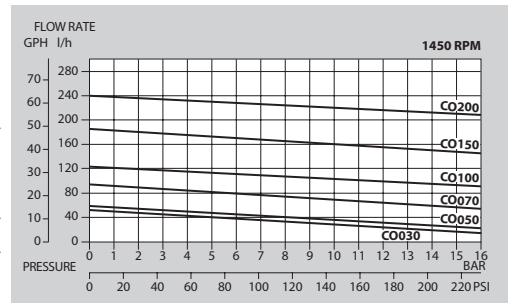
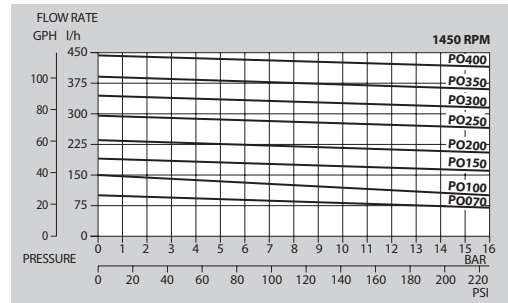
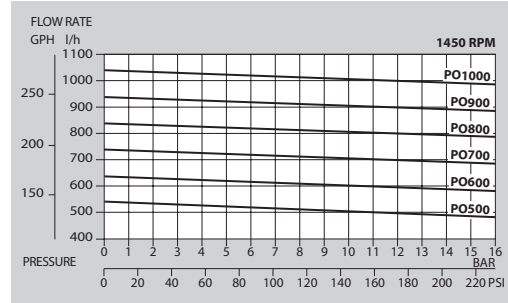


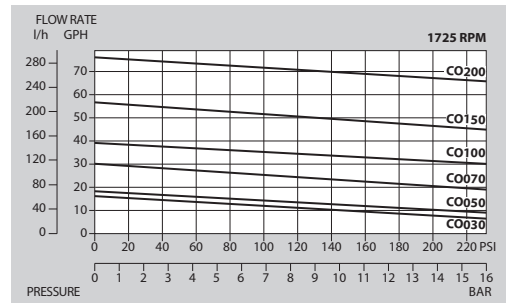
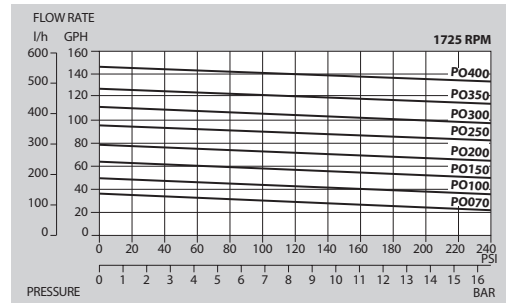
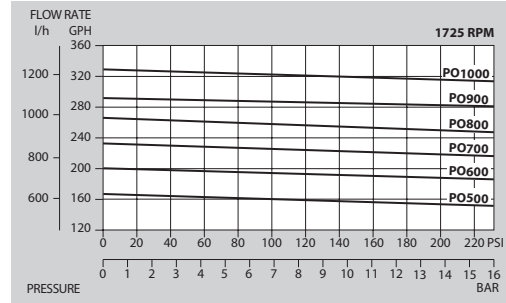
[LISTINGS]

NSF Listed Pumps are marked PA/MA instead of PO/MO
WRAS listed pumps are marked POW.
The "Compact" series pumps are not equipped with
weep holes, therefore the normal condensation may not
evaporate. In this case it is necessary coupling the pump
to a motor equipped with 4 90° holes in the coupling
area.



[CERTIFICATIONS]

The pump itself, without the motor, is not to be considered
as a machine, but only a component, therefore the mark
"CE" is not applicable. A conformity declaration may be
requested to state the essential safety features ("Machinery
Directive" 89/392/CEE). The complete group is instead
considered as a machine ready to be used and it is sup-
plied with the mark "CE" that grants its conformity. Prod-
uct in conformity with the D.M. 174/2004.



The above figures refer to measurements with by pass fully closed. Water temperature 20 °C. Figures of flow are averages.

