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60 Hz. / 50 Hz. WATERFALL PUMP SYSTEM INSTRUCTION MANUAL

TABLE OF CONTENTS

Safety Information.....	1	Horizontal /Vertical Mount	
Pre-Assembly.....	2	• Installation.....	5
Sled Mount		• Diagrams.....	5 & 6
• Installation.....	3	Control Panel.....	6
• Mooring or Anchoring.....	3	Maintenance.....	7
• Diagrams.....	4		

SAFETY INFORMATION

WARNING

This product is not intended for use by young children or infirm persons unless they have been adequately supervised by a responsible person to ensure that they can operate the product safely.

Young children should be supervised to ensure that they do not play with the product.

Aqua Control, Inc. products are made entirely of corrosion resistant materials including stainless steel, aluminum alloy, bronze and engineered plastics. They will provide safe, long and satisfactory service if properly installed, operated and maintained.

1. Follow all applicable local and state electrical codes.
2. Protect exposed or vulnerable wiring with tubing or conduit.
3. Do not operate the unit when it is obvious the flow rate is reduced.
4. Do not work on the unit when it is turned on.
5. Follow all normal safety precautions when working in or around the water.
6. Prevent tension on electrical wires.
7. Do not carry or pull the unit by the lights or by the cable.
8. Never try to dislodge debris from the impeller or propeller while the motor is connected to the power supply.
9. Always verify the control panel and all electrical equipment are grounded properly.
10. Any time high voltage electricity is used in or around water, a potential safety hazard exists. Aqua Control includes safety features in its control panels.

PRE-ASSEMBLY

Prior to installing, verify the correct product has been ordered and received. Aqua Control, Inc. will not accept any returns for refund or exchange of product or components that have been installed in the water or modified in any way. Keep original packaging for returns to the factory or contact the factory for instructions as to how to properly package for safe return of product.

1. **Check the packing slip** that accompanies the shipment. Verify that all boxes have been received. Each label will have a box number and total for the shipment (1 of 5, 2 of 5, etc.). The packaging list has the total number of boxes noted at the bottom.
2. **Check the pond depth or wet well size.** Is the pond deep enough for the sled mount unit to be installed? Are the wet well dimensions large enough for the vertical or horizontal unit to be installed?
3. **Verify the incoming voltage** where the power supply will be connected to the control panel. Does the measured voltage match the rated motor voltage requirements? Note the horsepower, voltage and phase on the packing slip.
4. **Is there a VFD operating** from the same power supply or in the vicinity that might interfere with the GFCI?

CHECK VALVES

Most waterfall applications require a check valve. Unless otherwise specified by Aqua Control, all waterfalls will include a check valve (4", 6" or 8"). The check valve serves two purposes if the pump shuts off. It stops the upper pond from draining into the lower pond. It stops the pump from running in reverse. If the pump shuts off, the backflow of water through the pipe would cause the pump/motor to spin slowly in reverse. This could damage the motor bearings.

Although the check valve can be attached directly to the output of the pump, it is good practice to install the check valve at least 10 pipe diameters from the pump output. For example, with 8" pipe or hose, the check valve should be positioned at least 80" from the pump outlet.

When installing a check valve, orientation is critical. There is a notation on the top of the check valve "**THIS SIDE UP**". Installing the check valve upside down or on it's side will render the check valve useless. The check valve will remain open. There is also an arrow with the label "**FLOW**". This indicates the direction of water flow. Installing the check valve backwards will stop all water flow.

WATERFALL LINES

- **Angel:** 1HP to 5HP line built using centrifugal pumps designed to produce head approaching 50' at lower flow (500 GPM Max.).
- **Niagara:** 1HP to 7.5HP line built using axial pumps designed to produce very high flow (1,200 GPM Max.) with head up to 20'.
- **Niagara 2:** 1HP to 7.5HP line is a revolutionary redesign of the Niagara line. Composed of the same high strength composite materials used in the Select Series 2, this innovative new waterfall pump line now offers better performance at higher head up to 45'.
- **Yosemite:** 7.5HP to 40HP line is built using turbine pumps designed to produce very high flow (1,200 GPM Max.) with higher head up to 150' or more.

SLED MOUNT INSTALLATION

Sled Mounts are designed for direct install to the pond bottom. They do not require a wet well. Their patented design allows the pump to sit lightly on the pond bottom.

