

## MAINTENANCE & DISPOSAL OF PRODUCT

### Maintenance And Clean

! Our pumps for hydromassage facilities do not required any special maintenance or programming. If the pump will be idle for a long period of tme, it is recommended to disassemble, clean and store in a dry, well - ventlated place. If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person to a hazard. Pump can be automotive empty water after correct installation. When the pump needs to clean (1) filling with water up to level position of bathtub's nozzle, (2) operating 2 -3 minutes, (3) exhausting water of bathtub after engine stop.

### Correct Disposal of this Product

This marking indicates that this product should not be disposed with other household wastes throughout the EU. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental safe recycling.



# AVAPOL®



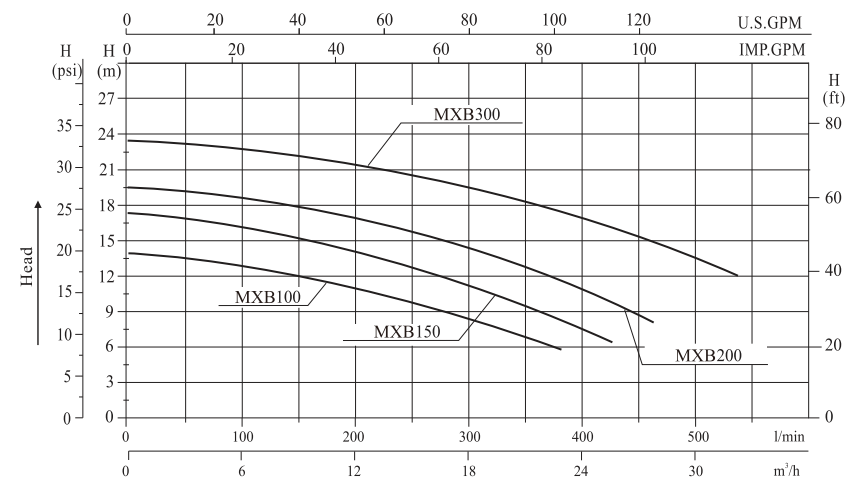
**MXB SERIES PUMP**

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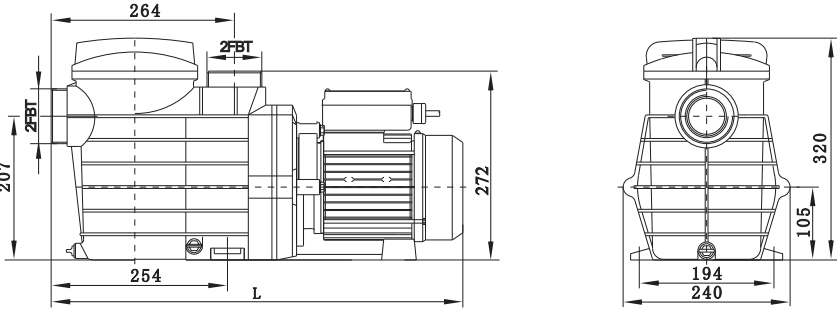
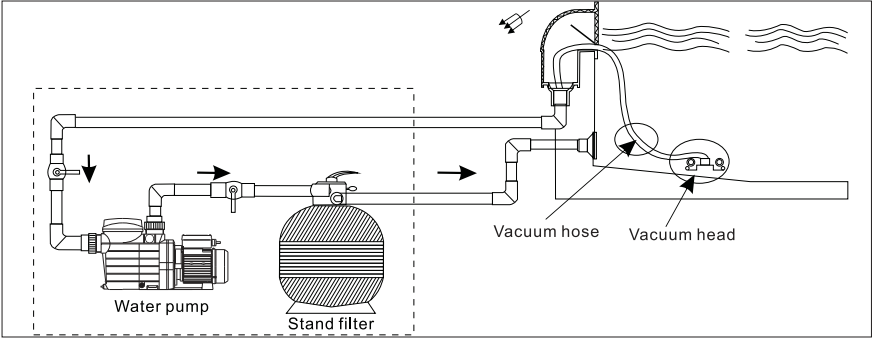
# INSTALLATION DIAGRAM

Performance curves



V / Hz esp: See pump nameplate. Liquid temperature: 4°C ~ 50°C  
Storage temperature: -10°C ~ +50°C. Relative Air Humidity: 95% Max.

