

Waubashene Machine & Welding

User Guide for Pumpout Models AVR20 with Toggle Switch Operation

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Please take the time to read all instructions and warnings!

Please store the instructions or a copy for future reference!

Customer Pumpout Information

Pumpout Model	<input type="checkbox"/> AVR20 <input type="checkbox"/> Other: _____
Serial No.	_____
Voltage	_____

05.05.2008

User Guide for Pumpout Models AVR20

Introduction

Thank you for buying a Waubaushene Pumpout System.

- This manual package should include:
 - 1x User Guide
 - 1x Warranty Registration Form
 - 1 Set of wiring diagrams
 - 1 Set of keys
 - _____
- Please check, if you received all the accessories that you ordered with the pumpout system.
- Call us immediately at (705) 538-1459 or 1-800-663-1624 if any parts are broken, incomplete, or missing.
- You **MUST** complete the **WARRANTY REGISTRATION** form and mail or fax it to Waubaushene Machine & Welding within 14 days after receipt of the pumpout system.
- Please read this manual carefully **BEFORE** installing and operating the equipment.

How to Contact Us

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Web Site: www.wmwpump.com

Getting Started

Before permanently installing one of these pumps, we highly recommend that you use it to pump some clean water first.

The pump has been tested at the factory and is shipped ready-to-use. The only necessary procedure is to connect the suction hose to the top valve at the right of the pump and the connection of the discharge hose or pipe at the bottom of the unit.

It is suggested that you run the pump a few cycles with clean water before installing it. With the discharge disconnected, you will be able to actually see how much water one of these pumps moves in one cycle. This way you can become familiar with the performance. The pumping action is very smooth, sometimes it is difficult to tell that the pump is sucking unless you look at the vacuum gauge or watch the clear part of the suction hose.

Try emptying water out of a container such as a five-gallon pail or a garbage can so that you see how it works. Then, if it won't work after you have installed it, at least you will have some idea of what it should do. Test your installation with clean water, if for example, you find out that your discharge plumbing is not working, it is much more pleasant to work on before it has sewage in it.

This would also be a good time to learn how to fill and check the lubricator and how it works. Please refer to the "Lubrication Oil" paragraph for more information.

Warning: Waubaushene Marine Pump Out Systems are *NOT* designed or intended for pumping gasoline or flammable liquids. Such use of the pump out could cause a fire and is a safety risk.

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Installing Your Marine Pump Out System

These pumps are usually easier to hook up than a domestic washing machine. All that most people require is a drain and a power supply. However, here are some pointers:

1. The pumps are skid mounted, the choice of foundation and location is entirely up to the end user. An asphalt or concrete base would be preferred, if that is not available, at least put a couple of heavy timbers such as a pair of railroad ties under the pump to keep the skid rails up out of the mud.

NOTE: For maximum suction performance locate the pump as close to water level as possible to keep the vertical lift on the suction side to a minimum.

2. The pump has heavy duty lift rings for handling. This is the safest and best way to move these pumps.

Approx. weight of pump when full:

AVR60: 425 lbs (195 kg)

Make sure that the location you set it on can support the weight.

3. The pump should be mounted in an area that is well ventilated. The standard electrical components are not explosion proof and therefore, the machine should not be installed where a concentration of fuel vapours could occur (e.g. gasoline fumes from a refuelling operation).
4. Most authorities require that a certain distance be maintained from a gas pump or refuelling operation. In case you are installing a remote stand, these may also come under the authority of your local electrical utility. Check your local rules before locating this equipment.
5. The suction hose can be connected directly to the pump or the suction piping may be extended as far as you want away from the pump. The maximum recommended horizontal distance is about 100 feet (30 metres). The maximum recommended vertical lift is about 20 feet (6 metres). If you do not exceed that you don't have to worry about the suction performance.
6. If you extend the suction plumbing, use 1 ½" pipe or hose. The preferred method is to use PVC pipe for the main runs and flexible hose where you have to make a transition from a floating dock to a fixed dock or bulkhead. The choice and type of plumbing are up to the installer, it is recommended that some provision for service be made, such as a clean-out at strategic places and possibly the use of quick connect hose fittings at ramps or gang ways. Use a three-piece mechanical union to connect permanent suction pipes to the pump. If you don't, it will be very difficult to service the inlet check valves.
7. The pump is specified to be operated on the following voltage (unless specified otherwise in "Customer Pumpout Information" Table on Page 1):

	North America	Europe, Australia etc.
AVR20	120V AC, 15A Circuit min., 60 Hz	230V AC, 15A Circuit min., 50 or 60 Hz

It is recommended that an electrician is consulted about the wiring before these pumps are connected.

