25K Series - Stepper Motor

BOXER

25K flip-top peristaltic pump with Stepper Motor.

Technical Data

Flow per Revolution	
ID Ø 2.4 mm (x 1.6 mm wall)	0.60 / 0.55 ml per revolution (3 / 4 rollers)
ID Ø 3.2 mm (x 1.6 mm wall)	1.10 / 1.00 ml per revolution (3 / 4 rollers)
ID Ø 4.8 mm (x 1.6 mm wall)	2.50 / 2.10 ml per revolution (3 / 4 rollers)
ID Ø 6.4 mm (x 1.6 or 2.4 mm wall)	3.50 / 3.00 ml per revolution (3 / 4 rollers)
ID Ø 8.0 mm (x 1.6 or 2.4 mm wall)	4.20 / 3.50 ml per revolution (3 / 4 rollers)

Max Flow / Speed	
ID Ø 2.4 mm (x 1.6 mm wall)	480 ml at 800 rpm / 440 ml at 800 rpm (3 / 4 rollers)
ID Ø 3.2 mm (x 1.6 mm wall)	660 ml at 600 rpm / 600 ml at 600 rpm (3 / 4 rollers)
ID Ø 4.8 mm (x 1.6 mm wall)	1250 ml at 500 rpm / 1050 ml at 500 rpm (3 / 4 rollers)
ID Ø 6.4 mm (x 2.4 mm wall)	1750 ml at 500 rpm / 1200 ml at 400 rpm (3 / 4 rollers)
ID Ø 8.0 mm (x 2.4 mm wall)	2100 ml at 500 rpm / 1400 ml at 400 rpm (3 / 4 rollers)

ID Ø 6.4 mm and 8.0 mm with 1.6 mm wall has reduced max flow / speed:	
ID Ø 6.4 mm (x 1.6 mm wall)	1050 ml at 300 rpm / 900 ml at 300 rpm (3 / 4 rollers)
ID Ø 8.0 mm (x 1.6 mm wall)	1260 ml at 300 rpm / 1050 ml at 300 rpm (3 / 4 rollers)

Power Consumption (including A4 driver)	15 to 24 W

Tube Materials	Innovaprene / Pharm-a-line / Innovasil (Silicone) / Lagoprene / ED-Plex

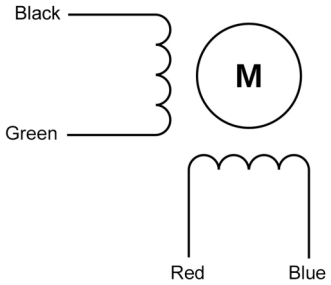
General Data	
Max pressure	2.0 bar
Max suction height (dry)	9 m H_2O
Motor life	>10000 hour
Weight (without driver)	1425 g

Optional Sensors	
Optical speed sensor	12 pulses per revolution
Reed speed / stall sensor	Contacts close once per revolution
Reed lid sensor (to confirm tube clamp is in the locked position)	Contacts close in locked position

All data measured with 'run-in' Innovaprene tubing and H_2O.

25K Series - Stepper Motor

Motor Details



Specification	
Type	2 phase, hybrid, bipolar
Size	Nema 23 / 57 mm
Step Angle	1.8 ° (200 steps per revolution)
Voltage	24 V
Phase 1 / Phase 2	Black - Green / Red - Blue (see diagram above)
Ambient temperature range	-20 to +50 °C
Max temperature rise	80 °C
Insulation resistance	100 MΩ
Insulation class	B
Rated current	2.8 A
Resistance per phase	1.13 Ω ±10%
Inductance per phase	3.6 mH ±20%
Wire gauge	22 AWG
Lead length	300 mm
Available drivers	→ Drivers
Recommended driver rating	4 A

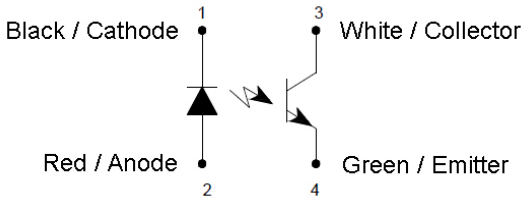
A current limiter should be used for low speed operation to avoid excessive motor temperatures

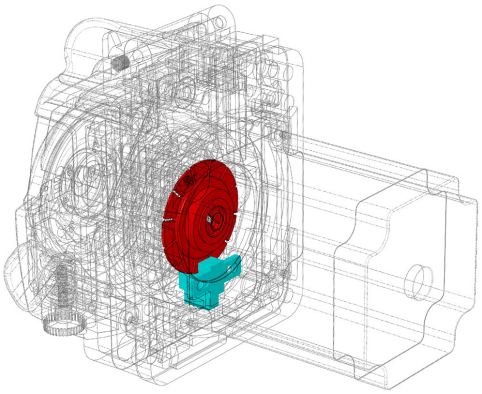
Optional Sensors

Three internal sensors are available for the 25K peristaltic pump.

