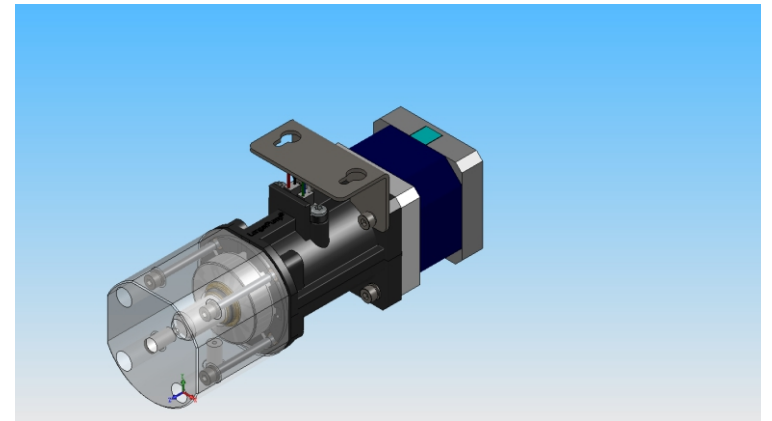


LONGER

MP Series Micro Piston Pump Operating Manual



LONGER

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MP Series Micro Piston Pump

Baoding Longer Precision Pump Co.,Ltd.

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1. Product Instruction

MP series micro piston pump is a precision dispensing pump developed by Longer Precision Pump Co., Ltd. The main function of the pump is to carry out the quantitative fluid delivery. It has very high dispensing accuracy and reproducibility. Precision can be maintained more than 10 million cycles service life.

1.1 Main Features

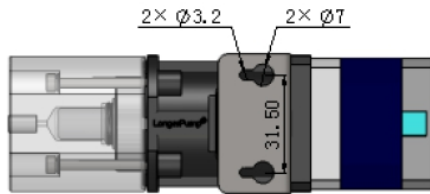
- There are 8 volumes between 25ul and 5ml
 - The pump has very high and stable dispensing reproducibility within the service life cycles. With deionized water, the reproducibility test results are:
 100% dispensing:
 CV<0.1% (pump volume<500uL)
 CV<0.05% (pump volume ≥500uL)
 10% dispensing:
 CV<0.5%(pump volume <500ul)
 CV<0.1%(pump volume ≥500ul)
 1% dispensing:
 CV<2%(pump volume <500ul)
 CV<1%(pump volume ≥500ul)
 - Rated Stroke Dispensing Accuracy ≥99.5%
 - Rated Stroke (Step): 12.7mm (2000 steps or 4000 steps)
 - Piston material is zirconia ceramic TZP or PEEK. The advanced piston manufacturing and sealing technology ensure the pump life is more than 10 million cycles with distilled water. Repair and maintenance are not needed during the life cycles.
 - Parts contacting with fluid has good chemical corrosion resistance.
1. Pump head material: PMMA.as standard, PEEK, PEI and other polymer material are also available according to special requirement..
 2. Piston material: Zirconia ceramic TZP or PEEK
 3. Seal ring material: UHMW-PE/VITON

■ End position optical detection: pump initial position can be detected by photoelectric sensors as fully withdraw or fully dispensing.

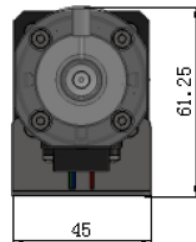
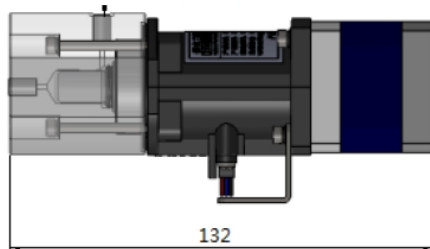
■ 1.8° Two-phase step motor has longer life and high performance