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IMPORTANT: All pumps for North America are wired with a plug for a standard 120V outlet for easy testing. It is the customer's responsibility to check the local rules for electrical machines in wet environments. Do NOT use the pump on an extension cord and do NOT share the 15 Amp. power outlet with other devices.

8. The discharge pipe to the holding tank or sewer should be 1 ½".
9. There is almost no wrong way to connect one of these pumps. However, if you use a mechanical union to connect the pump at both the suction and the discharge side it will be much easier to service in the future. If you are connecting a remote stand we recommend the installation of a union and a ball valve in the suction pipe at the pump. The union is necessary to allow service to be done on the pump.

The reason for putting the extra ball valve in the suction pipe when installing a remote, is that it allows you to isolate the pump from the dock plumbing. If you ever get a vacuum leak this will allow you to quickly detect if the problem is at the pump or in the remote stand plumbing.

10. The choice of pipe material is entirely up to the owner or installer. Suction and discharge piping should be either PVC or Polyethylene. PVC is the preferred material because it comes in easily handled lengths. Steel or galvanized pipe does not work as well as plastic for sewage lines. The reason is that toilet paper coats the interior wall of steel pipe, it doesn't do that with plastic pipe. Schedule 40 or 75 PSI (5 bar) Polyethylene pipe is excellent material for the discharge piping, we recommend it because the bends are gradual and the interior of the pipe is smooth.

Some installers use a short length of hose between the pump and the suction and discharge pipe. This adapts well to changes in direction and allows easy servicing in the future. If you are using polyethylene pipe on the suction side between a remote stand and the pump, use the highest pressure rating available. This type of poly pipe is frequently used for potable water and is available in pressure ratings of 75 PSI (5bar), 125 PSI (approx. 8.5 bar), and 250 PSI (approx. 16.5 bar).

If you use polyethylene pipe for suction lines (vacuum lines), USE AT LEAST 125 PSI (approx 8.5 bar). It has a thicker wall and resists collapsing under vacuum. It is very difficult to find vacuum rated poly pipe because it is normally used for pressure. We do know from experience that 125 PSI (approx 8.5 bar) rating is adequate. But we have found out some things the hard way and we pass along our experience. If a polyethylene pipe of less than 125 PSI (approx. 8.5 bar) rating is used on an intake vacuum line, it will suck flat and the pump will not work at all. This usually happens on a hot day several months later, so be forewarned. Schedule 40 PVC pipe resists collapsing and works well.

If the suction line is to be buried, it may be wise to install it in a plastic drainage pipe to protect it from gravel and other sharp objects. This makes any future service much easier, particularly if the vacuum line is buried under asphalt.

NOTE: Do not run suction lines under water to get from one dock to the next. The total lift is measured from the lowest point in the system. Also, vacuum lines are often empty which means they will float up and may be hit by propellers and boat keels. If you insist on doing this, be prepared for lots of unforeseen trouble!

11. Use as few elbows as possible. Two 45 degree elbows are better than a 90 in this business.

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If you must make sharp turns, use a tee with a plug in the unused side, instead of a 90 degree elbow. If a blockage occurs, it will always be at an elbow or other connection. By using a tee and plug you have a 90 degree angle you can service.

TIP: You can purchase a slow or long radius bend from companies who sell PVC electrical conduit. These bends provide a more gradual turn with less pressure drop. Often, the electrical PVC has the same pressure characteristics as PVC plumbing pipe.

NOTE: Each 90-degree elbow also reduces the overall pumping distance - so keep them to a minimum. As stated before, iron, black or galvanized steel pipe is not recommended because the inside is not smooth and may become packed with shredded toilet paper. Whether you use ABS or PVC pipe, it should also be installed with clean out plugs at strategic places.

