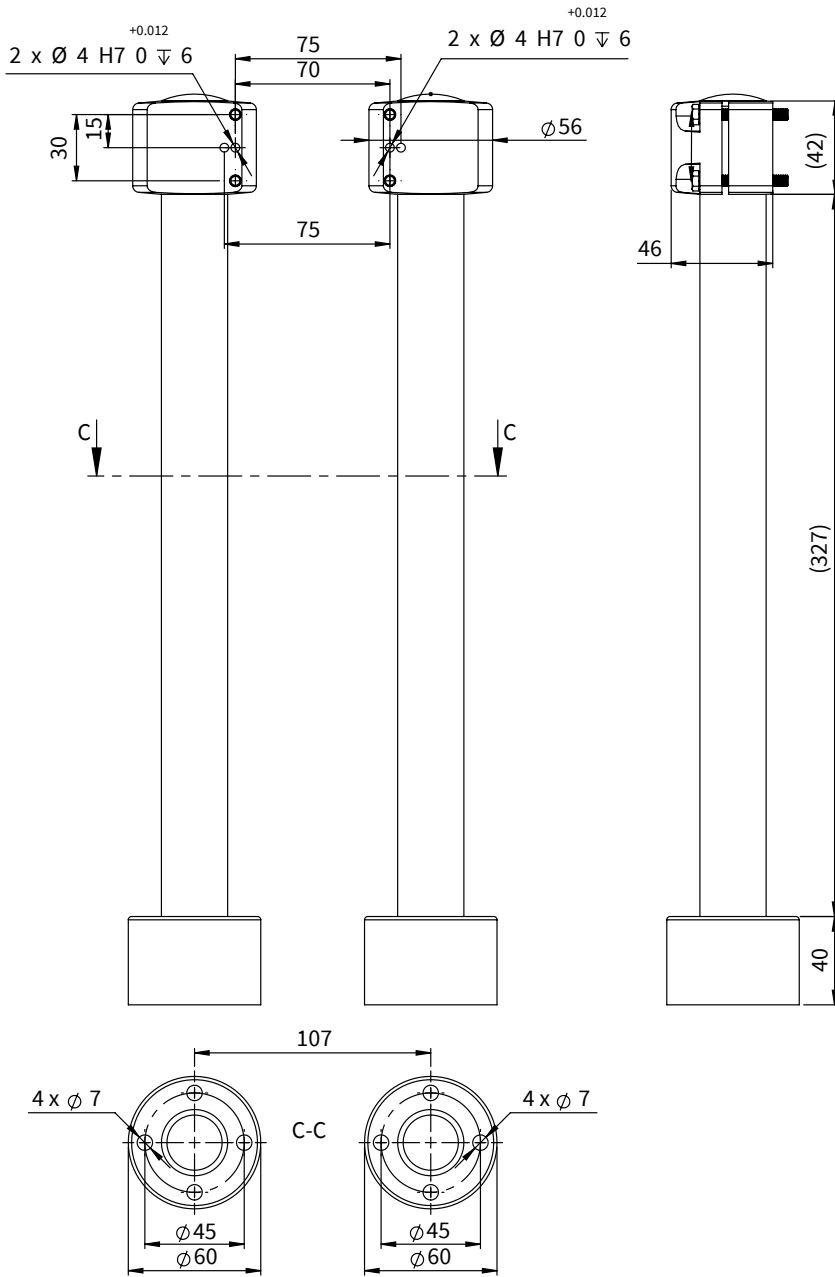
SM01 to SM01 with pillars

MOUNTING ACCESSORIES

The mounting kit includes all necessary screws to mount SM01-37S with SM01-37S and SM01-37Sx120 with SM01-48. The adapter plate is needed to mount SM01-37Sx60 with SM01-48.

Item	Description	Item-No.
Z01-AsKit-SM01-SM01	Mounting kit for SM01 on SM0x Linear Modules includes: 4 x Hexagon head screw M5x16 A4 (ISO 4017) 4 x Hexagon head screw M5x40 A4 (ISO 4017)	0150-4507
SM01-48-AP-37Sx60	Adapter Plate-Kit for SM01-37Sx60 to SM01-48	0150-4187

