

TECH-MAG SERIES MTSP SERIES SEAL-LESS REGEN TURBINE PUMPS

INSTALLATION, OPERATION, AND MAINTENANCE INSTRUCTIONS

TO OBTAIN THE BEST PERFORMANCE FROM YOUR TECH-MAG MTSP,
PLEASE READ THIS MANUAL CAREFULLY.

Failure to follow the recommended procedures may result in early and severe damage to your TECH-MAG pump, and may also invalidate the warranty.

Thank you for your purchase of a TECH-MAG MTSP series self-priming regenerative turbine pump. Proper installation and maintenance will provide many years of trouble free operation.

INSTALLATION

- a) Locate the pump on a firm base close to the liquid source and not more than 6 feet above it. The maximum self-priming height may be less for dense liquids.
- b) The pump must be mounted in a horizontal position with the discharge port vertically upwards.
- c) Keep the inlet pipe short, with as few bends as possible. Make sure that it is completely airtight.
- d) The bore of the suction and discharge pipes should be at least as large as the bore of the pump ports.
- e) Use a rigid or reinforced inlet pipe that will not deform or collapse under suction conditions.
- f) Align rigid pipes accurately with the pump ports, to ensure that the pump head is not distorted or damaged.
- g) Fit an inlet strainer of approximate 0.2 mm mesh and adequate surface area if there is any risk of solid particles entering the pump.
- h) Use of a proper electrical starter is strongly advised.

An appropriate starter will:

Prevent accidental re-starts after power failure;

Provide a safe, waterproof switch enclosure;

Protect the motor with a correctly set thermal overload cut-out: a fuse protected only wiring;

Withstand the heavy starting current of the motor, preventing arcing and rapid contact wear.

RUNNING PRECAUTIONS:

A) DO NOT RUN THE PUMP DRY!

The process fluid acts as the lubricating and cooling medium. Without fluid in the pump, frictional forces generate heat which may damage the pump.

B) DO NOT DEAD-HEAD THE PUMP!

In general, the inlet and discharge lines should not be restricted any more than necessary.

Restricting the suction line may lead to cavitation, or if completely blocked, a dry run.

Restricting the discharge pipe may overload the motor as a turbine pump requires more power with increasing head. If completely obstructed (dead-head), the fluid will not cool or lubricate the bearings properly. Consult the factory on minimum flow.

C) DO NOT PUMP FLUIDS WITH FERRO-MAGNETIC PARTICLES!

Magnetic particles will collect on the internal magnet - regardless of size. Consult the factory for guidance when handling magnetic solids or other particulates.

STARTING AND RUNNING:

- 1) Fill the pump body with liquid through the priming port adjacent to the discharge port. This is essential for self-priming, and also protects the shaft(s) and bearings against dry running. The flap valve in the discharge port will ensure that the pump body remains full of liquid, and the pump will self-prime on subsequent starts without additional priming.
- 2) Start the motor briefly to ensure that the pump is rotating in the correct direction. The motor should rotate in the direction shown (viewed from in front of the pump) to obtain the required direction of flow (see Figure 1).

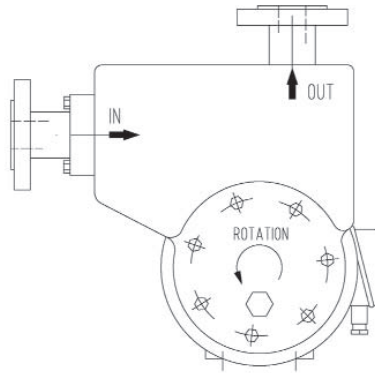


Figure 1: Direction and Port Location

To alter the direction of a three phase motor, reverse any two connections. For a single phase motor, reverse the polarity of the start winding in relation to the main winding. If in doubt, obtain the help of a qualified electrician.

- 3) When running the pump, check that normal liquid flow has been established. If priming does not occur within a minute or two, check the inlet line for airtight. If the flow is poor or non-existent, check for adequate liquid supply, correct rotation of the motor and possible inlet or discharge piping.

MAINTENANCE:

In general, the TECH-MAG MTSP series pump does not require routine maintenance, and therefore does not need to be dismantled frequently. However, it is advisable to check the impeller and bearings once every year. Shut down periods are best for this.

WEAR SAFETY GOGGLES

DISMANTLING THE PUMP:

The pump may be dismantled in two ways:

- 1) The pipe work is disconnected from the pump, and the pump end is removed. This allows the motor and bracket to remain.
 - 2) The motor and bracket are withdrawn from the pump end. This allows the pipe work to remain intact on the volute.
- a) Shut off power to the motor before disconnecting leads, isolate the pump from the rest of the liquid system.
 - b) Remove the bolts holding the pump body to the motor adapter.

- c) Separate the pump body from the motor and adapter;
- d) Carefully separate the internal parts of the pump, noting their correct positions for reassembly; body from the motor and adapter;
- e) Examine the bearings and internal surfaces, checking for minimal play on the shaft, signs of abrasive wear and other damage;
- f) Clean the rotating and static parts to remove any deposits before re-assembling the pump.

MAXIMUM WORKING TEMPERATURE

The maximum temperatures advised are:

150° F to 180° Ffor Polypropylene (PP)

195° F to 230° Ffor Polyvinyldenfluoride (PVDF)

REASSEMBLE THE PUMP:

Re-assembly proceeds in reverse order to dismantling. Note carefully the following points:

- 1) If the pump has been dismantled leaving the pump head & pipe work in place, take particular care when re-assembling not to distort or damage the pump head.
- 2) If the drive magnet has been removed from the motor shaft, make sure that it is re-fitted in the correct position. Check with TECH-MAG for external magnet settings.
- 3) If the ceramic shaft (fitted in pumps MTSP 7503 & larger) needs to be re-fitted in the rear body, it should be pressed in carefully with a HAND press, using a guide to ensure that it is exactly concentric with the rear body. Ceramic or PTFE / graphite half shafts (fitted in pumps MTSP 7502 & smaller) should be pressed gently into place in the impeller/magnet assembly, using finger pressure or a light hand press.

MONITORING

Flow metering or power sensing relays are strongly recommended to prevent unsuitable operation conditioned such as dead-heading, dry-running, or cavitation. Current amp sensors are not advisable. Consult with your local TECH-MAG Pump distributor or representative for appropriate minimum and maximum flow limits for a specific pump model. Maximum flow settings often are dependent upon the NPSH available from the system.

For More Information, Please contact:

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