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9QQ miniature flip-top peristaltic pump with Stepper Motor.



Technical Data

Flow per Revolution	
ID Ø 0.5 mm tube	16 / 15 / 13 µl per revolution (3 / 4 / 6 Rollers)
ID Ø 1.0 mm tube	55 / 50 / 42 µl per revolution (3 / 4 / 6 Rollers)
ID Ø 2.0 mm tube	190 / 160 / 120 µl per revolution (3 / 4 / 6 Rollers)
ID Ø 3.0 mm tube	340 / 290 / 200 µl per revolution (3 / 4 / 6 Rollers)
ID Ø 3.5 mm tube	400 / 340 / 230 µl per revolution (3 / 4 / 6 Rollers)
RPM	
0 to 500 rpm	
Power Consumption	
Ca. 8.0 W	
Tube Materials	
Pharm-a-line / Silicone / Lagoprene / ED-Plex	
Max pressure	
1 bar	
Max suction height (dry)	
9.5 m H ₂ O	
Motor life	
>10000 hour	
Weight	
245 g	
All data measured with 'run-in' Pharm-a-line tubing and H ₂ O.	

Flow Data

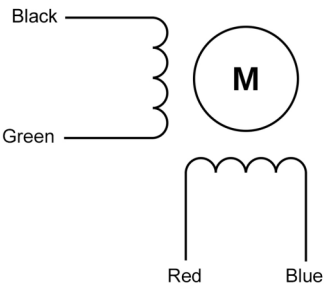
Flow Range (ml/min) with Stepper Motor:

Tube ID	3 Roller		4 Roller		6 Roller	
	Min	Max	Min	Max	Min	Max
0.5 mm	0.0	8.0	0.0	7.5	0.0	6.5
1.0 mm	0.0	27.5	0.0	25.0	0.0	21.0
2.0 mm	0.0	95.0	0.0	80.0	0.0	60.0
3.0 mm	0.0	170.0	0.0	145.0	0.0	100.0
3.5 mm	0.0	200.0	0.0	170.0	0.0	115.0

Max at 500 rpm, measured with continuous tube

Higher speeds are possible depending upon tube material, tube ID, number of rollers and driving method

Motor Details



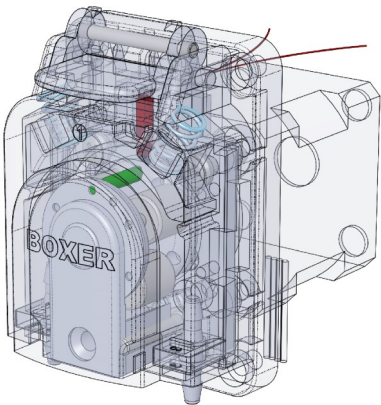
Specification	
Type	2 phase, hybrid, bipolar
Size	Nema 14 / 35 mm
Step Angle	1.8 ° (200 steps per revolution)
Voltage	24 V
Phase 1 / Phase 2	Black - Green / Red - Blue (see diagram above)
Ambient temperature range	-20 to +50 °C
Max temperature rise	80 °C
Insulation resistance	100 MΩ
Insulation class	B
Rated current	1.0 A
Resistance per phase	2.7 Ω ±10%
Inductance per phase	4.3 mH ±20%
Wire gauge	26 AWG
Lead length	300 mm
Available drivers	→ Drivers
Recommended driver rating	2 A

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

Encoder

The 9QQ peristaltic pump with stepper motor is available with an encoder mounted inside the pump body:

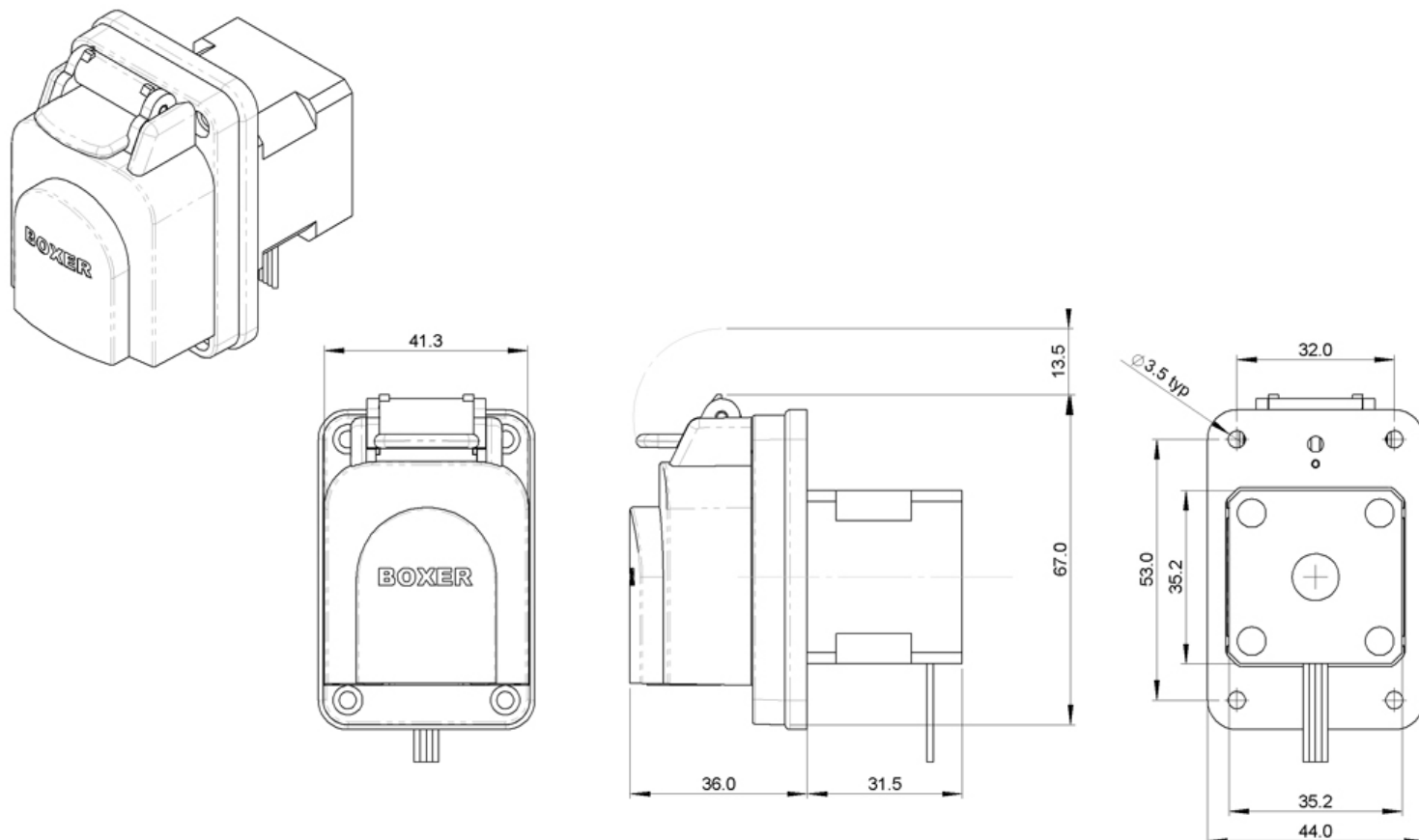
A micro reed sensor (shown in red) is located on the pump back-plate. A permanent magnet (shown in green) is located on the rotor. The contacts of the micro reed sensor close when the magnet moves through the upper portion of the rotation.