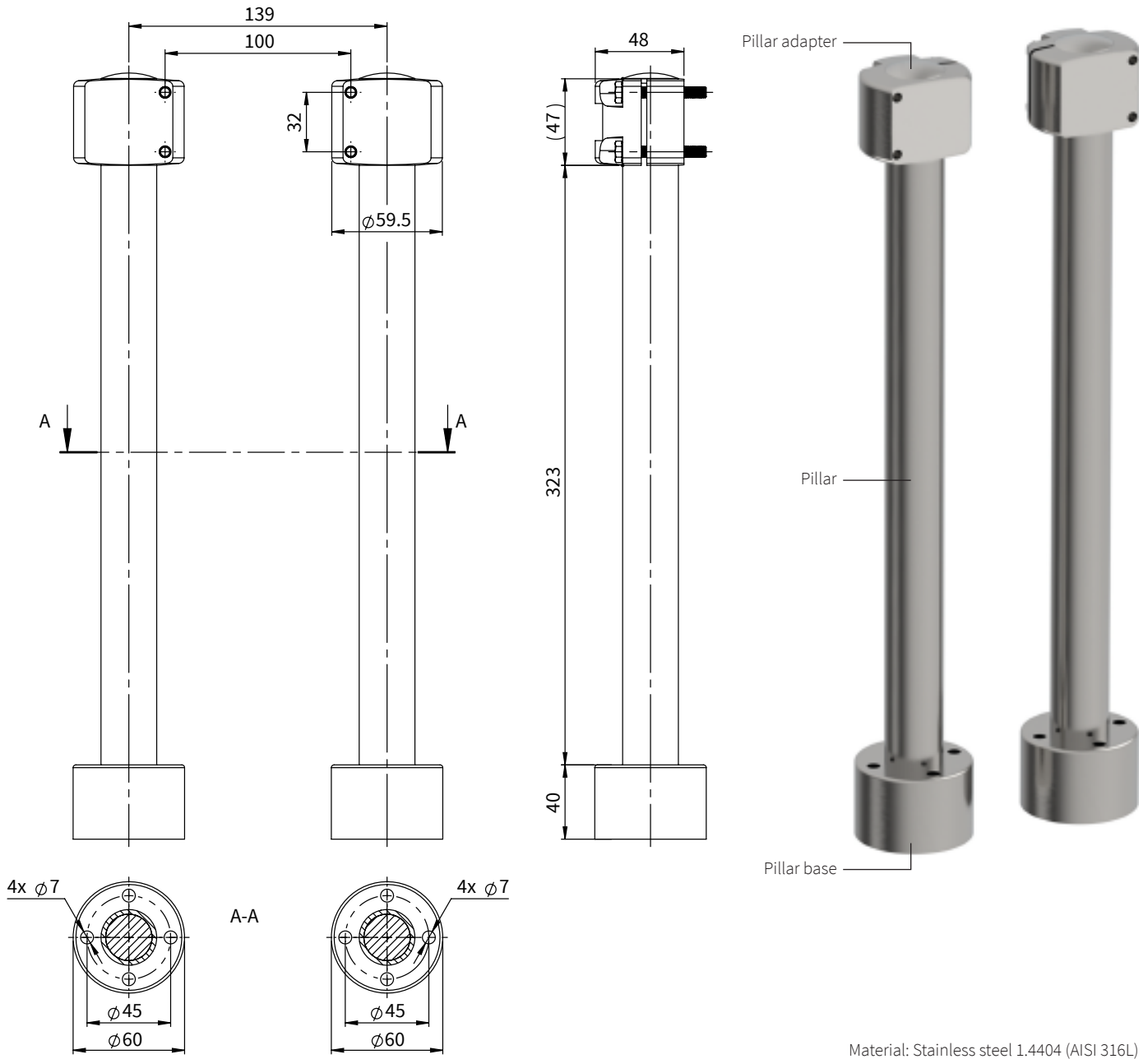
PILLAR SYSTEM FOR SM01-37 LINEAR MODULE



Material: Stainless steel 1.4404 (AISI 316L)

Item	Description	Item-No.
Z01-VF-30-SSC	Pillar adapter 30	0150-4501
Z01-SL30x400-HP-SSC	Pillar SSC $\varnothing 30$ Length=400 mm, Mat. 1.4112	0150-4508
Z01-SL30-25x400-SSCP	Pillar $\varnothing 30$ Length=400 mm, Mat. 1.4404 with Heat Pipe	0150-4502
Z01-SF-30-SSC	Pillar base	0150-4500

PILLAR SYSTEM FOR SM01-48 LINEAR MODULE



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Item	Description	Item-No.
Z01-VF-32-SSC	Pillar adapter 32	0150-4787
Z01-SL30x400-HP-SSC	Pillar SSC Ø30 Length=400 mm, Mat. 1.4112	0150-4508
Z01-SL30-25x400-SSCP	Pillar Ø30 Length=400 mm, Mat. 1.4404 with Heat Pipe	0150-4502
Z01-SF-30-SSC	Pillar base	0150-4500

Area with horizontal dotted lines for notes.

ALL LINEAR MOTION FROM A SINGLE SOURCE

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