

WMTA6 LN SERIES SEAL-LESS MAG-DRIVE MULTI-STAGE TURBINE PUMPS

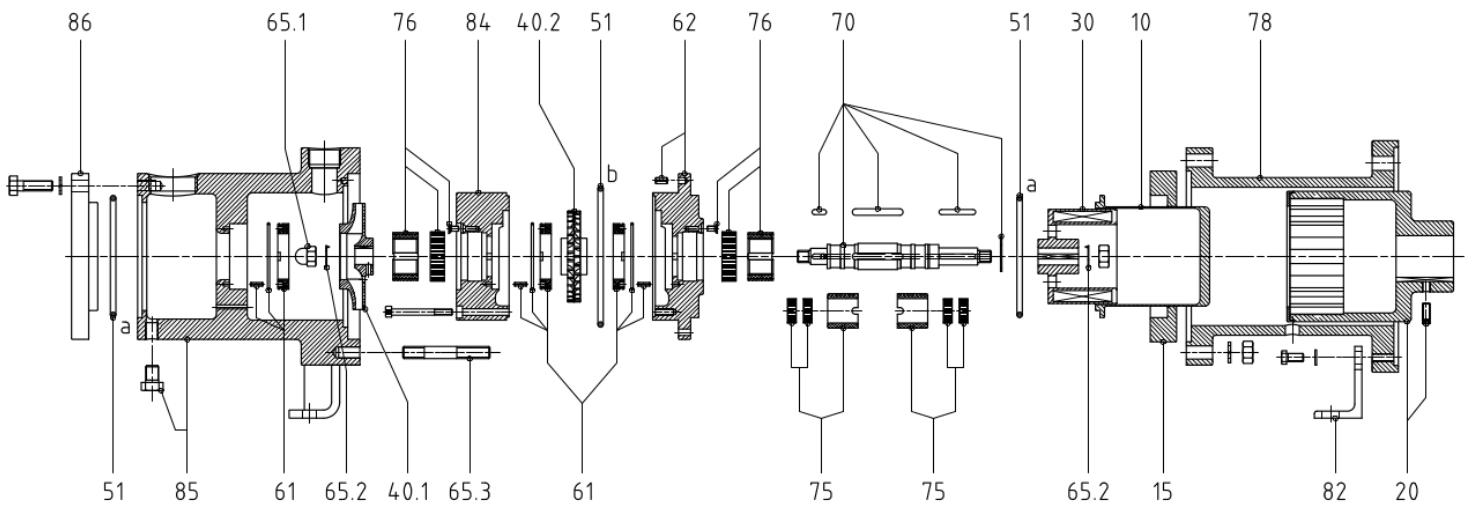
INSTALLATION, OPERATION, AND MAINTENANCE INSTRUCTIONS

TO OBTAIN THE BEST PERFORMANCE FROM YOUR WARRENDER WMTA6 LN PUMP, PLEASE READ THIS MANUAL CAREFULLY.

Failure to follow the recommended procedures may result in early and severe damage to your WARRENDER pump, and may also invalidate the guarantee.

Thank you for your purchase of a WARRENDER WMTA6 LN Series Multi-Stage turbine pump.
Proper installation and maintenance will provide many years of trouble free operation.





REF	Description	Material	REF	Description	Material
10	Rear Casing	Titanium	65.3	Stud Nuts	SS316
15	Rear Casing Flange	SS316	70	Shaft (incl. of keys and circlip)	SS431 SS316
20	Ext. Magnet (incl. of screw)	Neodym./Steel Steel	75	Sleeve Bearing d) Bearing e) Tolerance Rings f) Screw	SiC SS316 SS316
30	Int. Magnet	SS316/CoSm	76	Stationary Bushing f) Stationary Bushing e) Tolerance Ring	Carbon SS316
40.1	Centrifugal Impeller	SS316	78	Bracket (9-8½-1¼_1¾_1½)	Cast Iron
40.2	Turbine Impeller	SS316	82	Rear Foot	Steel
51	O-rings (a+b) a) O-ring 6437 (348) b) O.ring 6512 (354)	Viton	84	Front Ring	SS316
61	Thrust Bearings (incl. of o-ring) (incl. of pins)	Carbon Viton SS316	85	Pump Head (incl. of drain plug)	Carbon Steel Steele
62	Rear Ring (incl. of pin)	SS316 SS316	86	End Cover	Carbon Steel
65.1	Centrifugal Impeller Nut	SS316	88	Rear Wet End (10+30+40.1+40.2+51+61+ 62+65.2+70+75+76+84)	
65.2	Lockwasher	SS316			

1. SAFETY

INSTALLATION, OPERATION AND MAINTENANCE MUST BE DONE BY QUALIFIED PERSONNEL IN STRICT ACCORDANCE WITH THIS MANUAL AND MUST COMPLY WITH ALL LOCAL, STATE AND FEDERAL CODES.

