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15QQ peristaltic pump with DC / Gear Motor and optional encoder.

Technical Data

Flow per Revolution

ID Ø 1.6 mm tube	190 / 170 µl (4 / 6 Rollers)
ID Ø 2.4 mm tube	390 / 320 µl (4 / 6 Rollers)
ID Ø 3.2 mm tube	660 / 495 µl (4 / 6 Rollers)
ID Ø 4.8 mm tube	1250 / 830 µl (4 / 6 Rollers)

Available RPM

12 V	40 / 312 / 437 rpm
24 V	80 / 298 / 420 rpm

Electrical Data

Power Consumption	6.5 to 10.5 W
Terminal Resistance	
12 V	9.5 / 4.9 / 4.9 Ω (40 / 312 / 437 rpm)
24 V	9.5 / 14.8 / 9.5 Ω (80 / 298 / 420 rpm)
Motor Termination	Solder / Crimp Tags
Motor Insulation Class	B

Tube Materials

Innovaprene / Silicone / Norprene G / ED-Plex

General Data

Max pressure	2.0 bar
Max suction height (dry)	9.5 m H ₂ O
DC motor life	>1000 hours
Weight	405 g

All data measured with 'run-in' Innovaprene tubing and H₂O.



Flow Data

Flow Range (ml/min) with 12 V / 40 rpm Motor:

Tube	4 Roller		6 Roller	
	Min	Max	Min	Max
1.6 mm	3.8	7.6	3.4	6.8
2.4 mm	7.8	15.6	6.4	12.8
3.2 mm	13.2	26.4	9.9	19.8
4.8 mm	25.0	50.0	16.6	33.2
Min at approx. 50% nominal motor volatge, Max at nominal voltage				

Flow Range (ml/min) with 12 V / 312 rpm Motor:

Tube	4 Roller		6 Roller	
	Min	Max	Min	Max
1.6 mm	29.6	59.3	26.5	53.0
2.4 mm	60.8	121.7	49.9	99.8
3.2 mm	103.0	205.9	77.2	154.4
4.8 mm	195.0	390.0	129.5	259.0
Min at approx. 50% nominal motor volatge, Max at nominal voltage				

Flow Range (ml/min) with 12 V / 437 rpm Motor:

Tube	4 Roller		6 Roller	
	Min	Max	Min	Max
1.6 mm	41.5	83.0	37.1	74.3
2.4 mm	85.2	170.4	69.9	139.8
3.2 mm	144.2	288.4	108.2	216.3
4.8 mm	273.1	546.3	181.4	362.7
Min at approx. 50% nominal motor volatge, Max at nominal voltage				

Flow Data (continued)

Flow Range (ml/min) with 24 V / 80 rpm Motor:

Tube	4 Roller		6 Roller	
	Min	Max	Min	Max
1.6 mm	7.6	15.2	6.8	13.6
2.4 mm	15.6	31.2	12.8	25.6
3.2 mm	26.4	52.8	19.8	39.6
4.8 mm	50.0	100.0	33.2	66.4

Min at approx. 50% nominal motor volatge, Max at nominal voltage

Flow Range (ml/min) with 24 V / 298 rpm Motor:

Tube	4 Roller		6 Roller	
	Min	Max	Min	Max
1.6 mm	28.3	56.6	25.3	50.7
2.4 mm	58.1	116.2	47.7	95.4
3.2 mm	98.3	196.7	73.8	147.5
4.8 mm	186.3	372.5	123.7	247.3

Min at approx. 50% nominal motor volatge, Max at nominal voltage

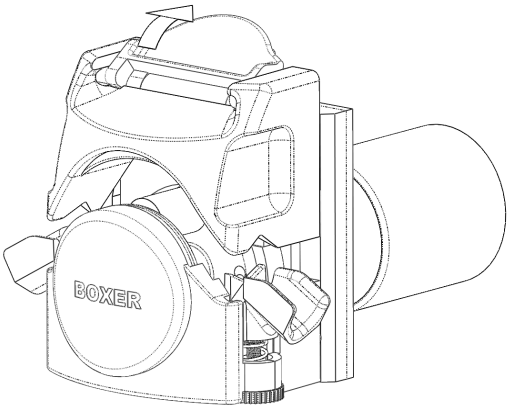
Flow Range (ml/min) with 24 V / 420 rpm Motor:

