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Variable Speed Pneumatic Pump

2026年5月

LONGER®
PRECISION FLUID TRANSFER

PH600 Pneumatic Peristaltic Pump Operating Manual



Baoding Longer Precision Pump Co.,Ltd.

A **Halma** company

Contents

Contents 1
1. Product Overview 2
2. Unpacking 2
3. Technical Specifications 3
4. Applicable Pump Head and Tubing 5
5. System Structure 6
6. Outline Dimensions 8
7. Pump Head Installation and Removal 9
8. Pump Operating Instructions 14
9. Maintenance Instructions 16

1. Product Overview

PH600 is a pneumatic peristaltic pump series powered by compressed air and driven by an pneumatic motor, eliminating the need for electrical components. It features simple operation, reliable performance, and maintenance-free use. The oil-free motor required no lubrication, minimizing the risk of contamination in the working environment. The pump is ideal for applications where electricity is unavailable or impractical. During operation, the motor is continuously cooled by the compressed air, preventing overheating. In the event of overload, it will automatically stall without damage, making it particularly suitable for heavy-duty applications and high-temperature or high-humid environments. The pump speed is controlled via a throttle valve, while a manual directional valve enables forward and reverse operation, providing greater flexibility for various piping configurations.

- A full stainless steel housing offers excellent corrosion resistance, moisture resistance, and allows for direct washdown with water.
- PH600-1 is compatible with YZ1515x, YZ2515x, YZII15, YZII25, YZ15-13X, YZ25-13X and KZ25 pump heads.
- PH600-2 is compatible with YZ35 and KZ35 pump heads.
- Pump speed range: 150-600rpm (actual speed varies with supply air pressure and load conditions)
- The recommended max speed is 600rpm.

Note:
the pneumatic components inside the pump are sensitive to dust, therefore the pump is not suitable for dusty environments. When used in potentially explosive atmospheres, the pump housing must be properly grounded prior to operation to prevent the buildup of static electricity.

2. Unpacking

(1) Remove the pump and the accessories from the shipping carton.
(2) Check the packing list to confirm all accessories are included.
(3) In case of any questions, please contact Longer Pump or the local distributor.

The standard package contains the following items

Item	Name	Unit	Descriptions
1	Pneumatic peristaltic pump	1	
2	Pump head	1	Select an appropriate pump head based on customer requirements.
3	Tubing	1	Select an appropriate tubing based on customer requirements.
4	Pump drive manual	1	Operating manual of the PH600
5	Pump head manual	1	Operating manual of the selected pump head

3. Technical Specifications

Item	Specification		Descriptions
Product model	PH600-1	PH600-2	
Applicable pump head	YZ1515x,YZ2515x, YZII15,YZII25,KZ25	YZ35, KZ35	
Flow range	10-5500mL/min	1.5L/min- 11L/min	
Pump control	Stepless speed control via throttle valve	Stepless speed control via throttle valve	
Direction control	The pump direction is switched via a 3-position, 4-way manual directional valve.	The pump direction is switched via a 3-position, 4-way manual directional valve.	Left: counterclockwise Right: clockwise Center: stop

Item	Specification		Descriptions
Product model	PH600-1	PH600-2	
Speed range	150-600rpm (When the pressure gauge indicates the rated pressure of 0.6 MPa, the throttle valve is fully open, and the load is 1.5 Nm, the pump speed is 600 rpm. The pump speed will vary with changes in air pressure or load. The speed will be unstable when below 150 rpm)	150-600rpm (When the pressure gauge indicates the rated pressure of 0.6 MPa, the throttle valve is fully open, and the load is 3 Nm, the pump speed is 600 rpm. The pump speed will vary with changes in air pressure or load. The speed will be unstable when below 150 rpm)	
Maximum air consumption	220L/min	260L/min	The air consumption at the speed of 600rpm
Rated air supply pressure	0.6MPa	0.6MPa	Displayed on the pressure gauge of the pump. Recommended maximum pressure: 0.7 MPa.
Allowable air supply pressure	0.4-0.8MPa	0.4-0.8MPa	Displayed on the pressure gauge of the pump. Recommended maximum pressure: 0.7 Mpa.
Air supply tubing	OD*ID: 10*6.5 PU tubing	OD*ID: 12*8 PU tubing	
Environment temperature	0-60°C	0-60°C	
Dimensions (L*W*H)	354*223*243 (mm)	386*243*243 (mm)	
Weight (drive only)	17Kg	18Kg	
Drainage of the Filter-Regulator unit	Differential pressure drainage Manual drainage	Differential pressure drainage Manual drainage	A 16# silicone tubing can be connected to the drain port for the water discharge
Noise	<85dB	<85dB	