12. When connecting the discharge pipe into a holding tank, the pipe must enter the top of the tank. It must be connected so that the sewage spills down into the tank. This is to prevent sewage from siphoning back to the pump. The discharge connection should also be made so that the sewage flows down into a manhole or pipe when connected to a sewer.

This is very important when the holding tank or sewer is higher than the pump out. The purpose is to prevent sewage from flowing back into the vacuum tank in the event that the outlet check valve on the pump does not seal.

If the contents of the discharge pipe is more than 20 US gallons (75 litres) between the pump and the sewer and the pipe is above the tank level, some special installation precautions should be made.

This would be a 1 ½" pipe which is 52 feet (16 metres) or longer. In a case like this, a valve should be installed between the pump and the sewage line, and it should be left shut when the pump is not being used.

The reason is that a long discharge line leading uphill from the pump will hold more sewage than the pump tank (assuming a pump tank with 20 gallons). If the outlet check valve on the pump should happen to leak, it will allow the sewage in the pipe to flow back into the pump tank while it is idle. This will flood the vane pump with sewage and it won't work the next time it is needed. Installations where the outlet point is below the pump are not affected by this potential problem. If there is any question about the above instruction, please call for advice!

IMPORTANT: If a valve is installed in the discharge line between the pump and the sewer, the valve must be open when the pump is run. These pumps expel waste air down the discharge line when they are pumping. If you block this air flow the pump motor will stall when it is on the vacuum cycle.

If you are emptying this pump into a lift station there may be a problem with strong odours of sewage. If the lift station is well ventilated and it is in a location where odour doesn't matter then don't be concerned. If odour is a concern there are several options. On pumps that are connected normally the smelly exhaust air is sent to the sewer with a hose from the exhaust air outlet through a check valve and a tee into the sewer.

On systems where there is no sewer connection a muffler filter jar is used to muffle the sound of the pump and to collect any waste oil and water vapour. The jar needs to be emptied periodically, typically when checking the oil level. Some people extend the vent line to another location or up a

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vertical distance. For example, one installation has a 3/4" plastic pipe running up a 40feet TV tower and the odour is dispersed on the prevailing breeze.

On systems that empty into a lift station it is usually better to run a separate line to the sewer on the outlet side of the lift station. This sends the smelly air into the sewer instead of the lift station. Sending the exhaust air into a lift station usually aggravates the odour because it pushes the air in the lift station out the vent as well as the air from the pump.

The same situation occurs when emptying into a septic tank. It is far better to separate the vent line and feed it into the filter bed separately. This diffuses the odour underground and usually eliminates any problem.

Remote Stand Installation Plumbing

The easiest way to install the remote stand(s) is to remove the bushing that holds the elbow into the remote stand. Install a vertical 2" pipe so that the elbow is at the correct height, then slide the remote stand over the pipe and put the bushing back in to hold the assembly in place. A 2" suction pipe has to be run between the remote stand(s) and the intake on the pump.

Again, the choice of pipe material is up to the installer, most marinas use ordinary PVC or ABS plastic drain pipe. The best way to make the connections between the pump and the dock is to use a short length of suction hose the same size as the pipe. It is recommended to use a mechanical union or a piece of hose with quick connect couplers to make the connection at the pump. This will facilitate any future service.

The suction line does not need any fall to it because air sucks the sewage along the pipe. A swing check valve should be installed at the base of the remote stand or in the suction hose where it goes into the remote stand. This check valve is normally supplied in the hose. The purpose of the check valve is to prevent sewage from flowing out of the remote stand if someone leaves the hose open.

Electrical Connection for Remote Stands

There is a terminal strip on the back side of the control box. Each remote stand has a matching terminal strip. The terminals are colour coded. Simply match the colours for a correct connection. Refer to the wiring diagrams or call us if you need help.

Use a gauge 22 wire to connect the remote stands to the pump. For distances shorter than 300 ft (90 metres) a wire up to gauge 18 may be used. A heavier wire than gauge 18 or a lighter wire than gauge 22 should not be used. In general, a LIGHTER wire should be used for LONGER distances between the pump and the remote stand, to keep the electrical capacity of the wire to a minimum. It is recommended to use electrical conduit to protect the wire from moisture and mechanical damage.