For your protection and the protection of others, always follow the safety rules outlined in this booklet.

Observe warning signs on machines and act accordingly. Form safe work habits by reading the rules and abiding by them.

Keep this booklet handy and review it from time to time to refresh your understanding of the rules.

The use of the word "DANGER" always signifies an immediate hazard with a high likelihood of severe personal injury or death if instructions, including recommended precautions, are not followed.

The use of the word "WARNING" signifies the presence of hazards or unsafe practices that could result in severe personal injury or death if instructions, including recommended precautions, are not followed.

The use of the word "CAUTION" signifies possible hazards or unsafe practices that could result in minor injury, product or property damage if instructions, when recommended precautions are not followed.

SDTM series are magnetic driven pumps. The use of the word "Magnetic" indicates the persistent presence of a magnetic field.

Such fields present immediate danger to individuals having electronic medical devices, metallic heart valves, metallic prosthetics or metallic surgical clips.

2. INSPECTION

All Warrender pumps are inspected prior to shipping and prepared for safe transportation.

Upon receipt of the WMTA6 LN series pump, check for any damage that may have occurred during shipment.

Notify the courier and Warrender Ltd. Pumps promptly if damage has occurred.

3. STORAGE

If the pump is not installed immediately, it should be protected from exposure to moisture and dust.

Shipping protections on the ports installed at the factory, must be kept securely in place.

Storage instruction provided by the driver manufacturer should be observed.

4. INSTALLATION

1. The foundation should be substantial in order to reduce vibrations, and rigid enough to prevent flexing that can result in misalignment.

Foundation bolts of the correct size should be installed by referring to certified drawings if the baseplate is supplied with the pump.

2. The pump must be mounted horizontally on a level foundation, with the discharge port facing upwards.

3. When installing a close-coupled motor-pump unit without baseplate level the pump base accurately, using shims under the pump feet. The pump must sit firmly and evenly on its foundation. It must not be distorted by bolting to an uneven surface.

4. Bare frame motor-pump unit on baseplate, level the baseplate accurately, using shims under the baseplate next to the foundation bolts. The baseplate must sit firmly and evenly on its foundation: it must not be distorted by bolting to an uneven surface, that will throw the pump and motor out of alignment.

5. OPERATION SAFETY BASICS

Listed below are some of basics you should keep in mind in addition to company rules regarding installation, operation and maintenance:

NEVER: start pump without proper prime (casing must be full of liquid)

NEVER: operate pump with the suction or the discharge valve closed.

NEVER: run pump dry over a few minutes.

NEVER: operate pump if there are signs of leakage.

NEVER: change pump service condition without approval of your Warrender Pump representative.

NEVER: loosen port connection while system is under pressure.

NEVER: attempt to clean the pump while it is operating.

NEVER: operate pump above rated temperature and pressure.

NEVER: Pump liquids containing ferromagnetic particles of any size, or substances that will erode or chemically attack the internal parts of the pump. If in doubt, please contact your pump supplier for advice.

NEVER: Restrict both the inlet and the discharge lines while the pump is running. Restriction of the inlet may cause the pump to cavitate, leading to loss of efficiency and rapid wear.

Reduced flow can be obtained if required by a valve branch from the discharge side of the pump back to the liquid source.

If the pump is to be shutdown for an extended period, circulate clean water (or other suitable solvent compatible with pump materials) for several minutes, to avoid the risk of internal precipitation or encrustation.

6. PUMP IDENTIFICATION

Every Warrender pump unit has a nameplate located on the side of the casing. It is recommended that the purchaser record the serial number and reference it when requesting information or service parts from Warrender Ltd. The serial number, must be used for all correspondence and spare parts order.

