

# LINEAR ROTARY MOTORS

## PR02-70



- ✓ New design principle with shorter installation length
- ✓ Special design, ideal for compact rotary transfer machines
- ✓ Independent linear and rotary movements
- ✓ Option of integrated MagSpring for load compensation
- ✓ Optional integrated torque measuring shaft and force sensor for high-precision torque or force control and process data logging
- ✓ Option hollow shaft for applications with air feed-through / vacuum
- ✓ Option pusher for opening grippers or ejecting parts
- ✓ Option stainless steel front for applications with the highest hygienic requirements

## Product description

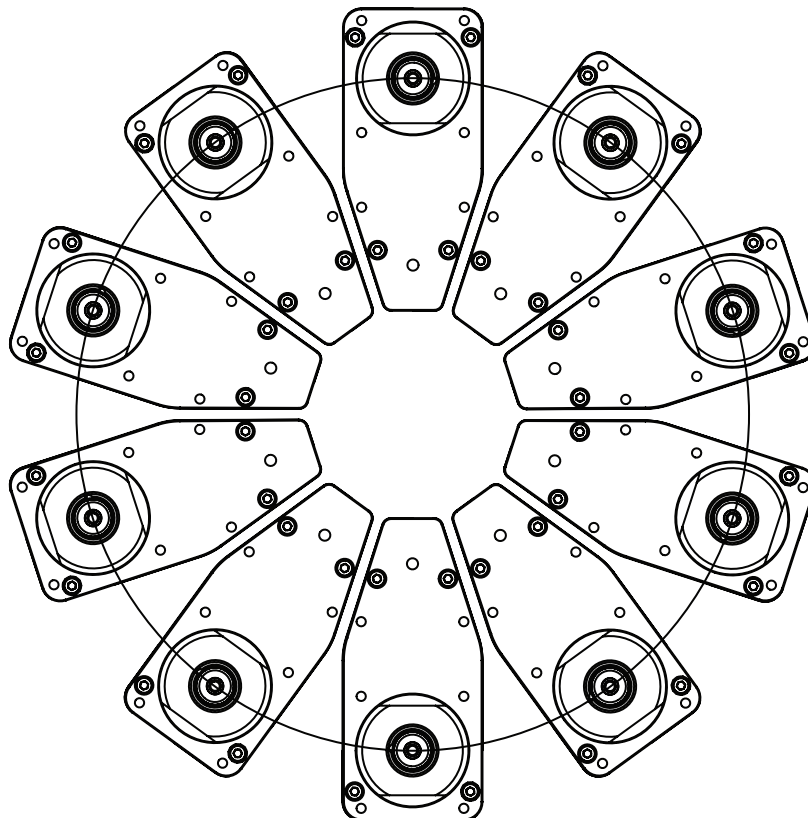
LinMot is expanding its product range of linear rotary motors with another type. The new PR02-70 motor series features a new design in which the motors including additional components are integrated in a slim housing.

In addition to the linear motor and the rotary motor, further options such as an air feed-through, a pneumatic pusher, a magnetic spring "MagSpring" and a torque and/or force sensor can be installed. With the help of the air feed-through through the hollow shaft, pneumatic grippers can be actuated or vacuum applications can be easily realised. Alternatively, the pneumatic pusher can be used as an independent second linear movement to actuate grippers in a mechanical manner, for example, or to eject gripped elements in a simple and targeted manner. An integrated MagSpring ensures that the weight force of the moving load is passively compensated and also prevents the axis from lowering in the de-energised state. The optional force and torque sensor enables precise, repro-



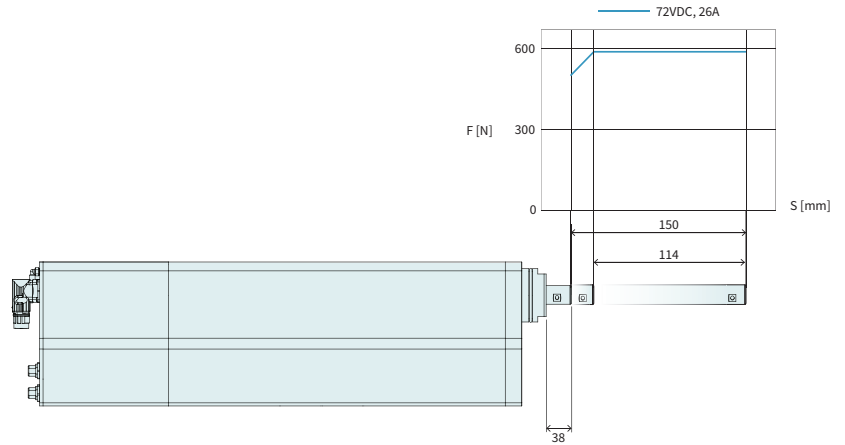
ducible and recordable closing processes, as required in the pharmaceutical industry, for example. With the new design, users also benefit from the shorter installation length of the entire unit and the hygienic design with easy-to-clean surfaces. The special design enables the arrangement of several linear rotary motors on the smallest pitch circle. This makes it easy to realize new rotary transfer machines with very compact diameters.

