

Boxer Pumps > Products > Peristaltic Pump

9QQ miniature peristaltic pump with DC / Gear 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)
Available RPM	
12 v	116 / 315 / 520 rpm
24 v	33 / 107 / 315 / 520 rpm
Power Consumption	
3.5 to 5.0 W	
Tube Materials	
Pharm-a-line / Silicone / Lagoprene / ED-Plex	
Max pressure	
1 bar	
Max suction height (dry)	
9.5 m H <sub>2</sub> O	
DC motor life	
>2000 hours	
Weight	
130 g	

All data measured with 'run-in' Pharm-a-line tubing and H<sub>2</sub>O.

Flow Data

Flow Range (ml/min) with 33 rpm Motor:

Tube ID	3 Roller		4 Roller		6 Roller	
	Min	Max	Min	Max	Min	Max
0.5 mm	0.3	0.5	0.2	0.5	0.2	0.4
1.0 mm	0.9	1.8	0.8	1.7	0.7	1.4
2.0 mm	3.1	6.3	2.6	5.3	2.0	4.0
3.0 mm	5.6	11.2	4.8	9.6	3.3	6.6
3.5 mm	6.6	13.2	5.6	11.2	3.8	7.6

Min at approx. 50% nominal motor volatge, Max at nominal voltage, measured with continuous tube

Boxer Pumps > Products > Peristaltic Pump

Flow Data (continued)

Flow Range (ml/min) with 107 rpm Motor:

Tube ID	3 Roller		4 Roller		6 Roller	
	Min	Max	Min	Max	Min	Max
0.5 mm	0.9	1.7	0.8	1.6	0.7	1.4
1.0 mm	2.9	5.9	2.7	5.4	2.2	4.5
2.0 mm	10.2	20.3	8.6	17.1	6.4	12.8
3.0 mm	18.2	36.4	15.5	31.0	10.7	21.4
3.5 mm	21.4	42.8	18.2	36.4	12.3	24.6
Min at approx. 50% nominal motor volatge, Max at nominal voltage, measured with continuous tube						

Flow Range (ml/min) with 116 rpm Motor:

Tube ID	3 Roller		4 Roller		6 Roller	
	Min	Max	Min	Max	Min	Max
0.5 mm	0.9	1.9	0.9	1.7	0.8	1.5
1.0 mm	3.2	6.4	2.9	5.8	2.4	4.9
2.0 mm	11.0	22.0	9.3	18.6	7.0	13.9
3.0 mm	19.7	39.4	16.8	33.6	11.6	23.2
3.5 mm	23.2	46.4	19.7	39.4	13.3	26.7
Min at approx. 50% nominal motor volatge, Max at nominal voltage, measured with continuous tube						