7. SUCTION AND DISCHARGE PIPING

- Piping should be supported independently of the pump and the line up naturally to pump ports.
- Suction piping should be installed with as few restrictions as possible to provide no less than minimum NPSH as listed on the specification sheet.
- The length of the suction pipe should be kept to a minimum.
 - Suction line should be clean and/or a strainer should be installed to protect the impeller from damage by welding slag, mill scale, or other foreign particles during initial start-up.
 - Pump suction use only a full flow valve.
 - Pressure gauges should be installed in both the suction and discharge piping.

The gauges will enable the operator to easily observe the operation of the pump, and to control if the pump is operating in conformance with the duty point required.

If cavitation or other unstable operation should occur, widely fluctuating pressure will be noted.

8. ELECTRICAL DANGER WARNING

Only a qualified electrician should make the electrical connections to the pump drive motor.

Thoroughly read motor manufacturers instructions before installation.

Check motor nameplate data to be certain that all wiring, switches, starter, and overload protection are correctly sized.

Install the motor according to local electrical codes.

Check all connections to the motor and starting device with wiring diagram. Check voltage, phase, and frequency on motor nameplate with line circuit.

NOTE: Install a flexible electrical conduit on the motor to allow movement of at least 12 inches.

This is necessary to service and inspect the pump.

9. PUMP SPEED

WMTA6 LN pumps are designed to rotate at speeds up to 4000 RPM.

Standard speeds are:

ELECTRIC MOTOR	50Hz	60Hz
2POLES	2900RPM	3500RPM
4POLES	1450RPM	1750RPM

If the pump is driven at variable speeds via an a.c. frequency inverter, keep within the recommended limit of speed.

10. STARTING

Fully open the suction valve. Pump requires a flooded suction.

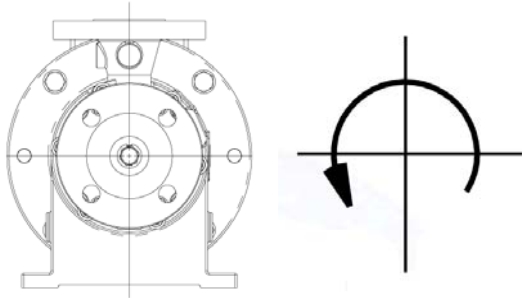
Do not operate pump with suction or discharge valve closed. Operating pump more than a few minutes with the suction valve closed can cause bearing failure.

CAUTION

WMTA6 LN pumps sense of rotation is not reversible.

Check driver for proper rotation.

Correct rotation is counter clockwise when viewed from the pump casing.



CAUTION

At start-up immediately check pressure gauges.

If discharge pressure is not quickly reached stop the motor, reprime and attempt to restart.

Check the pump and piping to ensure that there are no leaks.

Trouble	Possible cause	Investigative / corrective action
<p>No Flow, No pressure at start up.</p>	<p>Pump not completely filled with liquid</p>	<p>Bleed all vapor or air from port 6. Allow more cool down time if pumping low temperature fluid. Check suction line for air leak if suction pressure is lower than atmospheric.</p>
	<p>NPSH actually lower than NPSH requirement listed on specification sheet.</p>	<p>Suction line blocked—check suction screen and valve. Excessive pressure drop through suction piping. Flow restricted by vapor pockets in high points of suction line. Suction tank level or pressure too low. Entrained air or vapor in pumped fluid. NPSH reduced by presence of more volatile fluid in process fluid.</p>
	<p>Failure of drive component, such as interconnecting shaft or impeller key, or item missing from assembly.</p>	<p>Disassemble and inspect</p>

	Reverse direction of rotation.	Note: Impeller and driver rotate in the same direction.
Insufficient flow or head-rise.	NPSH actually lower than NPSH requirement listed on specification sheet.	Refer to solutions listed under “No Flow, no pressure at start-up”
	Flow too low, causing overheating of fluid resulting in internal boiling or unstable pump operation.	Increase through-flow rate. By pass part of pump discharge to supply tank. Use seal cavity bypass and vent the high point of pump to continuously increase inlet flow rate.
	Diffuser discharge partially plugged or impeller damaged by passage of solid particle.	Clean these areas of all obstructions and restore surfaces to a smooth polished finish (use emory cloth or machine), free of all corrosion pitting.
Motor Overloaded.	Process fluid specific gravity or viscosity different from values shown on specification sheet.	Check actual viscosity and specific gravity at operating temperature. Viscosity higher than ten centipoises will cause reduced head and flow with increased power consumption
	Drive speed too low.	Check speed against value listed on specification sheet.
	Pressure gauges of flow meters in error.	Calibrate instrumentation
	Fluid specific gravity or viscosity higher than values listed on specification sheet.	Check actual viscosity and specific gravity against value listed on specification sheet.
	Electrical failure in electric driver.	Check circuit breaker heater size and setting. Check Voltage Current for each phase should be balanced within three percent
	Mechanical failure in driver, or pump.	Remove driver and check for freedom of rotation of pump shaft assemblies Remove fluid end and search for any mechanical failure
Excessive discharge pressure pulsations	Insufficient NPSH.	Refer to solution for insufficient NPSH under “No Flow, no pressure at start-up.” above.