## Mounting example for turntable with diameter 360mm



**PR02-70x100(-SSC)-C\_48x240F-HP-C-150-Lxx\_MSxx\_TS0x\_FS0x**

**Max. Stroke:** 150 mm  
**Max. Force:** 572 N  
**Max. Torque:** 9 Nm



Dimensions in mm

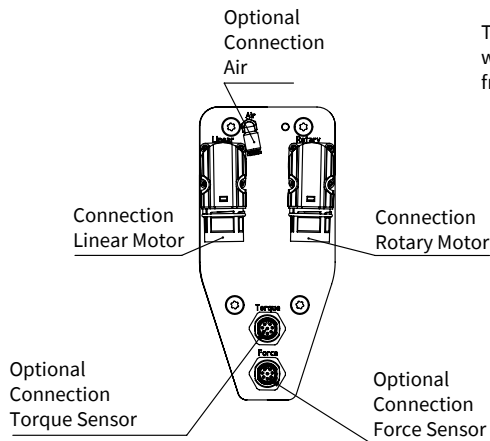
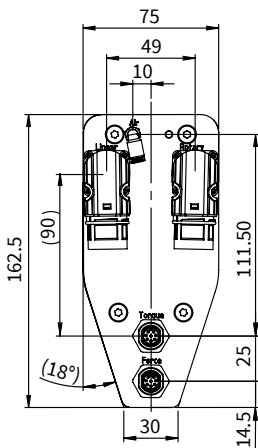
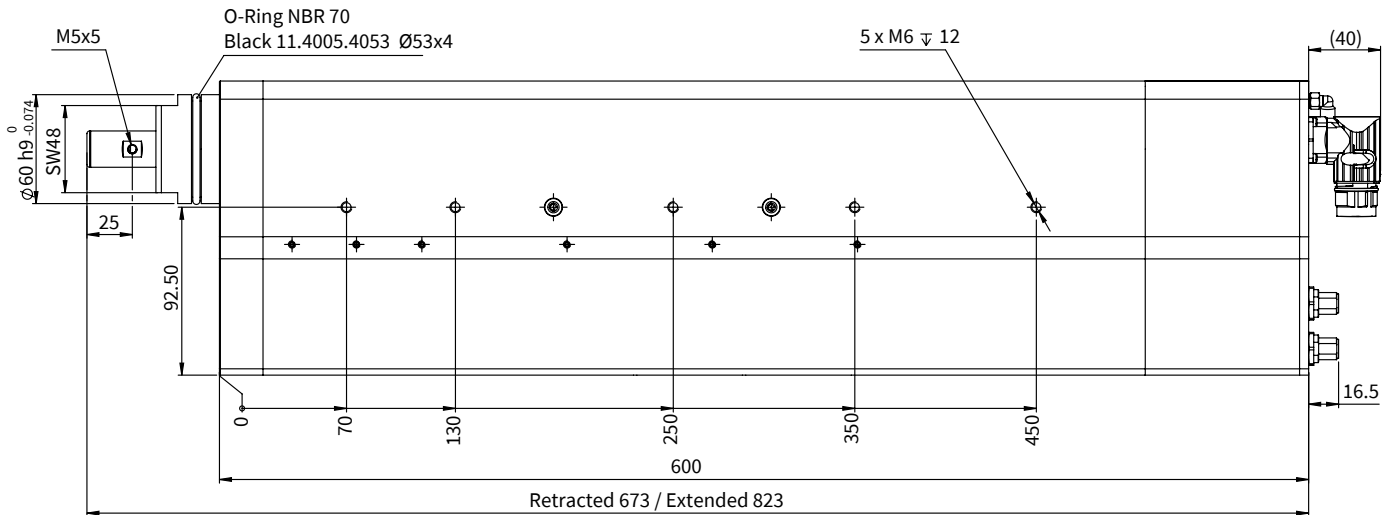
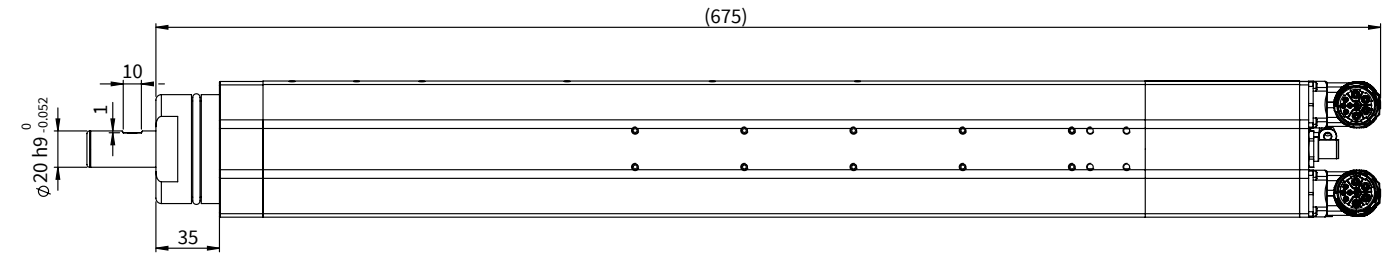
MOTOR DATA										
PR02-70x100(-SSC)-C_48x240F-HP-C-150-Lxx_MSxx_TS0x_FS0x										
<b>Linear Motion</b>										
Extended Stroke ES	mm (in)						150 (5.91)			
Standard Stroke SS	mm (in)						114 (4.49)			
Peak Force	N (lbf)						572 (129)			
Constant Force @ 25 °C <sup>1)</sup>	N (lbf)						201 (45.2)			
Force Constant	N/A <sub>pk</sub> (lbf/A <sub>pk</sub> )						22 (4.9)			
Max. Current @ 72VDC	A <sub>pk</sub>						26			
Max. Velocity @ 72VDC	m/s (in/s)						3.01 (118.9)			
Position Repeatability	mm (in)						±0.05 (±0.002)			
Linearity	%						±0.5			
<b>Rotary Motion</b>										
Peak Torque (± 10%)	Nm (lbf·in)						9 (80.1)			
Constant Torque (Halt) @ 25 °C <sup>1)</sup>	Nm (lbf·in)						2.06 (18.3)			
Max. Number of revolutions	rpm						1000			
Torque Constant 1	Nm/A <sub>pk</sub> (lbf·in/A <sub>pk</sub> )						0.36 (3.19)			
Torque Constant 2	Nm/A <sub>rms</sub> (lbf·in/A <sub>rms</sub> )						0.509 (4.52)			
Max. Current @ 72VDC	A <sub>pk</sub> / A <sub>rms</sub>						25 / 17.4			
Position Repeatability	°						±0.1			
<b>Mechanical Data</b>										
Width	mm (in)						75 (2.95)			
Height	mm (in)						162.5 (6.4)			
Length (without Connectors)	mm (in)						635 / 731 / 904 (25 / 28.78 / 35.59)			
<b>Options</b>										
		without	MS04: Load Compensation	Lxx: with Linear Rotary Shaft			TS04	FS04	SSC	
			MagSpring 60N	Hollow Shaft -L01	Pn. Pusher -L05	El. Pusher -L15	Torque Sensor	Force Sensor	Stainless Front	
Total weight Modul	g	14900	+1100	+0	tbd	tbd	+50	tbd	tbd	
Weight moving mass	g	3020	+185	+0	tbd	tbd	+0	tbd	tbd	
Rotary Torque of Inertia	kgcm <sup>2</sup> (lbf <sup>2</sup> )						1.96 (0.0047)			
Through bore-hole Lxx							Hole diameter 4 mm ; Connection (front): M5x 15, Connection (back): Push-in fitting for hose Ø4 mm			
Axle Diameter	mm (in)						20h9 (0.79)			
Protection Class							IP64 S			
<b>Integrated Sensors</b>										
			Torque Sensor (Optional)				Force Sensor (Optional)			
Supply Voltage	VDC						24			
Measuring Range	Nm (lbf·in) N (lbf)		±9 (±78.8)				±300 (±67.5)			
Boundary Frequency -3dB	kHz		1				4.4			
Output Signal	VDC						±10			
Current Consumption	mA						<200			
Zero Offset	mV						<±100			
Mechanical Overload	%		200				300			
Resolution (C1200)	Bit						12			
Linearity	Nm (lbf·in) N (lbf)		±0.09 (±0.81)				±3 (±0.675)			

**Electric / Pneumatic Pusher**

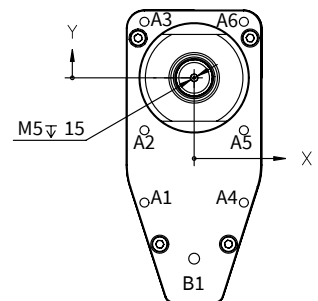
Peak Force (El. / Pn. @ 6 bar)	N (lbf)	225 / 275	(50.6 / 61.8)
Nominal Force (El. Pusher)	N (lbf)	50	(11.2)
Outer Diameter Centre Axle	mm (in)	6	(0.23)
Max. Stroke (Pusher)	mm (in)	25	(0.98)
Torsion Protection	mm (in)	2	(17.5)

1) Nominal force depends on 2nd motor (see LinMot Designer).