The remote stand wiring is electrically parallel to the wiring in the pump. If more than one remote stand is used, the wiring can be run from remote stand to remote stand or from each remote stand to the pump.

The remote stand needs a 120V AC or 230V AC power connection if it is equipped with a motorized ball valve. Please check the label on the motorized ball valve for appropriate voltages.

Operating Instructions

The Waubaushene pumps have a very simple procedure to use them. On the front of the pump, there is a key switch and a three-position toggle switch. The key switch is to prevent unauthorized use. The key may be removed in either the ON or OFF position. If you do not need the key lock, turn it ON and put the key in a safe place.

With the key ON, when the toggle switch is turned to the left, the pump will automatically suck from the boat and discharge to the sewer. This is the “ON AUTO CYCLING” position. These pumps have two distinct functions, they suck effluent first into the pump tank on the vacuum cycle, then discharge it from the pump tank into the sewer on the discharge cycle.

NOTE: It is important to understand, that the pump does not suck any effluent from the boat when it is in discharge cycle, nor does it pump any effluent into the sewer when it is in vacuum cycle.

The according light on the front of the control panel will light up to indicate if the pump is in the vacuum cycle (“VACUUM SUCTION” light) or in the discharge cycle (“DISCHARGING” light). Some units are used without a discharge pipe to the sewer for drainage. In this case the pump will fill until the tank is full and then it will stop and the “DISCHARGING” light on the front panel will light up.

The pump will stop immediately when the toggle switch is turned to the centre position (“OFF”).

NOTE: If the toggle switch is turned to “OFF” and the “Auto Discharge” feature is enabled, then the pump will switch to the discharge cycle automatically and empty the pump tank first before the motor stops. Please call us for information on turning the feature on or off.

The right-hand toggle switch position is for making the pump discharge only. It is used when the pump is full or is partly full and you want to empty it.

NOTE: The pump will not create more pressure than needed to overcome the vertical lift in the discharge line. It will create about 0.5 PSI per foot of vertical lift (0.1 bar per metre). Thus there is no general value for the pressure that the pump should build when discharging. It all depends on the circumstances in the marina. If the pump is operated in the manual discharge mode and is not connected to a sewer line or if the pump is operated with the outlet hand valve shut, it will build up pressure in the tank to 15 PSI (1 bar) and then release the pressure through the safety valve.

We suggest shutting off the pump with the key switch when not in use and only allow authorized persons to operate it.

Operating Procedure

NOTE: If you have a remote stand with a toggle switch connected to your pump, use either the switch on the pump or the one on the remote stand. If you turn on both switches, the pump will eventually shut off and won't restart until you turn off both switches.

1. Turn key on the pump clockwise to ON.
2. Select the “ON AUTO CYCLING” position with the toggle switch.
3. Close the valve in the suction hose (this type of valve is a ball valve. The valve is closed

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when the lever is across the hose, open when the lever is in line with the hose).

4. Screw the correct size deck fitting to the WASTE outlet of the boat.
5. Connect the hose to the deck fitting using the quick coupler supplied on the end of the suction hose.
6. Open the valve on the hose. The section of clear hose is to show when the boat is empty.
7. When the boat is empty, close the hose valve, remove the quick coupler from the deck fitting and remove the deck fitting from the waste outlet. If you want to clear the hose of sewage, open the hose valve when there is vacuum present and the resulting air flow will clear out the hose. Turn the toggle switch to OFF to stop the pump.
8. When the pump tank is full, it will automatically stop and a red light will show FULL or DISCHARGING.
9. The pump normally restarts in the discharge cycle automatically when the full light comes on. The Pump will resume with the vacuum cycle after the pump tank is empty. Some units have this feature turned off.
10. These pumps have a built in timer on the circuit board. The motor will stop automatically after about 15 minutes if the toggle switch is left turned ON (either left or right hand position). To reset the pump, turn the toggle switch OFF and then turn it ON again, the pump will restart. This is one of the reasons for only using one switch at a time. The timer will not reset until all toggle switches on pump and remote stands are turned to OFF.

