This product has the potential for the shaft to lock. Consideration should be given or countermeasures taken to avoid damage to the motor. 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. Thanks to the magnetic coupling the pump does not need a mechanical seal in order to prevent leakage. This eliminates the problems connected to the use of a mechanical seal. However the maximum pressure depends on the pump model and it decreases with the increase of the flow rate. Being the transmittible torque limited by the magnet, the coupling between the motor and the pump is not guaranteed and therefore the pump might stop. In order to re-establish the coupling it is sufficient to stop the motor, wait until complete stop and then restart the motor again. The sum of the inlet and outlet pressure must not exceed 20 bar (290 psi) in any case.

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 18 months from the production date stamped on the pump's housing, plus a period of 6 months to cover the warehouse and transit time, or for a period of maximum 24 months from the purchasing date to the product use.
In no event shall this period exceed 24 months from date of original invoice. Warranty remedy is limited to repair or replacement of defective product at Fluid-o-Tech own judgement. Fluid-o-Tech's responsibility under this warranty is limited to the repair or replacement of defective equipment returned to us on a D.A.P. basis, providing that our analysis discloses that such part or parts were defective at the time of sale.

Warranty is not recognized if:

The directions on how to handle, install or operate the pump are disregarded

- 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 compared to the values reported in the data sheet or in the specifications provided by the customer and accepted by Fluid-o-Tech.
- The pump has been utilized for an application where the operating conditions and/or the pumped liquid were incompatible with the pump itself. Furthermore the pump was not explicitly approved by Fluid-o-Tech for such an application
- The operating pressure results to be less than 3 bar below the bypass valve setting.

The adjustment or replacement of defective parts made under this warranty will not extend the original warranty period. Responsability of Purhaser/User is the proper disposal or recycling of product at end of service life or use.

CERTIFICATIONS

NSF standard 169 listed pumps (TA series). WRAS certified pumps (TW). The product complies with the following Directives:

- Directive 94/9/EC of the European Parliament and of the Council, of 23rd March 1994, related to equipments and protection devices intended to be used in potentially explosive environments - ATEX.
- D.M. 174/04 of the Health Ministry, of 6th April 2004, on materials and devices that may be used in fixed catching, treatment, adduction and distribution installations of waters destined for human use.
- EC Regulation n.1935/2004 of the European Parliament and the Council of 27th October 2004 on materials and articles intended to come into contact with food products and for which there are migration tests with photo A as required by DM n.338 of 22nd July 1998 Encl.1 Chapter 1.

Groups equipped with motors satisfy the requirements of the following Directives for the member states' legislations approaching:

- Directive 2004/108/EC of the European Parliament and of the Council, of 15th Dec 2004, related to the Electromagnetic Compatibility – EMC.
- Directive 2006/95/EC of the European Parliament and of the Council, of 12th Dec 2006, related to the electric material intended to be used within specified voltage limits – DBT.
- Directive 94/9/EC of the European Parliament and of the Council, of 23rd March 1994, related to equipments and protection devices intended to be used in potentially explosive environments - ATEX.
- Directive 2011/65/EU of the European Parliament and of the Council, of 08th June 2011, on the restriction of the use of certain hazardous substances in electrical and electronic equipment – RoHS.

MANUAL - TM/TH en – 07/17 Ed.

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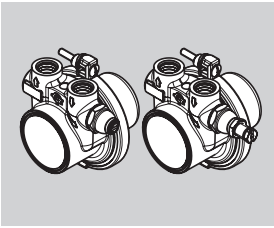
Fluid-o-Tech
POWER THE FLOW

INSTRUCTION MANUAL



MAGNET DRIVE ROTARY VANE PUMPS TM 30-400 AND TH 500-1000 SERIES

INSTALLATION

The pump has to be installed exclusively by skilled personnel with proper equipment.