**DIMENSIONS PR02-70X100(-SSC)-C\_48X240F-HP-C-150(-L01) (OPTION FULL SHAFT OR HOLLOW SHAFT)**

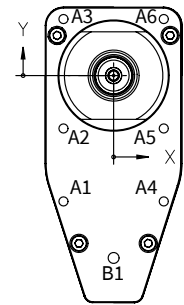
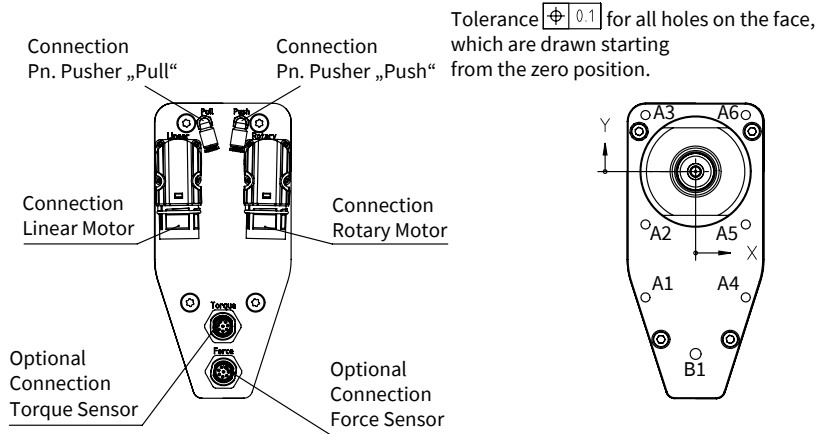
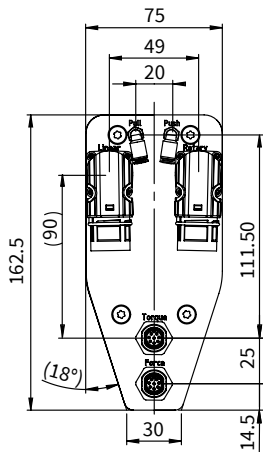
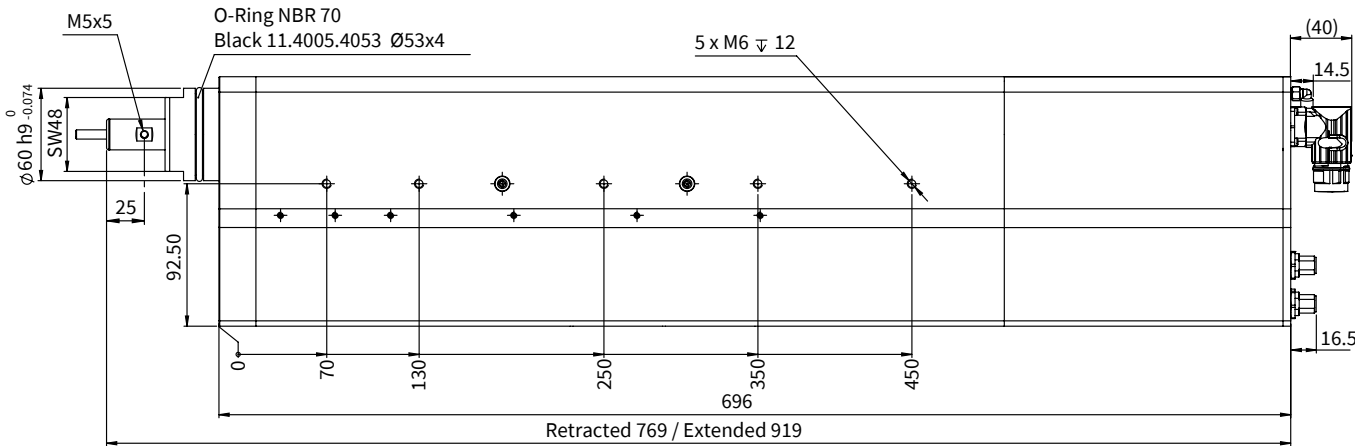
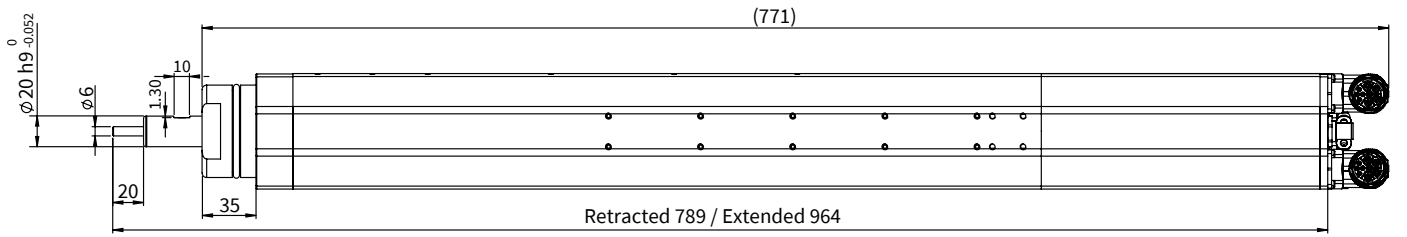


Tolerance  $\Phi \pm 0.1$  for all holes on the face, which are drawn starting from the zero position.



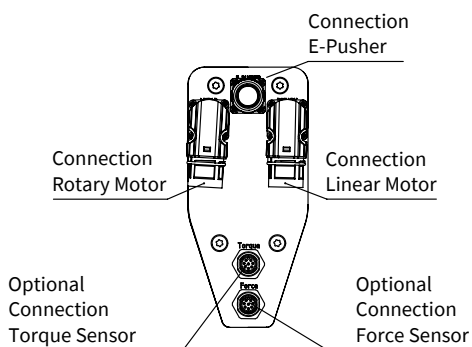
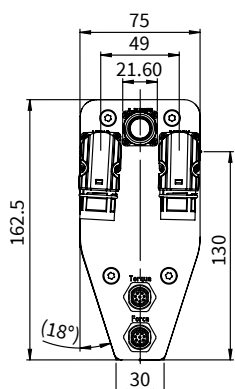
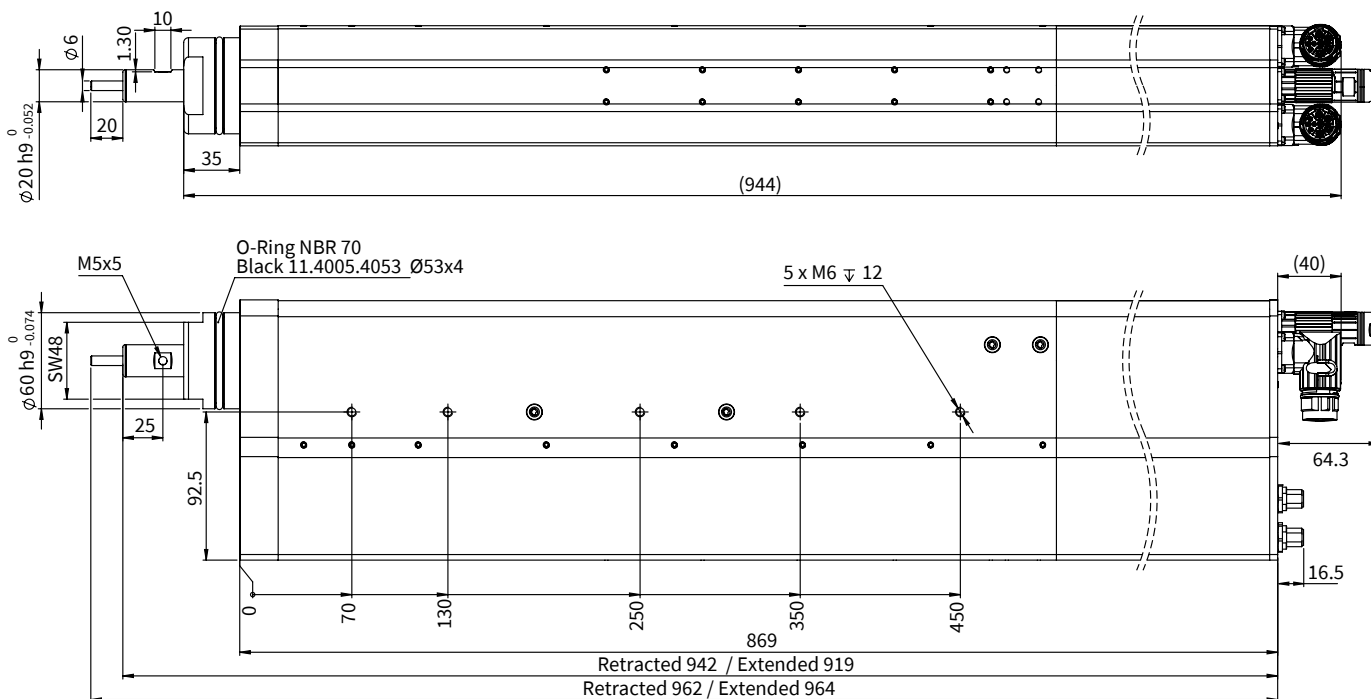
	X-Pos.	Y-Pos.	
A1	-27.50	-69	M6 12
A2	-27.50	-29	
A3	-27.50	31	
A4	27.50	-69	
A5	27.50	-29	
A6	27.50	31	
B1	0	-90	$\Phi$ 6 H7 $\begin{matrix} +0.012 \\ 0 \end{matrix}$ 12 10

**DIMENSIONS PR02-70X100(-SSC)-C\_48X240F-HP-C-150-L05 (OPTION PNEUMATIC PUSHER)**

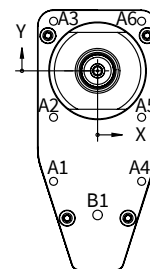


	X-Pos.	Y-Pos.	
A1	-27.50	-69	M6 12
A2	-27.50	-29	
A3	-27.50	31	
A4	27.50	-69	
A5	27.50	-29	
A6	27.50	31	
B1	0	-90	Ø 6 H7 <sup>+0.012</sup> / <sub>0</sub> 10

**DIMENSIONS PR02-70X100(-SSC)-C\_48X240F-HP-C-150-L15 (OPTION ELECTRIC PUSHER)**



Tolerance  $\pm 0.1$  for all holes on the face, which are drawn starting from the zero position.