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

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Drawing



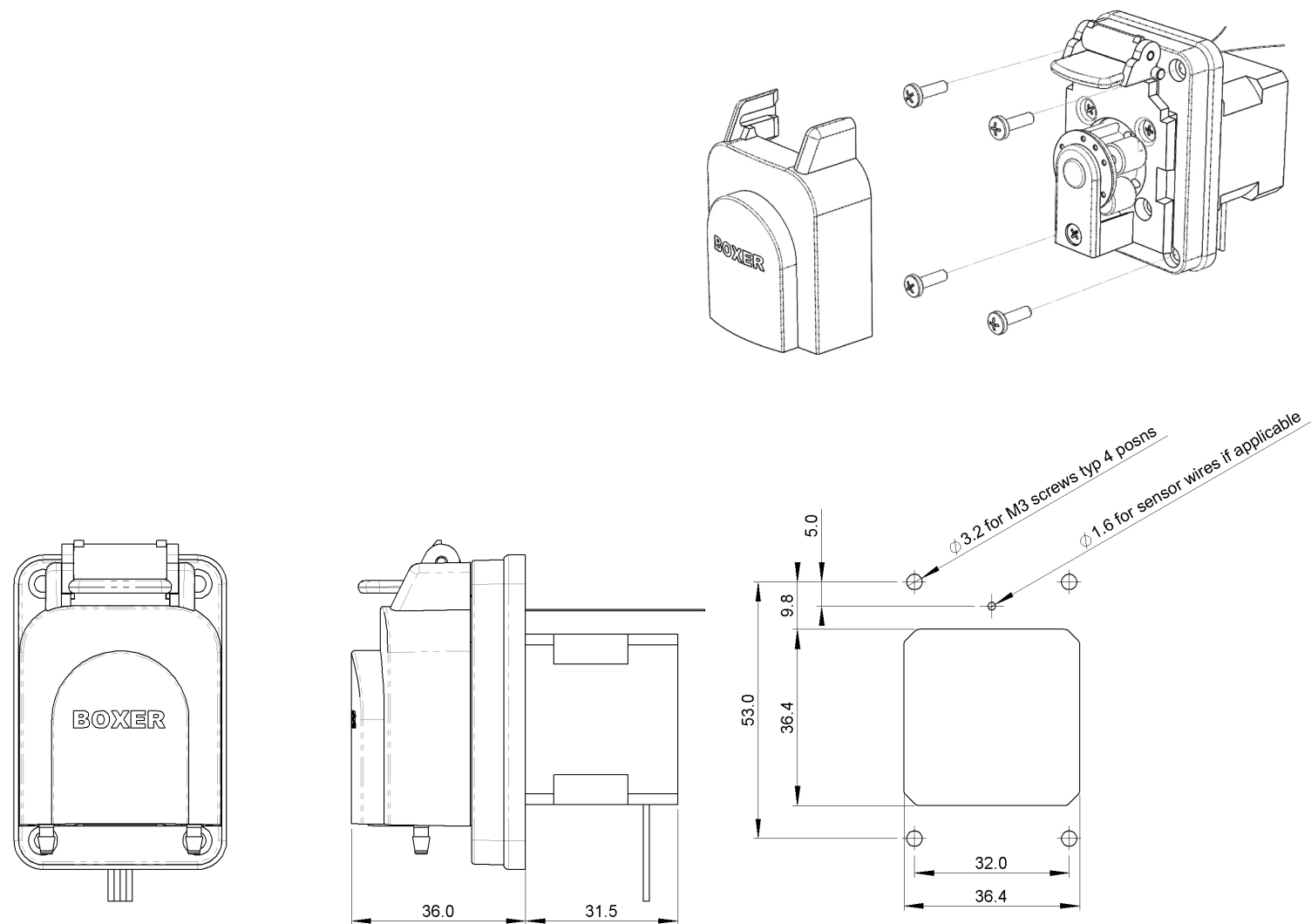
Links to Drawing and STEP file:

→ [Drawing \(.png\)](#)

→ [STEP \(.zip\)](#)