4. Applicable Pump Head and Tubing

Applicable Pump Head and Tubing for PH600-1

Pump Head	Silicone Tubing	PharMed® Tubing	Flow Rate with Silicone tubings for Reference (150rpm-600rpm)
(1、2) x YZ1515x/ YZ II 15/ YZ15-13X	13#、14#、19#、16#、25#、17#、18#	13#、14#、19#、16#、25#、17#、18#	10mL/min-2200mL/min
3 x YZ1515x/ YZ II 15/ YZ15-13X	13#、14#、19#、16#、25#、17#、18#	13#、14#、19#、16#	10mL/min-2200mL/min
4 x YZ1515x/ YZ II 15/ YZ15-13X	13#、14#、19#、16#、25#、17#、18#	13#、14#	10mL/min-2200mL/min
(1、2) x YZ2515x	15#、24#	15#、24#	240mL/min-1600mL/min
(3、4) x YZ2515x	15#、24#	Not recommended	240mL/min-1600mL/min
YZ II 25/ YZ25-13X	15#、24#、35#、36#	15#、 24#、35#、36#	240mL/min-3000mL/min
2 x YZ II 25/ YZ25-13X	15#、24#、35#、36#	15#、24#	240mL/min-3000mL/min
KZ25-13-A	15#、24#、35#、36#	15#、24#、35#、36#	450mL/min-6000mL/min
KZ25-13-A+KZ25-13-B	15#、24#、35#、36#	Not recommended	450mL/min-6000mL/min

Applicable Pump Head and Tubing for PH600-2

Pump Head	Silicone Tubing	PharMed® Tubing	Flow Rate with Silicone tubing for Reference (150rpm-600rpm)
YZ35-13-A	73#, 82#	73#, 82#	1.5L/min-11L/min
YZ35-13-E	26#	26#	1L/min-4L/min
KZ35-13-A	26#, 73#, 82#	26#, 73#, 82#	1L/min-11L/min