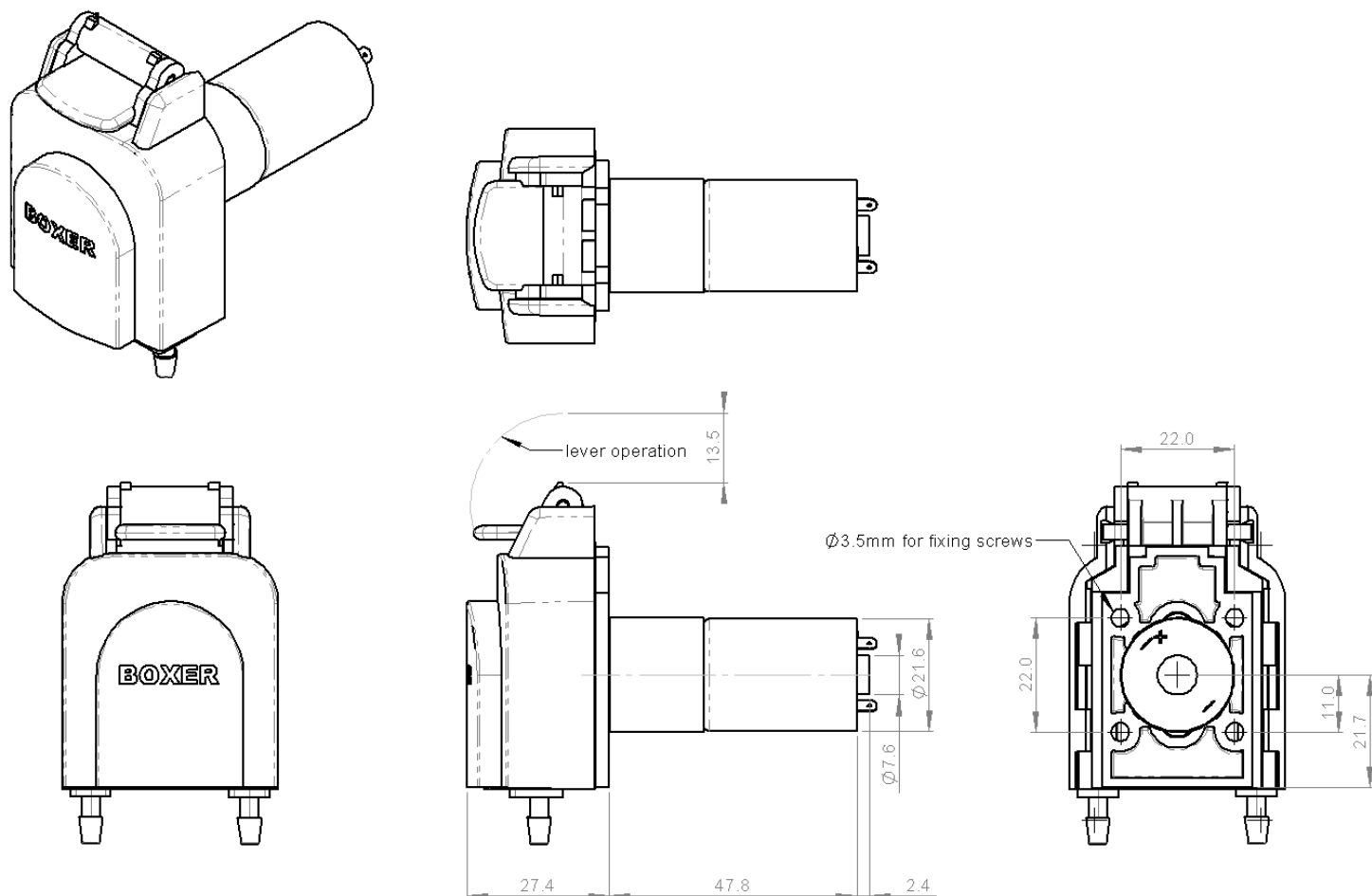
Flow Range (ml/min) with 315 rpm Motor:

Tube ID	3 Roller		4 Roller		6 Roller	
	Min	Max	Min	Max	Min	Max
0.5 mm	2.5	5.0	2.4	4.7	2.0	4.1
1.0 mm	8.7	17.3	7.0	15.8	6.6	13.2
2.0 mm	29.9	59.9	25.3	50.5	18.9	37.2
3.0 mm	53.6	107.1	45.7	91.4	31.5	63.0
3.5 mm	60.0	126.0	53.6	107.1	36.5	72.5
Min at approx. 50% nominal motor volatge, Max at nominal voltage, measured with continuous tube						

Flow Range (ml/min) with 520 rpm Motor:

Tube ID	3 Roller		4 Roller		6 Roller	
	Min	Max	Min	Max	Min	Max
0.5 mm	4.2	8.3	3.9	7.8	3.4	6.8
1.0 mm	14.3	28.6	13.0	26.0	10.9	21.8
2.0 mm	49.4	98.8	41.6	83.2	31.2	62.4
3.0 mm	88.4	176.8	75.4	150.8	52.0	107.0
3.5 mm	104.0	208.0	88.4	176.8	59.8	119.6
Min at approx. 50% nominal motor volatge, Max at nominal voltage, measured with continuous tube						

