

Watermark Projects

Chemical Dosing Specialists

Dosing Pump Operational Manual



Pump Range WMPS0110 - WMPS0408 - WMPS0607 - WMPS0805 - WMPS1204 - WMPS1502 - WMPS2001



<u>1- Product Introduction</u>	2
1.1 Product Overview	2
1.2 Technical Parameters	2
1.2.1 General Parameters	2
1.2.2 Performance Parameters	3
1.2.3 Installation Dimensions	3
1.3 Operation Instructions	4
<u>2- Installation</u>	6
2.1 Precautions	6
2.1 Installation	6
2.2 Tube Connection	6
2.3 Power Connection	6
<u>3- Operation and Setting</u>	7
3.1 Start-up	7
3.2 Setting	7
3.3 Signal Setting Operation Manual	7
<u>4- Maintenance and Repair</u>	7
4.1 Maintenance	7
4.2 Diaphragm Replacement	8
<u>5- Troubleshooting</u>	9
<u>6- Main parts</u>	10

Product Introduction

1.1 Product Overview

The Watermark Projects electronic metering pump is an electromagnetic driven diaphragm pump. The flow rate can be adjusted by the pump speed under the control of the microprocessor. It is a very reliable digital metering pump suitable for a range of applications. The diaphragm reciprocates in the pump head with the force of the electromagnet, causing the change of volume and pressure, which makes the check valves open and close automatically. The liquid is drawn and discharged alternately. The rated output volume of this electronic diaphragm metering pump is 1-20 l/h, and its corresponding maximum discharging pressure is 10-1bar. The LED screen displays the current pump settings.

1.2 Technical Parameters

1.2.1 General Parameters

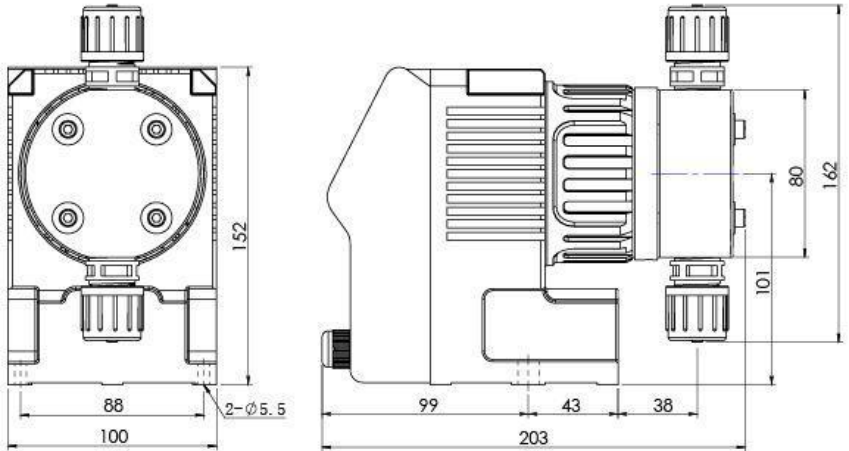
Metering Precision :	± 2% in stable condition
Allowable Ambient Temperature :	-10°C ~ +45°C
Power :	AC 220V or AC110V±10%
Frequency :	50Hz ~ 60Hz
Protection Degree:	IP65
Insulation Degree:	F
Outer Connection Control :	4-20mA or impulse Signal Pulse Width : 20ms
Connection Load :	5V, 0.5mA

Input Power	
Stroke Frequency:	Rated Output:
120strokes/min	20W
180strokes/min	28W