5. System Structure

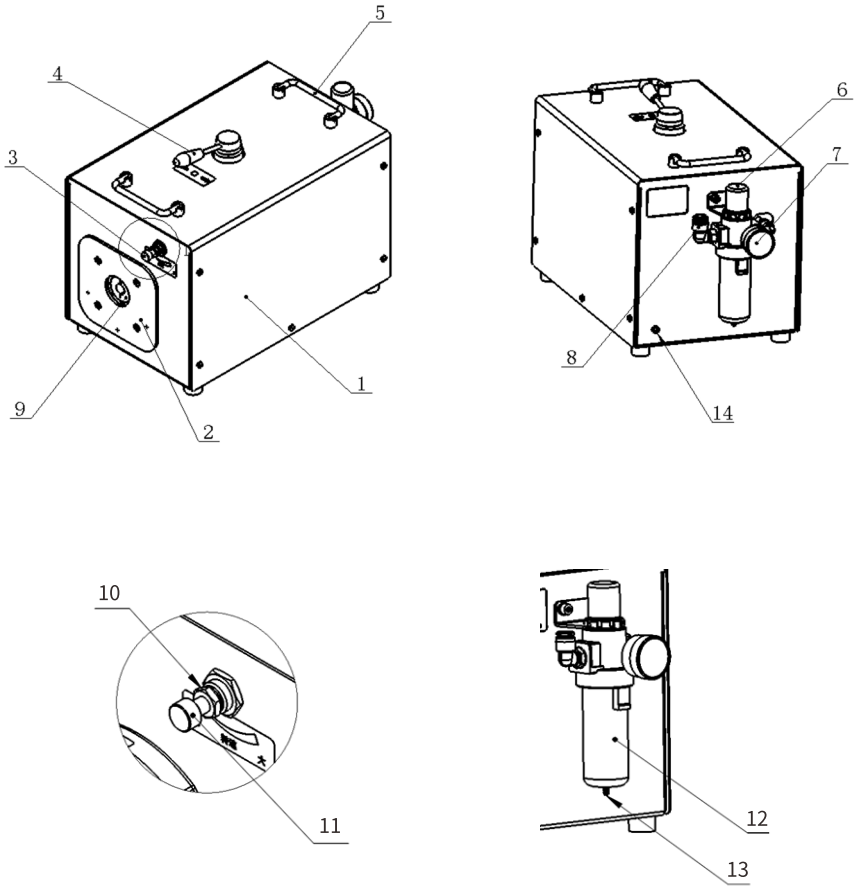


Figure 1: PH600 Structure

Table 1：PH600-1 Key Components			
Item NO.	Name	Material	Descriptions
1	Housing	304ss	
2	Pump head mounting plate	304ss	The pump head will be mounted on this plate.
3	Throttle valve		To control the pump speed: turn the valve clockwise to decrease the pump speed, turn the valve counterclockwise to increase the pump speed.
4	Directional valve		To set the pump direction. Left: counterclockwise Right: clockwise Center: stop
5	Carrying handle	304ss	
6	Pressure regulator		To adjust the air supply pressure (0.4-0.8MPa)
7	Pressure gauge		To indicate the air supply pressure (MPa)
8	Air supply connector		To connect the air supply to the pneumatic motor
9	Pump head coupling	Anodized aluminum	To connect the pump head shaft.
10	Locking nut		Tighten clockwise to secure the adjustment knob and prevent loosening. Loosen counterclockwise to allow rotation of the adjustment knob for pump speed adjustment.
11	Adjustment knob		Turn the knob clockwise to decrease the pump speed, turn the konb counterclockwise to increase the pump speed.
12	Water collection cup	PC	To collect moisture filtered from the air supply. It should be drained regularly.
13	Drain port		A 16# (ID 3.2mm, W.T. 1.6mm) silicone tubing can be connected to the drain port for the water discharge
14	Grounding screw		The PH600-2 is equipped with this grounding screw for connecting a grounding wire to dissipate static electricity. The PH600-1 needs to be mounted with a grounding screw on the housing.

