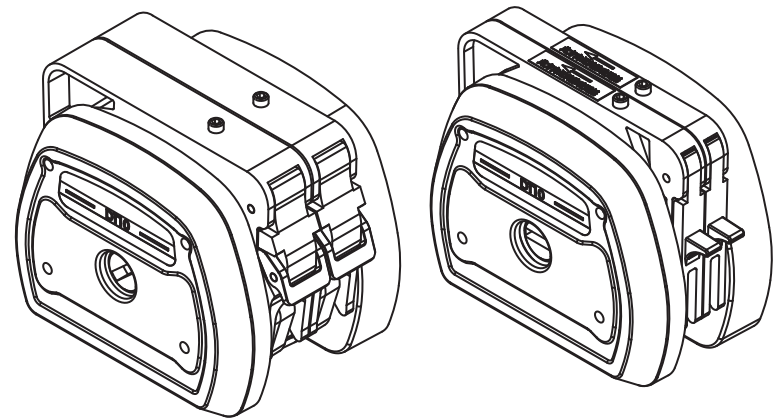


DT Series Multi-Channel Pump Head Operation



Safety Precautions



Important information:

Be sure to read the manual carefully before operation!

	This icon warns: Keep fingers away from moving parts.
	This icon warns: Be careful.
	This icon warns: Be careful, the surface is hot.
	This icon warns: Be careful, electric shock hazard.
	This icon warns: To recycle this product.
	This icon warns: Personal protective equipment (PPE) must be worn.

Danger:

	Please use the same power supply as that on the nameplate of the machine, otherwise the equipment will be damaged!
	Do not disassemble the casing or modify the interior of the equipment by yourself, otherwise it may cause malfunctions or even electric shock accidents!
	When disassembling the pump tube, please confirm that there is no pressure in the tube line
	When installing and disassembling the pump tube, please turn off the power first and do not approach the rotating roller to prevent fingers and clothing from getting entangled in the mechanical mechanism!
	If used for transporting hazardous liquids, a dedicated operating procedure must be established for this liquid, and personnel injury must also be prevented during using.

Warning:

	Before using, please confirm that the transmitted liquid will not react chemically with the tube or pump head, otherwise it will damage the tube or pump head. If unsure, please consult our engineers.
	Tubes are vulnerable parts, please pay attention to regular inspections. Our company is not responsible for the losses caused by tube damage, especially the leakage of toxic, harmful, and precious liquids!
	Warning: This product cannot be directly used for medical purposes.
	Please use tubes that are suitable for the pump head model and refer to the " Suitable Tube and Flow Rate of Pump Head" in the manual
	If the peristaltic pump is stopped for too long, please lift the pressure block on the pump head to prevent the inner wall of the tube from sticking due to prolonged compression.
	Due to actual working environment conditions (including temperature, humidity, power supply voltage, etc.) exceeding our technical specifications and causing machine damage, our company is responsible for paid warranty, but we do not bear any responsibility for any other damage caused by this!
	The main protection provided for operators to prevent them from being injured by the moving parts of the pump is provided by the safety device of the pump head. Please note that the safety devices for different products vary depending on the model of the pump head. Please refer to the pump head section in the manual.
	If the tube ruptures during using, please clean up any spilled liquid in a timely manner. Before reusing, check whether the pump head roller operates flexibly. If you find that the roller does not operate flexibly, please contact our after-sales service. Forcible use of the tube can cause abnormal wear and damage to the pump. head.

Contents

Description	2
Pump Head Structure	2
Component Name and Function	3
Usage Method	4
Install DT Pump Head	4
Tube Selection	5
Install the Tube	6
Precautions for Using	6
Malfunction and Maintenance	8
Warranty and After-sales	8
Daily Maintenance	8
Malfunction Solutions	9
Suitable Tube and Flow Rate of Pump Head	9
Dimensions	13
Technical Parameters	14

Description

The DT series pump head is designed specifically for medium and small flow rates (0.1-2200mL/min), multi-channel (1-4 channel DT15, 1-8 channel DT10) fluid transportation. Card type tube clamping method, convenient and fast replacement of tubes. The roller body is designed with bearings which can operate at higher speeds. Multi roller design, effectively reducing pulsation. The pump body is made of PPS material which has excellent chemical resistance. Compact structure and smaller volume.