## Drawing



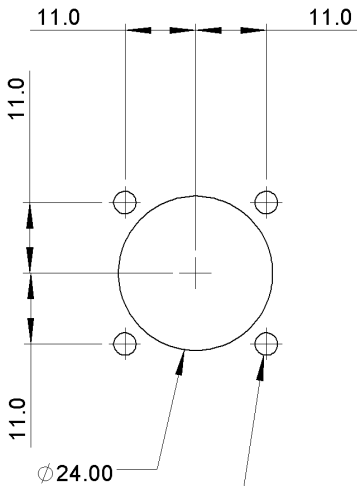
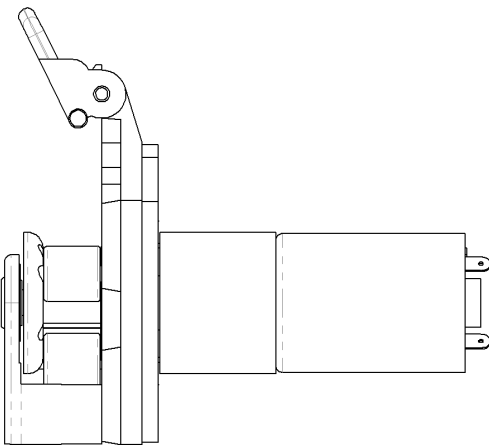
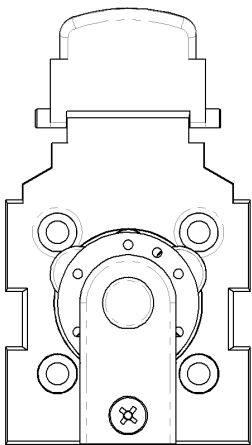
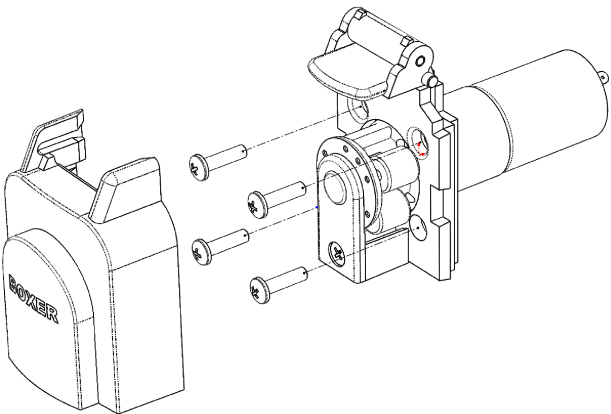
Links to Drawing and STEP file:

→ [Drawing \(.png\)](#)

→ [STEP \(.zip\)](#)

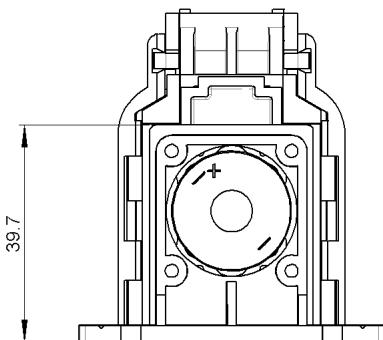
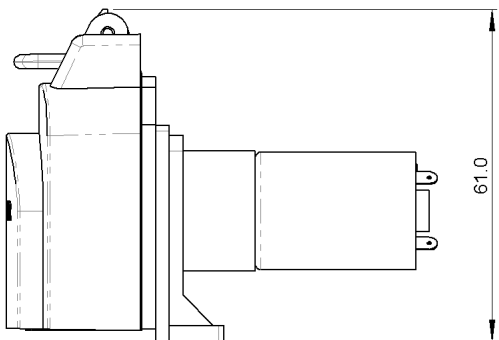
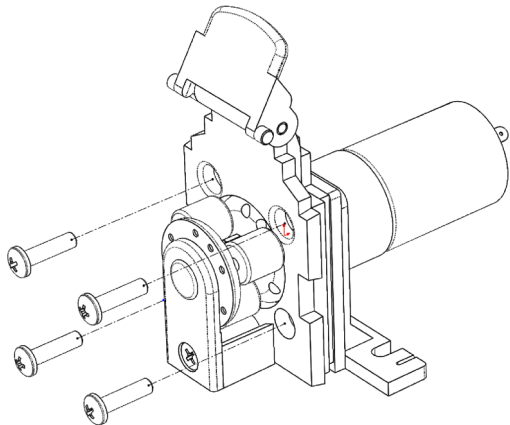
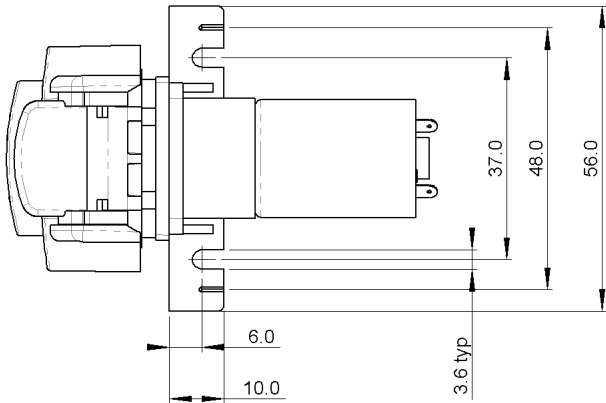
Assembly Information