6. Outline Dimensions

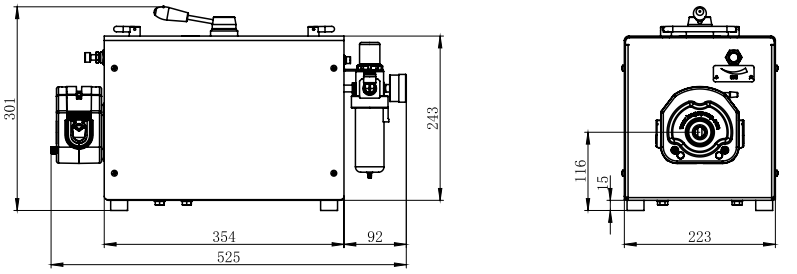


Figure 2: Outline Dimensions of PH600-1+KZ25

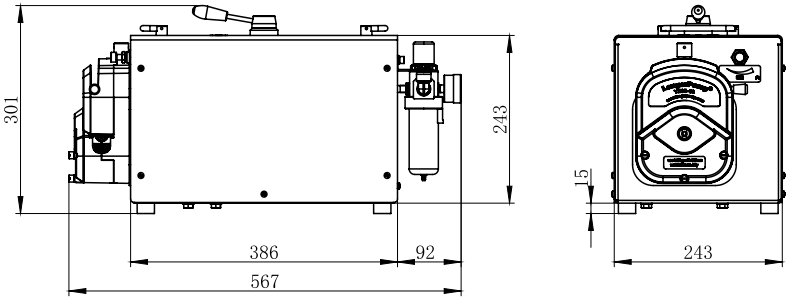


Figure 3: Outline Dimensions of PH600-2+YZ35

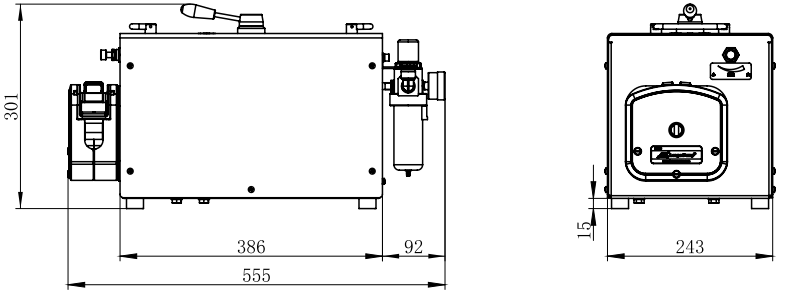
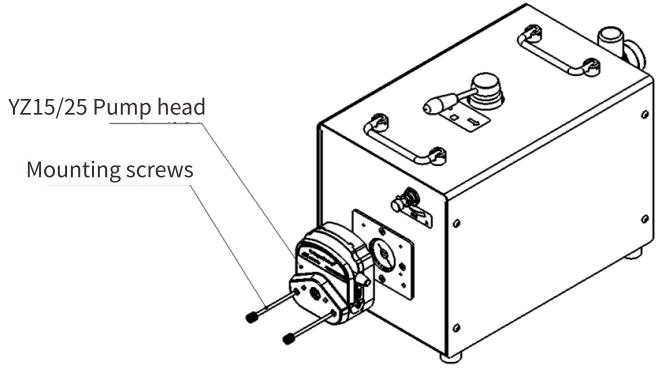


Figure 4: Outline Dimensions of PH600-2+KZ35

7. Pump Head Installation and Removal

Tubing loading: refer to the pump head operating manuals

7.1 Installation of YZ15/YZ25 Single Head



Installation steps:

1.Insert the tang of the pump head shaft into the slot of the pump head coupling.

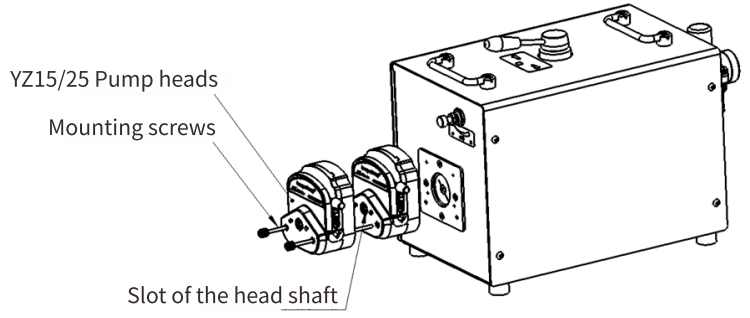
2.Tighten the 2 mounting screws.

Removal steps:

1.Loosen the 2 mounting screws.

2.Remove the mounting screws and the pump head.

7.2 Installation of YZ15/YZ25 Double Heads



Installation steps:

1.Insert the tang of the first pump head shaft into the slot of the pump head coupling.

2.Insert the tang of the second pump head shaft into the slot of the first pump head shaft.

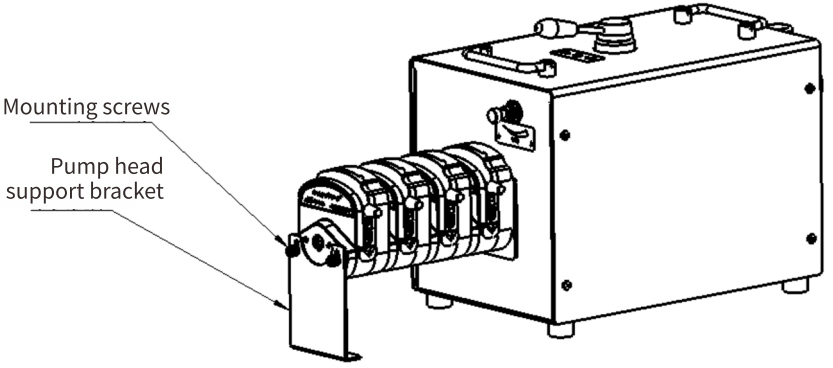
3.Tighten the 2 mounting screws.

Removal steps:

1.Loosen the 2 mounting screws.

2.Remove the mounting screws and the pump heads.

7.3 Installation of YZ15/YZ25 Three or Four Heads



Installation steps：

1.Insert the tang of the first pump head shaft into the slot of the pump head coupling.

2.Insert the tang of the second pump head shaft into the slot of the first pump head shaft.

3.Insert the tang of the third pump head shaft into the slot of the second pump head shaft. (Insert the tang of the fourth pump head shaft into the slot of the third pump head shaft.