1 Optical Speed Sensor

An optical sensor (shown in turquoise) is mounted inside the pump body and is interrupted by a 12 slot rotating disc (shown in red). The optical sensor has 4 leads.



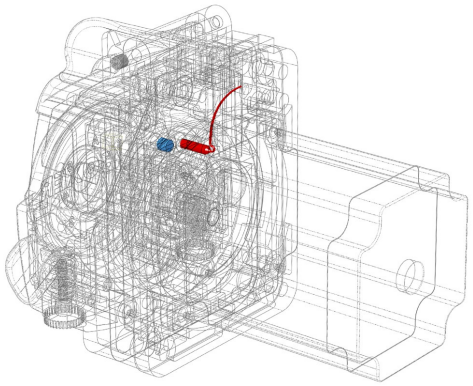


1 Optical Speed Sensor (continued)

Specification	
Sensor type	OPB8340W (Optek Technology)
Input diode current	50 mA
Collector current	30 mA
Max. collector-emitter voltage	30 V
Lead gauge	26 AWG
Lead length	60 cm

2 Reed Speed / Stall Sensor

A micro reed sensor (shown in red) is mounted inside the pump body. A permanent magnet (shown in blue) is located on the rotor. The contacts of the micro reed sensor close when the magnet moves through the upper portion of the rotation.

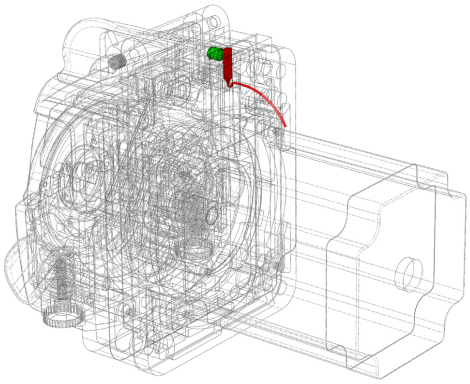


Specification	
Reed sensor type	Normally open, single pole, single throw
Contact closure	Once per revolution
Max. switching current	0.5 A
Max. switching voltage	170 V
Lead cross section area	0.06 mm^2
Lead length	27 cm

3 Lid Sensor

A reed sensor (shown in red) is mounted in the upper portion of the back plate. A permanent magnet (shown in green) is located in the locking lever which operates the tube clamping mechanism. The contacts of the reed sensor close when the locking lever is in the closed position. The signal can be used as a safety feature to ensure the pump does not operate unless the pump is fully closed.

The reed sensor specification is as above (speed / stall sensor).