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

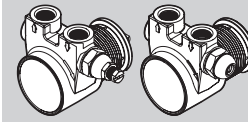
Fluid-o-Tech srl
Via Leonardo da Vinci, 40
20094 Corsico, Milano, Italy
Tel. +39 02 8917071
Fax +39 02 8917079

Fluid-o-Tech Int'l Inc.
161 Atwater St.,
Plantsville CT (USA) 06479
Tel. +1 (860) 276-9270
Fax +1 (860) 620-0193

Fluid-o-Tech Int'l Inc. Japan
203, 2-17-19, Ebara, Shinagawa
Tokyo 142-0063, Japan
Tel. +81 (0) (3) 3783-9660
Fax +81 (0) (3) 3783-9661

Fluid-o-Tech Asia (Beijing) Co., Ltd
Jingwei Industrial Zone,
Beifang Huairou, Beijing, 101400, PRC
Tel. +86 (0) (10) 61684650
Fax +86 (0) (10) 61684651

POSITIVE DISPLACEMENT ROTARY VANE PUMPS: PO, MO AND CO SERIES



INSTRUCTION
MANUAL



INSTALLATION

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

WARNING

**For food applications the pumps (even when NSF listed or
WRAS approved) need to be sterilized by circulating water
at 80 °C/176 °F for at least 20 minutes. The water used for
this operation must not be reused, either during the steriliza-
tion or later, but must be discharged.**

It is recommended not pulling out the two protection sponge
caps placed on the inlet and outlet of the pump before
mounting the fittings and the pipes, to avoid the incidental
entrance of any solid extraneous object which might damage
the internal components of the pump.
The Fluid-o-Tech rotary vane pumps look identical in their
exterior aspect, within each range, although the flow rates are
different. For this reason, when replacing 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 sys-
tem, 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 noise and vibrations of mechanical parts, it's advis-
able to mount the motor on rubber shock-absorbing sup-
ports.

The use of the dumper coupling kit for 48YZ frame motors
(3000300 for the parallel shaft type, 3000310 for the splined
shaft type) is suggested in order to avoid any misalignment
between pump and motor.

[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 and frequency. The power supply needs to be switched off during installation.
- The motor rotation must be clockwise (looking the motor in front). If operated counter-clockwise, the pump won't work. In case the rotation is counter-clockwise, proceed according to the scheme generally enclosed in the electrical wiring box.
- If the pump fails or some estraneous object enters it, the pump-motor unit 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]

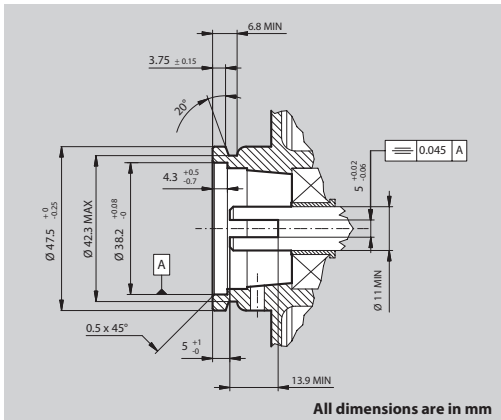
- Motor with clamp mounting (type 48YZ)
 - Make sure the motor is unplugged from the electric line
 - Insert the clamp on the pump (shaft side)
 - Clamp the pump to the motor by inserting the pump shaft into the motor shaft and pushing it till it stops
 - Turn the pump to the position desired
 - Position the clamp in order to surmount the pump and the motor rings
 - Tighten the clamp using 1 - 1,5 Nm torque maximum.
 - Make sure that the clamp screw is tight enough to prevent the rotation of the pump on the motor.
 - Should the pump be noisy during the startup, it is necessary to untighten the clamp screw, reposition the pump and tighten again the clamp screw.

- b) Motor with B14 or NEMA 56C mounting
- Make sure that the motor is unplugged from the electric line
 - Mount the motor side of the coupling on the motor
 - Tighten the set screw (only for the couplings equipped with the set screw)
 - Insert the shock absorber in the coupling on the motor side
 - Insert the pump side of the coupling in the shock absorber
 - Mount the adapter on the motor flange and tighten the screws
 - Insert the pump shaft into the coupling
 - Position the clamp in order to surmount the pump and the adapter rings
 - Turn the pump to the desired position
 - Tighten the clamp using 1 - 1,5 Nm maximum torque.
 - Make sure that the clamp screw is tight enough to prevent the rotation of the pump on the motor.

The drawing here below illustrates the minimum dimensional requirement of the motor in order to grant the proper alignment between pump and motor. Tool AT-190-1 is available upon request to verify the compliance of the motor to the above mentioned requirement.