The 9QQ peristaltic pump with DC / Gear 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.



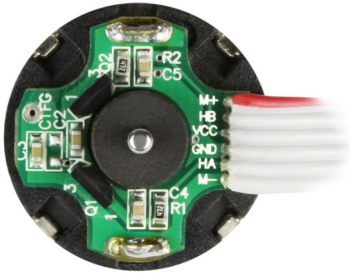
Ø3.5mm for M3 Pan Pozzi screws typ 4 posns

Alternatively a mounting bracket (part number 9000.613) is available for assembly onto a horizontal surface. 4 self tapping screws to secure the bracket to the pump body are supplied with each bracket.

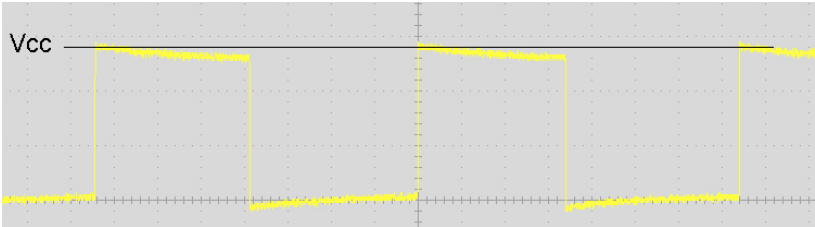


Encoder

The 9QQ peristaltic pump with DC / Gear is available with a dual channel encoder mounted on the rear of the motor. Each channel is switched by a hall effect sensor triggered by a 10 pole rotating magnet.



Output Signal:

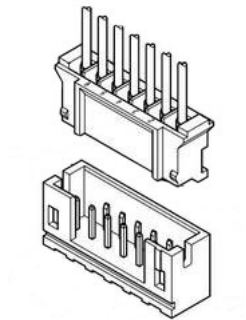


The output is 10 pulses per motor revolution. Since the encoder is placed on the motor shaft, the number of pulses per pump revolution depends on the gear ratio and nominal speed of the motor and so varies according to each motor version:

12V / 116 rpm	840 pulses per revolution	24V / 33 rpm	2700 pulses per revolution
12V / 315 rpm	190 pulses per revolution	24V / 107 rpm	840 pulses per revolution
12V / 520 rpm	190 pulses per revolution	24V / 315 rpm	190 pulses per revolution
		24V / 520 rpm	190 pulses per revolution

The encoder is supplied with 10 cm of ribbon cable and terminated by a PHR-6 2.0 mm pitch JST connector. The power supply to the motor is also connected via this cable:

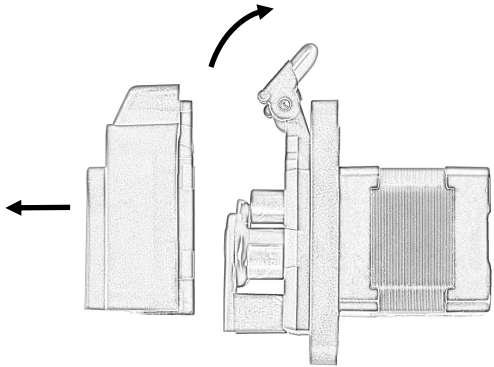
- Pin 1 = Motor GND
- Pin 2 = Motor +V (red)
- Pin 3 = Vcc of encoder (2.4 to 26.0 V DC)
- Pin 4 = GND of encoder
- Pin 5 = Output 1 (HA)
- Pin 6 = Output 2 (HB)



## Tube Loading / Unloading

The 9QQ peristaltic pump is designed for either a tube set or continuous tube. In these instructions the stepper motor version is shown.