# INSTALLATION DIAGRAM



Model	Qmax (l/min)	Hmax (m)	Power(P <sub>i</sub> )		L
			kW	HP	
MXB100	380	13	0.75	1.0	593
MXB150	420	17	1.1	1.5	
MXB200	465	19.5	1.5	2.0	
MXB300	540	23	2.2	3.0	

# IMPORTANT NOTICE

## Attention Installer

This manual contains important information about the installation, operation and safe use of this product. This information should be given to the owner/ operator of this equipment.

## WARNING

Before installing, read and follow all warning notices and instructions accompanying this filter/ pump. Failure to follow safety warnings and instructions can result in severe injury, death, or property damage.

## PUMP SAFETY INSTRUCTIONS

When installing and using this electrical equipment, basic safety precautions should always be followed, including the following:

1. Read and follow instructions.
2. **Warning** - To reduce risk of injury, do not permit children to use this product unless they are closely supervised at all times.
3. **Warning** - Risk of Electrical Shock. Connect only to a grounding type receptacle protected by a ground - fault circuit - interrupter (GFCI). Contact a qualified electrician if you cannot verify that the receptacle is protected by a GFCI.
4. Do not bury the electrical cord. Locate the cord to minimize the abu mower, hedge trimmers, and other equipment
5. **WARNING** - To reduce the risk of electrical shock, replace damaged cord immediately.
6. **WARNING** - To reduce the risk of electrical shock, do not use an extension cord to connect unit to electric supply; provide a properly located outlet.
7. **CAUTION** - For continued protection against possible electrical shock, this unit is to be mounted to the base in accordance with the installation instructions.

**SAVE THESE INSTRUCTIONS!**

# PUMP OVERVIEW & INSTALLATION

## 1. Pump Overview

Your recirculating pump is a centrifugal type pump to drive water flow to your water recirculation system and is designed to operate for years with proper maintenance. The pump wet-end case, diffuser, impeller are made from high quality thermoplastic materials. These materials have been selected for their corrosion resistant nature. When installed, operated and maintained properly in accordance with these instructions, your pump will provide years of service.

Your recirculating pump is driven by an electric motor. The motor is directly attached to the pump impeller. The electric motor turns, it causes the impeller to turn and this causes the water to flow. The water flows into the pump inlet (on the side) and through the strainer basket to pre-filter large particles. The water flow then enters the center of the pump case and through the impeller and out the pump discharge outlet port (above).

## INSTALLATION

1. Check carton for any evidence of damage due to rough handling in shipment. If carton or any pump components are damaged, notify Freight Carrier immediately.
2. After inspection, carefully remove pump from carton.
3. The pump should be secured to a flat solid foundation, high enough to prevent flooding of the motor. A sheltered location is best, being sure to allow for adequate ventilation.
4. Provide space and lighting for routine maintenance access. Do not mount electrical controls directly over pump.
5. The pump should be installed as near to the pool and spa as practical. Avoid installing the pump more than a few feet above the water level. Suction lifts of more than five (1.5 meter) feet will cause very long priming times. Pump will not lift more than 2 meter.

## Pipe Sizing

MAXIMUM RECOMMENDED SYSTEM FLOW RATE BY PIPE SIZE							
Pipe Size (mm)	Flow Rate m3/h	Suction Pipe Length (cm)	Pipe Size (mm)	Flow Rate m3/h	Suction Pipe Length (cm)	Pipe Size (mm)	Flow Rate m3/h
1"	4.6	5" (13)	1.5" (50)	10.4	7.5" (19)	2.5" (75)	25.3
1.25"	6.9	6.25" (16)	2" (63)	18.4	10" (26)	3" (90)	36.8

Note - It is recommended that a minimum length of straight pipe as above mentioned suction pipe length, also having 5x (times) of the system pipe size internal diameter, be used between the pump suction inlet and any pipe fittings (elbows, valves, etc.)