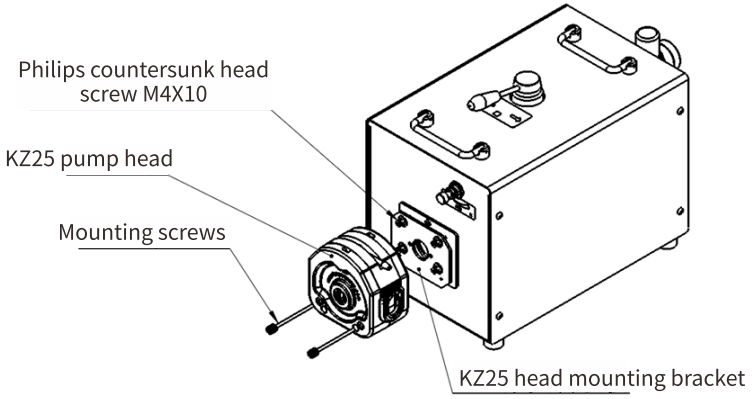
4.Place the pump head support bracket according to the drawing and tighten the 2 mounting screws.

Removal steps:

1.Loosen the 2 mounting screws.

2.Remove the mounting screws, support bracket and the pump heads.

7.4 Installation of KZ25 Pump Head



Installation steps:

1.Mount the KZ25 mounting bracket onto the pump drive PH600-1 via 4 Philips countersunk head screws M4X10.

2.Insert the tang of the pump head shaft into the slot of the pump head coupling.

3.If there are 2 KZ25 pump heads, insert the tang of the second pump head shaft into the slot of the first pump head shaft.

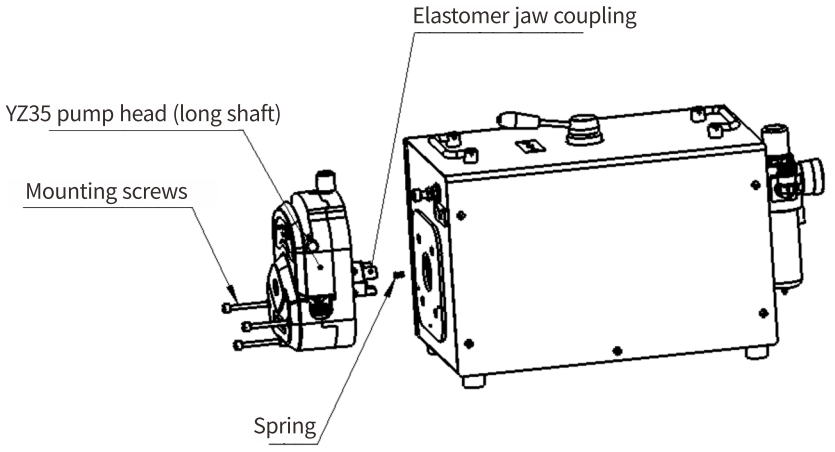
4.Tighten the 2 mounting screws.

Removal steps:

1.Loosen the 2 mounting screws.

2.Remove the mounting screws and the pump heads.

7.5 Installation of YZ35 Pump Head



Installation steps:

1.Install one half of the elastomer jaw coupling (16 mm bore) onto the pump head shaft, leaving a gap of approximately 6 mm from the end face of the pump head. Tighten the jaw coupling set screw.

2.Carefully insert the jaw coupling of the pump head into the other half of the jaw coupling on the drive unit. (Note: the spring inside the drive-side coupling is magnetically attached to the shaft; do not lose it. The spring is used only for static electricity dissipation.)

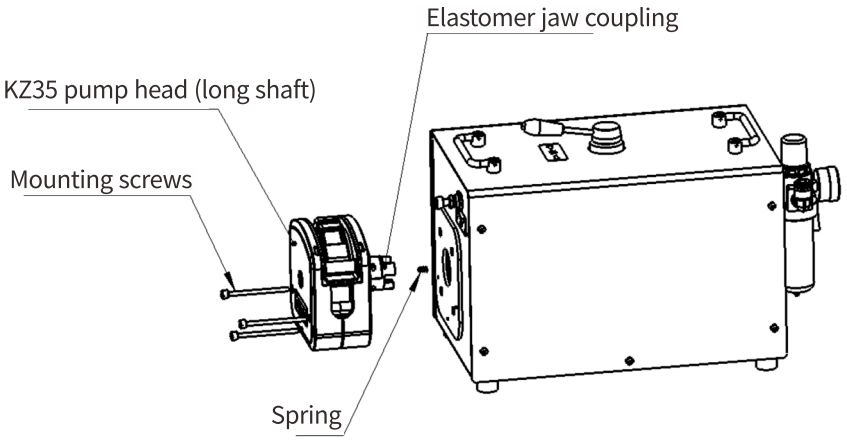
3.Push the pump head fully into position and secure it by tightening the three pump head mounting screws.