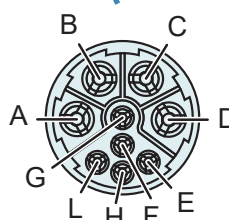


	X-Pos.	Y-Pos.	
A1	-27.50	-69	M6 12
A2	-27.50	-29	
A3	-27.50	31	
A4	27.50	-69	
A5	27.50	-29	
A6	27.50	31	
B1	0	-90	$\phi 6 H7 \begin{smallmatrix} +0.012 \\ 0 \end{smallmatrix} \nabla 10$

**CONNECTORS**

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

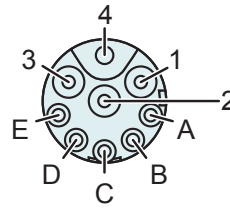
**C-Connector**



View: Motor connector, plug on

Connector Wiring	El. Pusher R-Connector	Wire Color Motor Cable
Ph 1+ / Ph A	1	red
Ph 1- / Ph B	2	pink
Ph 2+ / Ph C	3	blue
Ph 2- / (-)	4	grey
+5VDC	A	white
GND	B	inner shield
Sin	C	yellow
Cos	D	green
Temp.	E	black
Shield	Housing	outer shield

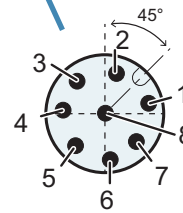
**R-Connector**



Ansicht: Motorstecker, steckseitig

Connector Wiring	Torque- / Force Sensor M12 Connector (A-coded)	Wire Color Sensor Cable
Supply GND	1	white
Supply 24V (approx. 80 mA @ 24VDC)	2	brown
Do not connect	3	green
Torque / Force -	4	yellow
Torque / Force +	5	grey
AGND / Reference ground for force sensor signal (Isolated from PGND, connect to reference GND of analog input on servo drive.)	6	pink
Do not connect	7	blue
Do not connect	8	red

**M12-Connector (A-coded)**



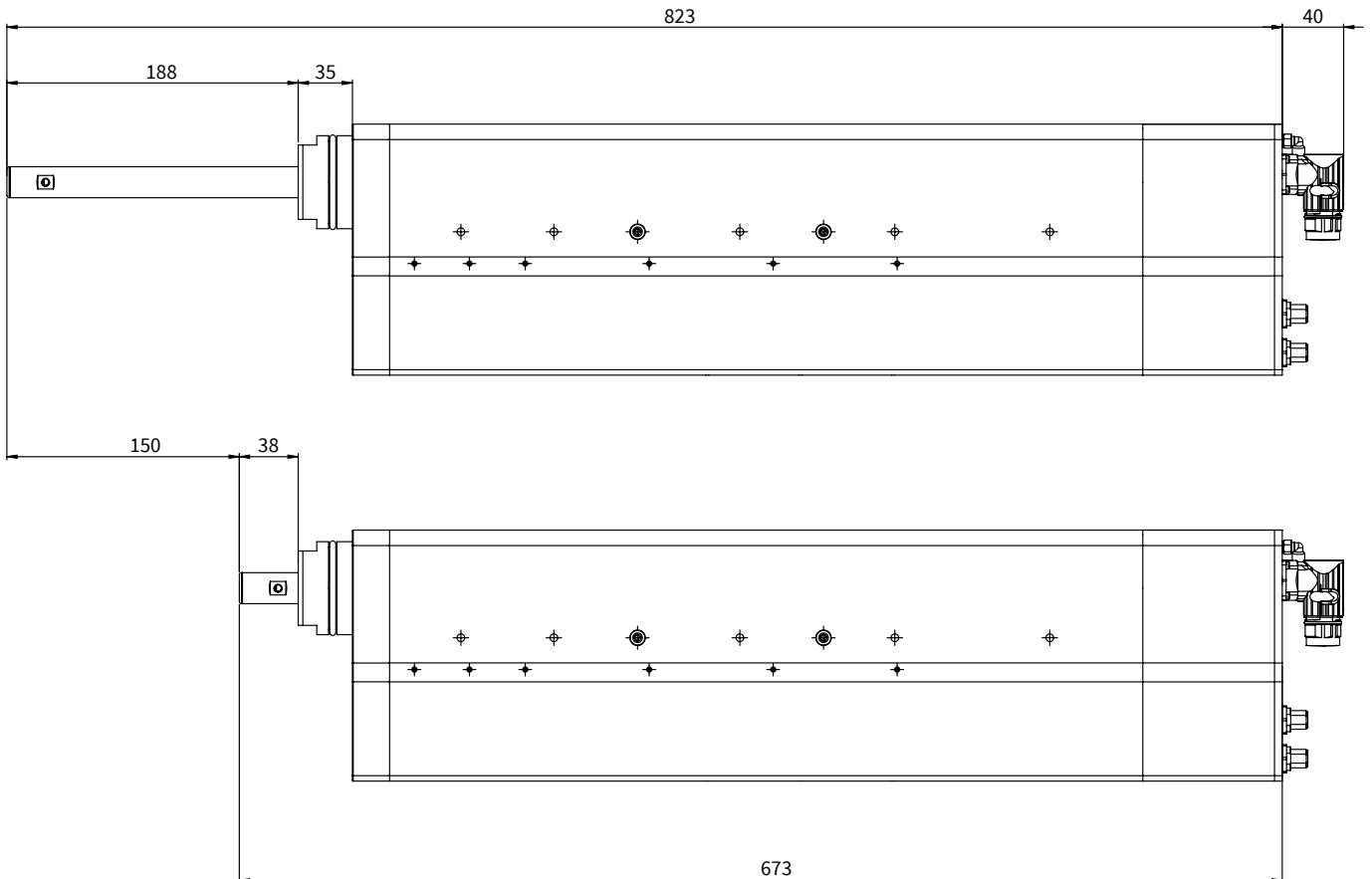
View: Motor connector, plug on

PIN 4 (torque / force -) and PIN 1 (supply GND) are internally galvanically isolated and must not be connected to each other. Please read installation guide for any exceptions.