Assembly Information

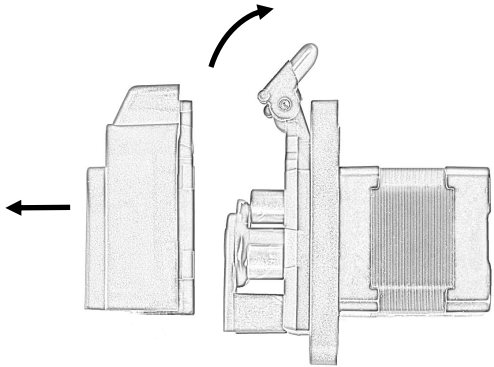
The 9QQ peristaltic pump with Stepper Motor is assembled to a panel cut-out using 4 x M3 bolts. To access the mounting holds the lever should be moved to the upper position and the cover removed.



Tube Loading / Unloading

The 9QQ peristaltic pump is designed for either a tube set or continuous tube.

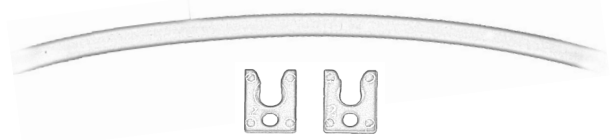
- 1 Rotate the lever to upper position and remove cover.



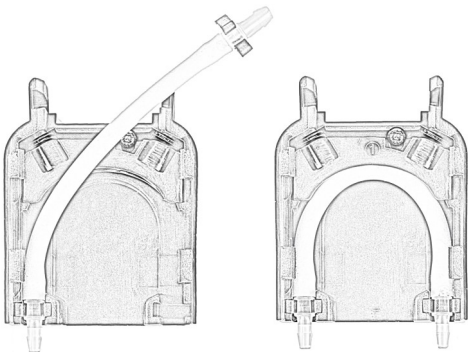
Tube Set consists of a length of tube complete with tube clips and barb connectors:



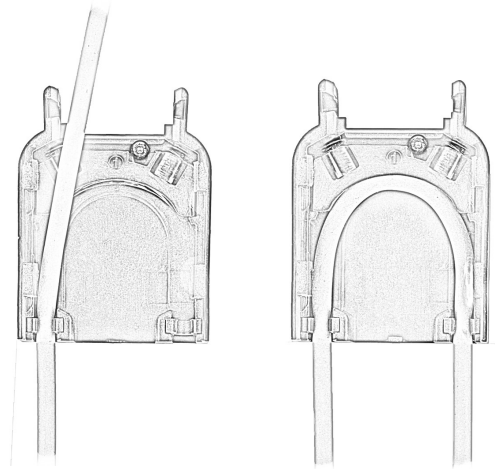
Continuous Tube consists of any length tube and 2 matching tube clips:



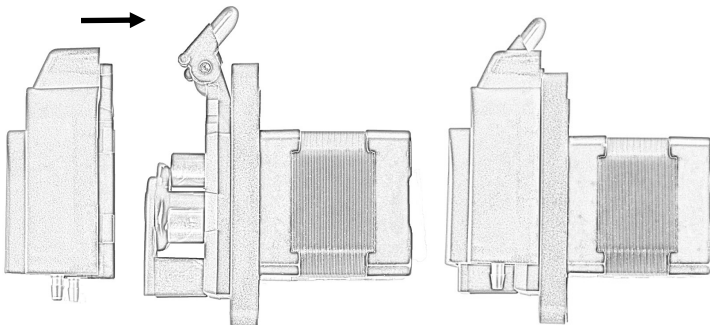
- 2 **Tube Set:** Insert the tube clips into the recesses of the cover with the open end of the tube clips pointing out. The tube should sit symmetrically in the cover.



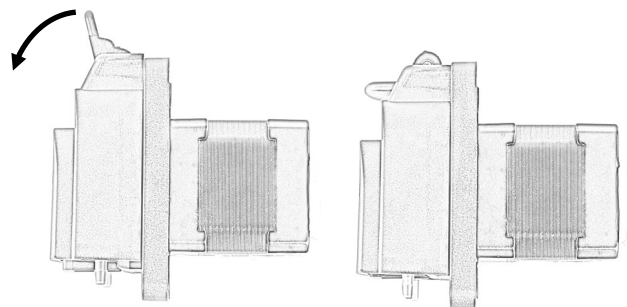
- 2 **Continuous Tube:** Insert both tube clips into the recesses of the cover with the open end of the tube clips pointing out. Then push the tube into the clips with the tube touching the upper portion of the cover.