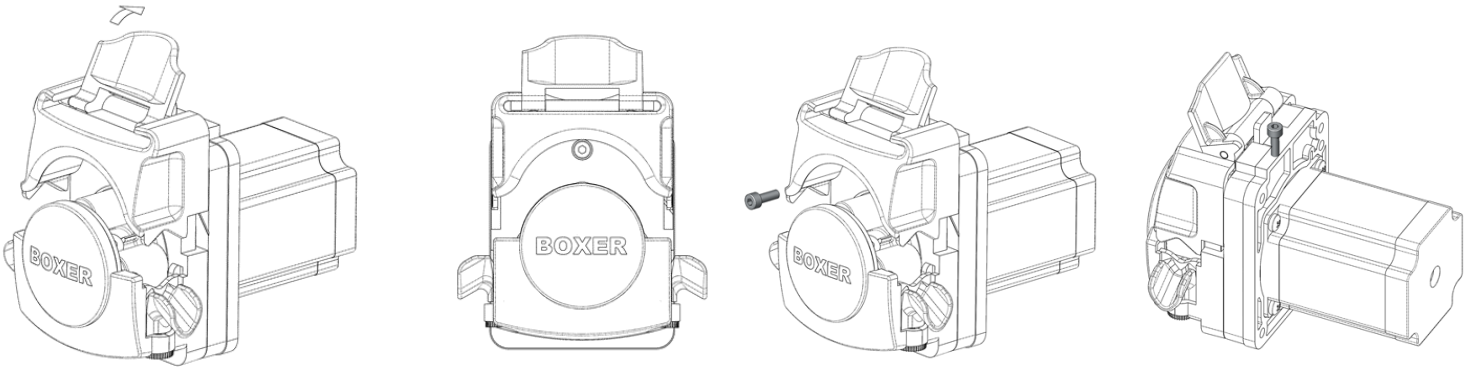


Removal / Assembly of Pump Head

The 25K peristaltic pump is designed with a bayonet style head assembly onto the motor plate.

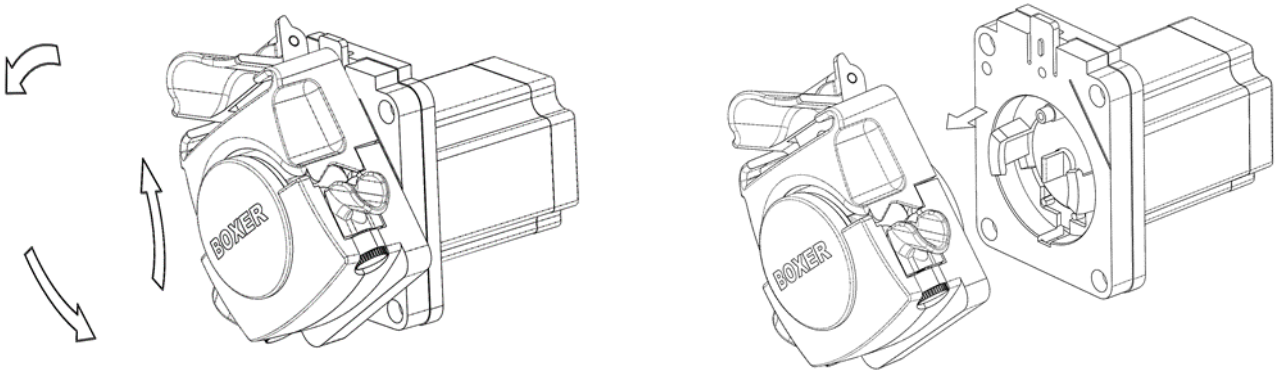
❶ Open the tube clamp lever completely.

❷ Remove the M4 hex bolt (2.5mm AF). It can be stored in the space provided in the mounting gasket.

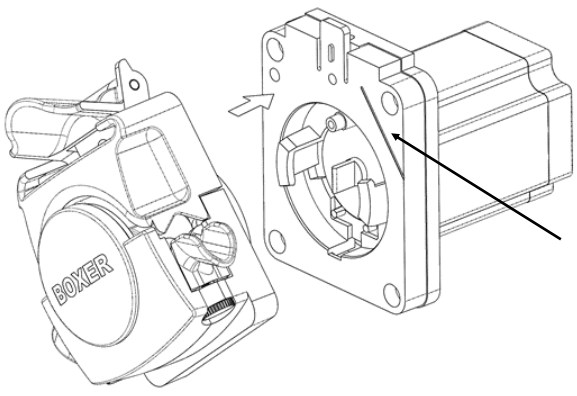


❸ Move the lever in the direction of closing but not completely closed. Rotate the head anti clockwise.

❹ Pull the head assembly away from the motor plate. Ensure that the rubber shaft coupling remains in the head assembly.

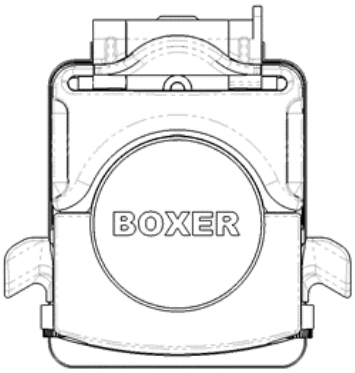


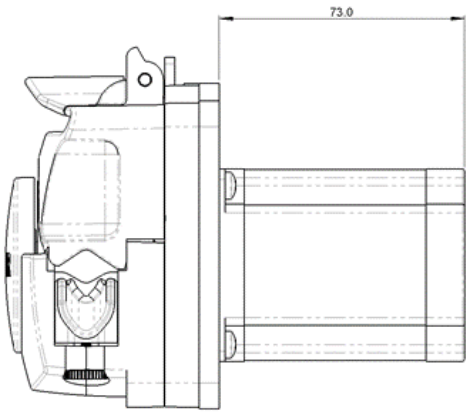
❺ To re-assemble follow the above steps in the reverse order. The head alignment guide on the motor plate will assist in finding the correct angle before pushing the head assembly onto the motor plate and locking into position