Tube	4 Roller		6 Roller	
	Min	Max	Min	Max
1.6 mm	39.9	79.8	35.7	71.4
2.4 mm	81.9	163.8	67.2	134.4
3.2 mm	138.6	277.2	104.0	207.9
4.8 mm	262.5	525.0	174.3	348.6

Min at approx. 50% nominal motor volatge, Max at nominal voltage

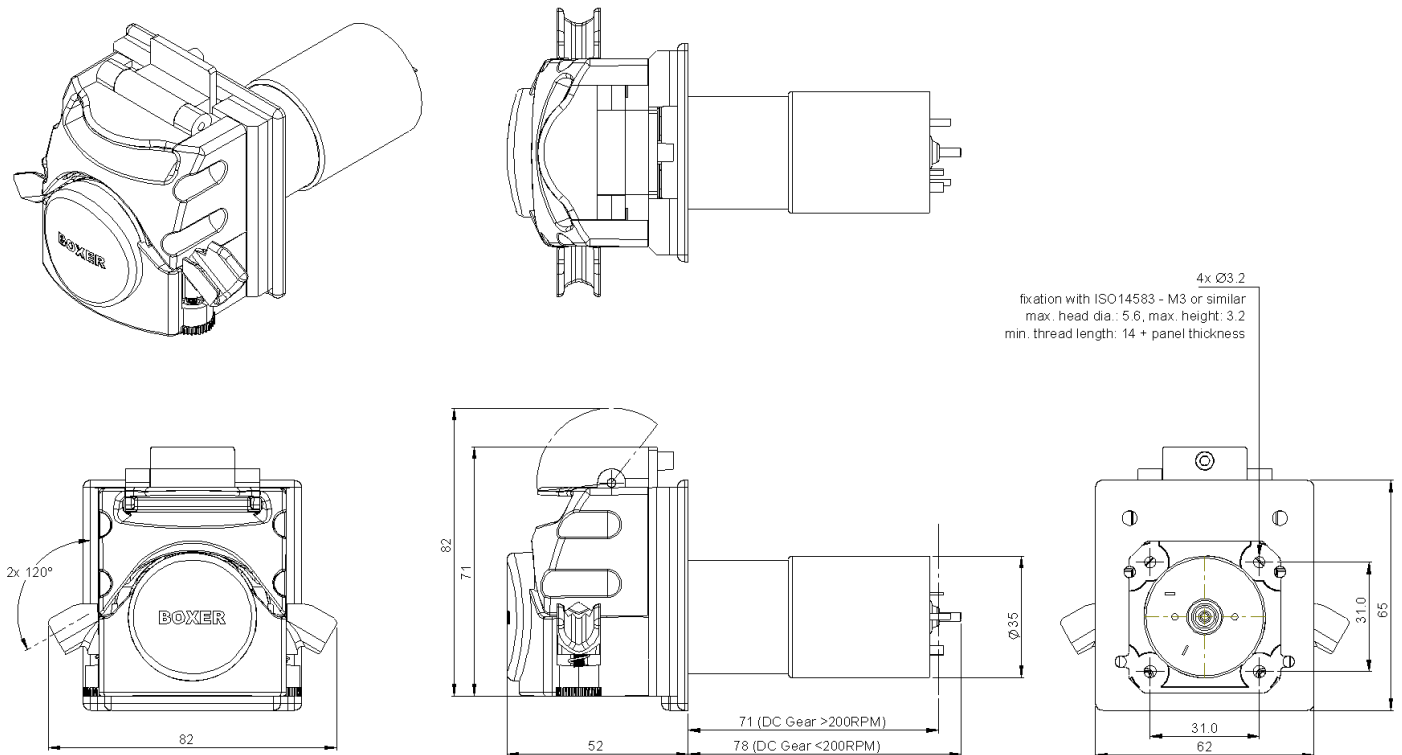
Tube Loading / Unloading

The 15QQ peristaltic pump is a flip-top design. The loading and unloading of the tube is through operation of the lever:



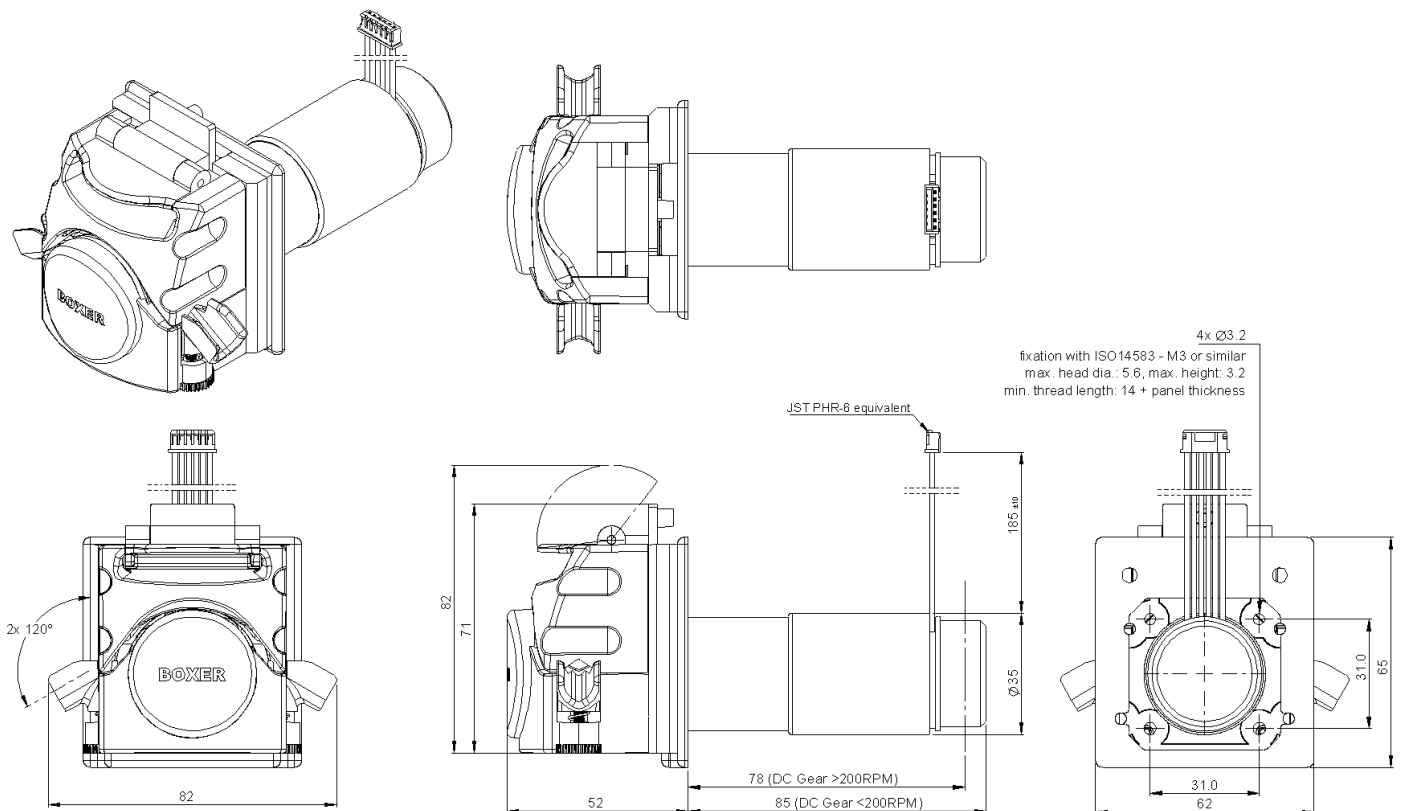
The tube grips are sprung loaded and adjust automatically to the OD of the tube. The 15QQ is designed for 1.6 mm wall tubing from ID of 1.6 to 4.8 mm. Only tubing suitable for peristaltic pumps should be used.

Drawing (without Encoder)



Drawings and STEP files are available to download from the 15QQ product page.