According to the different tubes used, they are divided into two series: DT15 and DT10. The specific product models are shown in Appendix 1.

Pump Head Structure

Suitable tubes for each model:

- **DT15** tube size: 19#, 16#, 25#, 17#
- **DT10**(Black silk top thread) tube size: 13#, 14#
- **DT10**(Silver top thread) tube size: ID<3.17mm, wall thickness 0.86mm

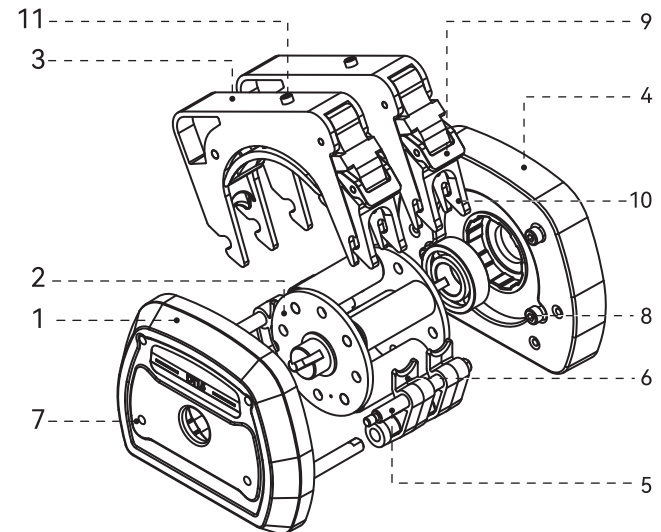


Figure 1 DT15 Pump Head (Equipped with 20 card assembly)

DT15/DT10 Pump Head Operation Manual

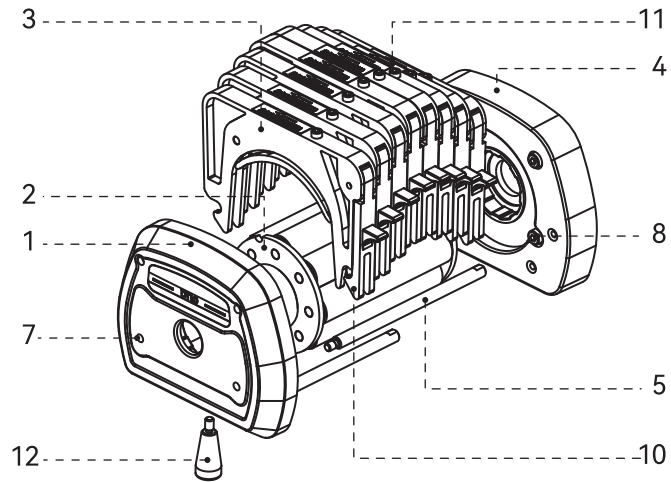


Figure 2 DT10 Pump Head (Equipped with 10 card assembly)

◆ Component Name and Function

1. Front Panel
2. Roller Core
3. Card Assembly: mounting tube
4. Back panel
5. Round Support Rod: The card assembly is clamped onto the fixed rod
6. Lower Tube Clamp: Clamp the tube tightly to prevent tube leakage (DT10 pump head does not have this part, and its limited tube function is achieved by using automatic tube sleeves or self-adhesive tube clamps)
7. Front Panel Through-hole: Insert an Allen wrench (model: 3 #) from this hole and tighten the pump head mounting screws
8. Pump Head Mounting Screws
9. 20 card wrench, this part is unique to 20 cards
10. Card Hook: Install the card device onto the round support rod
11. Fine Adjustment of the Top Screw: Fine adjustment of the pressure tube gap (the product has been adjusted before leaving the factory and can only be adjusted in special circumstances. Tool: 2.5 # Allen wrench)
12. Front Support Plate Support Leg: Supporting the pump head (for longer pump heads, this part is required for support, currently optional)