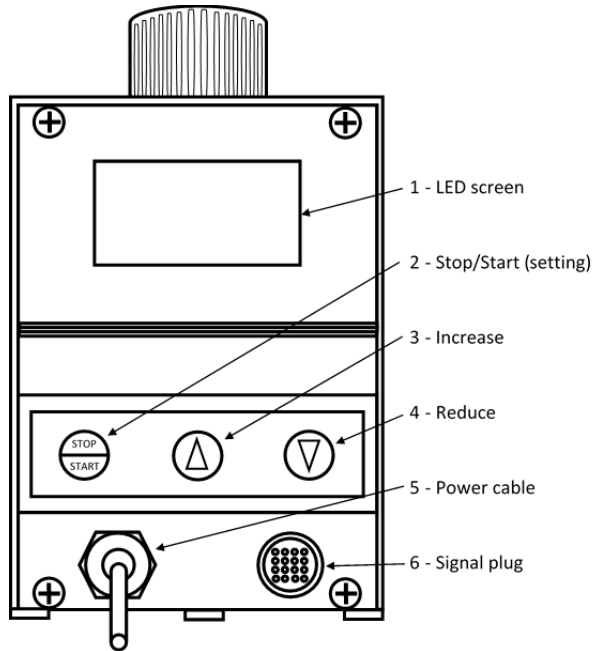
1.2.2 Performance Parameters

Item No.	Flow (L/H)	Pressure (Bar)	Pulse frequency (Stroke/min)	Caliber (mm)
WMPSP0110	1	10	0~100	5
WMPSP0408	3.8	7.6	0~150	5
WMPSP0607	6.3	6.8	0~140	5
WMPSP0805	8	5	0~110	5
WMPSP1204	12	4	0~130	5
WMPSP1502	15	2.5	0~160	5
WMPSP2001	20	1	0~170	5

1.2.3 Installation Dimensions



1.3 Operation Instructions



Stop State: 0 %

Running State:

SET: 100 % MANUAL

FLOW : 12.88L/H AUTO

Volume: 1999.9L REMOTE

Setting State: 180



2 Installation

2.1 Precautions

- If the pumped medium cannot be mixed with water, the pump should be cleaned before use, as there may be some water present due to factory testing.
- If stop valve is equipped at the outlet of the metering pump, when the stop valve is closed, and the pump operated the counter pressure may exceed the maximum pressure limit, which may rupture the pipe or cause damage to the pump. To avoid such accidents, we recommend installing a relief valve.
- Use the correct tubing sleeve, end cap and tube to ensure the connector is stable and durable.

2.2 Installation

- The inlet and outlet must be installed vertically.
- The inlet tubes should not be too long, it is recommended that the foot valve is 10-30mm above the bottom of the tank (it can be 50mm if the liquid has heavier solids).
- Tighten the screws to fix the pump in the position.
- Install the outlet tubes and injection valve (back pressure valve should also be installed if it is open discharging).

2.3 Tube Connection

- Route the hose through the union and the clamp.
- Cut the hose to a suitable length and insert the nozzle as deep as possible.
- Press the clamp and tighten the union to the valve body.

2.4 Power Connection

- Make sure the input voltage is consistent with the grade marked on the nameplate.
- Insert the plug to the correct socket.

3 Operation and Setting

3.1 Start-up

- Open all the control valves on the input and output tubes. Open the bypass valves to discharge air, if the pump is with injection valve or pressure regulating valve. Or loosen the union to discharge the air.
- Start the pump and check if the liquid comes out of the outlet tube or the bypass valve.
- Close the bypass valve when the pump is working normally.


3.2 Setting


- Adjust the frequency using buttons 3 or 4 to control the flow speed (from 0-100%).

3.3 Signal Setting Operation Manual



- When the pump is stopped (the display will read 0 on the screen), the “stop/start” key will start the pump. When the pump is on, if the “stop/start” key is pressed again, it will stop. Holding down the “stop/start” key will switch to Parameter Settings.

Parameter setting:



Hold  key to run into the parameter setting.



Choose parameter from 0-8 by pressing .



0: Machine No.;

1: Set the max pulses value per minute (10-180), change the value by button   (on the control panel)

2: Set the minimum pulses per minute;

3: Flow rate input after calibration. This value is 10 times of the flow. For example, if the flow rate is 6.1L/h, input 61, change the value by button   on the control panel;

4: Setting flow rate in percentage; Input the flow rate in percentage by button   (suggest 30%-100%) ;

5: Remote control: 0 for stopping the remote function; 1 opening the remote function; change by button  

- 6: Function option: 0 for manual control;1 for pulse signal function multiply; 2 for pulse signal function divider;
3 for 4-20mA signal function; 4 and 5 to be developed;
7: RS485 communication interface;
8: No Function;
9: Show 4-20mA input value

Wire connection:

1. for RS485 B terminal (green)
2. for RS485 A terminal (red)
3. for ground line (black)
4. for impulse input (blue)
5. for ground line (yellow)
6. for remote control (white)
7. for 4-20mA input (grey)

4. Maintenance and Repair

Warning 

- Electrical maintenance must be carried out by qualified electrician.
- Before maintenance, unplug the power socket or cut off the power. If there is a relay, it should be cut off. Ensure there is no power during maintenance.
- During maintenance, first release the pressure from the tubes, and clean the pump head. Don't use corrosive liquids.
- If medium is a hazardous substance, please check the performance parameters of the medium. Discharge and wash the pump head before maintenance.

