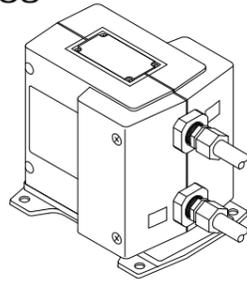


Operation Manual -Process Pump PA3000 Series-

Read this manual carefully and thoroughly before using.

For construction and specification etc. of this product, refer to drawing and catalogue. The content of this operation manual is subject to change without prior notification.



1. Precautions

Warning

Environment

When using hazardous fluid, take measures to keep people away from the pump. The occurrence of external leakage could result in serious injury.

External leakage of transported fluid

Fluid might leak externally due to life of diaphragm, and this could result in human injury or equipment damage. Take measures against leakage.

Caution

Quality of supply air

Place filter with filtration 5 μm. Use air having better quality than No.B mentioned in catalogues of Air cleaning Equipment.

If a large amount of foreign matter comes from air source (carbon powder, etc.), take measures such as using special lubricant, which generates less carbon powder or using mist-separator together with this pump. Smooth operation might be hindered by resistance increased due to foreign matter piled up.

Quality of transported fluid

When using the pump to transport liquid which contains solid matter, install strainer mount the filter with filtration of 0.2mm at least on IN port.

Diaphragm should be changed before the life indicated. If diaphragm should be damaged, transported fluid will leak into the pump and damage inner components.

Calculation method of diaphragm life. (varying with applications)

$$\text{Life span (day)} = \frac{0.032 \text{ liter} \times \text{Max. indicated cycle(ex.)}}{\text{Flow (l/min)} \times \text{operating time per day (hour)} \times 60 \text{ (min.)}}$$

Model	Max. indicated cycle
PA3 10	100 million times
PA3 20	50 million times

2. Installment

Caution

Mounting

Mount in horizontal posture. Otherwise, internal parts may not operate smoothly and liquid is not transported. Tighten mounting bolts(4pcs.) securely to avoid breakage of mounting bracket due to vibration.

Piping

For piping to the port FLUID IN or FLUID OUT, tighten it securely with tooling such as spanner. Use flexible tube, not steel pipe to avoid load applied to the ports. Excessive load applied to the inner seal could cause liquid leakage.

Flush the piping thoroughly. When installing piping or a fitting into a port, ensure that sealant material and cutting chips of threads do not enter piping. When using sealant tape, leave the first 2 threads exposed at the end of piping/fitting.

Tightening torque

Under-tightening causes liquid or air leakage while over-tightening causes breakage of threads and other parts. Refer to the table below for appropriate tightening torque.

Connecting port		Correct tightening torque(N·m)
Rc(PT)1/4	Metal	12 ~ 14
Rc(PT)3/8	Metal	12 ~ 14

< Description and purpose of each port >

- Suction port (FLUID IN) Sucking transported fluid
- Discharge port (FLUID OUT) Discharging fluids sucked into the pump. Connect to the discharge port.
- Pilot air supply port (AIR SUP) Supplying pressure set by regulator. Use clean air.
- Pilot air exhaust port (AIR EXH) Exhausting pilot air.
- Reset For resuming of normal operation after momentary stoppage.

3. How to use

Caution

[Start & Stop]

See Circuit Example 1

Connect air piping to the port AIR SUP, and transported fluid piping to the suction port FLUID IN and the discharge port FLUID OUT respectively.

Set pilot air pressure in the range of 0.2MPa and 0.7MPa(2 to 7.1 kgf/cm²) by using regulator. Keep ball valve open on the discharge side. When air is supplied to the port AIR SUP, the pump will operate and exhaust noise will start to come out of the port AIR EXH. Fluid flows from the suction port FLUID IN to the discharge port FLUID OUT.

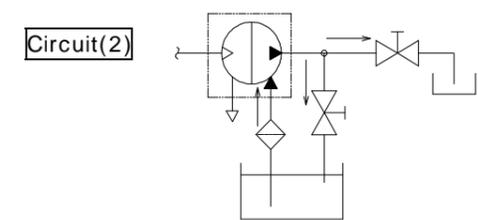
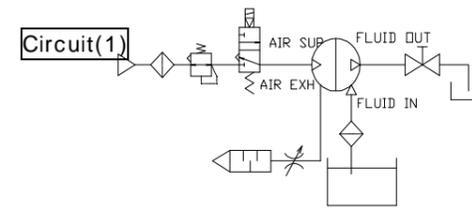
To stop the pump. Exhaust pressure supplied to the pump. Pump also stops when ball valve is closed on the discharge side. Avoid stopping the pump for long hours., as this may prevent restart of the pump. Closing valve abruptly can generate surge, that considerably shortens the life of the pump.

[Discharge Flow Adjustment]

See Circuit Example 2

To adjust flow from the discharge port, use ball valve on the discharge side.

When the pump is operated with discharge below the specification range, use bypass circuit from the discharge side to suction side for keeping the minimum flow inside the process pump. The pump may stop due to unstable operation with discharge flow less than the minimum discharge flow.



4. Maintenance

Caution

During operation

Check liquid and air leakage, and operation conditions regularly during pump operation. If any abnormal conditions or unclear matters are found, stop the pump immediately and contact SMC or the sales office you purchased the pump.

Use protective tools such as anti-corrosive gloves to avoid a burn or other human injury when touching the pump for check.

At stop

Exhaust the air on the SUP side if the pump will be stopped for a couple of hours.

Clean inside the pump to avoid clotting of transported liquid and sticking of internal parts if it will not be used for a long period of time.

Check & Repair

Check liquid and air leakage, and operation conditions regularly during pump operation. If any abnormal conditions or unclear matters are found, stop the pump immediately and contact SMC or the sales office you purchased the pump.

Replace diaphragm before the indicated life cycles.

If diaphragm is broken due to the life, the operating fluid would flow out to the pilot air side. Leading to the failure of pump.

5. Replacement parts

PTFE diaphragm set	KT-PA3-31
NBR diaphragm set	KT-PA3-32
Switching valve assembly set	KT-PA3-36
Actuator parts set	KT-PA3-37
Pilot valve set	KT-PA5-38

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Specifications are subject to change without prior notice and any obligation the part of the manufacturer.

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