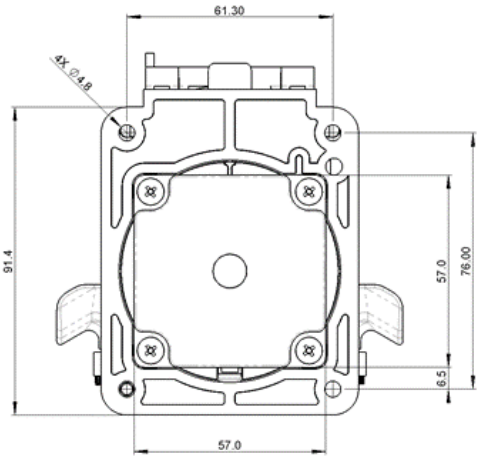


Assembly Information

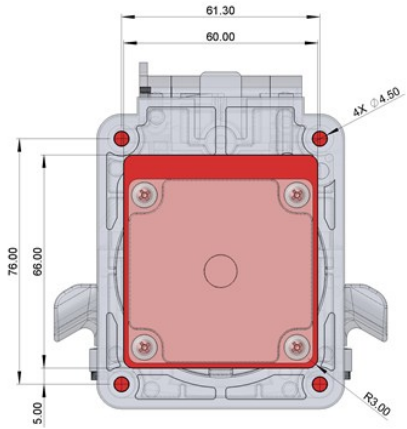
The 25K peristaltic pump is assembled to a panel cut-out using 4 x M4 bolts. To access the bolt holes remove the pump head from the motor plate following the instructions on the previous page. The rubber gasket should be placed between the motor plate and the panel.





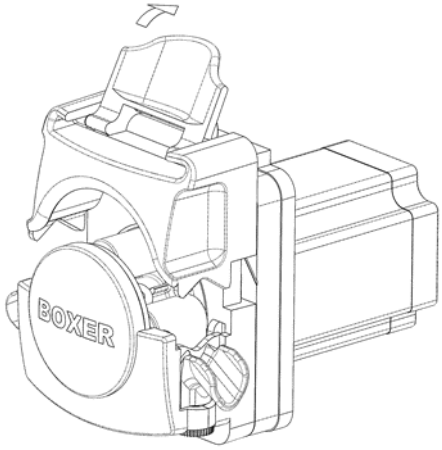


Suggested panel cut-out:



Tube Loading / Unloading

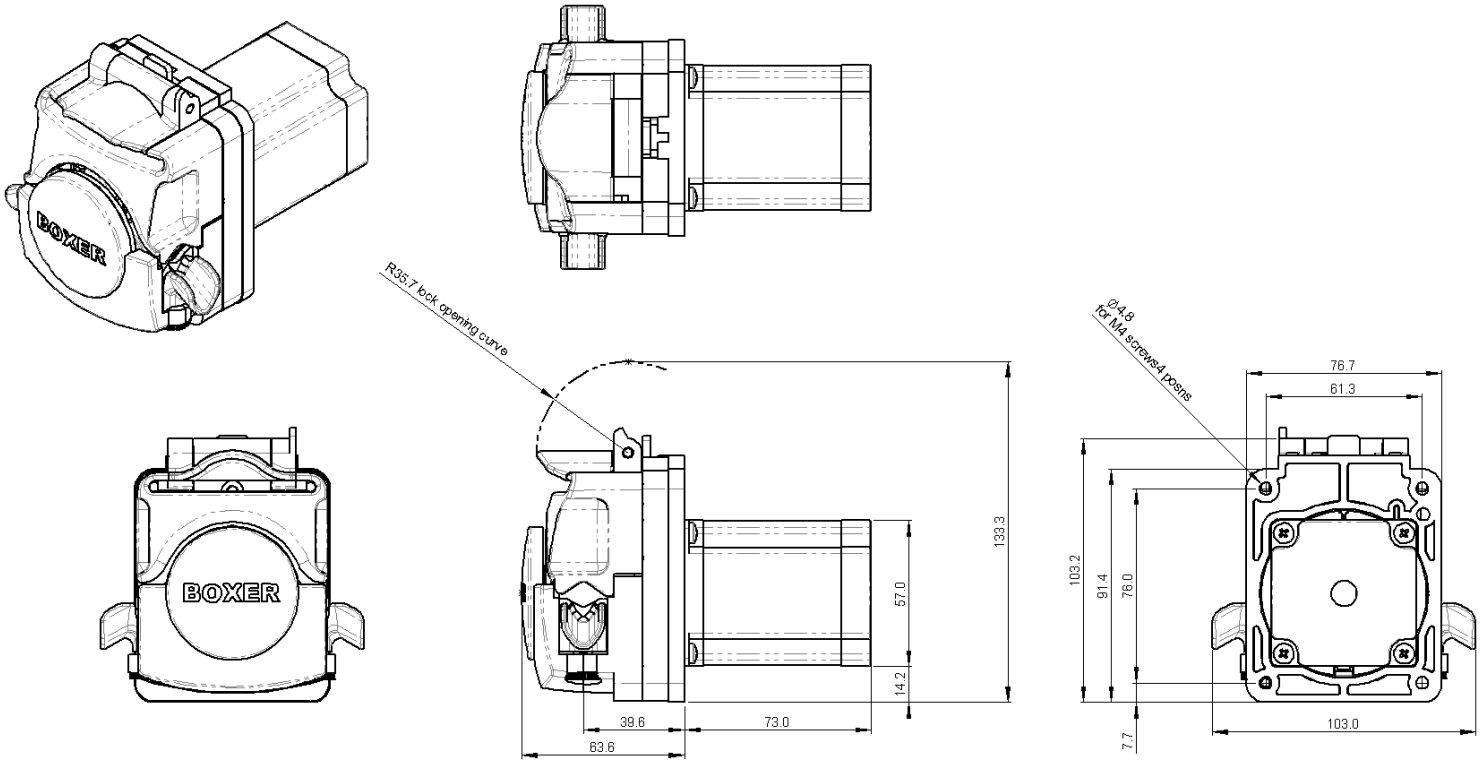
The 25K peristaltic pump is a flip-top design. The loading and unloading of the tube is through operation of the lever:



The tube grips are sprung loaded and adjust automatically to the OD of the tube. The 25K is designed for 1.6 and 2.4 mm wall tubing from ID of 2.4 to 8.0 mm. Only tubing suitable for peristaltic pumps should be used.

25K Series - Stepper Motor

25K with Stepper Motor (without driver)



Links to Drawing and STEP file:
→ Drawing (.png)
→ STEP (.zip)

Order Information

For 1.6 mm wall tube:

Part Number	Description
25001.000	25K 24 V Stepper / 3 Rollers
25002.000	25K 24 V Stepper / 4 Rollers

For 2.4 mm wall tube:

Part Number	Description
25004.000	25K 24 V Stepper / 3 Rollers
25005.000	25K 24 V Stepper / 4 Rollers

