

**Operation Manual -Process Pump PA(P)3310-**

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.
- Disassemble  
Do not disassemble.

**Caution**

- Quality of supply air  
(1)Place filter with filtration 5 μm. Use air having better quality than NoB\* mentioned in catalogues of Air cleaning Equipment.  
\* NoB.Circuit  
Compressor HAW(Water cooled after cooler) AT(Air tank) AFF(Mainline filter) IDF(Refrigerated air dryer) AF(Air filter) PA
- (2)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.
- 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.
- Calculation method of diaphragm life. (varying with applications)  

$$\text{Referential life date} = \frac{0.022 \text{ liter}(\text{discharge amount per one cycle}) \times 50 \text{ million cycles (referential life cycle)}}{\text{Flow (l/min)} \times \text{operating time per day (hour)} \times 60 \text{ (min.)}}$$

**2. Installment**

**Caution**

- Mounting  
Mount in horizontal posture. Otherwise, internal parts may not operate smoothly and liquid is not transported. Tighten mounting bolts securely to avoid breakage of mounting bracket due to vibration. Mounting thread of MS is provided at 2 places for standard product. (Option with foot :Mounting hole of M6 thread is provided at 4 places.)
- 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.
- Fitting material  
The thread material quality is a resin. The thread part might be damaged, and please do not install the metal 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)1/8	1.5 ~ 2.0
Rc(PT)1/4	1.5 ~ 2.0
Rc(PT)3/8	2.0 ~ 2.5

< 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**

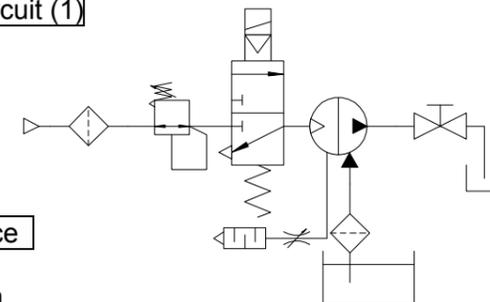
[ Start & Stop ]

- (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.
- (2)Set pilot air pressure in the range of 0.2MPa and 0.5MPa 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.
- (3)To stop the pump. Exhaust pressure supplied to the pump.

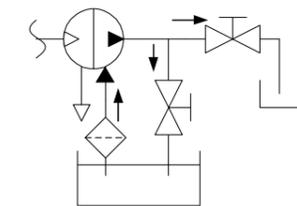
[ Discharge Flow Adjustment ]

- (1)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.
- (2)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.

Circuit (1)



Circuit(2)



**4. Maintenance**

**Caution**

- During operation  
(1)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.  
(2)Use protective tools such as anti-corrosive gloves to avoid a burn or other human injury when touching the pump for check.
- At stop  
(1)Exhaust the air on the SUP side if the pump will be stopped for a couple of hours.  
(2)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  
(1)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.  
(2)Please discontinue operating before the life indicated. 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.  
(3)Due to the change of fluororesin as time passes, the bolt may be loosened. So, periodical additional tightening is required by removing resin cover. (Tightening torque: 3N·m)

**SMC Corporation** URL <http://www.smcworld.com>

Akihabara UDX 15F,  
4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, JAPAN  
Phone: +81 3 5207 8249 Fax: +81 3 5298 5362  
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