6. The location should provide for adequate floor drainage to prevent flooding.
7. Provide for the need to remove the pump for potential service by providing valves or other means to disconnect the pump suction and discharge.
8. Never store pool chemicals within 10ft of your pool filter and pump. Pool chemicals are corrosive and should always be stored in a cool, dry, well ventilated area.
9. For below water installations ensure isolation valves are installed to reduce risk of flooding or water impact.
10. For above water installation ensure check valves are installed to prevent negative pressure (vacuum) in filter which may damage filter tank. (This applies to M series filter which is without air relief valve feature to relieve negative pressure)

# TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
Pump will not prime	<ol style="list-style-type: none"> <li>1. No water in strainer compartment</li> <li>2. Strainer compartment lid is not tight</li> <li>3. Damaged lid o-ring (air leakage)</li> <li>4. Water level is below skimmer (for Skimmer type pool)</li> <li>5. Clogging in the piping system before the pump suction</li> <li>6. Closed valve in piping system</li> <li>7. Pump speed too low (for multispeed pump)</li> <li>8. Air leak in suction line.</li> </ol>	<ul style="list-style-type: none"> <li>• Add water to strainer compartment</li> <li>• Tighten lid</li> <li>• Replace lid o-ring</li> <li>• Adjust pool water level</li> <li>• Clear basket</li> <li>• Check all valves and open all necessary valve</li> <li>• Adjust to maximum speed ( for multispeed pump)</li> <li>• Find &amp; fix leak</li> </ul>
Low Flow - High Filter Pressure	<ol style="list-style-type: none"> <li>1. Filter is dirty.</li> <li>2. Restriction in return line</li> </ol>	<ul style="list-style-type: none"> <li>• Clean filter</li> <li>• Open return line restriction</li> </ul>
Low Flow - Low Filter Pressure	<ol style="list-style-type: none"> <li>1. Strainer basket or skimmer basket is clogged</li> <li>2. Clogged impeller</li> <li>3. Air leak in suction line</li> <li>4. Restriction in suction line</li> </ol>	<ul style="list-style-type: none"> <li>• Clean basket</li> <li>• Clean obstruction</li> <li>• Find &amp; fix leak</li> <li>• Find and open restriction</li> </ul>
Motor does not turn	<ol style="list-style-type: none"> <li>1. Power switch is off</li> <li>2. Circuit breaker has tripped</li> <li>3. Pump is in "off - mode" on a timer controlled circuit</li> <li>4. Motor terminal connections are incorrect</li> <li>5. Motor shaft is locked by bad bearing</li> <li>6. Impeller is locked by debris</li> <li>7. Fuses blown of thermal overload open</li> </ol> <p>Motor windings burn out defective motor starting switch insufficient voltage</p>	<ul style="list-style-type: none"> <li>• Check power switch &amp; reset</li> <li>• Check circuit breaker &amp; reset, if re-trips, contact electrician</li> <li>• Check timer mode.</li> <li>• Have terminal connections checked by electrician</li> <li>• Have motor bearings replaced by electrician</li> <li>• Have fuse or thermal overload replaced or replaced pump</li> <li>• Have motor replaced</li> </ul>
Motor Over - Heating	<ol style="list-style-type: none"> <li>1. Electrical supply connections are incorrect</li> <li>2. Wiring to pump is undersized</li> <li>3. Power Company supply voltage is low</li> <li>4. Ventilation is inadequate for motor</li> </ol>	<ul style="list-style-type: none"> <li>• Have terminal connections checked by electrician</li> <li>• Consult electrician to rewire pump</li> <li>• Notify Power Company.</li> <li>• Remove any restrictions to air flow</li> </ul>



# WINTERIZING PROCEDURE

## WINTERIZING

**NOTICE:** Allowing the water to freeze in pump will damage the pump and cause potential water damage/ flooding and potential property damage.