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 sterilization or later, but must be discharged. This product is not designed to pump dangerous fluids, including flammable or toxic fluids. The magnetic coupling does not guarantee a defined value of the discharge pressure.
Should it be necessary to protect the hydraulic circuit from any possible fluid hammers generated by the pump, it is vital using a pump, equipped with a bypass or a safety valve to be installed after the pump itself. For speed higher than 2500 rpm the internal pins must be in PTFE instead of stainless steel. Stainless steel pins will damage the vane and cause the pump to fail. The circuit should be carefully flushed before starting the pump.

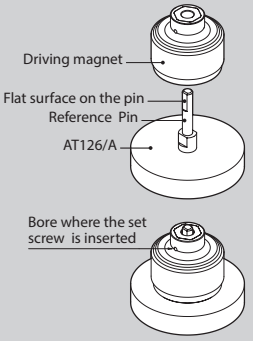
It's recommended pulling out the two protection sponge caps placed on the inlet and outlet ports of the pump only immediately before mounting the fittings and the pipes, in order to avoid the incidental entrance of any solid estraneous object which might damage the internal components of the pump. Model numbers of this product are available with optional features, materials and performance. Choice of the model should be appropriate to its intended use. Attention should be paid when installing a service pump, including matching the model numbers. Changing the pump with a model of different capacity may damage the system and the pump itself. If continuous operation is needed, the unit has to be mounted in an airy space in order to dissipate the heat produced by the motor. To avoid vibrations of mechanical parts and noise, it is advisable to mount the motor with rubber shock-absorbing supports.
Particular care must be taken when connecting the pump with fittings in order to avoid leaks. If a sealing fluid or Teflon tape is used, make sure to avoid any quantity of it to fall into the pump. Should any warning or limitation not be understood, please contact an engineer at Fluid-o-Tech for clarification or explanation.

ASSEMBLING THE MAGNET ONTO THE MOTOR SHAFT

Motors with flat shaft ("D" type)

1. Tighten the set screw in its seat in the magnet holder until it protrudes from the bore of the brass insert in order to verify that there are no imperfections in the thread which might stop the set screw before it is able to block the magnet on the rotor shaft.
2. Untighten the set screw until it does not protrude any longer into the bore where the shaft will be inserted.
3. Place the magnet on the tool AT126/A with the bore where the set screw sits in correspondence with the flat surface of the "D" pin (fig. 1).

Fig. 1



4 Tighten the set screw until it touches the pin, but do not tighten so much to make the extraction of the magnet difficult. The pin should not be scratched by the set screw when extracting the shaft.

5 Remove the magnet and place it on the motor shaft. In such conditions the set screw, protruding slightly from the internal diameter of the bore in the brass bushing, prevents an incorrectly oriented assembling onto the motor shaft.

6 Place the unit vertically on the bench with the magnet facing downwards (see fig. 2) to place the magnet in the correct position. Tighten the set screw with a max torque of 2.0 Nm.

Motors with shaft key seat and "TMA"/"TMAS" series driving magnets

1 Tighten the set screw in its seat in the magnet holder until it protrudes from the bore of the brass insert in order to verify that there are no imperfections in the thread which might stop the set screw before it is able to block the magnet on the rotor shaft.

2 Untighten the set screw until it does not protrude any longer into the bore where the shaft will be inserted.

3 Remove the shaft key from the motor shaft.

4 Predispose the magnet on the motor shaft paying attention, in case the magnet is of tma or tmas series, not to tighten the set screw close to the shaft key seat. In case the magnet is of tmas-c series please see the paragraph: "motors with shaft key seat and "tmas-c" series driving magnets".

5 Position the unit vertically: a) on the test bench for tma series magnets in order to have the magnet and the motor adapter on the same level or b) on tool at155/1 for tmas series magnets in order to assemble the magnet in the correct position.
Tighten the set screw with a max torque of 2.0 Nm.

Motors with shaft key seat and "TMAS-C" series driving magnets

1 Tighten the set screw in its seat in the magnet holder until it protrudes from the bore of the brass insert in order to verify that there are no imperfections in the thread which might stop the set screw before it is able to block the magnet on the rotor shaft.