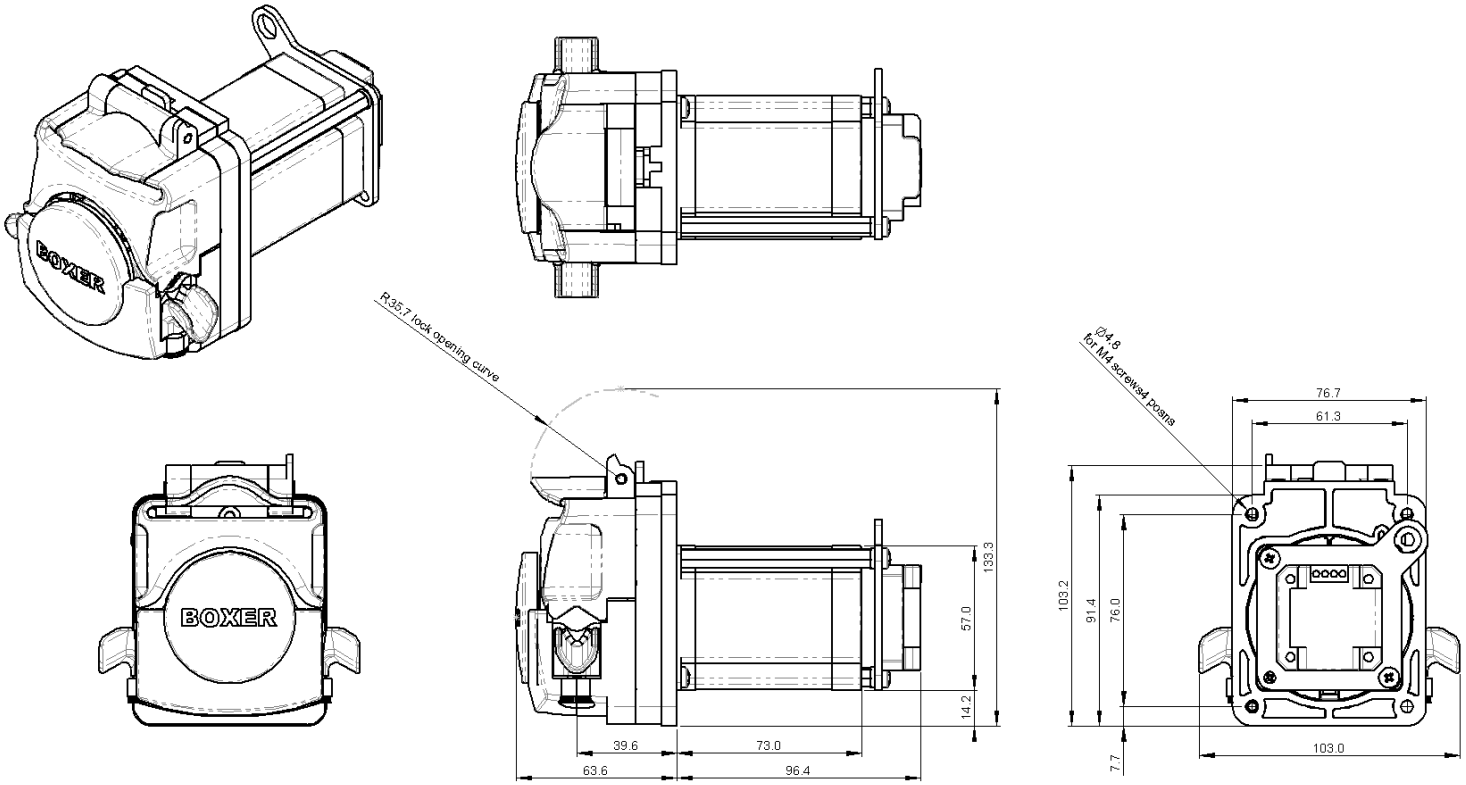
Please enquire for part numbers of other configurations.

BOX-it (Webshop)

Sample quantities are available for direct online purchase:

→ BOX-it

25K Stepper Motor with Analogue Driver (0 to 5 V Speed Input)



Link to driver information:
→ Drivers

Links to Drawing and STEP file:
→ Drawing (.png)
→ STEP (.zip)

Order Information

For 1.6 mm wall tube:

Part Number	Description
25057.000	25K 24 V Stepper / 3 Rollers / A4 Driver
25058.000	25K 24 V Stepper / 4 Rollers / A4 Driver

For 2.4 mm wall tube:

Part Number	Description
25060.000	25K 24 V Stepper / 3 Rollers / A4 Driver
25061.000	25K 24 V Stepper / 4 Rollers / A4 Driver

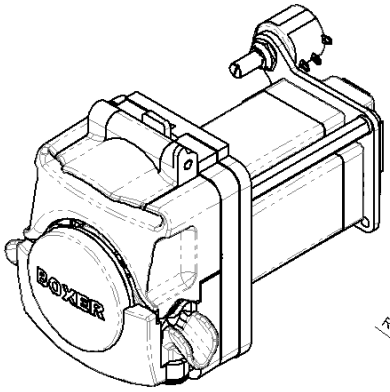
Please enquire for part numbers of other configurations.