1. Select an area of the pond for the installation where the pond bottom is relatively flat. This area must have less than one foot of silt on the pond bottom and must be at least 4' deep (excluding Yosemite).
2. Before installation, ensure no ropes or cables are tangled or twisted under the unit. Place the unit as close as possible to the water's edge with the front (output) end facing the shoreline.
3. Attach the mooring or anchoring rope to the front looped rope connected to the front two eyebolts on the sled. This must be in-line with the thrust from the pump. Note that the front rope group is used for mooring the unit when in operation and to pull the unit should it not float to the top for any reason.
4. Attached to the two rear eyebolts is another looped rope. Attach a temporary tow rope to this loop. This looped rope is used to tow the unit to its desired location and can be used to tilt the unit in order to clean the suction screen while it is floating. The rope with the factory supplied finder float and large bar weight is attached to the rear rope loop. This weight is used to sink the unit and the finder float is used to locate the unit when it is submerged.
5. **IMPORTANT!** Verify that the flexible hose is completely stretched out and has no kinks or bends in it.
6. With the bar weight removed, the unit is designed to float and can be towed to the desired location of the pond. Float the unit slowly, allowing time for it to fill completely with water and level itself. This may take a few minutes. Once the unit is level it may be moved to the desired location of the pond.
7. When the pump assembly has been brought to the desired location, verify no pump cables, ropes or hoses are tangled, twisted or interfering with the floating unit. Remove the temporary tow line.
8. When the main large bar weight is placed inside the float tube, the unit will gently sink to the pond bottom. The finder float will remain on the surface, showing the location of the rope that is attached to both the unit and the weight. If additional weight is required to sink the unit, place the second bar weight inside the float tube. When the unit needs to be floated or moved, the bar weight can be removed from the unit and it should slowly float to the surface. Once the unit is fully surfaced, it can be towed back to shore or inspected at the location.
9. Should the unit not surface for any reason, the finder float rope may be used to help pull the unit up to the surface for further inspection. The unit can be also be pulled up to the surface using the mooring/anchoring line.
10. The entire pump assembly must be submerged for proper operation. If the unit is submerged below ice depth, it will not require removal during the winter months.