[CONNECTING THE PUMP TO THE CIRCUIT]

It's strongly recommended using, on the inlet port of the pump, pipes and connections of suitable size for the pump capacity, (8 mm for "Compact" pumps with capacities up to 150 l/h, 10 mm for "70-400" series pumps with capacities up to 500 l/h, 15 mm for "High Volume" pumps with capacities up to 1000 l/h.



This precaution avoids the possibility of cavitation and consequent damage of the pump.

The pumps - although identical in their aspect - may have GAS or NPT threaded ports. The thread of the fitting should match the thread of the pump port. If the pump has GAS threads the sealing is provided by an o-ring which is pressed against the flat surface of the port. With the NPT thread, the sealing is provided by the contact between the threads.

In this case a few turns of PTFE tape around the fittings are necessary. Do not exceed in using PTFE tape as pieces of it may fall into the pump (especially on the Inlet side) and cause the pump to fail.

The use of pipe dope (liquid sealant) should be avoided. A particular care is needed while mounting the fittings, to avoid liquid leaks.

Hold the pump with a wrench in the area marked with the arrows indicating the inlet-outlet ports and the rotation sense, without over-tightening. It is recommended not exceeding 15 Nm torque when tightening the fittings because the threads on the pump might be damaged. It is suggested using aluminium sheet on each side of the pump to avoid damage to the ports. Do not use the motor as pump support when tightening the fittings, in order to avoid a possible misalignment and stress of the shafts.

If the pump is made of stainless steel the fittings have to be made of stainless steel or plastic, not in brass, to avoid problems of corrosion.

- The circuit should be carefully flushed before connecting the pump.

[OPERATING CONDITIONS]

Make sure that the pumped fluid is compatible with the materials of the pump.

For particular applications, please contact the nearest authorized Fluid-o-Tech distributor.

- Avoid as well to use liquids with temperature higher than 70 °C (158 °F).
- The maximum differential pressure must not exceed 16 bar (230 psi).
- The maximum system pressure must not exceed 20 bar (290 psi).
- A circuit layout with elbows and sudden changes in the diameter of the pipes, causes turbulence in the water and resonance in the machine. This is also worsened when the pump is not fed by the main water line.
- Although Fluid-o-Tech may give technical support, the final approval of the pumps is responsibility of the Customer, in fact the performances and reliability may be affected by particular operating conditions and/or hydraulic circuit layout.

[USEFUL TIPS FOR A LONG LASTING LIFE OF THE ROTOFLOW PUMPS]

The Rotoflow pump is designed to handle clean fluids only. It is recommended for this reason installing before the pump a 10 µm filter with a filtering area big enough, so as not to cause flow-pressure losses in the circuit.

Place the filter at least 50 cm before the inlet port of the pump in order to avoid cavitation.

It is also important to check periodically the filter cartridge. In order to keep the filter under control, it is advisable to install a vacuum gauge before and after the filter. In case the vacuum increases more than 0,1 bar, the cartridge should be cleaned or changed.

A dirty filter or an insufficient supply of water causes cavitation and fast wear of the pump.

The rotary vane pumps are self-priming, but dry running causes overheating and failure of the mechanical seal and of the internal components, and therefore potential leaks.

If the line is subject to scarce pressure or flow it is necessary to fit a low pressure switch before the pump in order to switch the motor off.

In order to avoid cavitation, if the tank is at atmospheric pressure, do not install the pump more than 1 m above the maximum liquid level of the tank.

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.

If possible it's advisable to install the pump as close as possible to the tank.

The bypass valve is set from the factory at 12 bar (170 psi) unless otherwise requested.

The by pass is not and must not be used as a flow regulator.

If used as a flow regulator, the water in excess will recirculate inside the pump through the by pass and the pump will fail.

The maximum differential pressure should be at least 2 bar (43 psi) lower than the by-pass setting in order to avoid operation with the bypass valve open.

The maximum differential pressure must not exceed 16 bar (230 psi).

[STANDARD MAINTENANCE, SUBSTITUTION OF PARTS SUBJECT TO WEAR]

The Rotary vane pumps maintenance, and the replacement of the parts subject to wear has to be done by Fluid-o-Tech or authorized repair centers.

For the pump with built-in filter it's recommended the periodic cleaning of the filter with alcohol and compressed air.

If the filter is external it's necessary to clean it or to replace it periodically.

A dirty filter doesn't allow the flow of the liquid through it and causes cavitation and fast wear of the internal parts of the pump.

- 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, contact Fluid-o-Tech.

[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 F.O.B. 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
- 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.