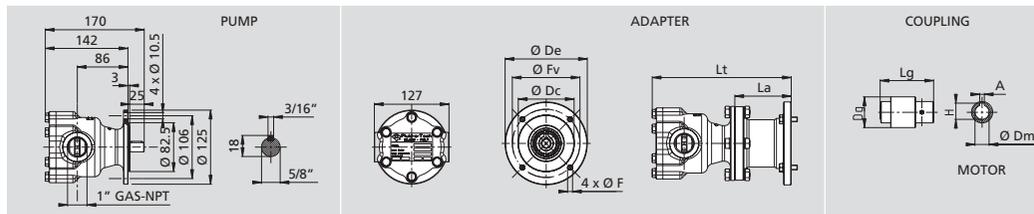
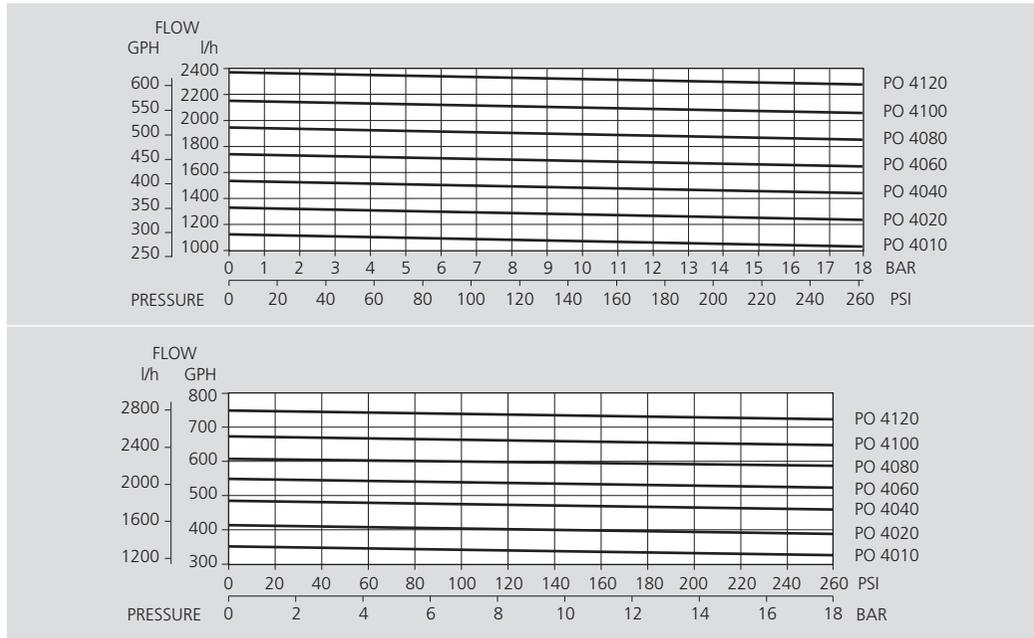


- In case of pumps equipped with relief valve, the operating pressure results to be less than 1 bar below the relief valve setting.

The adjustment or replacement of defective parts made under this warranty will not extend the original warranty period.

The performance curves of the **PO4000** series are supplied here below for your reference.  
Figures of flow are averages - Curves measured on pumps without bypass- Water temperature: 20 °C (70 °F)



MOTOR	ADAPTER						COUPLING				
	Ø Dc	Ø Fv	Ø F	Ø De	La	Lt	Lg	Dg	Ø Dm	A	H
M80	80	100	7	120	86	188	81	52	19	6	21.5
M90	95	115	9	140	96	238	91	68	24	8	27
M100	110	130		160	100	242	95		28		31
Nema 56C	4.5"	5.875"	0.433"	6.5"	3.898"	4.449"	3.07"	2.047"	5/8"	0.19"	0.7165"
Nema 143TC - 145TC							3.583"		7/8"		0.9685"

All measures for M80/M90/M100 are in mm  
All measures for Nema 56C/Nema 143TC - 145TC are in inch

Fluid-o-Tech reserves the right to alter the specifications indicated in this manual at any time and without prior notice.

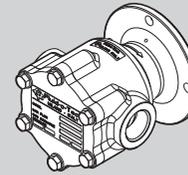
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## POSITIVE DISPLACEMENT ROTARY VANE PUMPS 4000 SERIES



# INSTRUCTION MANUAL



### INSTALLATION

The pump has to be installed exclusively by authorized staff. Handle with care.