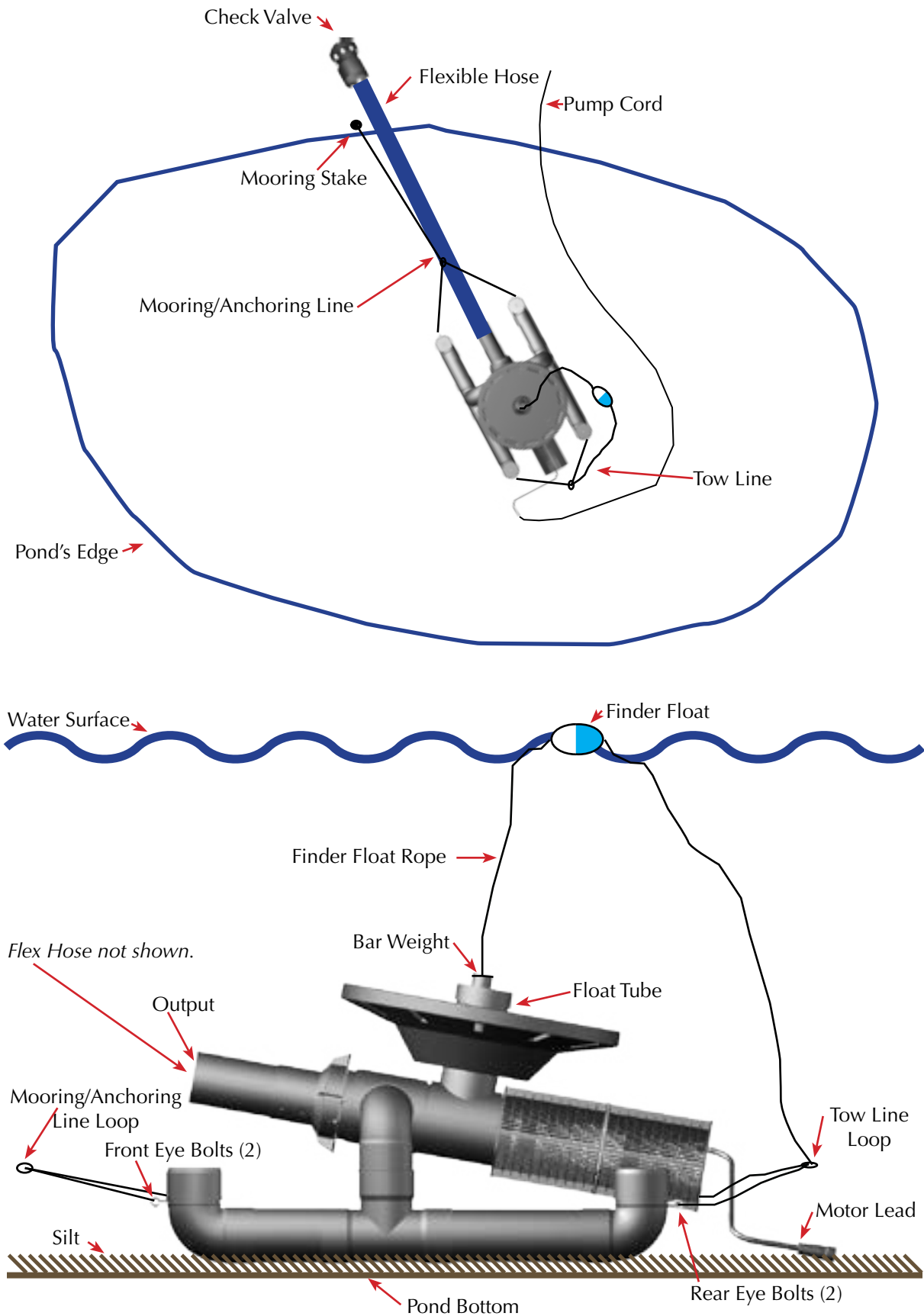
MOORING OR ANCHORING

1. The mooring or anchoring line must be attached to the front rope loop and must be connected in line with the pump. This line must be tight. There will be 25 to 100 pounds of constant force to counteract.
2. For **MOORING**, the rope should run in the direction the unit is pointing and attached securely to a suitable point on the shore. Use a mooring stake or other well-attached tie point close to the shoreline. (See *fig. 1*)
3. For **ANCHORING**, extreme care must be taken to anchor the unit securely and in line with the thrust. A good quality marine anchor with flukes must be very securely set. The anchor line must be tight and attached to the front rope loop.
4. The rope, sled and flexible hose must all be positioned in a straight line with the hard piping at the pond's edge.
5. The motor cable must be lead back to shore in a manner that does not put tension on the cable.

CAUTION: Because the pump creates a continuous 25 to 100 pounds of tension on the mooring or anchor rope, it is critical to moor or anchor the unit securely.

SLED MOUNT WATERFALL CONNECTION DIAGRAM

Fig. 1



HORIZONTAL / VERTICAL MOUNT INSTALLATION

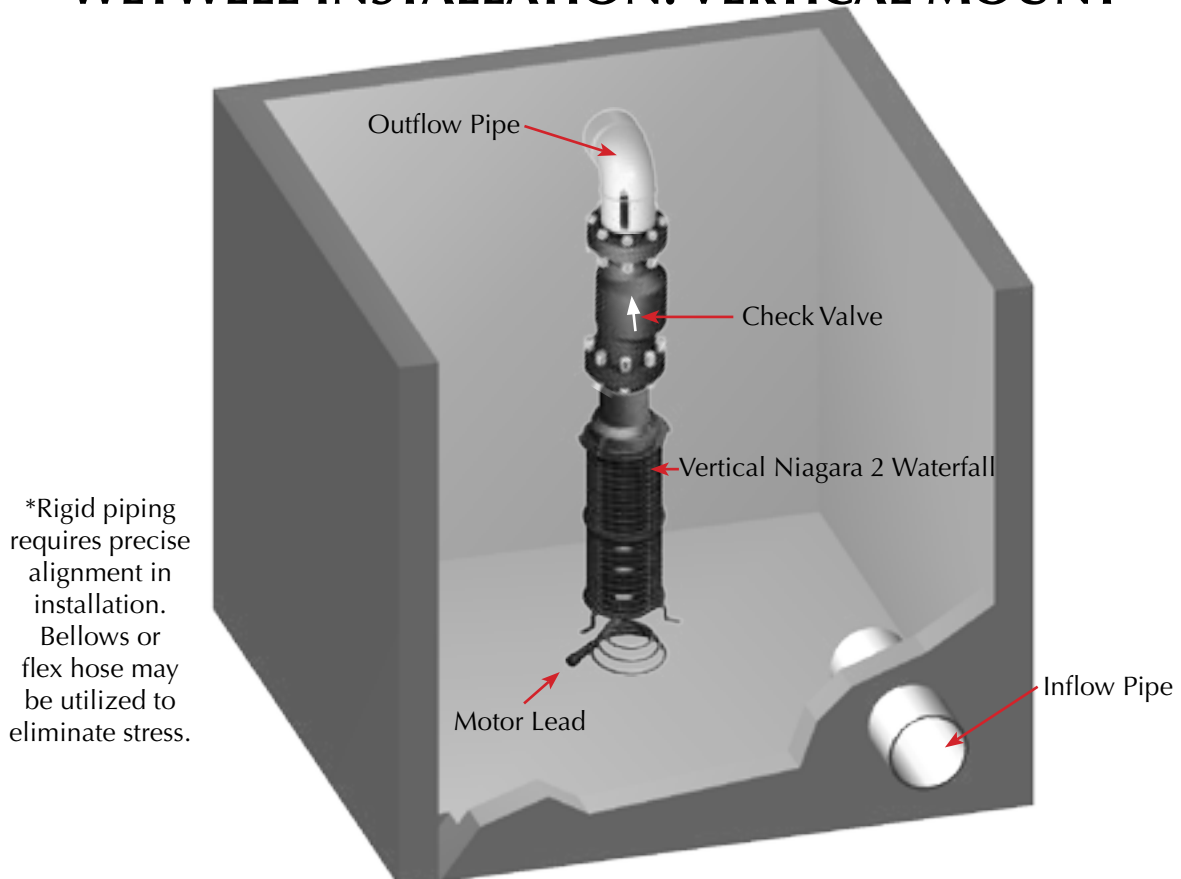
These configurations are designed to be installed in a wetwell. A wetwell is a water-filled chamber or pit that will house the pump.