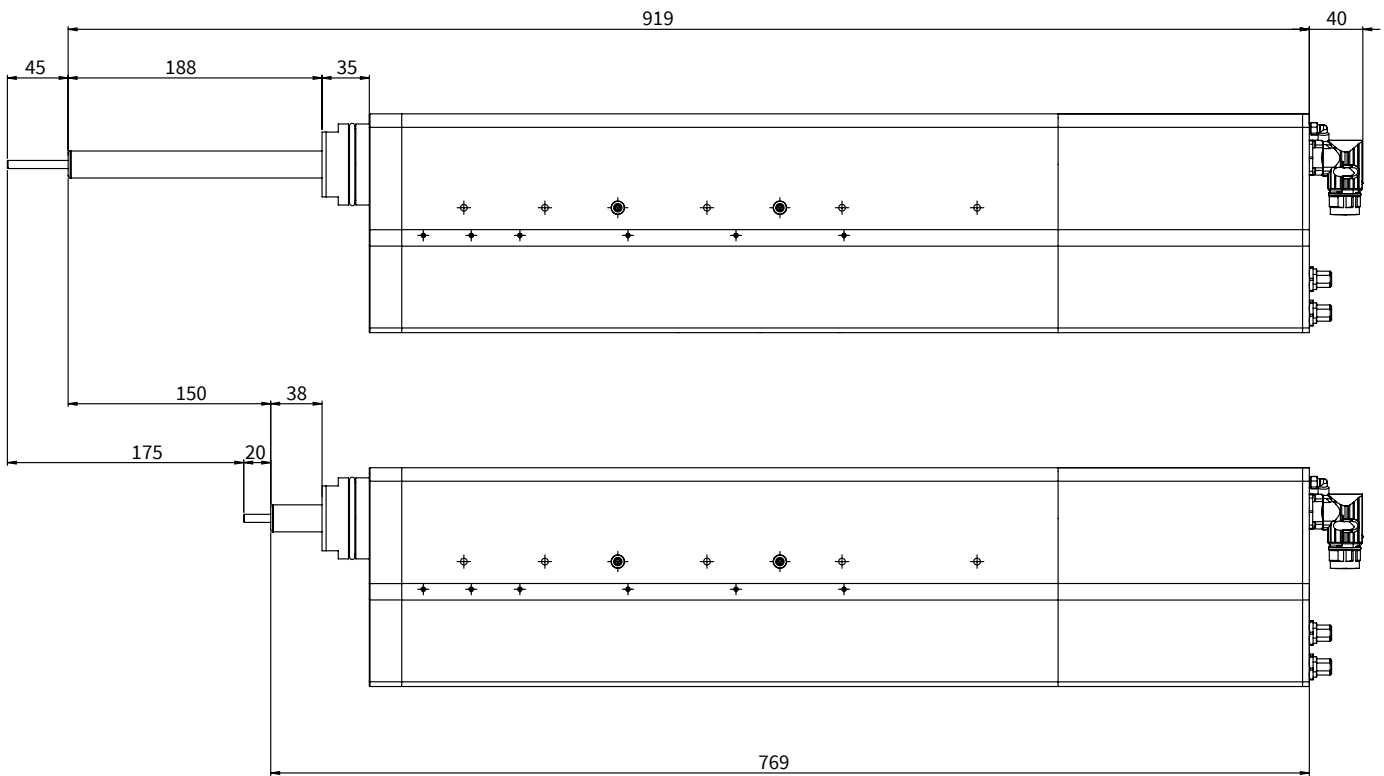
**External EMC circuitry**

A ceramic capacitor 100nF / 50V can be soldered between pins 4 - 5 on the evaluation to avoid wire-bound interference.

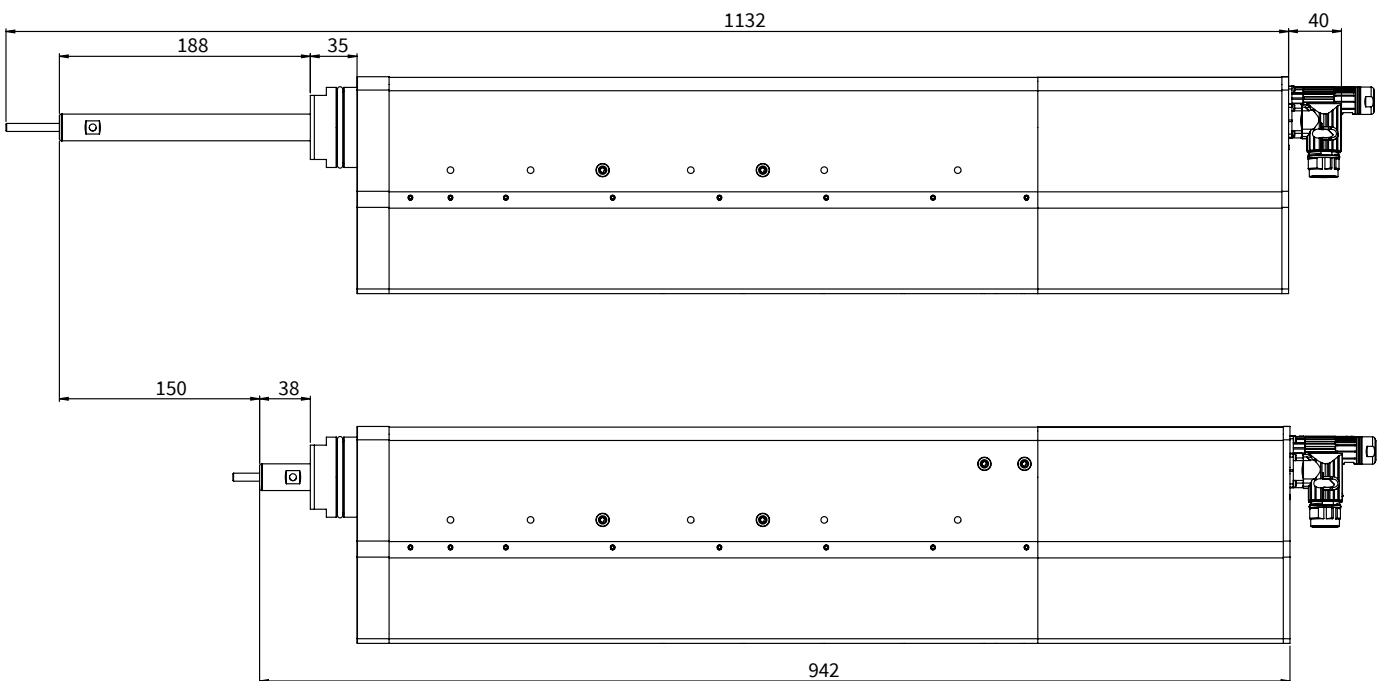
**MAX. STROKE PR02-70X100(-SSC)-C\_48X240F-HP-C-150(-L01) (OPTION FULL SHAFT OR HOLLOW SHAFT)**



**MAX. STROKE PR02-70X100(-SSC)-C\_48X240F-HP-C-150-L05 (OPTION PNEUMATIC PUSHER)**



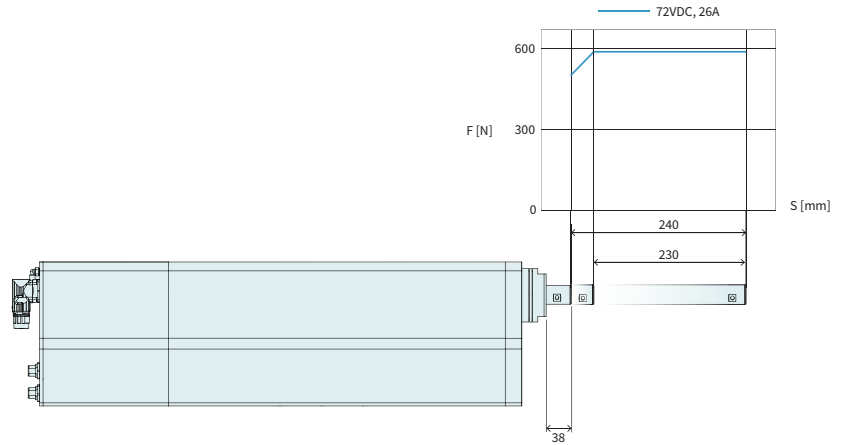
**MAX. STROKE PR02-70X100(-SSC)-C\_48X240F-HP-C-150-L15 (OPTION ELECTRIC PUSHER)**





