MTH18-12 Operating Manual



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Please read this operating manual carefully before using the product.

The contents of this publication are presented for informational purposes only, and while every effort has been made to ensure their accuracy. Aurora Pro Scientific accepts no liability for errors or omissions.

We reserve the right to modify or improve the designs or specifications of such products at any time without notice. Please contact with Aurora Pro Scientific or certified distributor for up-to-date manuals.

1 General Information

1.1 Precaution

- If tubing leaks or bursts, fluid may spray from the tubing and pump head. Take reasonable practicable measures to ensure the operators' safety.
- Make sure fluid in the tubing has been drained out, no pressure in the pipeline and disconnect pump from mains power, while removing or replacing the tubing.
- Disconnect pump from the mains power before connecting the control signal wire.
- Do not touch the rotor while pump is running.
- Some section of surfaces of the pump may get warm during operation. Do not take hold of the pump while it is running.
- Release the track when pump stop running for a long time to avoid tubing deformation caused by squeezing.
- Keep the rotor clean and dry to avoid tubing excessive wear and premature failure of pump head or driver.
- Please do not put lubricating oil by yourself, any improper operation could corrode the pump head housing or dislocate the tubing
- The entire unit can't resist organic solvent and corrosive liquid. Isolate the unit (except tubing) from these fluids.
- Don't disassemble, change or repair the product. Please contact the distributor for product maintenance.

1.2 Warranty and Service

1.2.1 Warranty Service

(1) Aurora Pro Scientific, obligation under this warranty is limited to a period of one (1) years from the date of original purchase. Within the 1 years of warranty period, Aurora Pro Scientific will replace or repair any defective parts free of charge. This warranty doesn't cover consumable part (tubing).

(2) Warranty does not cover:

- The repair or exchange of the entire unit after the warranty period.
- Any damage or failure caused by improper installation, storage, maintenance or usage, not in compliance with operating manual.
- Beyond or violate the conditions listed in contract or technical agreement.
- Any damage or failure caused by attempts by personnel other than authorized representatives to install, repair, modify or remove the product.
- Any damage or failure caused by non-Longer parts, or user-replaceable parts purchased from unauthorized distributors.

- Any damage or failure caused by accidents or human errors (including wrong power supply voltage, corrosion, fall-off, etc.)
- Any damage or failure caused by natural disaster or other irresistible force (earthquake, fire, etc.).
- Other product damage or failure not caused by defects in design, material and workmanship.

1.2.2 Maintenance Service

- Customer will be charged for the repair or replacement of the parts or accessories after warranty period.

1.2.4 Dispute Settlement

Dispute over product quality or service will be handled according to contract or agreement. If there is no related contract or agreement, it shall be resolved by the disputing parties through consultation. Otherwise, it will be resolved according to relevant national laws and regulations.

1.3 Repair Notes

Please contact Aurora Pro Scientific or its distributor, and provide the product serial number before returning the product. Products which has been contaminated with, or exposed to, toxic chemicals or any other substance hazardous to health must be decontaminated before returning to Aurora Pro Scientific or its distributor. You must ship the product in its original packaging or better, to insure it against possible damage or loss during the transport.

2 Pump Introduction

2.1 Main Feature

MTH18-12 is mainly used in hemodialysis application. With small size and compact structure, the pump is ideal for OEM and can be mounted to customer equipment through panel. The pump head has two spring-loaded rollers, which automatically compensate for minor variations in tubing wall thickness, giving extended tube life. With brushless motor, the noise is very low. Brushless motor controller (model:BLDCDRV-B1) is available, or can be controlled by customer's specific motor controller.

Table 1：Product Model Table

Model	Description	Product Code
MTH18-12	Hemodialysis Pump	052101A

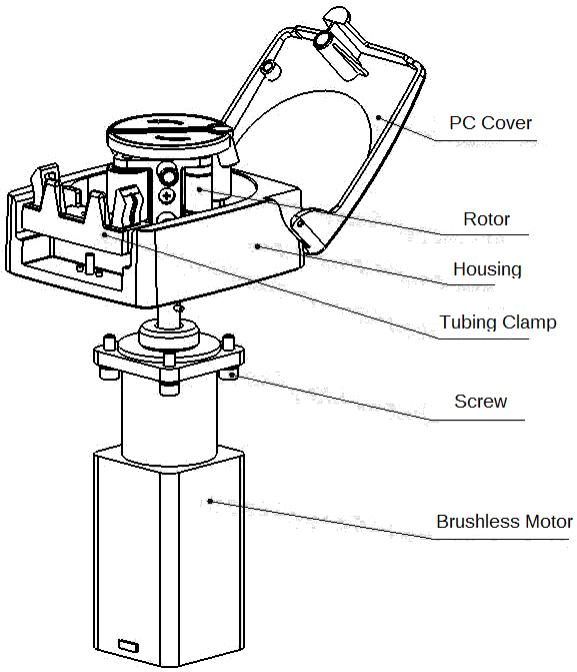


Figure 1 Pump Structure

2.2 Main Function

1) The pump head has single channel and two spring-loaded rollers. The spring-loaded rollers can automatically compensate for minor variations in tubing wall thickness, giving extended tube life.