Removal steps:

1.Loosen the 3 mounting screws.

2.Remove the mounting screws and the pump head. Do not lose the spring.

7.6 Installation of KZ35 Pump Head



Installation steps:

1.Install one half of the elastomer jaw coupling (16 mm bore) onto the pump head shaft, leaving a gap of approximately 6 mm from the end face of the pump head. Tighten the jaw coupling set screw.

2.Carefully insert the jaw coupling of the pump head into the other half of the jaw coupling on the drive unit. (Note: the spring inside the drive-side coupling is magnetically attached to the shaft; do not lose it. The spring is used only for static electricity dissipation.)

3.Push the pump head fully into position and secure it by tightening the three pump head mounting screws.

Removal steps:

1.Loosen the 3 mounting screws.

2.Remove the mounting screws and the pump head. Do not lose the spring.

8. Pump Operating Instructions

8.1 Initial Trial Operating

a) Ensure the pump head and tubing are correctly installed.

b) Ensure the directional valve is in the center (stop) position.

c) Turn the throttle valve fully clockwise to close the air supply.

d) Set the pressure regulator to the minimum position: first pull up the knob, then turn it fully counterclockwise.

e) Connect the air supply: For PH600-1, use tubing with an outer diameter of 10mm and an inner diameter of 6.5mm to connect to the air supply quick connector (item 8 in figure 1). For PH600-2, use tubing with an outer diameter of 12mm and an inner diameter of 8mm. Ensure the tubing is fully inserted into the quick connector and securely locked in place. It should not come loose when pulled.

f) Turn on the air supply to provide air to the Filter-Regulator unit. The supply air pressure should be maintained between 0.65Mpa and 0.9Mpa. Insufficient pressure will result in reduced pump speed, may not reach its maximum speed.

g) Adjust the supply air pressure: pull up the pressure regulator knob and slowly turn it clockwise until the pressure gauge indicates 0.6 - 0.65Mpa. Push the knob down to lock it in place.

h) Trial operating: turn the directional valve to the left position for counterclockwise running, or to the right position for clockwise running.

i) Speed adjustment: loosen the throttle valve locking nut by turning it counterclockwise. Slowly rotate the adjustment knob counterclockwise while observing the pump running direction and speed. Continue adjusting until the desired speed is reached.

j) Once the speed is set, tighten the locking nut clockwise to secure the adjustment knob and prevent unintended changes due to vibration or accidental operation.

k) Turn the directional valve to the center position to stop the pump. Check for any air leakage. If leakage is detected, verify that the air tubing is properly connected.

8.2 Normal Operating after Trial

1.Start the pump: Set the directional valve to the center (stop) position. Turn on the air supply, then move the directional valve to the left for counterclockwise running or to the right for clockwise running. The pump will run at a speed corresponding to the throttle valve setting. Adjust the speed using the throttle valve: turn clockwise to decrease the speed, turn counterclockwise to increase the speed.

Note:

If the pump has been idle for a long period, set the throttle valve to the minimum speed position by turning it fully clockwise before starting. After startup, gradually increase the speed by adjusting the throttle valve to avoid potential accidents caused by sudden high-speed operation.

2.Stop the pump: Move the directional valve to the center position to stop the pump. For long-term shutdown, first turn off the air supply, then move the directional valve to the center position to release internal pressure.

3.Drainage of the Filter-Regulator unit: During long-term operation, moisture filtered from the air supply accumulates in the water collection cup and should be drained regularly. The supplied Filter-Regulator unit supports both differential pressure drainage and manual drainage.

Differential pressure drainage: turn off the air supply and allow the internal pressure to be released. The water in the collection cup will then automatically drain from the drain port at the bottom of the cup. A drain tubing can be connected to the drain port to direct the discharged water to a desired location. (Recommended: 16# tubing with ID 3.2mm x W.T. 1.6mm)

Manual drainage: When the air supply is on, push up the drain fitting at the bottom of the water collection cup to release the water. The water will then drain from the drain port.