**PR02-70x100(-SSC)-C\_48x240F-HP-C-240-L0x\_MSxx\_TS0x\_FS0x**

**Max. Stroke:** 240 mm  
**Max. Force:** 572 N  
**Max. Torque:** 9 Nm



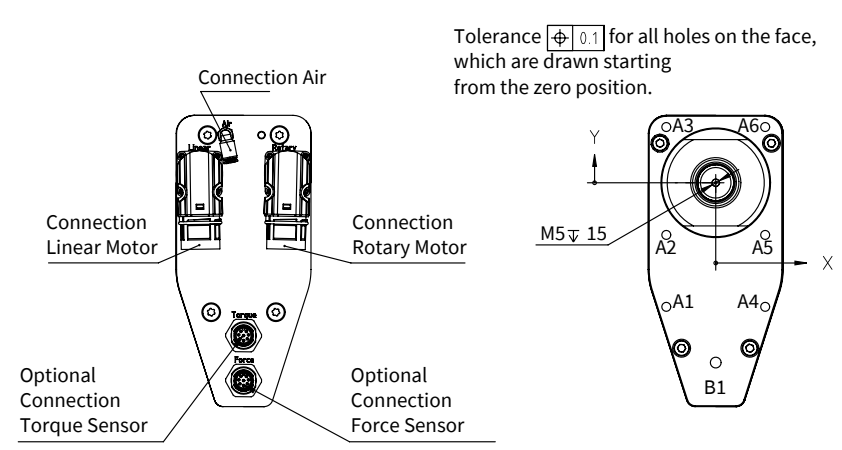
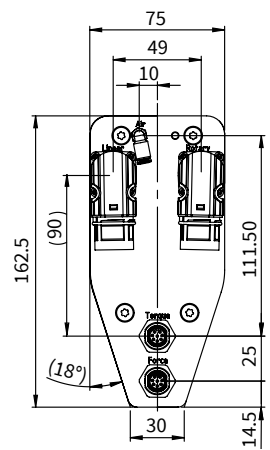
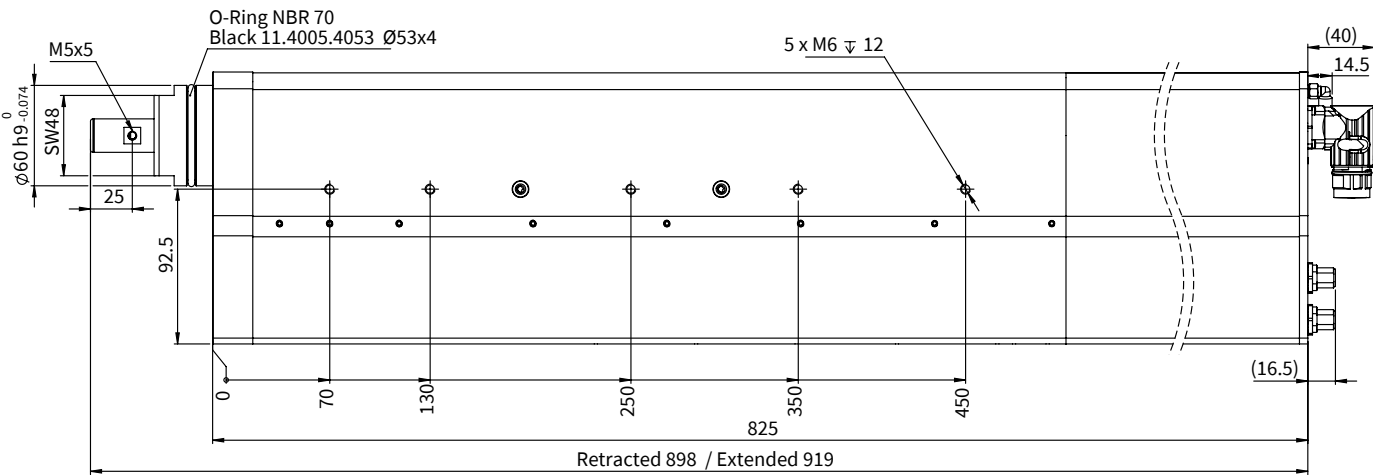
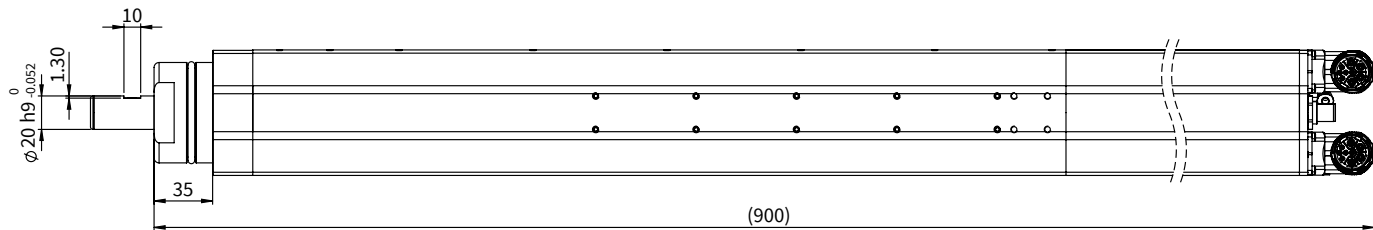
MOTOR DATA									
PR02-70x100(SSC)-C_48x240F-HP-C-240-L0x_MSxx_TS0x_FS0x									
<b>Linear Motion</b>									
Extended Stroke ES	mm (in)			240	(9.45)				
Standard Stroke SS	mm (in)			230	(9.06)				
Peak Force	N (lbf)			572	(129)				
Constant Force @ 25 °C <sup>1)</sup>	N (lbf)			201	(45.2)				
Force Constant	N/A <sub>pk</sub> (lbf/A <sub>pk</sub> )			22	(4.9)				
Max. Current @ 72VDC	A <sub>pk</sub>			26					
Max. Velocity @ 72VDC	m/s (in/s)			3.01	(118.9)				
Position Repeatability	mm (in)			±0.05	(±0.002)				
Linearity	%			±0.35					
<b>Rotary Motion</b>									
Peak Torque (± 10%)	Nm (lbf·in)			9	(80.1)				
Constant Torque (Halt) @ 25 °C <sup>1)</sup>	Nm (lbf·in)			2.06	(18.3)				
Max. Number of revolutions	rpm			1000					
Torque Constant 1	Nm/A <sub>pk</sub> (lbf·in/A <sub>pk</sub> )			0.36	(3.19)				
Torque Constant 2	Nm/A <sub>rms</sub> (lbf·in/A <sub>rms</sub> )			0.509	(4.52)				
Max. Current @ 72VDC	A <sub>pk</sub> / A <sub>rms</sub>			25 / 17.4					
Position Repeatability	°			±0.1					
<b>Mechanical Data</b>									
Width	mm (in)			75	(2.95)				
Height	mm (in)			162.5	(6.4)				
Length (without Connectors)	mm (in)			860	(33.86)				
<b>Options</b>			<b>without</b>	<b>MS04: Load Compensation</b>	<b>Lxx: Linear Rotary Shaft</b>	<b>TS04</b>	<b>FS04</b>	<b>SSC</b>	
				MagSpring 60N	Hollow Shaft -L01 Pn. Pusher -L05	Torque Sensor	Force Sensor	Stainless Front	
Total weight Modul	g		17000	+1350	+0	tbd	+50	+0	tbd
Weight moving mass	g		4000	+275	+0	tbd	+0	+0	tbd
Rotary Torque of Inertia	kgcm <sup>2</sup> (lbf <sup>2</sup> )				1.96	(0.0047)			
Through bore-hole Lxx					Hole diameter 4 mm ; Connection (front): M5x 15, Connection (back): Push-in fitting for hose Ø4 mm				
Axle Diameter	mm (in)				20h9	(0.79)			
Protection Class					IP64 S				
<b>Integrated Sensors</b>				<b>Torque Sensor (Optional)</b>			<b>Force Sensor (Optional)</b>		
Supply Voltage	VDC				24				
Measuring Range	Nm (lbf·in) N (lbf)			±9 (±78.8)			±300 (±67.5)		
Boundary Frequency -3dB	kHz			1			4.4		
Output Signal	VDC			±10					
Current Consumption	mA			<200					
Zero Offset	mV			<±100					
Mechanical Overload	%			200			300		
Resolution (C1200)	Bit			12					
Linearity	Nm (lbf·in) N (lbf)			±0.09 (±0.81)			±3 (±0.675)		

**Pneumatic Pusher (Option in planning)**

Peak Force	N (lbf)	300 (67.4)
Outer Diameter Centre Axle	mm (in)	6 (0.23)
Max. Stroke (Pusher)	mm (in)	25 (0.98)
Torsion Protection	Nm (lbf·in)	2 (17.5)

1) Nominal force depends on 2nd motor (see LinMot Designer).