1.2 MP Series Micro Piston Pump System Structure

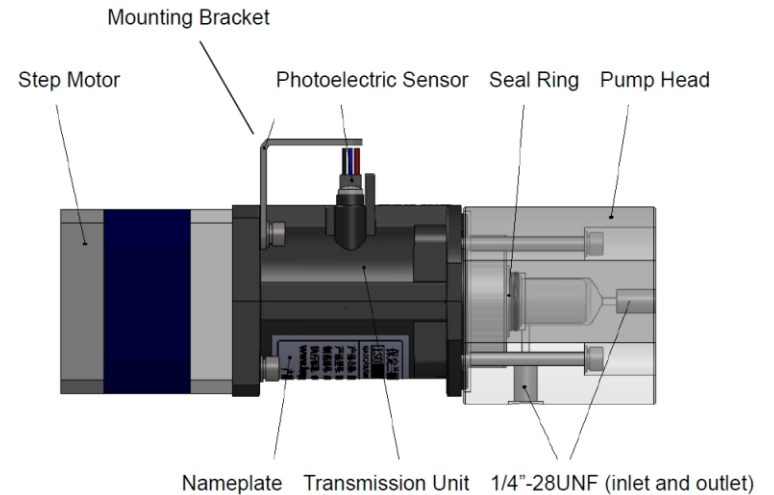
■ Outline Dimension: mm



1/4"-28UNF (2 pcs)



■ Main Structure



1.3 Function and Performance

1.3.1 Dispensing Function

The micro piston pump has 8 volumes: 25ul 50ul 100ul 250ul 500ul 1ml 2.5ml 5ml. Each volume pump can dispense full stroke or part of the stroke, depending on the control logic. For the minimal dispensing volume, please consult your distributor.

1.3.2 Piston stroke and speed

■ Rate stroke: 12.7mm

■ Stroke resolution:

For 2000 steps pump: stroke resolution is 0.00635 mm/step or 1 step

For 4000 steps pump: stroke resolution is 0.003175mm/step or 1 step

■ Speed:

For pump volume ≤ 1mL, speed ≤ 12.7mm/0.8s

For pump volume of 2.5mL, speed ≤ 12.7mm/1s

For pump volume of 5mL, speed ≤ 12.7mm/1.2s

1.3.3 Chemical corrosion resistance

Parts contacting with fluid has good chemical corrosion resistance

Piston material: Zirconia ceramic TZP, PEEK
Seal ring material: UHMW-PE, VITON
Pump head material: PMMA as standard, PEEK/PEI/other polymer material are optional

1.3.4 Pump pressure

No leakage under the working pressure 0~0.68Mpa (depends different pump volume)

1.3.5 Connection

The pipe is connected to pump through 1/4"-28UNF internal thread flat-bottomed port

1.4 Working Condition

■ The pump can't work alone, the external control circuit, pipe and valves will be needed

■ Working pressure: 0~0.68Mpa

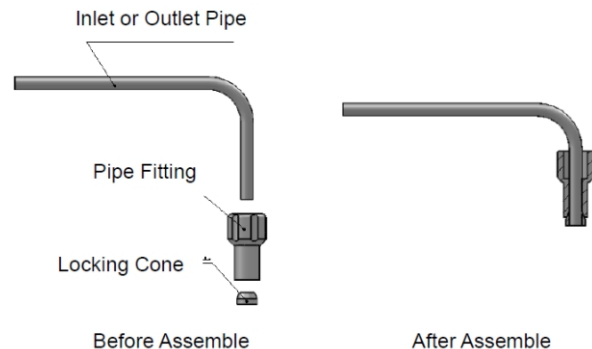
■ Operating condition: Temperature 5-40°C, Relative humidity: 20%~80%