2 Untighten the set screw until it does not protrude any longer into the bore where the shaft will be inserted.

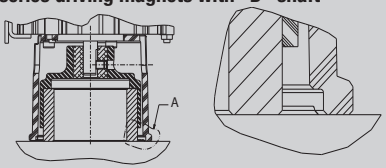
3 Make sure the shaft key is in its seat on the motor shaft.

4 Align the shaft key with the relevant seat in the magnet bore and slide the magnet on the motor shaft.

5 Position the unit vertically on tool at155/1 with the magnet facing downwards in order to set the magnet in the correct position (see fig. 2).

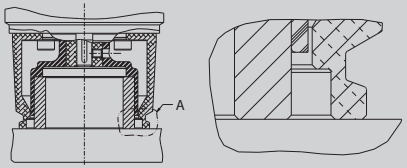
Fig. 2

TMA series driving magnets with "D" shaft

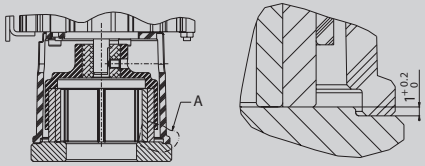


Place the unit vertically on the bench in order to have the magnet and the motor adapter on the same level.

TMA series driving magnets with shaft key seat



TMAS/TMAS-C series driving magnets with "D" shaft or shaft key seat



Place the unit vertically on tool AT155/1 in order to assemble the magnet in the correct position.

CONNECTING THE PUMP TO THE CIRCUIT

The circuit should be carefully flushed before connecting the pump.

Ilt is strongly recommended to use, especially for the inlet port, piping with internal diameter 10 mm (3/8"). This will avoid cavitation and consequent failure of the pump. The piping on the outlet port has to be resistant to 20 bar. The pumps - although identical in their aspect – may have GAS or NPT threaded ports.
The thread of the fit ting 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. Using a fitting with a GAS thread on a pump with NPT ports, or vice versa, may cause filaments in the pump pipes and possible breaks in the pump (especially on the inlet side) and cause the pump to fail. 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. 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 recomended not exceeding 15 Nm torque when tightening the fittings because the threads on the pump might be damaged. It is suggested the use of 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.

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.

OPERATING CONDITIONS

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

- For applications that require temperatures higher than 80 ° C (176 F), please contact Fluid-o-Tech.
- The maximum differential pressure must not exceed 16 bar (230 psi)
- The maximum system pressure must not exceed 20 bar (290 psi)
- A hydraulic circuit with elbows and sudden changes in the diameter of the pipes, causes turbulence in the water and resonance in the machine
- 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 circuits.

USEFUL TIPS FOR A LONG LASTING LIFE OF THEROTOFLOW PUMPS

This product is designed for indoor use or enclosures designed to exclude weather. The Rotoflow pump is designed to handle clean fluids only. It is necessary for this reason to install 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, which doesn't allow enough flow of liquid through it, causes cavitation and fast wear of the pump. For the pump with a 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. (+ 0.0007/-0.0023). The rotary vane pumps are self-priming, but the dry running may cause failure of the mechanical seal and internal components and therefore possible leaks. Leaks may be also caused by ingress of extraneous solid particles. Consideration should be given or countermeasures taken to avoid creation of dangerous or damaging conditions.

Before operation it is advisable to pour little water into the pump to keep the seal area wet in the first seconds of operation.

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 case of water shortage. 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 at 12 bar (170 psi) unless otherwise requested.

The bypass valve is a relief valve to protect circuit from peaks of pressure beyond its set value and must not be used as a flow regulator. If used as a flow regulator, the water in excess will recirculate inside the pump heating and encouraging the deposit of limestone on the pump components. The maximum differential pressure should be at least 3 bar (43 psi) lower than the bypass valve setting in order to avoid operation with the bypass valve open. The maximum differential pressure must not exceed 16 bar (230 psi).