Usage Method

◆ Install DT Pump Head

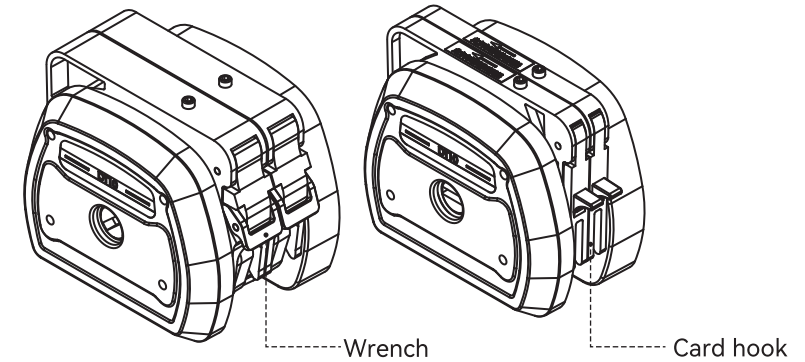


Figure 3 DT pump head remove the card

1. Remove all cards: use your hand to lift the card wrench or hook the lower end to remove the cards, as shown in Figure 3

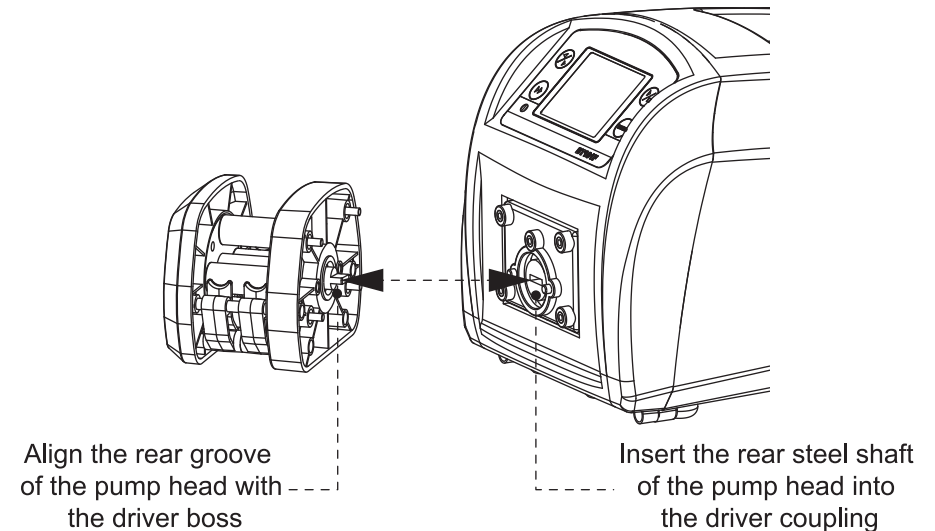


Figure 4 DT Pump Head and Driver Installation

2. Orient the coupling end of the pump head towards the driver, align it with the groove of the coupling in the pump head bracket, and push it in

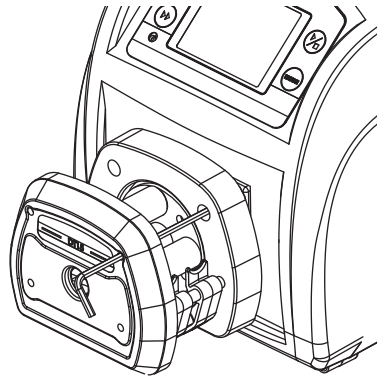


Figure 5 DT Pump Head, Tighten the Installation Screws

3. Insert an Allen wrench into the through-hole of the front support plate and tighten the four built-in Allen screws on the pump head

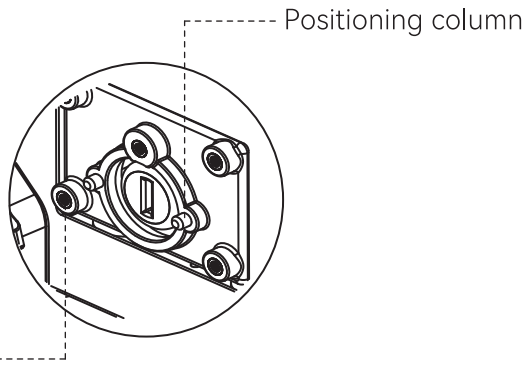


Figure 6 Pump Head Fixed Position Diagram



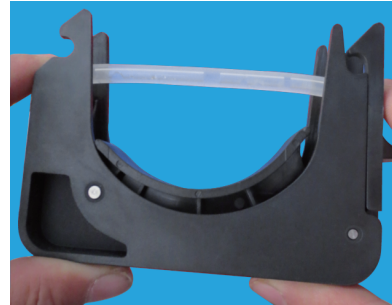
Note: when tightening the pump head screws, try to ensure that the tightening torque of the four screws is the same and should not be too tight!