**DIMENSIONS PR02-70X100(-SSC)-C\_48X240F-HP-C-240-(L01) (OPTION FULL SHAFT OR HOLLOW SHAFT)**



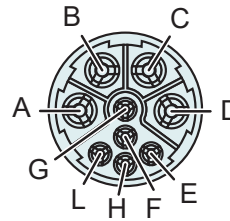
Tolerance  $\pm 0.1$  for all holes on the face, which are drawn starting from the zero position.

	X-Pos.	Y-Pos.	
A1	-27.50	-69	M6 12
A2	-27.50	-29	
A3	-27.50	31	
A4	27.50	-69	
A5	27.50	-29	
A6	27.50	31	
B1	0	-90	$\phi 6 H7 \begin{matrix} +0.012 \\ 0 \end{matrix} \nabla 10$

**CONNECTORS**

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

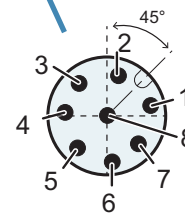
**C-Connector**



View: Motor connector, plug on

Connector Wiring	Torque- / Force Sensor M12 Connector (A-coded)	Wire Color Sensor Cable
Supply GND	1	white
Supply 24V (approx. 80 mA @ 24VDC)	2	brown
Do not connect	3	green
Torque / Force -	4	yellow
Torque / Force +	5	grey
AGND / Reference ground for force sensor signal (Isolated from PGND, connect to reference GND of analog input on servo drive.)	6	pink
Do not connect	7	blue
Do not connect	8	red

**M12-Connector (A-coded)**



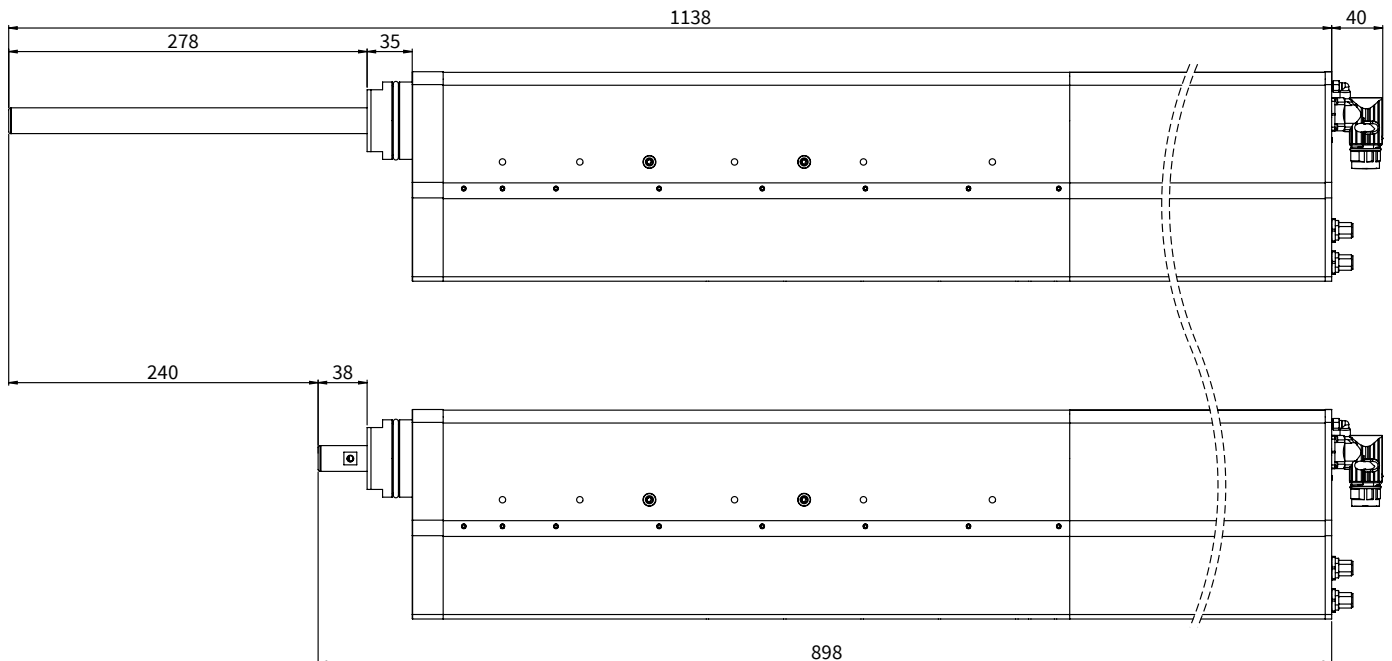
View: Motor connector, plug on

PIN 4 (torque / force -) and PIN 1 (supply GND) are internally galvanically isolated and must not be connected to each other. Please read installation guide for any exceptions.

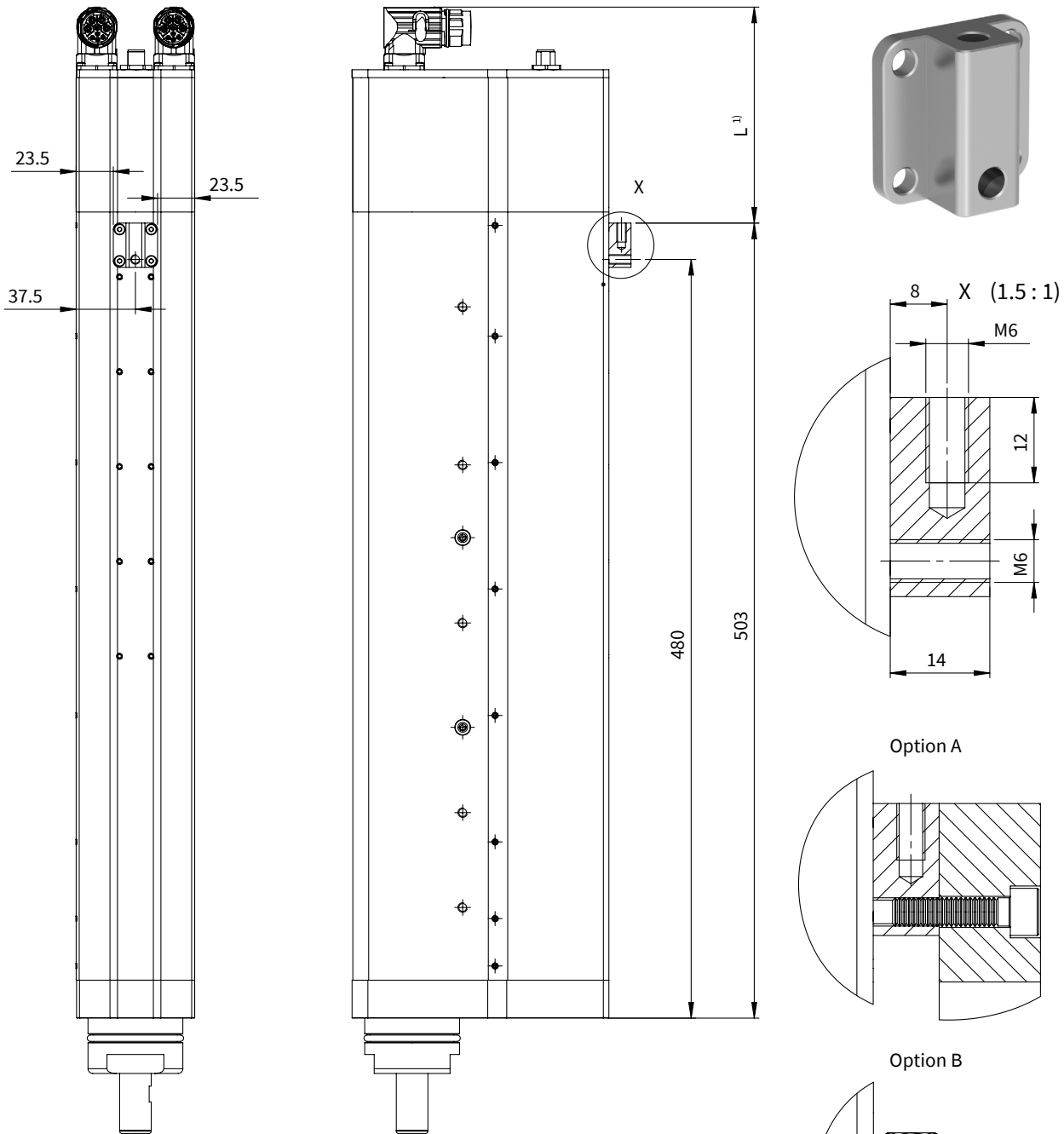
**External EMC circuitry**

A ceramic capacitor 100nF / 50V can be soldered between pins 4 - 5 on the evaluation to avoid wire-bound interference.

