

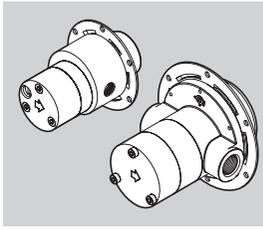
## [CERTIFICATIONS]

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. When the pump is assembled with a motor, the complete pump-motor unit is instead considered as a machine and supplied with the mark "CE". In this case, the unit satisfies the requirements of the following Directives: 89/366/CEE related to

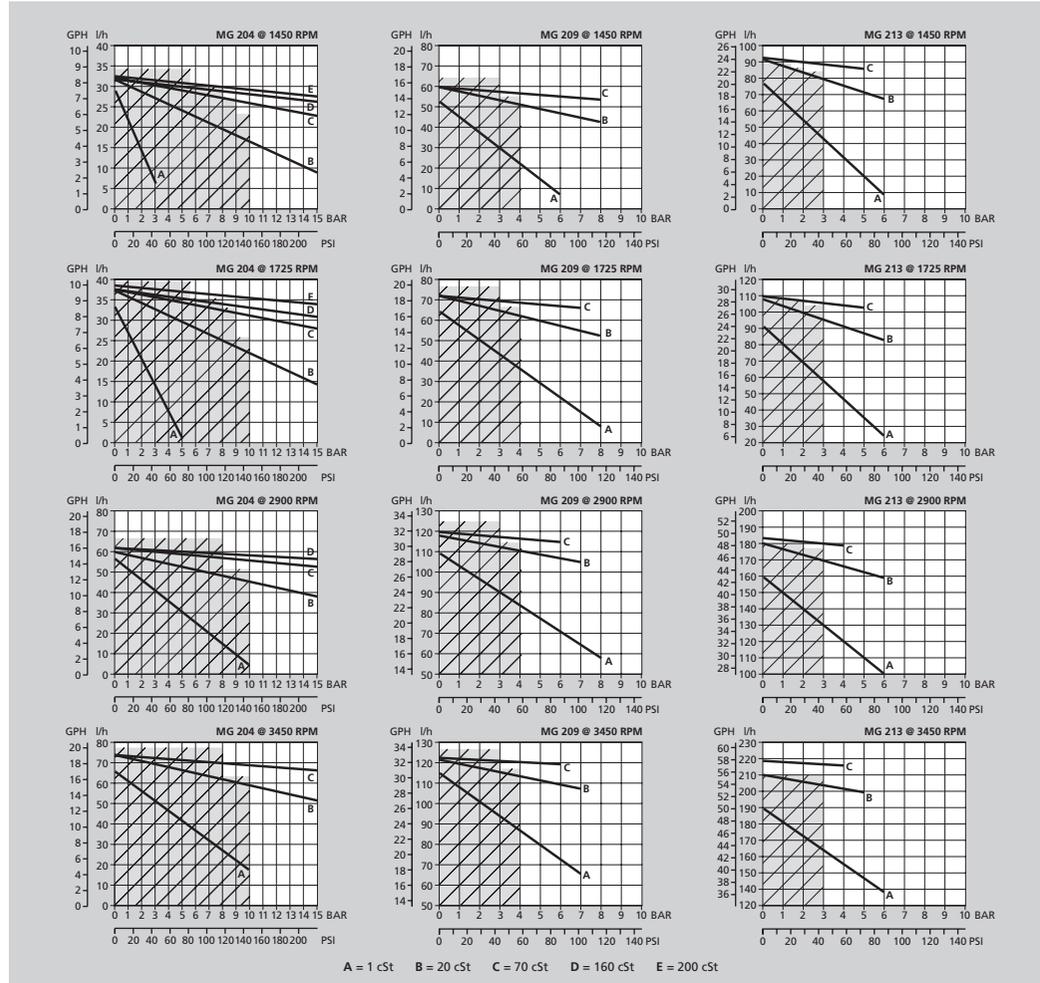
Electromagnetic Compatibility - EMC, 73/23/CEE related to Electric Material intended to be used in potentially explosive environments - DTB and 94/9/CE related to Equipments and Protection Devices intended to be used in potentially explosive environments - ATEX.

The Fluid-o-Tech conformity declaration may be requested to state the essential compliances with the above mentioned Directives.

## POSITIVE DISPLACEMENT MAGNET DRIVE GEAR PUMPS MG, MK AND MS SERIES



# INSTRUCTION MANUAL



Note: Performances beyond the grey zone are reached with rare earths magnets only.

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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## INSTALLATION

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

## WARNING



The flange must be handled with care and not taken with tongs and vices, since they could cause the misalignment of the magnets and the damage of the pump.

For food applications the pumps (even when NSF listed) need to be sanitized from the customer first through pasteurization.

It's recommended pulling out the two protection 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 extraneous object which might damage the internal components of the pump.

If continuous operation is needed, the pump 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. It is advisable to use stainless steel or plastic fittings.

When substituting just the pumphead, it is necessary to make sure that model number of the new pump is equal to the pump to be changed. Changing the pump with a model of different capacity may damage the system, the motor and the pump itself. The circuit should be carefully flushed before starting the pump.