Drawing (with Encoder)

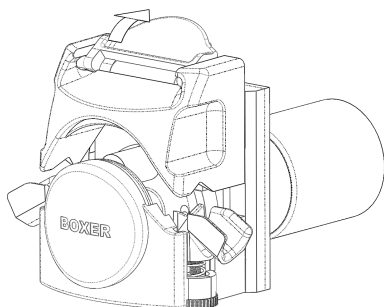


Drawings and STEP files are available to download from the 15QQ product page.

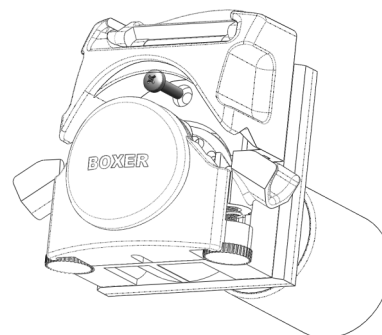
Removal / Assembly of Pump Head

The 15QQ peristaltic pump is designed with a bayonet style head assembly onto the motor plate.

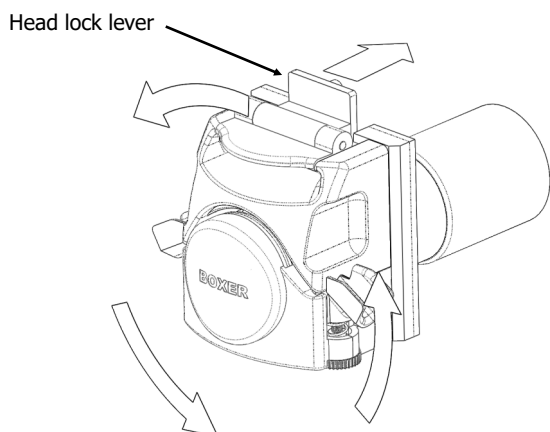
- ❶ Open the tube clamp lever completely.



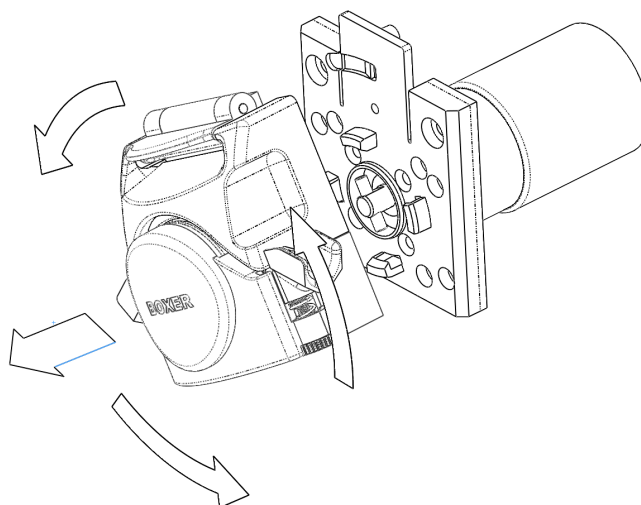
- ❷ Remove the M3x12mm screw. Close clamp lever.



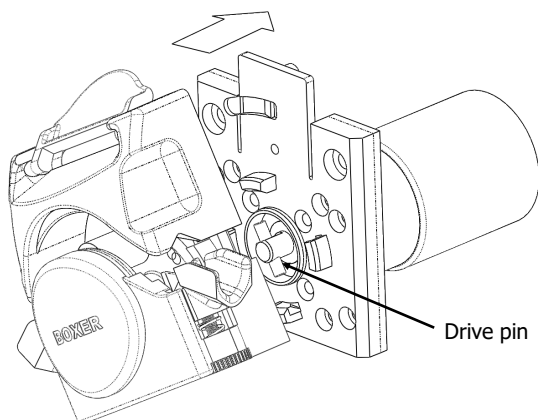
- ❸ Push head lock lever in direction on the motor. Rotate the head anti clockwise.



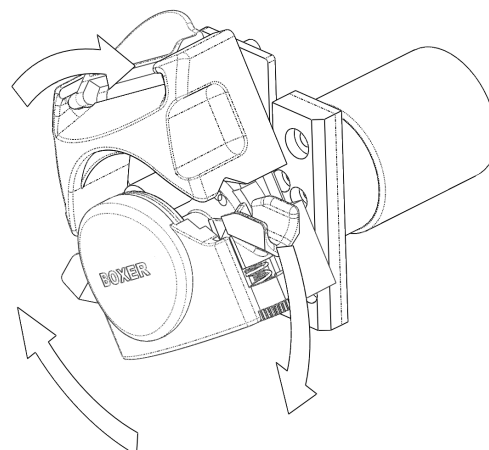
- ❹ Pull the head assembly away from the motor plate.