1. Bolt the unit's legs to the floor of the wetwell.
2. Secure the pump outlet to the pipe. Normally, the optional flange assembly (4", 6" or 8") will terminate the waterfall pump and will attach directly to the site's hard piping. To compensate for a slight misalignment of the piping, a short piece of flex hose can be inserted between the hard piping and the check valve.
3. Fill the wetwell.

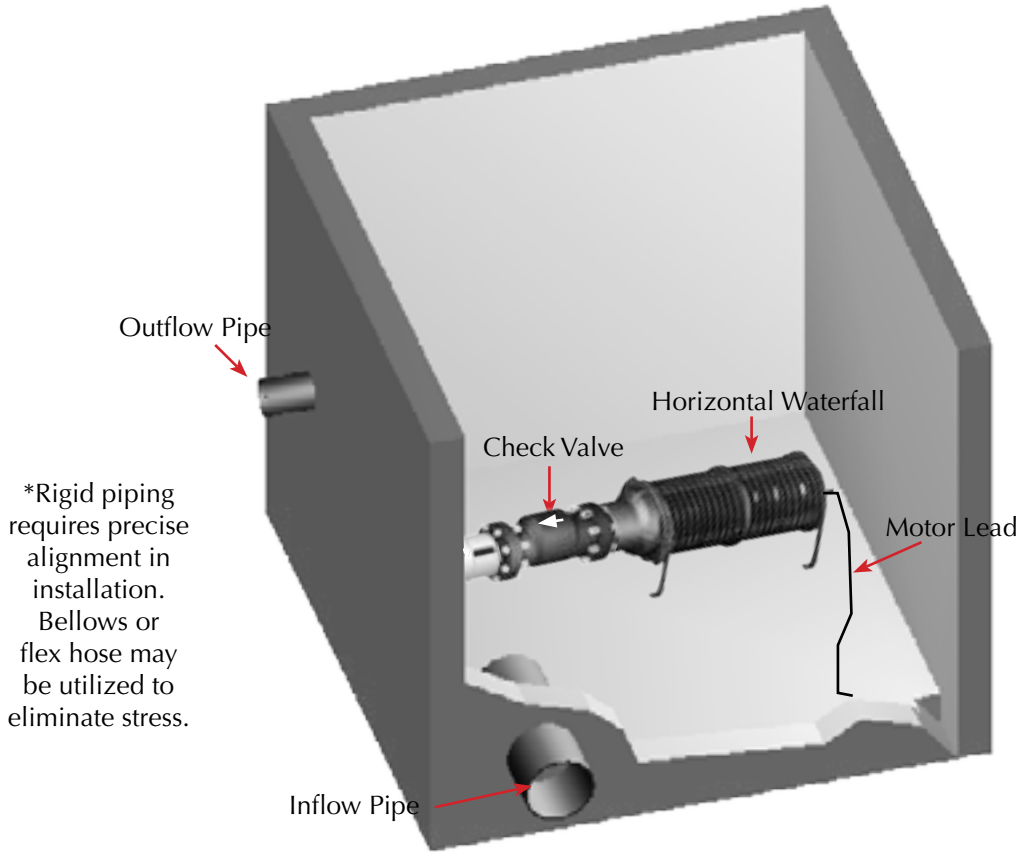
To ensure proper operation, when running, the pump must be completely submerged. Although this is rarely a concern with the horizontal mount, this must be considered with the vertical mount. The water level should cover the top of the pump. The propellers, impellers or turbine must be completely submerged at all times. Horizontal units have a different type of depth consideration. If there is not enough water covering the unit, a vortex may develop above the suction screen. This will cause air to be sucked into the pump, disrupting water flow. It is necessary to have at least 18" of water in the wetwell for a horizontal unit.