11. MAINTENANCE AND DISASSEMBLY

The maintenance and disassembly procedure are intended for use during standard field inspection or service.

Warrender Pumps WMTA6 LN series contains very strong magnets.

The use of a non metallic work surface is highly recommended.

A) Disassembly

Proceed with caution. Make sure the pump has cooled down if it is recently handled hot liquids. Wear protective clothing and eyewear if the pump has handled any dangerous or toxic liquids. The back to the manufacturer for reconditioning, it must be thoroughly drained and cleaned by the customer.

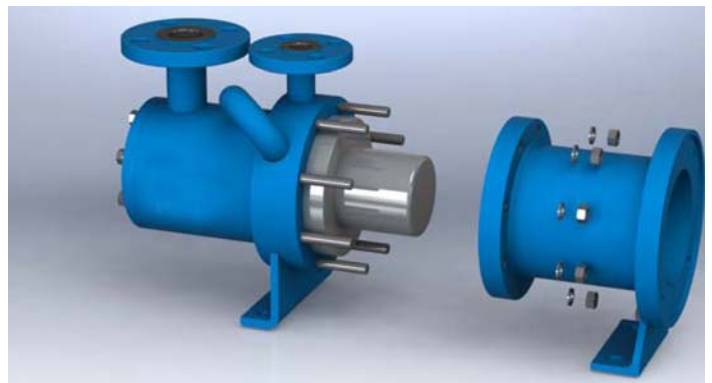
- 1) Remove bolts connecting pump and motor to foundation or base plate.
- 2) Remove hex bolts connecting pump to motor.
- 3) Separate the pump from the motor end by pulling the driver away from the pump.

WARNING MAGNETIC

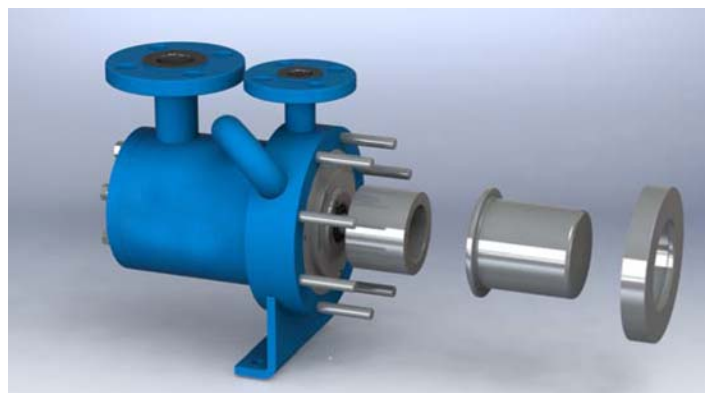
Warrender pumps contain extremely strong magnets. The use of non magnetic tools and work surface are highly recommended.

There is strong magnetic attraction when disassembling / assembling drive end to liquid end. The shop area must be clean and free of any ferrous particles.

- 4) Place the pump with the suction port facing upward, remove hex screws connecting the bracket from the pump casing. Then pull off the bracket assembly.



- 5) Remove the O-ring and replace it each time the pump is disassembled.



6) Unlock impeller nut and lock washer

7) Remove the impeller

8) Unscrew the two screws that lock volute ring, in the back of centrifugal stage

9) Remove pump casing screws

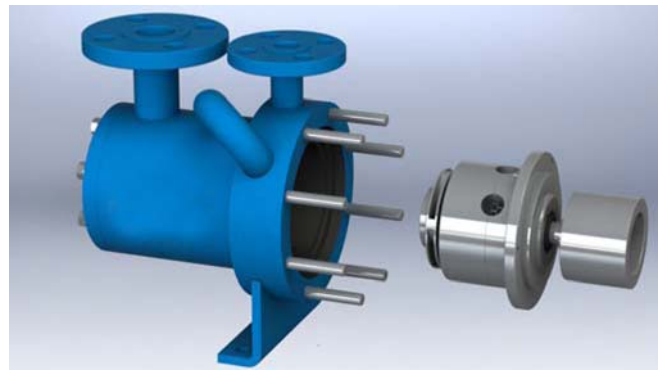
Reminder: Keep all metal tools away from magnetic field of the inner magnet.

