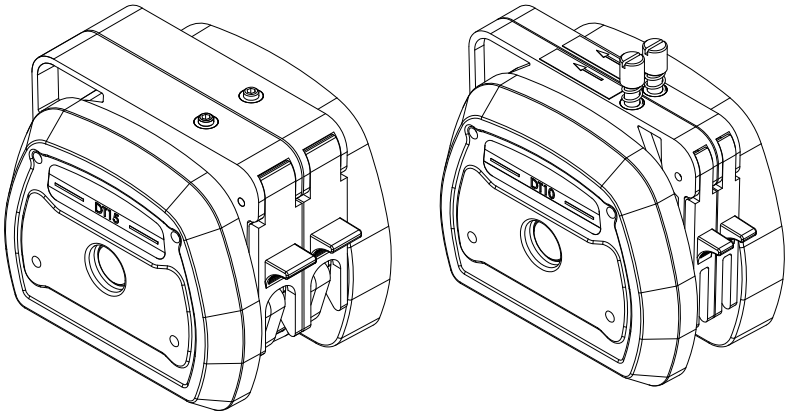




DT Pump Head

User's Guide



1 Safety Cautions



Warning

- Please carefully read this user's guide before operating the pump head.
- Regularly check the tubing for breakage as it may cause fluid to be sprayed from the pump. Replace the tubing promptly when needed.
- Power off the pump before installing external control devices.
- This product is not intended for use in patient-connected applications, such as medical and dental use.



Danger

- Disconnect the power from the pump before mounting or unmounting the pump head to the drive.
- Disconnect the power from the pump before performing any maintenance or cleaning operations.
- Turn off the drive before removing or installing tubing to prevent the risk of fingers or loose clothing getting caught in the drive mechanism.

Note:

- Only use matched tubing with the pump head to ensure optimal performance. The use of other tubing may void applicable warranties.
- If the drive has been inactive for an extended period, release the cartridge to prevent continuous squeezing of the tubing by the rollers.
- Timely replace the squeeze section of the tubing to extend its lifespan.
- In the event of tubing breakage, clean the pump head using a mild detergent solution. Do not immerse or use excessive fluid. Check if the rollers can still rotate smoothly. If not, stop the drive to prevent damage to the pump head.
- Fine adjustments can be made to the gap between the roller and the housing for the tubing. If the pump head fails to deliver fluid properly or the output pressure is weak, reduce the gap by

rotating the arm of the ratchet wheel until the pump head functions as expected.

2 Introduction

The DT series pump heads, which include DT10 and DT15, are specifically designed for small flow and medium fluid delivery. These pump heads feature a convenient cartridge for easy tubing replacement. With a PPS case and stainless steel rollers, the DT series pump heads are more compact compared to multiple-channel YZ or YT pump heads.

The DT10 pump head offers the ability to finely adjust the occlusion, ensuring consistent flow rates across the channels. The DT10 pump head without knobs has been pre-adjusted for tubing with a wall thickness of 0.92mm or 1.6mm. If necessary, an Allen Key can be used to adjust the occlusion. However, we advise against frequent adjustments.

3 Specifications

DT15 (Rollers: 4; Roller Material: Stainless Steel; Cartridge Material: PPS)

Model	No. of Channels	Max Speed	Tubing	Max Flow Rate	Weight (kg)
DT15-14	1	600 rpm	19# 16# 25# 17#	1600 mL/min	0.62
DT15-24	2				1
DT15-44	4				1.44

DT10 (Rollers: 8; Roller Material: Stainless Steel; Cartridge Material: PPS)

Model	No. of Channels	Max Speed	Tubing	Max Flow Rate	Weight
DT10-18	1	100 rpm	ID<3.17mm, Wall thickness: 0.8-1mm, 13# 14#	82 mL/min	0.72
DT10-28	2				0.78
DT10-48	4				1.08
DT10-88	8				1.68