◆ Tube Selection

- DT series pump head is suitable for tubes: domestic tubes and imported tubes.
- The dimensional accuracy of tube wall thickness and inner diameter will affect flow accuracy.

◆ Install the Tube

- Straighten the tube naturally and place it in the slot of the card device, and pinch the tube onto the card by hand to ensure that the length of the installed tube is consistent, as shown in the following figure



- Adjust the tube to ensure that it is smooth and not twisted
- Install the card, insert the hook on the left side of the card into the round support rod of the pump head (corresponding to the position of the lower tube card), and press down on the card device to install the card hook (on the right side) on the round support rod, as shown in the structural diagram
- When multiple channels are used simultaneously, it should be ensured that the length of the tube installed between the cards is as equal as possible to ensure that the flow rate of each channel is basically the same

◆ Precautions for Using

- This pump head can be used in multiple channels. When multiple channels are used at the same time, the flow rate between each channel is not exactly the same. When high consistency of flow rate is required for each channel, please limit the length of the working tube and standardize the inner diameter tolerance of the tube (choose high-quality tube)
- During the operation of the pump head, there is wear on the tube, and attention should be paid to checking the wear of the tube during using.
- The flow rate of the tube decreases with the extension of usage time.

Please pay attention to adjust the rotational speed of the peristaltic pump in a timely manner (for flow type peristaltic pumps, please recalibrate the flow rate).

- If the tube ruptures during using, please clean up the spilled liquid in a timely manner. Before reusing, check whether the pump head roller operates flexibly.
- The pump head mounting plate and card are made of plastic material and cannot withstand all chemical substances. Please consult our company before using.
- When installing and disassembling cards, please place them in a safe place to avoid falling and causing card damage.



Warning: The adjustment instructions for the DT10 card are only applicable to special occasions. The pump head card has been adjusted before leaving the factory. If you need to make adjustments, please contact our company's after-sales personnel! Incorrect adjustment can easily lead to serious consequences such as liquid leakage and sudden decrease in tube life!

For adjustments under special conditions on DT10 cards, please refer to the following methods:

- 1) Set the speed of the driver to 5rpm/min.
- 2) Start the peristaltic pump and adjust the card as follows:
 - If the liquid level in the tube does not rise, slowly adjust the fine adjustment screw clockwise. At this time, observe the rise of the water level in the tube, and stop adjusting when the liquid level in the tube starts to rise.
 - Manually control the driver and jog it. When the driver stops, observe whether the liquid level in the tube has decreased. If it does not, continue jogging and repeat jogging several times
 - If the liquid level drops, slowly adjust the fine adjustment top screw until the liquid level does not drop (be sure to adjust the fine adjustment top screw slowly)

Malfunction and Maintenance

◆ Daily Maintenance

- Regularly inspect the tubes for damage or loss of elasticity.
- Applying silicone oil on the wall of the pressure block can reduce tube wear and prolong the service life of the tube.
- The pump head cannot be washed with water. If the pump tube breaks during operation, the liquid in the pump head shall be wiped or dried in time.
- Do not use chemical reagents to clean the pump head.

◆ **Malfunction Solutions**

NO.	Malfunction	Solution	Remarks
1	Unable to inhale liquid	1. Whether the viscosity of the liquid too high. When the viscosity is too high, the flow rate will seriously decrease or even become unusable 2. If the negative pressure at the inlet of the tube is too high or the inlet is blocked, check the inlet tube line 3. If the tube is not installed in the correct position, reinstall it according to the instructions for use 4. Whether the tube specification is appropriate, and select the appropriate specification of tube according to the instructions for use	
2	The service life of the tube has significantly shortened	1. To detect whether the liquid contains solid particles, please choose an imported tube. Excessive particle impurities can seriously reduce the service life of the tube and even render it unusable 2. If the tube is not installed in the correct position, reinstall it according to the instructions for use 3. Check whether the roller rotates flexibly	

 Note: If the above methods still cannot be solved, please contact the after-sales service of Enterprise!