10) Remove rear casing O-ring.

Note:

O-ring should be replaced each time you disassemble the pump.

11) Extract internal assembly, pulling the internal magnet with your hand.



12) Extract front volute ring



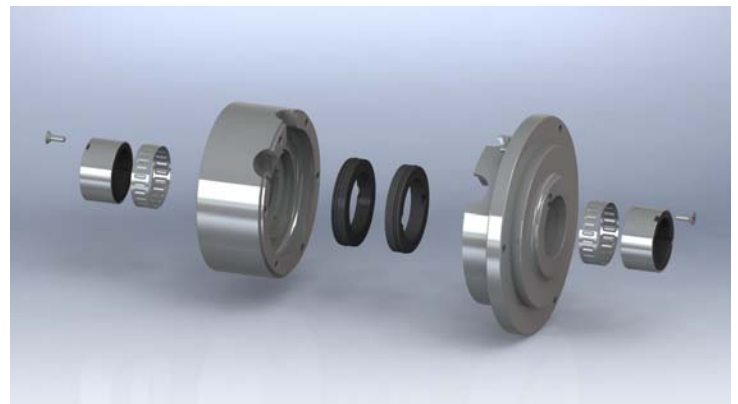
13) To disassemble the volute ring:

a) Remove lock washer screw

b) Pull out lock washer and wear ring, replace the wear ring if worn or damaged

c) To extract the bushing, push from the rear, replace it if necessary

d) Each time you disassemble the bushing, replace tolerance rings and bushing O-rings



14) Flatten the magnet lock washer and remove the internal magnet bolts



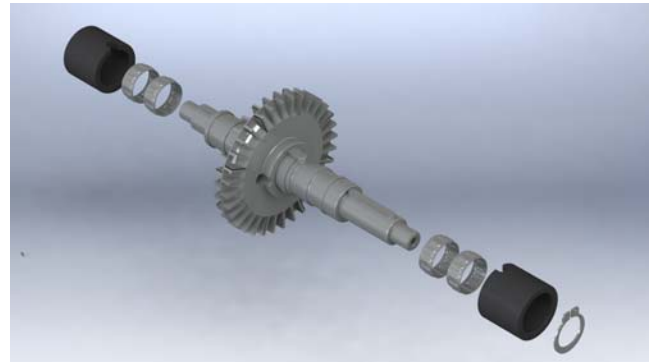
15) Pull out the internal magnet



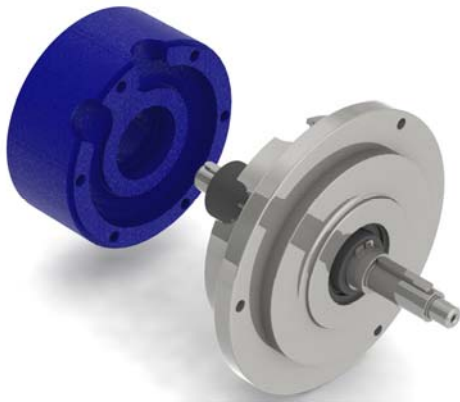
16) Pull out the keys from the shaft



17) Extract shaft spacer



18) Pull out rear volute ring assembly



19) Remove rear volute ring backplate screws

20) Remove rear volute ring backplate

21) Follow the instruction shown at point 13



22) In case of worn or damaged sleeve bushings remove shaft sleeve



23) Pull out shaft sleeve bearings and replace if worn or damaged. Replace the tolerance rings every time you replace sleeve bushing



24) Remove the impeller and replace it, if worn or damaged.



25) To remove the external magnet, unlock the hub screw



26) Pull out the magnet from motor shaft using an extractor



CAUTION

- Replace all damaged or worn parts.
- Thoroughly clean all parts before assembly. Make sure all parts are free of dirt, metallic particles, etc.
- To re-assembly the pump following the above instruction in reverse.

NOTICE

The information in this user's manual is subject to change without notice.

The manufacturer or resellers shall not be liable for errors or omissions contained in this manual and shall not be liable for any consequential damages, which may result from the performance or use of this manual.

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