1. Drain all water from pump housing and piping when freezing temperatures are expected. A drain plug is provided to drain the pump. If the pump has a strainer pot, both the strainer drain plug and the housing drain plug should be removed. If pump has no strainer pot, then only remove the housing plug.
2. If the pump can be removed and placed in an inside dry location this should be done.
3. For an outdoor unprotected location, it is best to protect the equipment in a weatherproof enclosure.
4. Do not wrap the motor with plastic because condensation could form inside the motor.
5. In installation where the pump cannot be drained, a 40% propylene glycol 60% water solution will protect to 50° F.

**NOTICE:** Do not use anti-freeze solutions except propylene glycol; as other anti-freeze is highly toxic and will damage the pump.

# PUMP OVERVIEW & INSTALLATION

## WARNING

Chemical fumes and/or spills can cause severe corrosive attack to the filter and pump structural components. Structurally weakened the filter or pump components can cause filter, pump or valve attachments to separate and could cause severe bodily injury or property damage

Assemble piping and pipe fittings to pump and valve provided Unions with pipe glue. All piping must conform to local and state plumbing and sanitary codes.

**Note:** It is highly recommended to use manufacturer's provided unions to avoid forceful installation that may cause damage to pump main body. Damage to pump main body is a costly mistake compare to damage to unions.

Use thread seal tape or pipe sealants on all male connections of pipe and fittings. Use only pipe sealant compounds suited for plastic pipe. Support pipe to prevent strains on filter, pump or valve. **DO NOT USE PETROLEUM BASE PRODUCTS.**

Avoid over tightening the pipe threads when connecting fittings to the pump. Proper procedure is to apply a pipe sealant to the thread and then install hand tight plus 1 -1/2 turns. **DO NOT OVER TIGHTEN.**

Long piping runs and elbows restrict flow. For best efficiency, use the fewest possible fittings, large diameter pipe (at least 1-1/2") and locate equipment as close to the pool as possible. The pump suction line should not be smaller than the pipe size on the inlet of the pump.

It is essential that the suction line be free of air leaks and air traps.

For commercial pump MRB and MTX series, please make sure gate valves and shock absorbers be installed at suction and discharge port to overcome water hammer effects.

## WARNING

Blockage of suction fittings can cause severe or fatal injury due to drowning. Small children using pool/spa equipment must always have close adult supervision.

To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.

Wiring of this pump should be performed by a licensed electrician in accordance with your local electrical code.

**WARNING-**Never work on pump while it is running or power is still connected; hazardous voltage can cause severe or fatal injury. A suitable ground fault interrupter should always be installed at the power supply source of the unit.

Ground motor before connecting to electrical power supply. Failure to ground motor can cause severe or fatal electrical shock hazard. Do not ground to a gas supply line.

The pump motor must be wired for the proper voltage in accordance with the wiring diagram supplied with the motor.

Wiring the motor with the incorrect supply voltage will cause damage to the motor and void the warranty.

# PUMP OVERVIEW & INSTALLATION

The wiring to the motor should be kept as short as possible and large enough NOT to cause an excessive voltage drop. Use the wire size table as a guide in selecting minimum conductor size.

Install, ground and bond wire according to local code requirement.