Suitable Tube and Flow Rate of Pump Head

Experimental conditions:

1. Normal temperature and pressure
2. Test medium: Water
3. Tubeline: The length of inlet and outlet is 500mm, and the inlet and outlet are at the same level.

When the liquid, viscosity, tubeline length, inlet and outlet pressure difference and other service conditions change, the flow value will change. Please consult the engineer of Enterprise.

Suitable tube and flow rate of DT15 pump head (unit: mL/min)

DT15-14, DT15-24, DT15-44 单位: mL/min				
Speed \ Tube	19#	16#	25#	17#
100rpm	67	100	220	360
300rpm	200	300	660	1100
600rpm	400	600	1300	2200

Note: For tubes with a wall thickness of 1.6mm, the flow rates measured in the table are all single channel flow rates.

Suitable tube and flow rate of DT10 pump head (unit: mL/min)

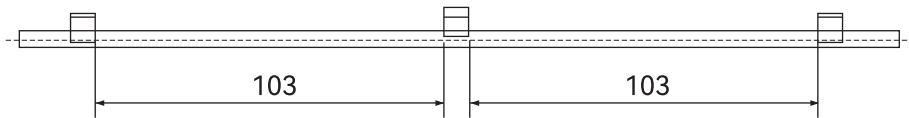
Speed \ Tube	0.13	0.25	0.5	0.76	1	1.22
0.1rpm	0.0002	0.0009	0.0034	0.0080	0.010	0.016
20rpm	0.046	0.182	0.680	1.600	1.960	3.240
40rpm	0.092	0.364	1.360	3.200	3.920	6.480
60rpm	0.138	0.546	2.040	4.800	5.880	9.720
80rpm	0.184	0.728	2.720	6.400	7.840	12.960
100rpm	0.230	0.910	3.400	8.000	9.800	16.200

Speed \ Tube	1.52	1.65	2	2.4	2.79	3.17
0.1rpm	0.027	0.028	0.036	0.041	0.057	0.082
20rpm	5.380	5.660	7.200	8.200	11.400	16.400
40rpm	10.760	11.320	14.400	16.400	22.800	32.800
60rpm	16.140	16.980	21.600	24.600	34.200	49.200
80rpm	21.520	22.640	28.800	32.800	45.600	65.600
100rpm	26.900	28.300	36.000	41.000	57.000	82.000

DT15/DT10 Pump Head Operation Manual

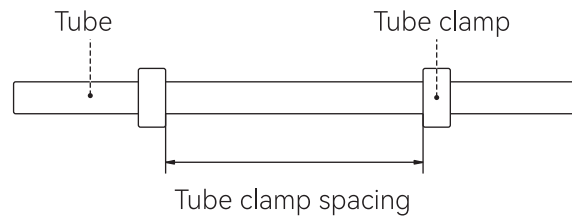
Speed \ Tube	13#	14#
0.1rpm	0.005	0.018
20rpm	1.000	3.600
40rpm	2.000	7.200
60rpm	3.000	10.800
80rpm	4.000	14.400
100rpm	5.000	18.000

- DT10 card is dedicated, and the length dimensions of the adhesive tube card are shown in the following figure.



Note: If there are no special requirements from the customer, the total length of the standard tube is 150.

- DT10 card is dedicated, and the length of the tube sleeve is shown in the following figure.