2) Spring-loaded tubing clamps accept multiple PVC soft tubing size.

3) The lever of the rotor assembly helps to load the tubing easily and can be used to run the pump head manually.

4) Rotor can be removed and installed rapidly, which is convenient for cleaning inside of the pump head.

5) The tubing and pump running condition can be monitored through the transparent PC cover, which avoids exposure of rotating parts.

6) The pump head is fitted with electromagnetic detection board to detect the pump head cover open/close state. Under this function, the pump will stop when the pump head cover is open.

7) Roller material is 304SS, better anti-corrosion capability.

8) With brushless motor, the pump can run stably with low noise.

2.3 Specification

Speed Range: 0-70 rpm
Channel Number: 1
Roller Number: 2
Applicable Tubing：OD≤10mm, and Wall thickness: 1.75±0.2mm
Flow Rate：5～300mL/min(6.5mmIDx10mmOD)
2～165mL/min(4.6mmIDx8.4mmOD)
Working Condition：Temperature：0-40℃，Relative Humidity：<80%，no condensation

Outline Dimension：(L×W×H) 166x80x93mm
Weight: 1.23g
Noise: ＜50dBA (0-70 rpm)

2.4 Motor Parameter

42 DC brushless motor
Voltage Rating: 24VDC
Current Rating: 3.2A
Speed Rating: 4000 rpm
Pole-pairs Number: 8
Reduction Ratio: 1:19

2.5 Installation Drawing

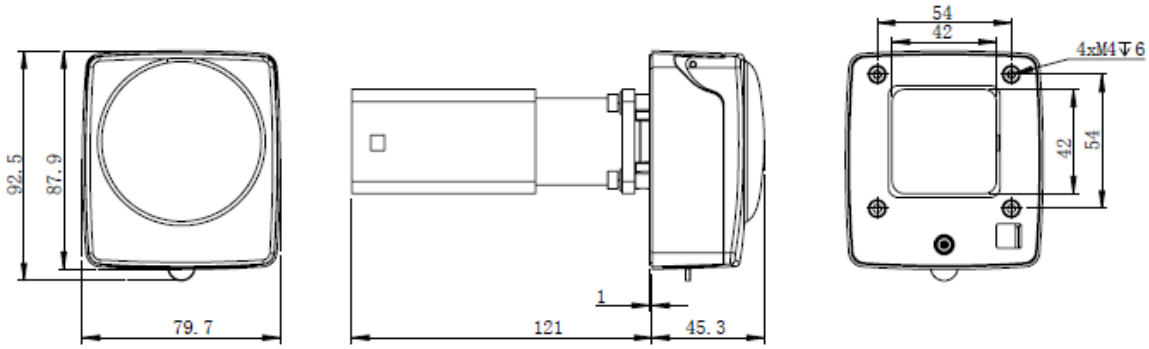


Figure 2

3 Operating Instruction

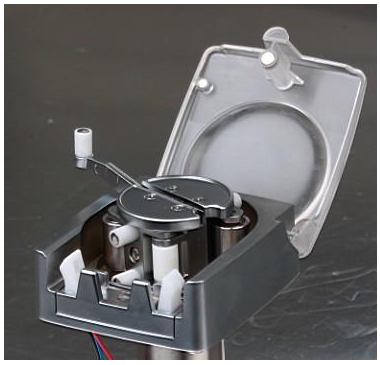
3.1 Pump Head Mounting

Don’t replace the pump head by yourself to avoid tubing excessive wear and premature failure of pump head or driver. If you need to replace the pump head, please send the pump back to us or the authorized distributors.

3.2 Tubing Loading

Note: Please disconnect pump from the mains power before loading the tube.

1. Open the PC cover. Open the rotor assembly lever and rotate lever to the position indicated in below picture.



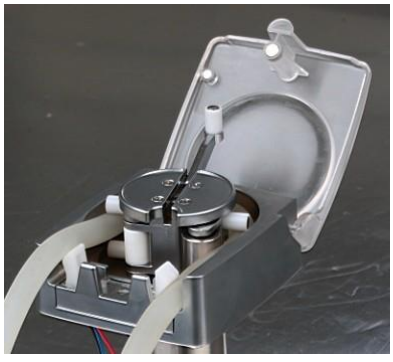
2. Fit one end of the PVC soft tubing into the right tubing clamp.



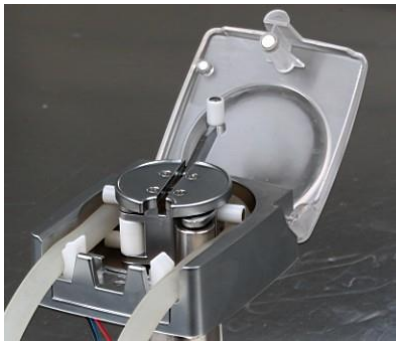
3. Hold the tubing by your left hand. Rotate the rotor lever counterclockwise by your right hand and feed the tubing between the two white tube guides.



4. Continue to rotate the rotor lever counterclockwise and feed the tubing between the roller and compression block.



5. Fit the other end of the PVC soft tubing into the left tubing clamp. Make sure that the tubing must not be twisted or stretched.