- ❺ To re-assemble: open tube clamp lever. Align head with motor plate at the angle shown below. Rotate pump rotor until the rotor is aligned with drive pin. Push head into bayonet.



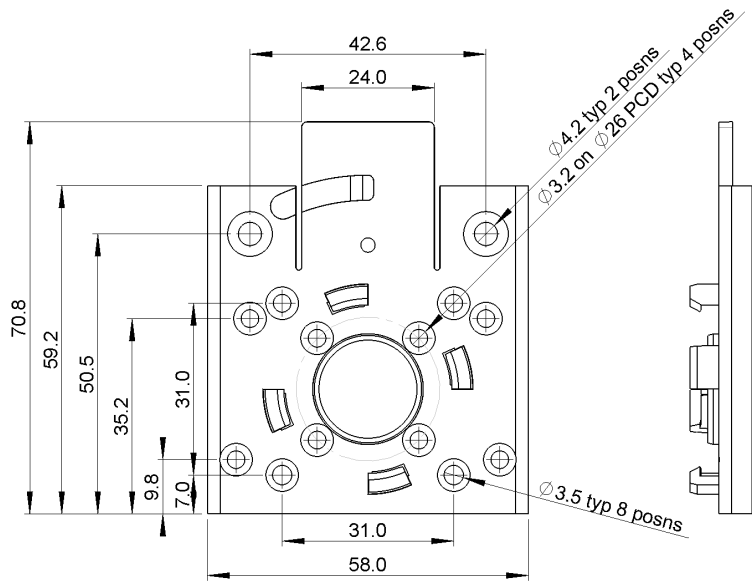
- ❻ Rotate head assembly clockwise until 'clicks' into position. Replace M3x12mm screw. Close tube clamp lever.



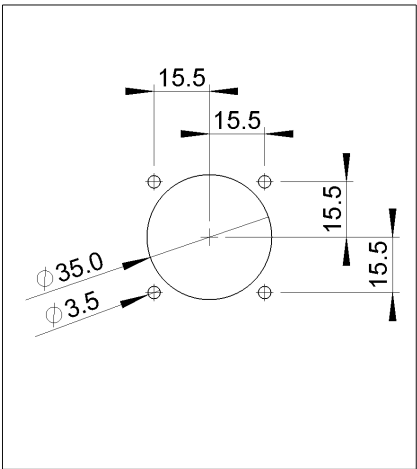
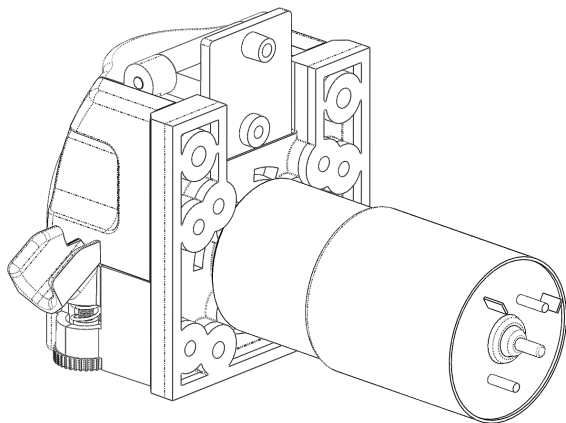
Assembly Information

The 15QQ peristaltic pump with DC / Gear is assembled to a panel cut-out using 4 x M3 bolts. To access the mounting holes the head assembly should be removed following the instructions on the previous page.

The mounting plate is designed for several different motors. The 4 x 3.2 mm mounting holes are recommended for the DC / Gear version. The mounting gasket should be placed between the motor plate and panel. The M3 bolts should be torqued to minimum of 5 to 10 Ncm (for guidance only since torque is dependent on hardware used).