4.Warm-up: At the start of each shift or when the ambient temperature is low, the motor may experience higher friction, resulting in a lower initial speed. Allow the pump to run for 1–3 minutes for warm-up; the speed will increase after warming up. After warm-up, check whether the speed is appropriate to avoid excessively high speed during normal operation.

5.Release internal pressure: For long-term shutdown, first turn off the air supply, then move the directional valve to the center (stop) position to release internal pressure. If the air supply is disconnected afterward, it is recommended to move the directional valve to the left or right position for approximately 5 seconds to release any remaining internal pressure, and finally return it to the center (stop) position.

9. Maintenance Instructions

1) The pump should be installed vertically on a stable and level surface. Do not install it in a tilted position (tilt angle must not exceed 15°, otherwise uneven motor lubrication may occur, leading to reduced service life).

2) Before connecting the air tubing to the pneumatic drive unit, use compressed air to purge moisture, debris, and other contaminants from the air tubing.

3) In case of malfunction or abnormal noise during operation, stop the pump immediately for inspection and maintenance.

4) When the pump is stopped for each non-use period, it is recommended to open the pump head and release the tubing tension to maximize tubing service life.

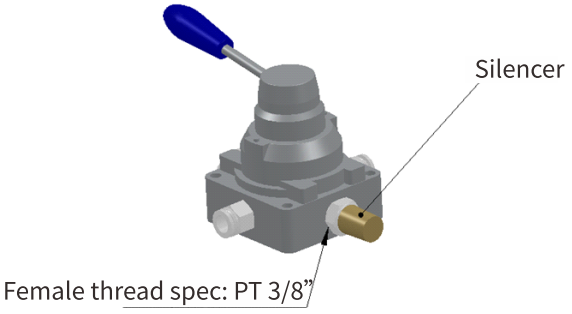
5) This pump is equipped with a maintenance-free pneumatic motor and does not require lubrication.

6) For long-term shutdown, disconnect the air supply, drain the water from the filter unit, and release internal pressure.

7) After speed adjustment, if a fixed speed is required, it is recommended to tighten the throttle valve locking nut to prevent speed changes caused by vibration or accidental operation.

8) Recommended air supply pressure is 0.65–0.9 MPa, with a rated pressure of 0.6MPa. If the throttle valve is fully open but the speed is still insufficient (recommended maximum speed ⩽ 600 rpm), the inlet air pressure may be appropriately increased. The allowable pressure range is 0.4–0.8 MPa, and must not exceed 0.8 MPa.
9) The silencer of this pump is installed inside the housing, and the motor exhaust air is discharged into the workshop where the pump is located. If exhaust discharge into the workshop is not permitted, an additional extension air hose should be connected to vent the exhaust air outside the workshop. As the motor is maintenance-free and does not require lubrication, the exhaust air contains only limited contaminants, which are significantly lower compared with lubricated pneumatic motors.

Steps for connecting the extension air hose:
a.Remove the stainless steel housing.
b.Remove the silencer.
c.Install the air hose fitting. For PH600-1, it is recommended to use hose with OD × ID of 10 mm × 6.5 mm; for PH600-2, hose with OD × ID of 12 mm × 8 mm is recommended. (Port specification: PT 3/8” thread.)
d.Connect the extension air hose.



10) The water collection cup of the Filter-Regulator unit must be drained regularly, and cleaning with organic solvents is strictly prohibited.
11) The maximum pump speed varies depending on supply air pressure and load conditions. The recommended maximum operating speed is 600 rpm. If a smaller pump head or tubing is used, the maximum speed may exceed 600 rpm; however, users must follow the maximum safe speed recommended for the pump head and must not exceed it. Otherwise, the service life of the pump head and tubing may be significantly reduced.
12) After a long shutdown period, when restarting the pump, ensure that the directional valve is in the center (stop) position and the throttle valve is set to the minimum speed position before supplying air. After startup, gradually increase the speed to avoid accidents caused by sudden high-speed operation.
13) Do not touch the pump head rollers while the pump is running at any time. Before any maintenance, disconnect the air supply and ensure the directional valve or throttle valve is closed.
14) The pump base is made of rubber material. If used in flammable or explosive environments, the pump housing must be reliably grounded separately to prevent static electricity accumulation. The grounding resistance must be less than 0.1 Ω.
15) The maximum speed and load capacity of the pump are measured at an ambient temperature of 20°C. If the ambient temperature decreases, both speed and load capacity may also decrease.