It's recommended not pulling out the two protection sponge caps placed on the inlet and outlet ports of the pump before mounting the fittings and the pipes in order to avoid the incidental entrance of any solid estraneous object which might damage the internal components of the pump.

The **PO4000** series rotary vane pumps look identical in their exterior aspect, although the flow rates are different. For this reason, when substituting just the pump, it is necessary to check the model of the new pump. Changing the pump with a model of different capacity may damage the system, the motor and the pump itself.

If continuous operation is needed, the pump has to be mounted in an airy space in order to dissipate the heat produced from the motor. The pump must be mounted horizontally.

To avoid vibrations of mechanical parts and noise it is advisable to mount the motor with rubber shock-absorbing supports.

### [WIRING THE MOTOR TO THE POWER SUPPLY]

- The power supply must be consistent with the electrical data stamped on the motor plate, with particular regard to voltage, frequency and current.
- The power supply should be switched off during installation.
- The motor rotation must be clockwise (looking at the motor in front). If operated counterclockwise, the pump won't work.
- In case the rotation is counterclockwise, proceed according to the scheme generally enclosed in the electrical wiring box.
- If the pump fails or some estraneous object enters it, the group may stop or work in critical conditions; for this reason the motor should have a thermal protection to avoid overheating or a current protection to avoid overloading.

### [MOUNTING THE PUMP ONTO THE MOTOR]

The overall dimension drawing of the pump is shown on the last page of this leaflet. When mounting the pump onto the motor, it's advisable to pay the maximum attention in order to avoid shocks against the shaft, checking the correct alignment and verifying, after mounting, that the shaft turns free.

How to proceed:

- Make sure the motor is unplugged from the electric line.
- Check that the key is tight on the motor shaft.

- Mount the motor side of the coupling on the motor, **without hammering it**.
- Tighten the set screw (only for the couplings equipped with set screw).
- Insert the shock absorber in the coupling on the motor side.
- Secure the **pump** side of the **coupling** on the pump, **without hammering it**.
- Mount the adapter on the motor flange and tighten the screws.
- Mount the pump on the motor by inserting the coupling side of the pump shaft into the coupling side of the motor shaft.
- Turn the pump to the position desired and stop it by tightening the 4 bolts.

#### Note:

The motor should be a 4 poles type with B3 B14 frame, with power between 1.5 and 2.2 Kw, in accordance to the capacity of the pump (325 to 700 gph) and to the operating pressure. Take into account that the pump performs differently if operated at 50 Hz (1450 rpm) or 60 Hz (1725 rpm). Do not run the pump with a 2 poles motor (2900 rpm at 50 Hz or 3500 rpm at 60 Hz). Running the pump at such speed, highly affects the life of the mechanical seal.

#### [CONNECTING THE PUMP TO THE CIRCUIT]

- A particular care is needed while mounting the fittings, to avoid liquid leaks.
- If using Teflon tape it's important that **no particles** of it fall into the pump. Avoid using liquid sealer since it may glue the pump's components if it enters the pump. It is advisable to use **fittings** made of **stainless steel** or **plastic**.
- The circuit should be **carefully flushed** before starting the pump.

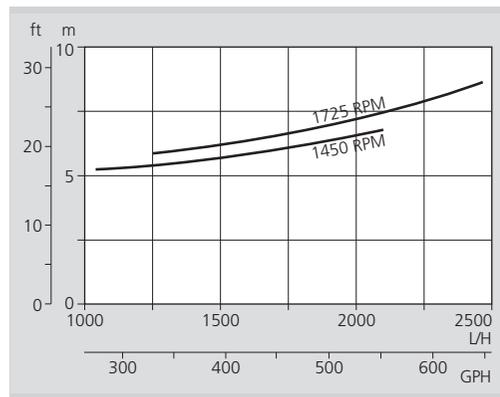
#### [OPERATING CONDITIONS]

- **Make sure that the pumped fluid is compatible with the materials of the pump.** For particular applications, contact the nearest **Fluid-o-Tech** authorized distributor.

- **Avoid** as well to use **liquids** with temperature 70 °C (158 °F).
- It's strongly recommended using **pipes and connections** of suitable size for the pump capacity, with **internal diameter** of at least **25 mm (1 inch)**, especially on the inlet side. This precaution avoids the possibility of cavitation and consequent damage of the pump.
- The **maximum differential pressure** should not exceed **18 bar (260 psi)**.
- The **maximum system pressure** should not exceed **20 bar (290 psi)**.