6. Continue to rotate the rotor lever, when the motor shaft slot is aligned with the slot of the rotor, put down and lock the lever into the slot.



7. Close the PC cover.



3.3 Pump Head Rotor Removal and Installation

Rotor can be removed and installed rapidly which is convenient for cleaning inside of the pump head.

Rotor removal steps:
Open PC cover-> open rotor lever-> rotate the rotor by rotating the lever, until the motor shaft slot is perpendicular to the slot of rotor-> withdraw the rotor from the shaft.

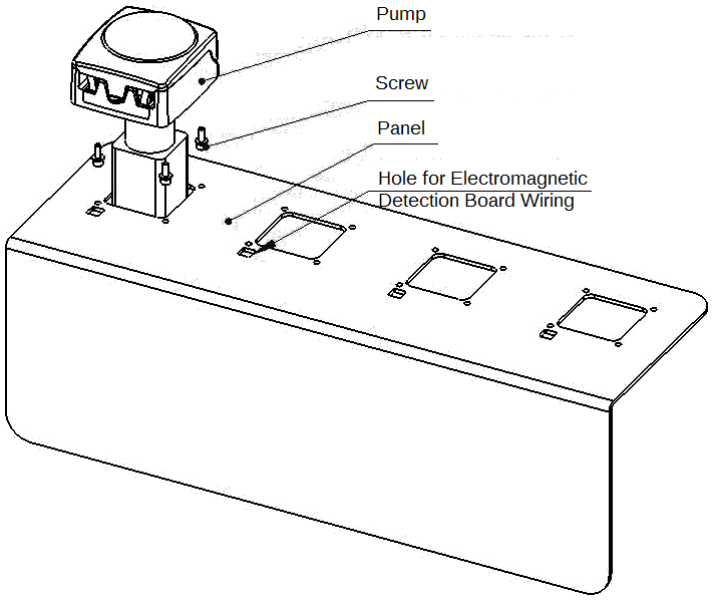
Rotor installation steps:
Open rotor lever-> put the rotor on the shaft while the rotor slot is perpendicular to the slot of motor shaft-> rotate the rotor by rotating the lever, until the motor shaft slot is aligned with the

slot of rotor-> put down and lock the lever into the slot.

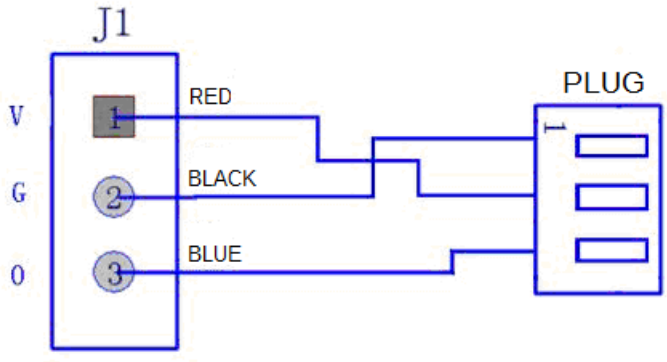
3.4 Pump Mounting

1) Insert the pump motor into the mounting panel of customer equipment, pay attention to the wiring position of electromagnetic detection board.
2) Secure the pump by using 4 pcs M4x12 screws, including flat washer and spring washer.

Note:
Please disconnect the pump from the mains power before mounting the pump.
When tighten the screws, please don't tighten too much, in order to prevent the pump casing deformation.



3.5 Electromagnetic Detection Board Wiring



Black Wire---GND
Red Wire---VCC 5V+
Blue Wire---Pump head cover state signal. When pump is running and the pump head cover is open, the output signal is high level 5V. When pump is running and the pump head cover is closed, the output signal is low level 0V.

The electromagnetic detection board is used to detect the pump head cover open/close state.

By using the output signal of electromagnetic detection board when design the motor controller, the pump will stop when the pump head cover is open.

3.6 Motor Wiring

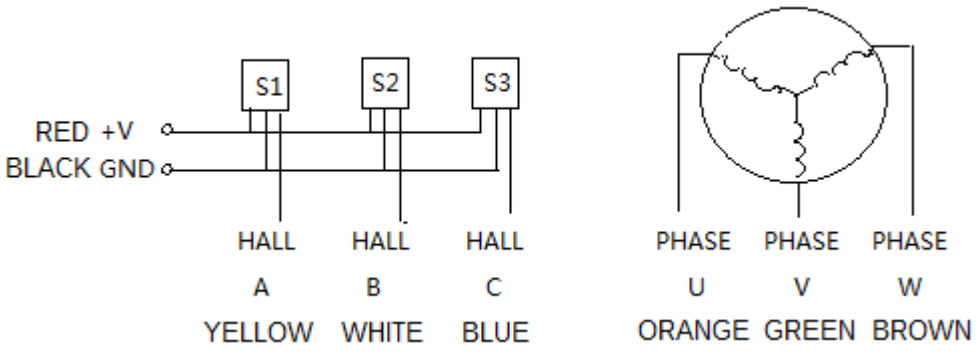


Figure 3