NOTE: This timer feature is intended to protect the pump from abuse. It was introduced because a few pumps with remote stands were left running for weeks because no one could hear them. In other cases people left the pump on and the hose valve open or in the water and the pump flooded septic and lift systems. Please call us for information on turning the feature on/off or for changing the time setting.

ATTENTION: Always open the suction valve slowly when there is vacuum present. Some operators prefer to connect the suction hose to the boat and then turn it on. Either procedure is acceptable, the only difference is that you can save a little time by starting the pump first. It is a good policy to shut the suction hose whenever the “DISCHARGING” light is on. This light shows that the pump is on the discharge cycle and there is no suction anyway. Closing the hose just makes sure that any sewage left in the hose won't trickle out while there is no vacuum.

When you initially start the pump, there is no vacuum indicated and there won't be until you close the hose valve or put the end of the hose into water. The vacuum will increase until the water begins to move.

At a low lift this takes place very quickly. If the lift is higher it may take several minutes to achieve enough vacuum, also the length of the intake piping has an effect. For example, a very long intake pipe system can have as much empty space in it as the pump tank.

The pump has to produce vacuum in the tank and the rest of the system so it takes longer to start. When you are pumping out a boat and you see its tank is empty, close the hose valve and save the vacuum. This will keep the suction pipe full of liquid instead of letting the pump suck the intake pipes

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dry. On long intake runs, if the pipes are already full, the pump does not have to suck air out of all the space to start.

On installations with short suction lines of 33 feet (10 metres) or less, the start up time will be very short anyway. On long runs starting with the intake full, it can save several minutes. After the boat empties, if you leave the hose valve open, the vacuum level will drop off to zero.

Some boat owners will want to rinse the head, etc. Close the valve as soon as you see air going up the hose, rinse the head, then open the hose again. You won't have to wait for the vacuum to build up to suck out the last bit of water.

ATTENTION: Do not run this pump in a discharge cycle with the discharge valve shut. It will very quickly build air pressure in the tank. This will cause the motor current to go too high and it will shut down. The motor will reset itself automatically after it cooled down.

Operating Procedure with Coin / Token Box

1. Turn power key on the pump clockwise to ON.
2. Make sure that the toggle switch on the pump is in the "OFF" position. The pump is started in the vacuum cycle by the coin / token box timer directly. The pump may have an additional key switch, which disables or enables the toggle switch on the pump to prevent unauthorised people from starting it without inserting coins or a token.
3. Screw the correct size deck fitting to the WASTE outlet of the boat.
4. Connect the hose to the deck fitting using the quick coupler supplied on the end of the suction hose.
5. Open the valve on the hose. The section of clear hose is to show when the boat is empty.
6. Insert the coins or token. The pump will start and run for a certain amount of time depending on the coin / token box timer setting. It will automatically switch to the discharge cycle to empty the pump tank after the timer expires. The pump will stop when the pump tank is empty and new coins or token have to be inserted to start it again.

IMPORTANT: Do not insert coins or token while the "DISCHARGING" light is flashing, since no suction is available at that time. Wait until the pump stops and the "PUMP TANK EMPTY" light comes on.

To change the timer setting open the back of the coin / token box and set the dip switches as described on the unit.

7. When the boat is empty, close the hose valve, remove the quick coupler from the deck fitting and remove the deck fitting from the waste outlet. If you want to clear the hose of sewage, open the hose valve when there is vacuum present and the resulting air flow will clear out the hose.

The pump tank shouldn't fill up completely under normal conditions, since it will be discharged each time the coin / token box timer expires. This ensures that each customer starts with an empty pump tank.

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NOTE: If more than one remote stand is connected to the pump, then all remote stands are usually equipped with a motorized ball valve. The coin / token box timer will start the pump and open the motorized ball valve on the remote stand. All motorized ball valves on the remote stands need to be closed in order to trigger the automatic discharge.