2. Operation Instruction

2.1 Pipe Connection

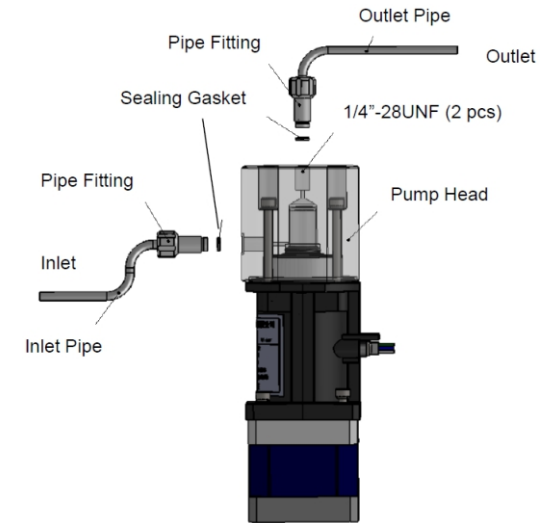
The pump connects inlet and outlet pipes through two 1/4"-28UNF internal thread holes Steps as below:

Step 1



The inlet and outlet pipes are inserted into the pipe fittings (with external thread) and locking cones. Make sure the end of pipe is flush with the locking cone.

Step 2:



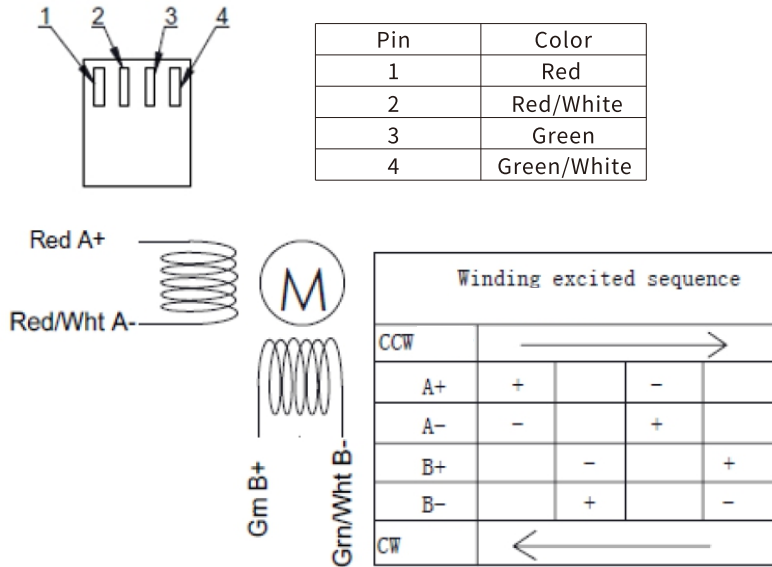
■ Put the gasket into 1/4" -28UNF hole. Make sure the gaskets lay on the bottom of the holes to ensure good sealing performance and protect the gasket from damage.

■ Put joint pipe from step 1 into the thread hole, tight the pipe fitting.

2.2 External Control Interface

2.2.1 Step Motor Interface

Step motor is plugged into external control circuit through 2510KF-4P plug.

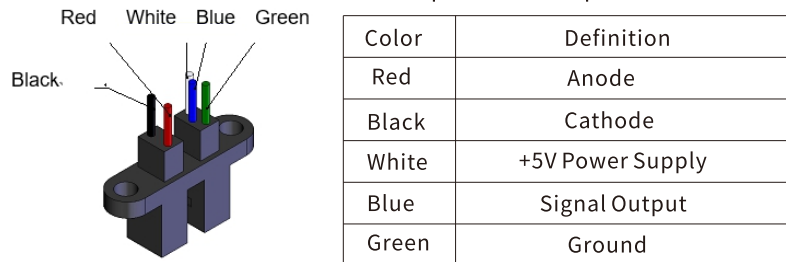


CCW: Pump aspirates
 CW: Pump dispenses

Motor Specification			
Step Angle	1.8°	Rated Voltage	3.0V
Phase	2	Rated Current/phase	1.2A
Insulation Resistance	100MΩ (500VDC)	Resistance/phase	2.5Ω±10%
Insulation Class	B	Inductance/phase	3.3mH±20%

2.2.2 Photoelectric Sensor Interface

Main function of photoelectric sensor: piston initial position detection.