4 Setup and Operation

4.1 DT Pump Head

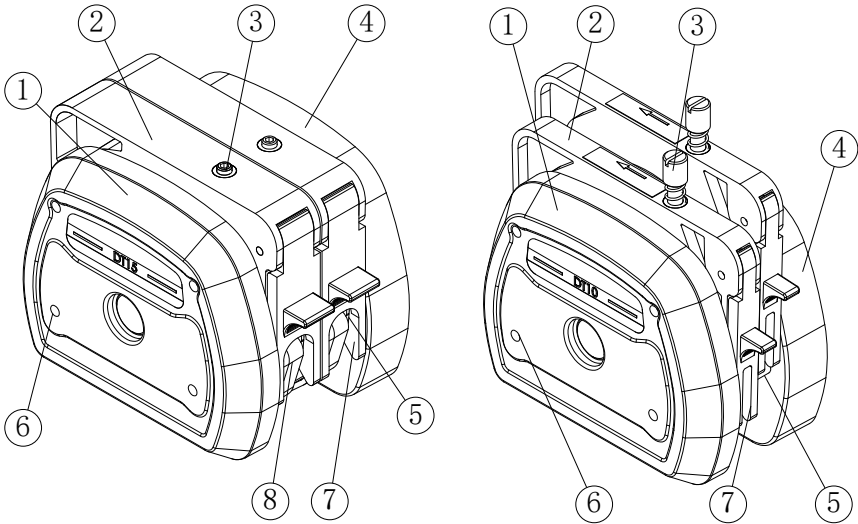


Figure 1. DT15 and DT10 Pump Heads (without/with knobs)

- 1 – Front panel
- 2 – Tubing cartridge
- 3 – Occlusion adjustment set screw
- 4 – Back panel
- 5 – Support metal rod
- 6 – Allen key hole
- 7 – Snap-fit hook for cartridge attachment
- 8 – Tubing retainer for secure fixation

4.2 Pump Head Installation

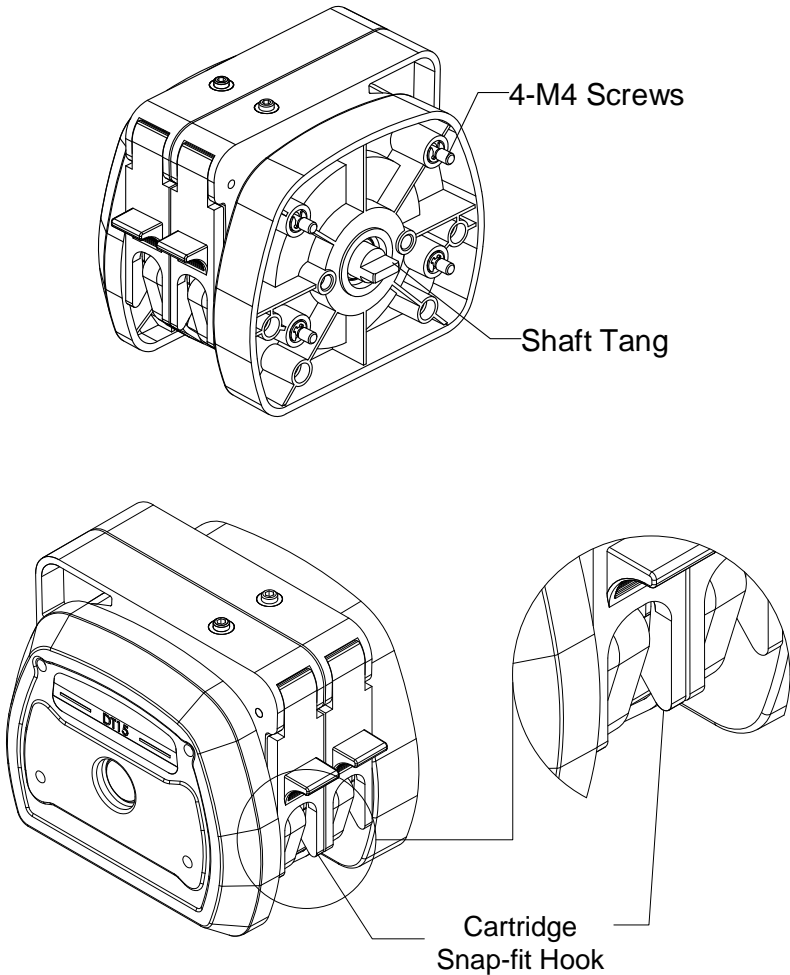


Figure 2. Pump Head Installation

To install the pump head, follow these steps:

- Insert the shaft tang of the pump head into the slot on the drive shaft.
- Align the pump head with the two alignment pins on the drive.
- Remove the cartridge(s) and press the pump head against the drive.

- Use the Allen key to insert into the mounting holes and tighten the four screws to securely mount the pump head to the drive.

4.3 Tube Loading

- 1) Ensure that the pump drive is turned off.
- 2) Remove the cartridge from the pump head.
- 3) For DT10 only: Install two stoppers on the tubing to secure it to the pump head. Adjust the distance between the two stoppers to approximately 105mm for optimal performance, as illustrated in *Figure 3*.