For direct wiring into main supply, MXB pump is supplied with a power cord that can be plugged into the power source. There are two terminals labelled as AC-L and AC-N. Attach the power leads to these terminals. Either wire may be attached to either terminal

## Procedure:

1. Make sure that the pump is disconnected from power source.
2. Unscrew the control panel located on the top of the electric motor. The power connection is located at the side where the wire comes out of the box.
3. Unscrew the pin that fastened the power cord.
4. Take out the power cord with plug and replace with the new one.
5. To fasten the power cord, connect the live wire to the AC-L pin and the neutral wire to the AC-N pin. The ground wire should connect to the ground wire pin.
6. Connect power to ensure the connections are correct. If not, repeat the steps above and check both pin connections.
7. Recover

## 3. INITIAL START-UP:

1. Release all system pressure and open all air bleeders on total hydraulic system prior to starting the pump. See filter owner's manual.
2. Ensure that all fittings, clamps, closures and couplings are tight and in accordance with equipment manufacturer's recommendations.
3. Open suction and discharge valving to allow free flow of water. On flooded suction pumps with strainer pot, the water source is higher than the pump, the water will flow into the pump strainer compartment and the compartment will fill with water.
4. On non-flooded suction systems, the pump lid will have to be removed by rotation the lid counterclockwise to a stop and lifting the lid.
5. The pump strainer compartment should be filled with water up to suction opening on the pump.
6. It is good practice to lubricate the lid O-ring with silicone lubricant each time the lid is removed. The O-ring should be cleaned and inspected every time the strainer pot is opened.
7. The lid should be replaced on the compartment by aligning the lid ears with the slots on the strainer compartment. Press the lid down and twist the lid clockwise to engage the lid.
8. The pump is now ready to prime. Energize the motor and the pump will prime. The time to prime will depend on the suction lift and the distance and size of the suction piping. Turn off power if the pump does not prime within five minutes and refer to Troubleshooting Guide section of this manual.

**NOTICE: Never run the pump dry. Running dry may damage the seals and pump housing. This could allow water leakage and flooding.**

# OPERATION & MAINTANANCE

The strainer basket in the pump should be inspected and cleaned twice each week. Remove the clear lid and the basket and clean debris from basket. Inspect the lid O ring; if damaged replace. The pump seal requires no lubrication. Refer to motor service centers for motor servicing.

## Disassembly/ Assembly Procedure for Seal Replacement

**WARNING: Never work on pump while it is running or power is still connected. Hazardous voltage can cause severe or fatal injury.**

1. Stop pump and release system pressure
2. Disconnect motor power at circuit breaker
3. Close suction and discharge gate valves
4. Use extreme care when handling the mechanical seal. The mating seal surfaces are polished and are easily damaged.
5. The mechanical seal can be changed without disconnecting piping by removing 6 bolts and pulling the motor with pump bracket diffuser and impeller assembly away from front pump housing body.
6. Remove impeller and rotating portion of seal by holding motor shaft and rotating the impeller counter-clockwise when facing the shaft extension on the motor.
7. The rotating portion of the seal can now be removed from the impeller. Clean the impeller hub and lubricate with soapy water. Wipe off shining carbon sealing surface of new mechanical seal with a clean tissue to remove oily fingerprints or other foreign materials. The new rotating seal can be pressed back onto the impeller.
8. To remove the stationary ceramic seal seat, first loosen the four motor bolts which run through the entire length of the motor into the bracket diffuser. Remove the bracket diffuser from the motor. Press the ceramic seat and rubber gasket out of the bracket diffuser.
9. Clean the bracket diffuser seal area and lubricate with soapy water. Press the new ceramic seal and gasket into the bracket diffuser, being sure it is fully seated. Wipe off the ceramic sealing surface with a clean tissue to remove oily fingerprints or foreign substances.
10. Place the bracket diffuser on the motor and carefully align the four motor through bolts. Secure the housing onto the motor being careful not to over-tighten the bolts. Gradually bring bolts up to final tightness by moving across diametrically and in a crisscross pattern.
11. Screw the impeller with new rotating seal onto the motor shaft. Rotate the motor shaft to make sure the impeller is not touching the bracket diffuser.
12. Clean the bracket diffuser o-ring and check to make sure it is in position. Replace the motor and bracket diffuser on the front pump housing body and bolt into position with 6 bolts. Gradually bring bolts up to final tightness by moving across diametrically and in a criss-cross pattern.
13. Refer to initial start up procedures to restart the pump.