Wiring instruction:

Wire Red: Anode, should be connected to power supply+. Power supply voltage should be between DC5V and DC24V. Before connecting the power supply, one current-limiting resistance should be connected between the power supply and the sensor. When the power supply voltage is +5V, the current-limiting resistance is about 300Ω. When the power supply voltage is +12V, the current-limiting resistance is about 1KΩ. When the power supply voltage is +24V, the current-limiting resistance is about 2KΩ.

Wire Black: Cathode, should be connected to power supply-.

Wire White: Logic Vcc of output signal. Voltage should be between 5V and 12V.

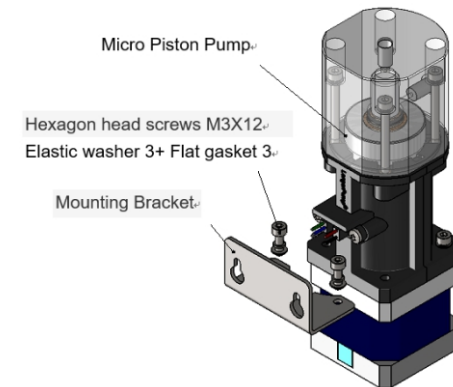
Wire Blue: Output signal (piston position signal), should be connected to customer's control system. When the piston is in the initial position, the output signal is low level voltage. When the piston is not in the initial position, the output signal is high level voltage.

Wire Green: Ground of the Logic Vcc.

2.3 Pump Mounting

2.3.1 Mounting Bracket on Pump

Mounting bracket is an option. Customer can use it if necessary.

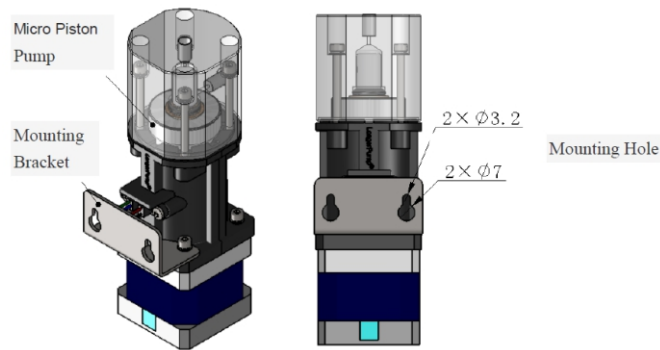


- Remove the two M3X12 hexagon head screws on the side of the photoelectric sensor.
- Mount the mounting bracket on the pump by using the two screws.

2.3.2 Mount the pump

The pump can be mounted on customer's equipment reliably and fast through the mounting bracket.

- Two $\phi 3.2$ mounting holes are needed on customer's equipment
- Mount the pump on customer's equipment through the mounting bracket. Refer to below picture.



3. Transportation and Storage

The micro piston pump is precision product., especially the pump head. Please avoid shocks during the transporting, storage and operation.

4. Repair and Maintenance

- 1) Check the pump regularly. Clean the pump timely if there is leakage,.
- 2) Life expectancy is 10 million cycles. Beyond 10 million life cycles, the seal ring may not keep sealing function. And this will lead fluid leakage, then damage the equipment.
- 3) Don't operate the pump without fluid.
- 4) Don't transfer those organic solvents that easily erode the pump, or expose pump in the related erosive environment.

5)The pump and the pipe can be cleaned by below solvents

- Diluted detergent
- Diluted HCL or NaOH solution

Clean pump and pipe with distilled water or deionized water is also needed after the solvent clean.

6)Please contact with us or distributor if the pump can't work. Don't open and repair it by yourself.

5. Warranty

The warranty period for this product is one year. If repair or adjustment is necessary within the warranty period, the problem will be corrected at no charge if it is not due to misuse or abuse on your part, as determined by the manufacturer. Repair costs outside the warranty period, or those resulting from product misuse or abuse, may be invoiced to you. Please contact with sales before shipping back the products.

6. Contract Information

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