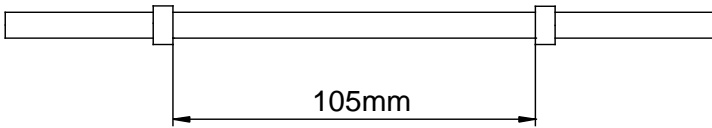


Figure 3. Stoppers for DT10 Pump Head

- 4) Insert the tubing into the slots of the cartridge on each side, ensuring that the tubing is not twisted.



Figure 4. Tubing Loading

- 5) Hook the left side of the cartridge onto the rod of the pump head, then press down on the cartridge to hook the right side onto the right rod of the pump head.



Figure 5. Fix the Cartridge

For multiple-channel applications, it is important to ensure that the tubing length in the cartridge and the stress on the tubing are nearly the same. This helps minimize the flow rate differences between the channels.

Note:

- 1) In multiple-channel setups, it is expected that the flow rates may not be identical. However, you can minimize the difference by finely adjusting the occlusion using the Set Screw.
- 2) During operation, the rollers squeeze the tubing to deliver the liquid. Regularly inspect the tubing and replace it before it wears out.
- 3) Due to tubing wear, the flow rate may decrease over time. Adjust the speed or recalibrate the pump as needed.
- 4) Avoid overtightening the Set Screw. Once the pump head can deliver liquid, the screw is adequately tightened.

5 Dimensions

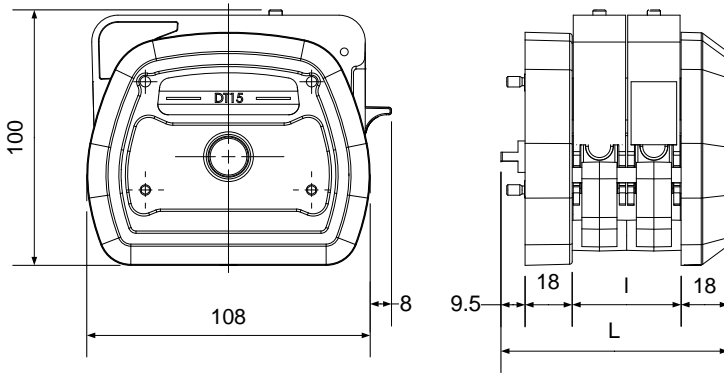


Figure 6. Dimensions (mm)

Model		Length L (mm)
DT10	DT10-18	57.5
	DT10-28	67
	DT10-48	87.5
	DT10-88	102
DT15	DT15-14	67
	DT15-24	87.5
	DT15-44	102

6 Warranty

The product includes a one-year warranty for both labor and parts. Please note that the limited warranty does not cover any damage caused by improper usage or mishandling.

7 Typical Flow Data

The rated flow rate provided below is based on water at 24 °C (75 °F) at standard atmospheric pressure. It assumes a tubing length of 2 meters, with 1 meter for the inlet and 1 meter for the outlet.

Table 1. DT15 Flow Rate (mL/min)

Speed (rpm)	Tubing Size			
	19#	16#	25#	17#
100	47	78	177	267
300	140	235	530	800
600	280	470	1060	1600

Table 2. DT10 Flow Rate (mL/min)

Speed (rpm)	Tubing Size (ID mm)						
	0.13	0.25	0.5	0.76	1	1.22	1.52
0.1	0.000	0.001	0.003	0.008	0.010	0.016	0.027
20	0.046	0.182	0.680	1.600	1.960	3.240	5.380
40	0.092	0.364	1.360	3.200	3.920	6.480	10.760
60	0.138	0.546	2.040	4.800	5.880	9.720	16.140
80	0.184	0.728	2.720	6.400	7.840	12.960	21.520
100	0.230	0.910	3.400	8.000	9.800	16.200	26.900
Speed (rpm)	Tubing Size (ID mm)						
	1.65	2	2.4	2.79	3.17	13#	14#
0.1	0.028	0.036	0.041	0.057	0.082	0.005	0.018
20	5.660	7.200	8.200	11.400	16.400	1.000	3.600
40	11.320	14.400	16.400	22.800	32.800	2.000	7.200
60	16.980	21.600	24.600	34.200	49.200	3.000	10.800
80	22.640	28.800	32.800	45.600	65.600	4.000	14.400
100	28.300	36.000	41.000	57.000	82.000	5.000	18.000

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