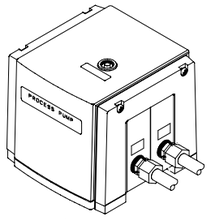
Operation Manual -Process Pump PAX1000 Series-



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 the life of diaphragm, and this could result in human injury or equipment damage. Take measures against leakage.

⚠ Caution

●Quality of supply air

①Place filter with filtration of 5μm. Use air having better quality than No3 mentioned in catalogues of Air Cleaning Equipment.

②If 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 (mesh #100) before IN port.

●Life Span and Replacement

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

●Pump Intermittent Operation

When stopping anti-pulsation pump, take measures to prevent surge, which considerably shortens the life of diaphragm.

●Calculation of diaphragm life. (Varying with the applications)

$$\text{Life span (day)} = \frac{0.021 \text{ liter} \times 50 \text{ million times (ex.)}}{\text{Discharge amount (L)} \times \text{Daily operating hours} \times 60}$$

2. Installation

⚠ Caution

●Mounting

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

●Piping

Use flexible tube, not steel pipe. Excessive load applied to the inner seal could cause leakage of liquid.
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 on the right 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

①Connect air piping to the port AIR SUP, and transported fluid piping to the suction port FLUID IN and the discharge port FLUID OUT respectively.

②Set pilot air pressure in the range of 0.2MPa and 0.7MPa(2 to 7.1 kgf/c㎡)by using regulator. Keep ball valve open on the discharge side. Make ball valve on the discharge side be open. 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. It takes a while for pulse attenuator to operate.

③To 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 generates surge, that considerably shortens the pump and degrades the quality of built-in pulse attenuator.

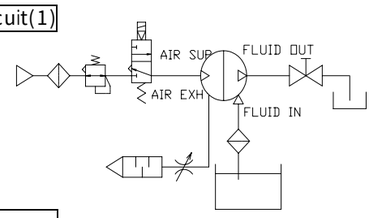
[Discharge Flow Adjustment]

See Circuit Example 2

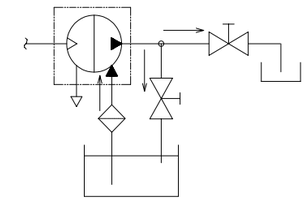
①To adjust flow from the discharge port, use ball valve on the discharge side.

②When 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.

Circuit(1)



Circuit(2)



4. Maintenance

⚠ Caution

● During operation

①Check 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.

②Use protective tools such as anti-corrosive gloves to avoid a burn or other human injury when touching the pump for check.

● At stop

①Exhaust the air on the SUP side if the pump will be stopped for a couple of hours.

②Clean 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

①Check 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.

②Replace all three diaphragms before the indicated life cycles.

③If 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-PAX1-31
Check valve set	KT-PAX1-36
Switching valve set	KT-PAX1-37
	KT-PAX1-37#1
Pilot valve set	KT-PA5-38
Pulse attenuator control parts	KT-PAX1-39

※ How to fix pump

1) Remove four M4 round head screws.
2) When lifting resin cover, four M8 threads for fixing the pump will appear.
3) Fix the pump by tightening four M8 screws.
4) Place resin cover to original position and fix it with four round head screws.

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