Another consideration for wetwells is inflow versus outflow including water in the pipe. For example, a 4'W x 10'L x 5'D wetwell can accommodate approximately 1500 gallons. The water depth will drop 1 foot for each 300 GPM pumped if not immediately replenished. When first turned on, the piping system must be filled completely before the water begins to recirculate and refill the wetwell. This can create a problem. For example, 150' of 8" pipe will hold approximately 390 gallons of water; therefore, if the wetwell does not have an auxiliary inflow, the wetwell will drain 15.5" before replenishment by the waterfall. If the water level falls below the minimum pump depth either a vortex may develop above the horizontal unit or the pump may be above water level. Either condition will reduce the pump flow and could damage the motor.

WETWELL INSTALLATION: VERTICAL MOUNT



WETWELL INSTALLATION: HORIZONTAL MOUNT



CONTROL PANEL

Aqua Control, Inc. is certified to manufacture UL Listed Industrial Control Panels (UL 508A). Most single-phase control panels are UL Listed. Three-phase control panels are not UL Listed.

INSTALLATION QUALIFICATIONS

It is recommended that all ACI control panels be installed by QUALIFIED electricians who are knowledgeable about your local and state electrical codes. **Aqua Control accepts no responsibility for injuries or product damage due to incorrect installation of control panels or if control panels are installed by a non-qualified person.**

A complete set of control panel installation instructions is shipped inside each control panel manufactured by Aqua Control. Refer to these instructions for installation guidelines. Control panel schematics are also included in all control panels manufactured by Aqua Control.

If the control panel instructions or schematics are not located inside the ACI control panel, contact your distributor of Aqua Control, Inc. to obtain them.

WARRANTY: Modification of the control panel voids the manufacturer's warranty on the entire unit unless those changes are specifically communicated to and approved by Aqua Control, Inc.

VENTILATION: If ventilation is added, it must be done with 3R rated and screened (or filtered) ventilation kit. A screened ventilation hole or holes can be put in the bottom of the control panel.

UL RATING: Field modifications to the control panel made by anyone not qualified and authorized by UL to make such modifications, or modified with Non-UL rated components, will render the control panel no longer UL listed.

MAINTENANCE

GENERAL

Aqua Control products do not require yearly maintenance of the motors or pumps. The motors should never be opened for maintenance and doing so will void the factory warranty.

SUCTION SCREEN CLEANING: Routine cleaning of the suction screen is required to assure adequate water flow past the motor to cool it during operation. If the screen becomes fouled with debris, the motor can overheat and cause premature motor failure.

A finder float is provided with sled mount waterfalls and is recommended to be attached to the waterfall prior to sinking the unit to assist in locating the unit. Follow the installation instructions on page 3 to resurface sled mount waterfall units for screen cleaning. Screens are designed to be cleaned by hand.

WINTERIZATION

It is helpful to install a drain valve near the output side of the check valve. This is used to drain the pipe for winterization. Water freezing in the pipe could damage the pipe. If the unit is in a wet well, the wet well should be drained and the unit stored in an area above 32°F. If the unit is a sled mount and is below the freeze line, you can remove the check valve from the hard piping and store the hose and check valve with the unit below the freeze line. If you want to remove the unit for the winter, disconnect the check valve from the hard piping and store the unit, hose and check valve in an area above 32°F. Aqua Control is not responsible for any damage to a unit that operates during the winter or is stored in the water.

WINTER OPERATION

SAFETY ADVISORY: Operation of a unit during the winter will compromise the thickness and stability of the ice and create a safety hazard for anyone on the ice.

WARRANTY DISCLAIMER: Aqua Control, Inc. does not warranty any damage incurred due to operation in freezing weather.