The graph here shown reports the NPSH (Net Positive Suction Head) for the **PO4000** series run at 1450 and 1725 rpm. Although this is a **positive displacement** pump, it is strongly recommended not to operating it over the values specified by the curves in the graph. Priming and operating the pump above the curve will result in cavitation. This will bring noisy operation and premature failure. Make sure that the NPSH value of the circuit is higher than the NPSH value of the pump. The Rotoflow pump is designed to handle clean fluids only.

Any particle bigger than 10 µm wears the graphite components out in a short time; it is recommended for this reason mounting, before the pump, a **filter** sized to keep out particles bigger than **10 µm** and with a surface area big enough, in order not to cause hydraulic losses in the circuit. Check periodically the good conditions and the cleanness of the filter. Certain descaler mixes used to clean hydraulic circuits are not compatible with the pump



components and tend to glue the graphites. For this reason it is always recommended verifying the compatibility of the material of the components with the liquid pumped.

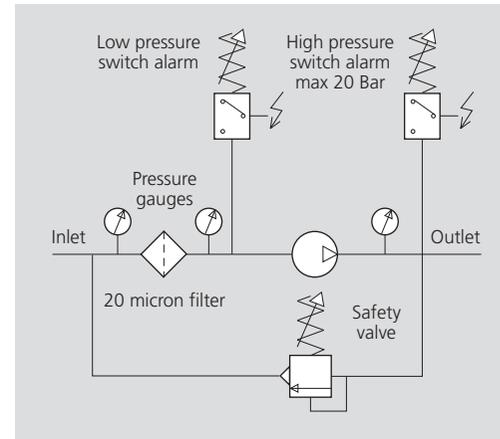
A **dirty filter** or an **insufficient supply** of water could cause **cavitation** and wear of the internal components of the pump.

The rotary vane pumps are self-priming, but **dry running causes** overheating and **fast wear** of the mechanical seal and of the internal components.

As a consequence of prolonged dry running, some leak may occur. If the intake is subject to low pressure conditions, it is necessary to fit a low pressure switch in order to turn the motor off when the pump is starved. In order to avoid cavitation, do not install the pump more than 1.5 m above the maximum liquid level of the tank.

Refer in any case to the NPSH curve shown on this leaflet. It is also necessary to protect the system from incidental overpressures with safety devices such as a pressure relief valve or a **pressure switch connected to the motor**.

#### P MAX: 18 BAR SYSTEM PRESSURE MAX: 20 BAR



**Solenoid valves should not be installed in the circuit;** however, if needed, a mechanical safety valve needs to be installed before the solenoid valve, in order to protect the pump from pressure peaks. Solenoid valves before the pump have to be avoided at all times.

#### [STANDARD MAINTENANCE, SUBSTITUTION OF PARTS SUBJECT TO WEAR]

- The maintenance, and the replacement of the parts subject to wear has to be done by an authorized technician.
- A **few drops** of water from the drain holes of the pump are **normal** during the **first hours** of operation. In case the **leaking persists**, please contact the nearest **Fluid-o-Tech** distributor.

#### [WARRANTY]

Every new pump manufactured by Fluid-o-Tech is guaranteed to be free of defects in workmanship and material when leaving the factory for a period of 12 months from the production date stamped on the pump's housing, plus a period of 3 months to cover the warehouse and transit time, or for a period of maximum 15 months for the purchasing date to the for product use. In no event shall this period exceed 15 months from date of original invoice.

Fluid-o-Tech will repair or replace at its judgement part or all of the product not conforming to this warranty. Fluid-o-Tech's responsibility under this warranty is limited to the repair or replacement of defective equipment returned to us on an DDP basis, providing that our analysis discloses that such part or parts were defective at the time of sale.

The warranty is not recognized if:

- The directions on how to handle, install or operate the pump are disregarded.
- The pump has been disassembled or modified by anyone other than a Fluid-o-Tech (or authorized by Fluid-o-Tech) engineer or repaired with non original components.
- The pump operated dry or in cavitation.
- Solid extraneous particles are found in the pump.
- Evident signs of over pressure are observed (over 250 psi for the pumps with flow rate up to 1.000 l/h and 260 psi for the pumps with flow rate between 1.000 l/h and 2.400 l/h).
- The pump has been utilized for an application for which it was not intended to be used where the operating conditions and/or the pumped liquid were incompatible with the pump itself and such application has not been specifically approved by Fluid-o-Tech.