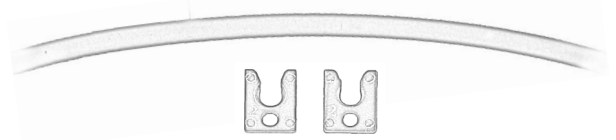
- 1 Rotate the lever to upper position and remove cover.



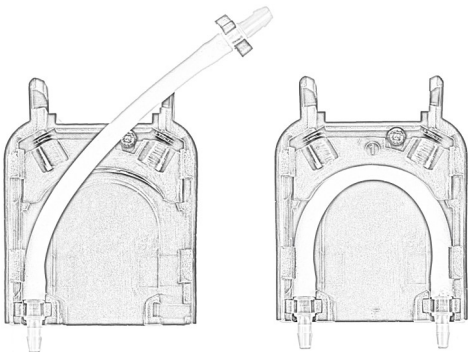
**Tube Set** consists of a length of tube complete with tube clips and barb connectors:



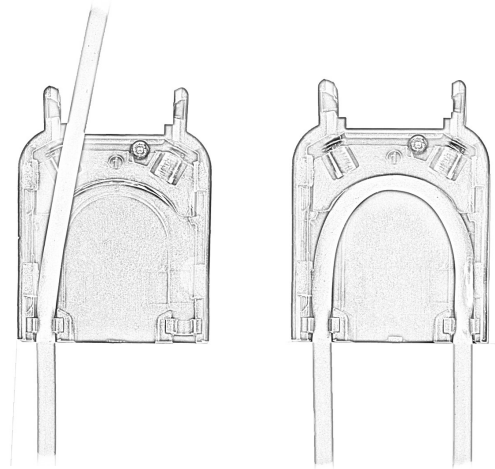
**Continuous Tube** consists of any length tube and 2 matching tube clips:



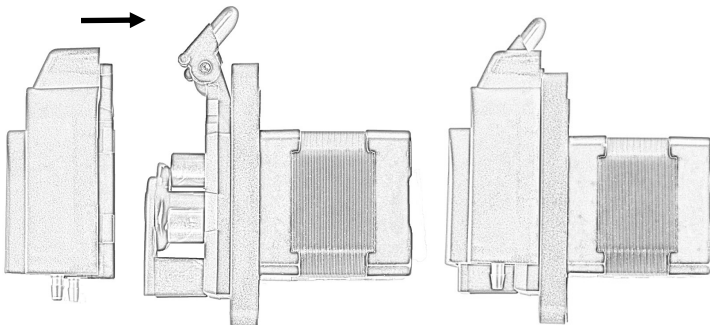
- 2 **Tube Set:** Insert the tube clips into the recesses of the cover with the open end of the tube clips pointing out. The tube should sit symmetrically in the cover.



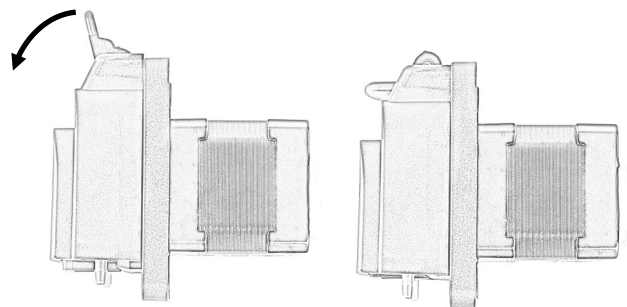
- 2 **Continuous Tube:** Insert both tube clips into the recesses of the cover with the open end of the tube clips pointing out. Then push the tube into the clips with the tube touching the upper portion of the cover.



- 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.

Boxer Pumps > Products > Peristaltic Pump

## Order Information

Part Number	Description
9010.930	9QQ 12 V DC / 116 RPM / 3 Rollers
9022.930	9QQ 12 V DC / 315 RPM / 3 Rollers
9007.930	9QQ 12 V DC / 520 RPM / 3 Rollers
9016.930	9QQ 24 V DC / 33 RPM / 3 Rollers
9012.930	9QQ 24 V DC / 107 RPM / 3 Rollers
9008.930	9QQ 24 V DC / 315 RPM / 3 Rollers
9015.930	9QQ 24 V DC / 520 RPM / 3 Rollers

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.