## [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 must be switched off during installation.

## [CHOOSING THE MOTOR]

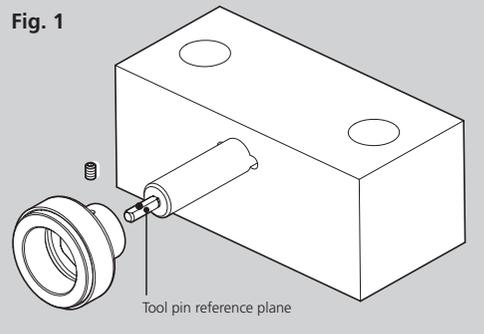
In case the motor is not supplied with the pump it is necessary to verify that the quotes and tolerances are the ones suggested by Fluid-o-Tech. Fluid-o-Tech gear pumps need a motor running at a speed between 800 and 5000 rpm. The flow rate is proportional to the motor speed. The continuous max torque must be lower than 0.1 Nm with ferrite-ferrite magnet coupling. Higher torque can be reached with other kinds of magnets.

## [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. Tighten 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 AT152 with the bore where the set screw sits in correspondence with the flat surface of the "D" pin (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.

Fig. 1



The pin should not be scratched by the set screw when extracting the shaft.

- 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.
- Place the unit vertically on tool AT 152/1 with the magnet facing downwards in order to set the magnet in the correct position (see fig. 2). Tighten the set screw with a max. torque of 1.5 Nm.

#### MOTORS WITH SHAFT KEY SEAT AND MGAS/MGAF SERIES DRIVING MAGNETS

- 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.
- Untighten the set screw until it does not protrude any longer into the bore where the shaft will be inserted.
- make sure to remove shaft key is from it seat on the motor shaft.
- Place the unit vertically on tool AT 152/1 with the magnet facing downwards in order to set the magnet in the correct position (see fig. 3). Tighten the set screw with a max. torque of 1.5 Nm.

Note: For dimensions of tool AT 152/1 refer to table 1.

#### [OPERATING CONDITIONS]

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

The Fluid-o-Tech pumps are designed to handle clean water at ambient temperature.

Any other fluid and/or operating condition needs to be tested and approved by the customer and verified by Fluid-o-Tech.

The maximum liquid temperature is 120 °C (248 °F). It is strongly recommended using, especially for the

Fig. 2

#### MGAF series driving magnets with "D" shaft

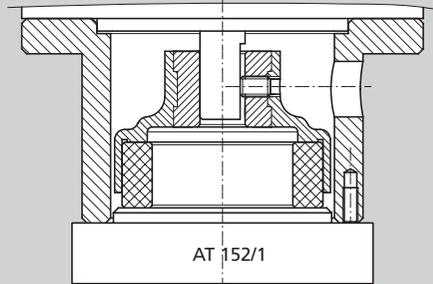
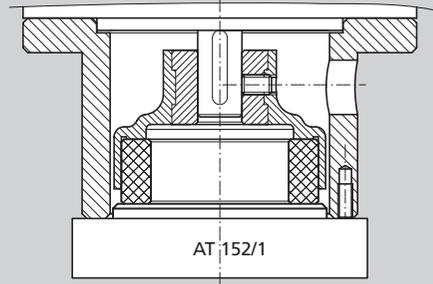
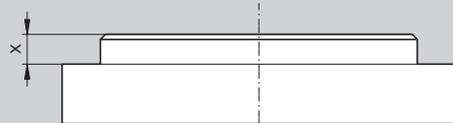


Fig. 3

#### MGAF series driving magnets with shaft key seat



Tab. 1: Tool AT 152/..



#### Tool AT 152/.. options (depending on pump series and magnet type)

Pump series	MG/MS		MK	
Magnet type	MGAF	MGAS	MKAF	MKAS
"X" dimension (in mm)	3		6	
Tool type	AT 152/1		AT 152/2	

inlet, a pipe with an inner diameter sufficient to handle the pump's capacity.

This will avoid cavitation and consequent failure of the pump.

The sum of the inlet and outlet pressure must not exceed 20 bar/290 psi in any case.

The piping on the outlet port has therefore to be able to handle a pressure of 20 bar (290 psi).

It is also recommended before the pump a filter capable of keeping out particles larger than 10 µm which could cause fast wear of the internal components and with a surface area big enough, in order not to cause hydraulic losses in the circuit.

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 after the filter.

In case the vacuum increases more than 0.1 bar, the cartridge should be cleaned or changed.

For a long life of the pump, the pumped fluid must not contain solid particles.

Although the magnet drive gear pumps are self-priming, they should operate under water head, in fact dry running causes fast wear of the internal components.

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

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

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. It is not advisable to install solenoid valves in the circuit; however, if needed, the solenoid valve should be installed after the pump. The internal diameter should be well sized to the pump capacity.

In order to avoid pressure strokes it is necessary to operate the solenoid valve only after the pump stopped, allowing a few seconds to go by after the motor has been switched off.

Solenoid valves before the pump are to be avoided at all times.

If the pump is equipped with a relief valve (by-pass), the valve will act, in case of accidental overpressure, to limit the pressure, thanks to an internal recirculation of the fluid.

#### The relief valve 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 relief valve and the pump will fail.

The maximum differential pressure should be at least 1 bar (14,5 psi) lower than the relief valve setting in order to avoid operation with the relief valve open.

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.

The maximum pressure depends on the pump model and it decreases with the increase of the flow rate.

Beyond the values specified in the graphs indicated at page 4 of this leaflet where the performances outside the grey area are reached with the rare earths magnet, 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 switch the motor off, wait until complete stop, and then restart the motor again.

#### [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 pumps'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 first product use. In no event shall this period exceed 24 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.
- 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.

#### [LISTINGS]

The gear pumps MG-MK-MS series are NSF certified for use with potable water and milk.

#### [STANDARD MAINTENANCE]

The Fluid-o-Tech magnet drive gear pumps maintenance and replacement of parts subject to wear have to be done by a technician certified by Fluid-o-Tech.

Periodic cleaning of the circuit and filters is advisable in order to avoid cavitation and wear of the internal components.