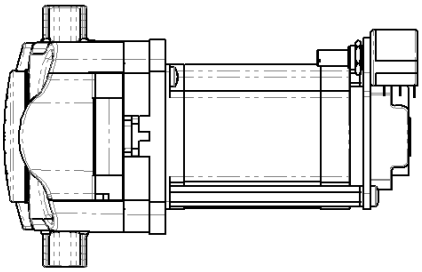
BOX-it (Webshop)

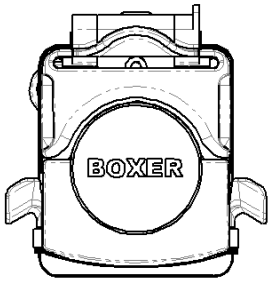
Sample quantities are available for direct online purchase:

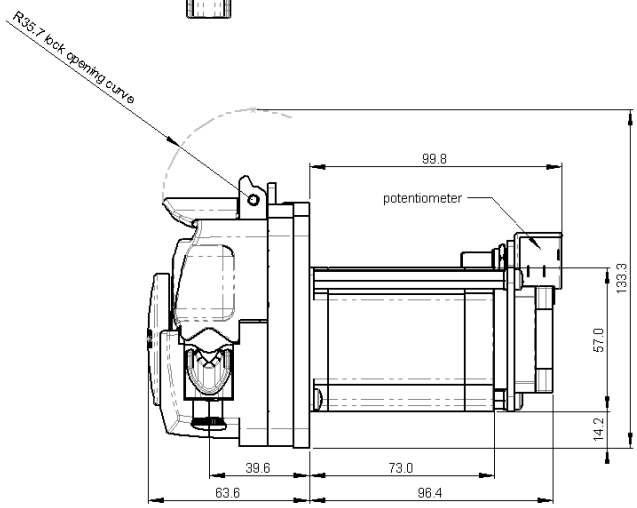
→ BOX-it

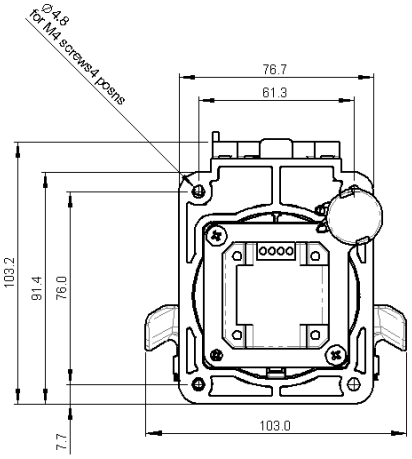
25K Stepper Motor with Analogue Driver with Speed Potentiometer











Link to driver information:
→ Drivers

Links to Drawing and STEP file:
→ Drawing (.png)
→ STEP (.zip)

Order Information

For 1.6 mm wall tube:

Part Number	Description
25051.000	25K 24 V Stepper / 3 Rollers / A4p Driver
25052.000	25K 24 V Stepper / 4 Rollers / A4pDriver

For 2.4 mm wall tube:

Part Number	Description
25054.000	25K 24 V Stepper / 3 Rollers / A4p Driver
25055.000	25K 24 V Stepper / 4 Rollers / A4p Driver

Please enquire for part numbers of other configurations.

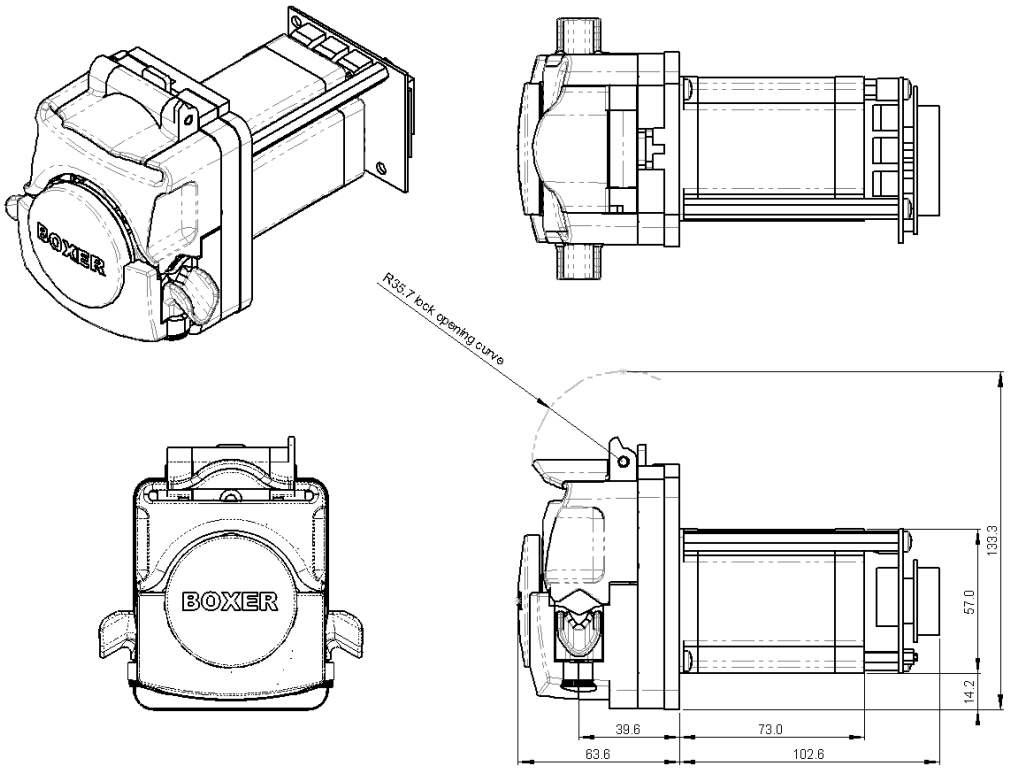
BOX-it (Webshop)