Recommended panel cut-out:



Encoder

The 15QQ 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 12 pole rotating magnet. Speed is provided by the frequency of either channel and direction of rotation is determined by the phase shift between the 2 channels.

Specification		
Number of Channels	2	
Number of Poles	12 (= 12 pulses per motor revolution)	
Pump Voltage / Speed	Gear Ratio / Pulses per Pump Revolution	
12 V / 40 RPM	100:1 / 1200	
12 V / 312 RPM	19:1 / 228	
12 V / 437 RPM	14:1 / 168	
24 V / 80 RPM	100:1 / 1200	
24 V / 298 RPM	19:1 / 228	
24 V / 420 RPM	19:1 / 228	
Phase Shift		
A leads B	Clockwise (CW) ¹	
A lags B	Counter-clockwise (CCW)	
¹ example diagram below		
Lead Length	185 mm	
Lead Termination	PHR-6 2.0 mm pitch JST housing	
Encoder Supply Voltage	2.4 to 26.0 V (separate to motor supply voltage)	
Supply Current	5 mA	
Output Signals	Open collector (10 kΩ resistor to Vcc recommended)	
Pin / Wire Allocation:		
Pin	Wire Colour	Description
1	Black	Motor Supply GND
2	Red	Motor Supply +V (depends in motor)
3	Green	Encoder GND
4	Brown	Channel B Output
5	Yellow	Channel A Output
6	Orange	Encoder +Vcc (2.4 to 26.0 V)

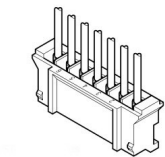
Encoder (without cover):



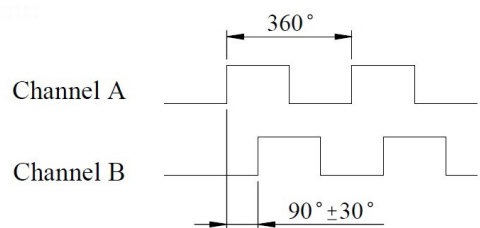
Encoder (with cover as supplied):



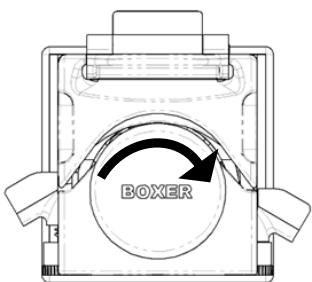
PHR-6 termination:



The phase shift between channel A and B determines the direction of rotation:



In this example, Channel A leads Channel B. This indicates rotation in clockwise direction.



Order Information

Pump and tubing should always be ordered separately.

Pump Configuration	Part Number	
	Without Encoder	With Encoder
15KS 12 V / 40 RPM / 4 Roller	15008.900	15408.900
15KS 12 V / 312 RPM / 4 Roller	15011.900	15411.900
15KS 12 V / 437 RPM / 4 Roller	15012.900	15412.900
15KS 24 V / 80 RPM / 4 Roller	15009.900	15409.900
15KS 24 V / 298 RPM / 4 Roller	15013.900	15413.900
15KS 24 V / 420 RPM / 4 Roller	15014.900	15414.900

Tubing				
Listed here is Innovaprene P60 tubing in 150 mm single lengths, 1m (or multiples of) lengths or 15 m coils. See website for alternative tube material.				
	Material	ID (mm)	Length	Part Number
Tube length	Innovaprene P60	1.6	150 mm	15000.216
Tube length	Innovaprene P60	2.4	150 mm	15000.217
Tube length	Innovaprene P60	3.2	150 mm	15000.218
Tube length	Innovaprene P60	4.8	150 mm	15000.219
Tube length	Innovaprene P60	1.6	1.0 m	81616.601
Tube length	Innovaprene P60	2.4	1.0 m	82416.601
Tube length	Innovaprene P60	3.2	1.0 m	83216.601
Tube length	Innovaprene P60	4.8	1.0 m	84816.601
Coil	Innovaprene P60	1.6	15.0 m	81616.615
Coil	Innovaprene P60	2.4	15.0 m	82416.615
Coil	Innovaprene P60	3.2	15.0 m	83216.615
Coil	Innovaprene P60	4.8	15.0 m	84816.615
Technical information including chemical compatibility → Innovaprene P60				



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.