The remote stand may have a “COIN / TOKEN BOX OVERRIDE” key switch. This enables authorised personnel to do a pumpout without inserting coins or a token. The pump will run in “ON AUTO CYCLING” as long as the key is in the “OVERRIDE” or “ON” position

Shut Down Procedure for Storage or Winterizing

If the pump will not be used for several weeks, or for storage, follow this procedure:

Switch the pump to “ON AUTO CYCLING” and let it build vacuum, open the hose valve abruptly to clear any sewage out of the intake hoses and plumbing. This may be repeated several times if necessary. Then switch to “DISCHARGE ONLY” and close the ball valve at the outlet of the pump. When 10 PSI (0.7 bar) pressure shows on the gauge, open the valve. The rush of stored air in the tank will clear the pump and the discharge plumbing of any remaining sewage. This may be repeated several times if necessary.

There is approximately five gallons of liquid left in the vacuum tank when the lower pilot light comes on. The above procedure will clear the tank and no further winterizing is necessary.

If freezing of discharge lines is a concern, suck up a little antifreeze and then discharge it. This should protect the pipes, in the event that there is any water left in a low area of the plumbing.

Explanation of Pump Cycles

NOTE: This only applies to pumps connected to a sewer for automatic draining.

The pump cycles automatically. When turned to “ON AUTO CYCLING”, there is a slight time delay. Assuming the pump tank is empty, the unit will start in the vacuum cycle. As the pump fills, sewage touches the low probe (=lower level sensor) and the “PUMP TANK EMPTY” light will go out. When sewage reaches the high probe (=upper level sensor) the pump will pause and restart in the discharge cycle. The “DISCHARGING” light will flash indicating the pump is in discharge cycle.

NOTE for all pumps equipped with the circuit board PCVERS 17 (or higher):

The “DISCHARGING” light will stay on solid as long as sewage touches the high probe. The “DISCHARGING” light will start to flash as soon as the high probe is cleared when the pump is in the discharge cycle. The light functions as a combined discharging cycle / tank full indicator. If the “DISCHARGING” light stays on solid even when the pump is in the vacuum cycle, then there is a ground fault on the high probe and the probe needs to be cleaned. Please refer to the “Probe Error” paragraph in this manual for probe cleaning instructions.

This unit is equipped with a motorized ball valve on discharge. It will open and stay open as long as the unit is in discharge cycle and it is closed when the unit is in vacuum cycle.

The pump will pause and then restart in the vacuum cycle when sewage clears the lower level sensor. At this time the “DISCHARGING” light goes out, the “VACUUM SUCTION” light and the “PUMP TANK EMPTY” light come on showing that the tank has emptied enough to start sucking again.

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Foul air from the pump tank is routed down the discharge pipe during the vacuum cycle. This air will push the water in the pipe toward the sewer. It may sometimes appear that the pump is discharging during the pump cycle because of this. See the installation instructions if you install any valves in the discharge pipes.

Lubrication Oil

IMPORTANT: These pumps consume oil, it is necessary and important that the oil level is checked frequently.

The oil goes into the bowl of the lubricator on the rear side of the pump. The bowl is filled through the top refill opening (big black plastic screw) or by detaching the bowl from the oiler.

NOTE: The lubricator is located on the right hand side of the pump head on older units.

Check the oil level daily and refill as necessary with Esso Unavis Bio 40 oil. Any SAE #10 hydraulic oil may also be used (Automatic Transmission Fluid is hydraulic oil #10 and is readily available).

ATTENTION: DO NOT USE 10W30 OR 2 CYCLE OIL.

The lubricator on the pump should be kept about 3/4 full. Don't overfill it and don't operate it dry. These pumps use oil. You can observe the oil dripping down into the air flow through a transparent dome or sight glass on top of the lubricator. It's purpose is for monitoring the air flow. The correct flow rate is one drop of oil every 5 to 10 seconds. The oil flow can be increased by turning the little metall screw on top of the lubricator counterclockwise or decreased by turning it clockwise.