Sample quantities are available for direct online purchase:

→ BOX-it

25K Series - Stepper Motor

25K Stepper Motor with Programmable Digital Driver



Link to driver information:
→ Drivers

Links to Drawing and STEP file:
→ Drawing (.png)
→ STEP (.zip)

Order Information

For 1.6 mm wall tube:

Part Number	Description
25011.000	25K 24 V Stepper / 3 Rollers / iD Driver
25012.000	25K 24 V Stepper / 4 Rollers / iDDriver

For 2.4 mm wall tube:

Part Number	Description
25014.000	25K 24 V Stepper / 3 Rollers / iD Driver
25015.000	25K 24 V Stepper / 4 Rollers / iD Driver

Please enquire for part numbers of other configurations.

BOX-it (Webshop)

Sample quantities are available for direct online purchase:

→ BOX-it

Tubing

Tubing should always be ordered separately. Listed here is **Innovaprene** tubing in 250 mm single lengths, 1m (or multiples of) lengths or 15 m coils:

Part Number	Description
25000.126	Innovaprene ID Ø 2.4 mm x 1.6 mm wall x 250 mm
25000.127	Innovaprene ID Ø 3.2 mm x 1.6 mm wall x 250 mm
25000.128	Innovaprene ID Ø 4.8 mm x 1.6 mm wall x 250 mm
25000.129	Innovaprene ID Ø 6.4 mm x 1.6 mm wall x 250 mm
25000.130	Innovaprene ID Ø 6.4 mm x 2.4 mm wall x 250 mm
25000.131	Innovaprene ID Ø 8.0 mm x 1.6 mm wall x 250 mm
25000.132	Innovaprene ID Ø 8.0 mm x 2.4 mm wall x 250 mm
82416.601	Innovaprene ID Ø 2.4 mm x 1.6 mm wall x 1 m
83216.601	Innovaprene ID Ø 3.2 mm x 1.6 mm wall x 1 m
84816.601	Innovaprene ID Ø 4.8 mm x 1.6 mm wall x 1 m
86416.601	Innovaprene ID Ø 6.4 mm x 1.6 mm wall x 1 m
86424.601	Innovaprene ID Ø 6.4 mm x 2.4 mm wall x 1 m
88016.601	Innovaprene ID Ø 8.0 mm x 1.6 mm wall x 1 m
88024.601	Innovaprene ID Ø 8.0 mm x 2.4 mm wall x 1 m
82416.615	Innovaprene ID Ø 2.4 mm x 1.6 mm wall x 15 m
83216.615	Innovaprene ID Ø 3.2 mm x 1.6 mm wall x 15 m
84816.615	Innovaprene ID Ø 4.8 mm x 1.6 mm wall x 15 m
86416.615	Innovaprene ID Ø 6.4 mm x 1.6 mm wall x 15 m
86424.615	Innovaprene ID Ø 6.4 mm x 2.4 mm wall x 15 m
88016.615	Innovaprene ID Ø 8.0 mm x 1.6 mm wall x 15 m
88024.615	Innovaprene ID Ø 8.0 mm x 2.4 mm wall x 15 m

Additional Information (Links):

→ 25K web page
→ Boxer peristaltic pump overview