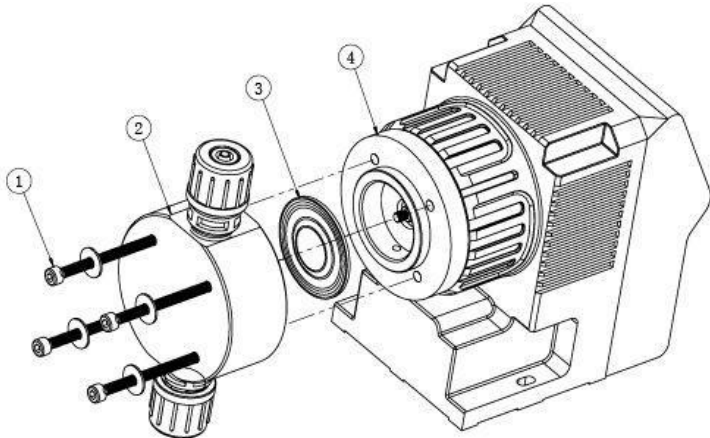
4.1 Maintenance

Strictly check the following items during maintenance;

- Pump head bolts (make sure they are firmly tightened)
- Inlet and outlet tubes (make sure they are firmly connected)
- Pump head and valves (make sure they are firmly connected)
- Leakage hole on the adapter base (the diaphragm may be broken if there is visible leakage).

4.2 Diaphragm Replacement

- Cut off the power, loosen the bolts ①;
- Pull out the pump head ② and bolts ① from pump body;
- Turn the diaphragm counter clockwise ③ and turn it off;
- Take off the adapter base ④
- Screw on a new diaphragm ③ clockwise as tight as possible;
- Put back the adapter base ④ with the drain hole oriented downward.
- Remount the pump head. Take care of the direction of inlet and outlet check valves.



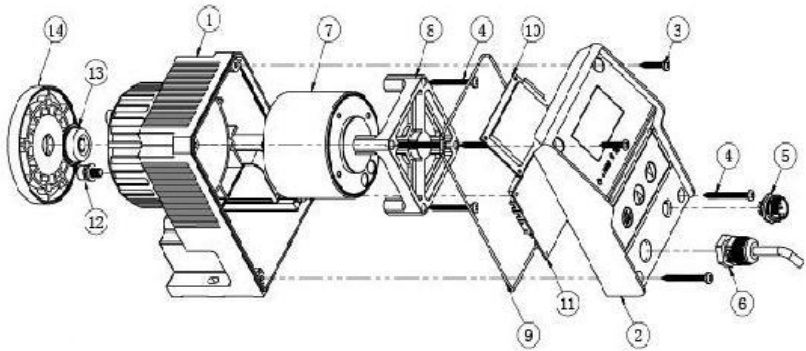
Warning

- Leakage hole on the adapter base must be facing downward.
- Recheck the screws on the pump head, tighten if necessary.

5. Troubleshooting

Problem	Possible Cause	Solution
Pump cannot start	Power failure	Check the power supply
	Fuse blowout	Change fuse
	Circuit is interrupted	Find the 'off' position
	Wrong connecting wire	Re-check diagram
	Pipe blockage	Open valve and clean
No Flow	Not working	Check the power supply
	Supply tank is empty	Fill supply tank
	Pipe blockage	Clean pipe
	Closed valve	Open valve
	Granule block off check valve	Check valve and clean
	Air in the pipe	Release air
	Cavitations	Increase the pressure of the suction and shorten the suction pipe
	Problem of priming	Re-prime and check for leakage
	Filter blockage	Disassemble filter, clean or replace
	Stroke set to '0'	Increase stroke strength
Low Flow	Valve broken or dirty	Clean or replace
	Calibration is wrong	Evaluate and adjust accordingly
	Medium viscosity is too high	Adjust temperature of product or reduce viscosity. Alternatively: Increase pump and pipeline size
	Medium cavitations	Increase suction pressure and shorten suction pipe
Flow becomes gradually lower	Valve leakage	Clean or replace valve
	Suction pipe leakage	Find leakage position and repair/replace
	Filter blockage	Disassemble filter, clean or replace
	Medium is changed	Check viscosity and other parameters
	Blowhole of supply tank is blocked	Open blowhole
Flow is unstopable	Suction pipe leakage	Find leakage position and repair/replace
	Medium cavitations	Increase suction pressure and shorten suction pipe
	Valve blockage	Clean or replace

6. Main Parts



1	Pump Body A	8	Frame
2	Pump Body B	9	Seal Ring
3	Screw (short)	10	Screen
4	Screw (long)	11	PCB
5	Signal Plug	12	Hexagon Screw
6	Power Cable	13	Protective Cover
7	Electromagnet	14	Adaptor Base



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