Regular Maintenance

1. Check the oil level frequently. Please call us if the pump seems to use much less or more oil than normally. The lubricator may need to be cleaned or adjusted. Please be aware, that the oil consumption depends on how much the pump is used. Refer to the "Lubrication Oil" paragraph for more information.
2. Run the pump at least once a week for 5 minutes in the discharge cycle, if it is not used very often. This can be done without actually doing any pumping. It ensures that the internal vacuum pump parts stay covered with an oil film, which prevents them from rusting. Rust may cause the vanes to stick inside the rotor, causing poor pump performance. You can skip this step, if the pump is used on a daily basis.
3. Clean all the level probes at the beginning of every season and then once a month.

Cleaning Instructions:

- ▶ Turn the power key switch to OFF and unplug the unit.
- ▶ Pull the level probes (stainless steel rods) and clean them with water and a rag. You may use cleaning detergent or even emery cloth for the metall part of the probe, but make sure that the black insulation is not damaged. Do not use any oil or grease. Take apart, clean and dry the fitting that holds the probe. Make sure that there is no dirt stuck in the fitting part that remains on the tank. Clean with a screw driver and a rag if necessary. Pull one probe at a time to make sure that the wires don't get switched.

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- ▶ Make sure that the plug snaps onto the probe end and makes a good electrical contact when reinstalling probe wires.

- ▶ Check the swing check valves in all the suction hoses, at the pump intake, and in the discharge line (if applicable) at the beginning of every season and replace them as necessary. In worst case, the pump could pump the sewage back into the boat tank and flood it, if all swing check valves fail and the ball valve in the suction hose is left open while the pump is in discharge cycle.

- ▶ There is a brass air filter in one of the ports of the air reverse valve (=solenoid operated valve located under the hood). Check the filter at the beginning of every season and replace it if necessary. The discharge performance of the pump will be poor if the filter is plugged.

Please store the instructions or a copy where they can be found by the persons who use this pump.

Any questions? Please call or fax us.

Phone: (705) 538-1459 or 1-800-663-1624, FAX: (705) 538-1776

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LIMITED WARRANTY

Waubashene Machine & Welding warrants this equipment to the original owner against defective material or workmanship for a period of:

One (1) Year on Electric motors, vacuum pumps and components from the date of purchase.

Seven (7) Years on New Tanks (as of April 1, 2008)

Lifetime warranty on Electronic circuit boards (as of January 1, 1993)

Waubashene Machine will repair or replace at no charge, any part of the solid state circuits for as long as the original customer owns the pump, regardless of the reason for failure. This extended warranty is limited to the electronic control circuit board. It does not include the motor or the electrical valve parts.

All tanks are warranted against rust through. All tanks used in saltwater must be galvanized; if painted tanks are used WMW will not honour 7-year term.

The manufacturer's responsibility under this warranty is limited to the repair or replacement of the defective part or parts and the shipment to the customer with regular freight (e.g. UPS Standard). All other costs including transportation, postage, and shipping of defective parts back to the factory, or Overnight Freight Charges and other incidental service are the customers' responsibility. This warranty does not cover damage resulting from shipping, negligent handling, lack of reasonable care, or natural causes beyond our control.

Waubashene Machine does not warrant the painted or plated finish. While every attempt is made to produce a good finish, the end result is beyond our control, therefore, we do not warranty the finished surfaces.

Waubashene Machine will supply labour at no charge to repair any defective part that is returned to the factory during the warranty period. Unless otherwise agreed upon, all parts replaced under warranty have to be inspected in our shop for the reason of failure. Warranty cannot be granted if defective parts are not returned. If the inspection shows that the reason for failure was due to improper use or care by the customer, WMW will not honour the warranty.

Waubashene Machine will not reimburse for labour charges to repair its' products by other parties unless previously authorized in writing.

The rights under this warranty are limited to the original user and may not be transferred to subsequent owners. Shipping costs from the customer to the factory associated with warranty claims are the responsibility of the customer. We reserve the right to bill for shipping of the new part and to bill for the new parts if the defective parts are not returned. We reserve the right to comment on the reason for failure and if the situation is not corrected, then to charge for recurring damage.

Waubashene Machine or their agents have no liability whatsoever at any time for personal injury, property damages, or for any special, indirect or consequential damages of any kind arising from the use or installation of products manufactured or distributed by Waubashene Machine & Welding.

This warranty is strictly limited to its terms and in lieu of any and all other warranties and conditions, written or oral, whether expressed or implied.