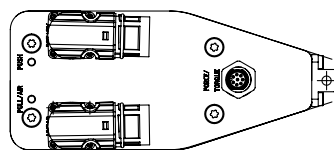
**MAX. STROKE PR02-70X100(-SSC)-C\_48X240F-HP-C-240(-L01) (OPTION FULL SHAFT OR HOLLOW SHAFT)**



**MOUNTING FLANGE**



LinMot offers a mounting flange as an accessory that makes vertical assembly easy. The mounting flange is attached to the motor using the threaded holes. Then an external support can be mounted with the flange according to options A or B.



1) The length L depends on the chosen PR02-70 type.

Item	Description	Item-No.
RS02-70-BF1	Mounting flange set including screws	<a href="#">0150-4840</a>

## ORDERING INFORMATION

LINEAR ROTARY MOTORS PR02-70		
Item	Description	Item-No.
PR02-70x100-C_48x240F-HP-C-150-L00_MS00_TS00	Linear Rotary Motor	<a href="#">0150-4445</a>
PR02-70x100-C_48x240F-HP-C-150-L00_MS04_TS00	Linear Rotary Motor, MagSpring 60N	<a href="#">0150-4446</a>
PR02-70x100-C_48x240F-HP-C-150-L01_MS00_TS00	Linear Rotary Motor, Hollow Shaft	<a href="#">0150-4449</a>
PR02-70x100-C_48x240F-HP-C-150-L01_MS04_TS00	Linear Rotary Motor, Hollow Shaft, MagSpring 60N	<a href="#">0150-4450</a>
PR02-70x100-C_48x240F-HP-C-240-L00_MS00_TS00	Linear Rotary Motor	<a href="#">0150-4633</a>
PR02-70x100-C_48x240F-HP-C-240-L00_MS04_TS00	Linear Rotary Motor, MagSpring 60N	<a href="#">0150-4423</a>
PR02-70x100-C_48x240F-HP-C-240-L01_MS00_TS00	Linear Rotary Motor, Hollow Shaft	<a href="#">0150-4972</a>
PR02-70x100-C_48x240F-HP-C-240-L01_MS04_TS00	Linear Rotary Motor, Hollow Shaft, MagSpring 60N	<a href="#">0150-4973</a>

LINEAR ROTARY MOTORS PR02-70 - OPTION STAINLESS STEEL FRONT (SSC)		
Item	Description	Item-No.
PR02-70x100-SSC-C_48x240F-HP-C-150-L01_MS04_TS00	Linear Rotary Motor, Stainless Steel Front, Hollow Shaft, MagSpring 60N	<a href="#">0150-5355</a>
PR02-70x100-SSC-C_48x240F-HP-C-150-L05_MS04_TS00	Linear Rotary Motor, Stainless Steel Front, Pusher, MagSpring 60N	<a href="#">0150-5357</a>

LINEAR ROTARY MOTORS PR02-70 - OPTION SENSOR (FS / TS) / PUSHER (LXX)		
Item	Description	Item-No.
PR02-70x100-C_48x240F-HP-C-150-L00_MS00_TS04	Linear Rotary Motor, Torque Sensor	<a href="#">0150-4447</a>
PR02-70x100-C_48x240F-HP-C-150-L00_MS04_TS04	Linear Rotary Motor, MagSpring 60N, Torque Sensor	<a href="#">0150-4448</a>
PR02-70x100-C_48x240F-HP-C-150-L01_MS00_TS04	Linear Rotary Motor, Hollow Shaft, Torque Sensor	<a href="#">0150-4451</a>
PR02-70x100-C_48x240F-HP-C-150-L01_MS04_TS04	Linear Rotary Motor, Hollow Shaft, MagSpring 60N, Torque Sensor	<a href="#">0150-4452</a>
PR02-70x100-C_48x240F-HP-C-150-L01_MS00_TS00_FS04	Linear Rotary Motor, Hollow Shaft, Force Sensor	<a href="#">0150-4966</a>
PR02-70x100-C_48x240F-HP-C-150-L01_MS04_TS00_FS04	Linear Rotary Motor, Hollow Shaft, MagSpring 60N, Force Sensor	<a href="#">0150-4967</a>
PR02-70x100-C_48x240F-HP-C-150-L01_MS00_TS04_FS04	Linear Rotary Motor, Hollow Shaft, Torque Sensor, Force Sensor	<a href="#">0150-4968</a>
PR02-70x100-C_48x240F-HP-C-150-L01_MS04_TS04_FS04	Linear Rotary Motor, Hollow Shaft, MagSpring 60N, Torque Sensor, Force Sensor	<a href="#">0150-4969</a>
PR02-70x100-C_48x240F-HP-C-150-L05_MS04_TS04	Linear Rotary Motor, Pusher, MagSpring 60N, Torque Sensor	<a href="#">0150-4970</a>
PR02-70x100-C_48x240F-HP-C-150-L15_MS04_TS00_FS00	Linear Rotary Motor, E-Pusher, MagSpring 60N	<a href="#">0150-4829</a>
PR02-70x100-C_48x240F-HP-C-150-L15_MS04_TS00_FS04	Linear Rotary Motor, E-Pusher, MagSpring 60N, Force Sensor	<a href="#">0150-5320</a>
PR02-70x100-C_48x240F-HP-C-150-L15_MS04_TS04_FS00	Linear Rotary Motor, E-Pusher, MagSpring 60N, Torque Sensor	<a href="#">0150-5312</a>
PR02-70x100-C_48x240F-HP-C-150-L15_MS04_TS04_FS04	Linear Rotary Motor, E-Pusher, MagSpring 60N, Torque Sensor, Force Sensor	<a href="#">0150-5313</a>

PR02-70x100-C_48x240F-HP-C-240-L00_MS00_TS04	Linear Rotary Motor, Torque Sensor	<a href="#">0150-4974</a>
PR02-70x100-C_48x240F-HP-C-240-L00_MS04_TS04	Linear Rotary Motor, MagSpring 60N, Torque Sensor	<a href="#">0150-4975</a>
PR02-70x100-C_48x240F-HP-C-240-L01_MS00_TS04	Linear Rotary Motor, Hollow Shaft, Torque Sensor	<a href="#">0150-4976</a>
PR02-70x100-C_48x240F-HP-C-240-L01_MS04_TS04	Linear Rotary Motor, Hollow Shaft, MagSpring 60N, Torque Sensor	<a href="#">0150-4977</a>
PR02-70x100-C_48x240F-HP-C-240-L01_MS00_TS00_FS04	Linear Rotary Motor, Hollow Shaft, Force Sensor	<a href="#">0150-4978</a>
PR02-70x100-C_48x240F-HP-C-240-L01_MS04_TS00_FS04	Linear Rotary Motor, Hollow Shaft, MagSpring 60N, Force Sensor	<a href="#">0150-4979</a>
PR02-70x100-C_48x240F-HP-C-240-L01_MS00_TS04_FS04	Linear Rotary Motor, Hollow Shaft, Torque Sensor, Force Sensor	<a href="#">0150-4853</a>
PR02-70x100-C_48x240F-HP-C-240-L01_MS04_TS04_FS04	Linear Rotary Motor, Hollow Shaft, MagSpring 60N, Torque Sensor, Force Sensor	<a href="#">0150-4661</a>

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# ALL LINEAR MOTION FROM A SINGLE SOURCE

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