Tube Stopper Selection Table				
Introduce	1. Prevent the tube from bouncing in the pump head 2. Ensure the consistency of soft length tubes between channels, thereby ensuring the consistency of flow velocity between channels.		Feature	1. Different sizes, distinguished by different colors 2. Complete specifications 3. Firmly clamped
No.	Name	Model	Material	suitable Tube
1	Black stopper	1.5*6*5	Silicone	ID 0.13-1.6
2	Blue stopper	2*6*5		ID 1.85-2.06、13#
3	Red stopper	3*7*5		ID 2.29-2.79
4	Yellow stopper	3.5*8*5		ID 3-3.2
5	Yellow stopper			14#
Note: If the tube line resistance is high, the tube stopper can be used in a reduced order (using a thinner tube stopper)				

Dimensions

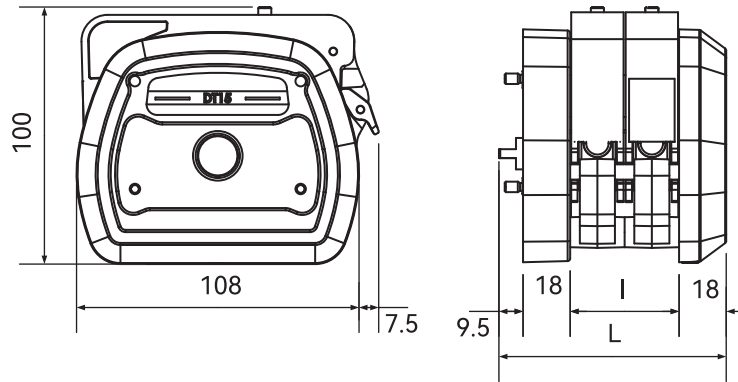


Figure 7 DT15

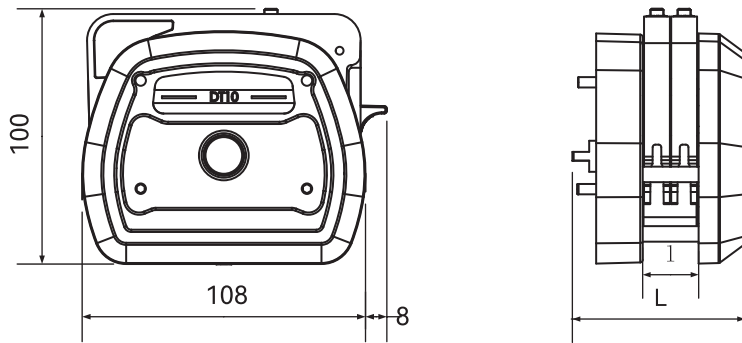


Figure 8 DT10

	Pump head model	Pump head length L (mm)
DT10	DT10-18	57.5
	DT10-28	67
	DT10-48	87.5
	DT10-88	128.5
DT15	DT15-14	67
	DT15-24	87.5
	DT15-44	128.5

Technical Parameters

DT15 pump head

Suitable Drive	BT, WT, and various OEM customization
Suitable Tube Size	19#, 16#, 25#, 17#, (wall Thickness 1.6mm, ID2.4-6.4mm)
Suitable Tube Type	Silicone, pharmed, A-60-G, A-60-F, F5500A, 2275, 2475, 3603, Viton
Speed Range	Maximum 600 rpm/min
Flow Range	Maximum 2200 mL/min
No. of Rollers	4 rollers, made of stainless steel 304 material
Maximum Channel	4
Case Material	PPS black
Work Environment	Temperature 0~40°C Relative humidity <80%
Dimension	See the table above
Pump Head Weight	0.62kg-DT15-14
	1.00kg-DT15-24
	1.44kg-DT15-44

DT10 pump head

Suitable Drive	BT, WT, and various OEM customization
Suitable Tube Size	13#, 14#(wall Thickness 1.6mm, ID0.8、1.6mm)--- black fine tuned top thread ID<3.17mm, wall Thickness 0.86mm ---silver fine tuned top thread
Suitable Tube Type	Silicone, pharmed, A-60-G, A-60-F, F5500A, 2275, 2475, 3603
Speed Range	Maximum 100 rpm/min
Flow Range	Maximum 82 mL/min
No. of Rollers	8 rollers, made of stainless steel 304 material
Maximum Channel	8
Case Material	PPS black
Work Environment	Temperature 0~40 C Relative humidity <80%
Dimensions	See the table above
Pump Head Weight	0.72kg-DT10-18
	0.78kg-DT10-28
	1.08kg-DT10-48
	1.68kg-DT10-88

Note: For applications where DT15 exceeds 4 channels and DT10 exceeds 8 channels, please consult our company for details. We have corresponding technical solutions and will not provide detailed explanations here.