- 3 Rotate rotor so 1 roller is in the upper (12 o'clock) position. Align cover with the pins on the lever and push cover into position.



- 4 Rotate lever to the lower position. The cover moves down into the correct position for operation.



The 9QQ is designed for 1.0 mm wall tubing from ID of 0.5 mm to 3.5 mm. Only tubing suitable for peristaltic pumps should be used.

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Order Information

Part Number	Description
9600.930	9QQ 24 V Stepper / 3 Rollers
9600.940	9QQ 24 V Stepper / 4 Rollers
9600.960	9QQ 24 V Stepper / 6 Rollers
9601.930	9QQ 24 V Stepper / 3 Rollers / Encoder
9601.940	9QQ 24 V Stepper / 4 Rollers / Encoder
9601.960	9QQ 24 V Stepper / 6 Rollers / Encoder

Please enquire for part numbers of other configurations.

BOX-it (Webshop for online purchase)

Sample quantities are available for direct online purchase:



→ [BOX-it](#)

Tube Sets / Tube Lengths

Tubing should always be ordered separately. Listed here are **Pharm-a-line** (PHI) tube sets, tube lengths x 1m (or multiples of) or tube lengths x 15 m coils. Tube lengths are for continuous tubing which require tube clips:

Part Number	Description
9000.567	Tube set PHI ID Ø 0.5 mm with PP connectors for 0.5 to 1.0 mm tubing
9000.620	Tube set PHI ID Ø 1.0 mm with PP connectors for 0.5 to 1.0 mm tubing
9000.531	Tube set PHI ID Ø 1.0 mm with PP connectors for 1.5 to 2.0 mm tubing
9000.532	Tube set PHI ID Ø 2.0 mm with PP connectors for 2.0 to 2.5 mm tubing
9000.565	Tube set PHI ID Ø 3.0 mm with PA connectors for 3.0 to 3.5 mm tubing
9000.719	Tube set PHI ID Ø 3.5 mm with PA connectors for 3.0 to 3.5 mm tubing
9000.566	Tube length PHI ID Ø 0.5 mm x 1 m
9000.535	Tube length PHI ID Ø 1.0 mm x 1 m
9000.536	Tube length PHI ID Ø 2.0 mm x 1 m
9000.537	Tube length PHI ID Ø 3.0 mm x 1 m
9000.547	Tube length PHI ID Ø 3.5 mm x 1 m
80510.115	Tube length PHI ID Ø 0.5 mm x 15 m
81010.115	Tube length PHI ID Ø 1.0 mm x 15 m
82010.115	Tube length PHI ID Ø 2.0 mm x 15 m
83010.115	Tube length PHI ID Ø 3.0 mm x 15 m
83510.115	Tube length PHI ID Ø 3.5 mm x 15 m
9000.601	Tube clips for ID Ø 0.5 and 1.0 mm tube (set of 2)
9000.616	Double tube clips for ID 1.0 mm tube (set of 2)
9000.602	Tube clips for ID Ø 2.0 mm tube (set of 2)
9000.603	Tube clips for ID Ø 3.0 and 3.5 mm tube (set of 2)



Technical information including chemical compatibility:

→ [Pharm-a-line](#)

Alternative tubing (**Silicone**, **Lagoprene** and **ED-Plex**):

→ [9QQ Tubing](#)

Additional Information (Links):

→ [9QQ Webpage](#)

→ [Boxer peristaltic pump overview](#)

All data is representative for initial selection purposes. It is the responsibility of the user to determine suitability for the intended use. Technical changes reserved. These peristaltic pumps are not suitable for in-vivo applications.