



2HP, 5HP & 7.5 SELECT SERIES II FOUNTAINS

TARGET: **WATER AERATION**

Select Series II Fountain Range INSTRUCTIONAL MANUAL



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SAFETY INFORMATION

- WARNING -

Your 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. Do not operate the unit when it is obvious the flow rate is reduced.
2. Do not work on the unit when it is turned on or operating.
3. Follow all normal safety precautions when working in and around the water.
4. Prevent tension on the electrical wires.
5. Do not carry or pull the unit by the lights or by the motor cable. Use the finger pockets on the float.
6. Never try to dislodge debris from the impeller or propeller while the motor is connected to the power supply.
7. Always make certain that the control panel and all electrical equipment are grounded properly.
8. Any time high voltage electricity is used underwater, a potential safety hazard exists. Aqua Control builds and provides control panels that are standard equipped with an Earth leakage Circuit Breaker for both motors and lights. This breaker, or residual current device (RCD), has a rated residual operating current of 30mA, and is typically calibrated to trip at 67-83% of rated fault trip current, that is 20-25mA.

PRE-ASSEMBLY

Prior to installing, verify the correct product has been ordered and received. We 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 your original packaging for returns to the factory or contact the factory for packaging suitable for safe return of the product.

1. Check the packing list that came with the shipment. Make certain all the items have been received.

2. Check the dam depth. Is the dam deep enough for the unit being installed?

HP	Minimum Operating Water Depth (Vertical)	Minimum Operating Water Depth (Horizontal)
2HP	1.1m	0.7m
5HP	1.1m	0.7m
7.5HP	1.2m	0.7m

3. Verify the incoming voltage where it will be connected to the control panel. Does the measured voltage match the rated motor voltage requirements? Note the HP, voltage and phase on the packing list.



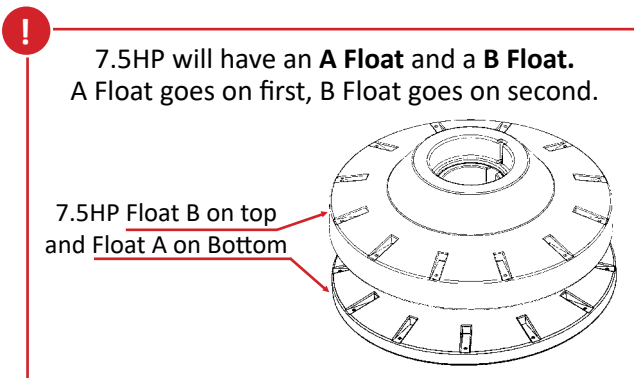
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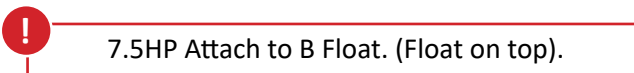
2HP, 5HP & 7.5HP SELECT SERIES II VERTICAL DISPLAY AERATOR FOUNTAIN ASSEMBLY

HP	Minimum Operating Water Depth (Vertical)
2HP	1.1m
5HP	1.1m
7.5HP	1.2m

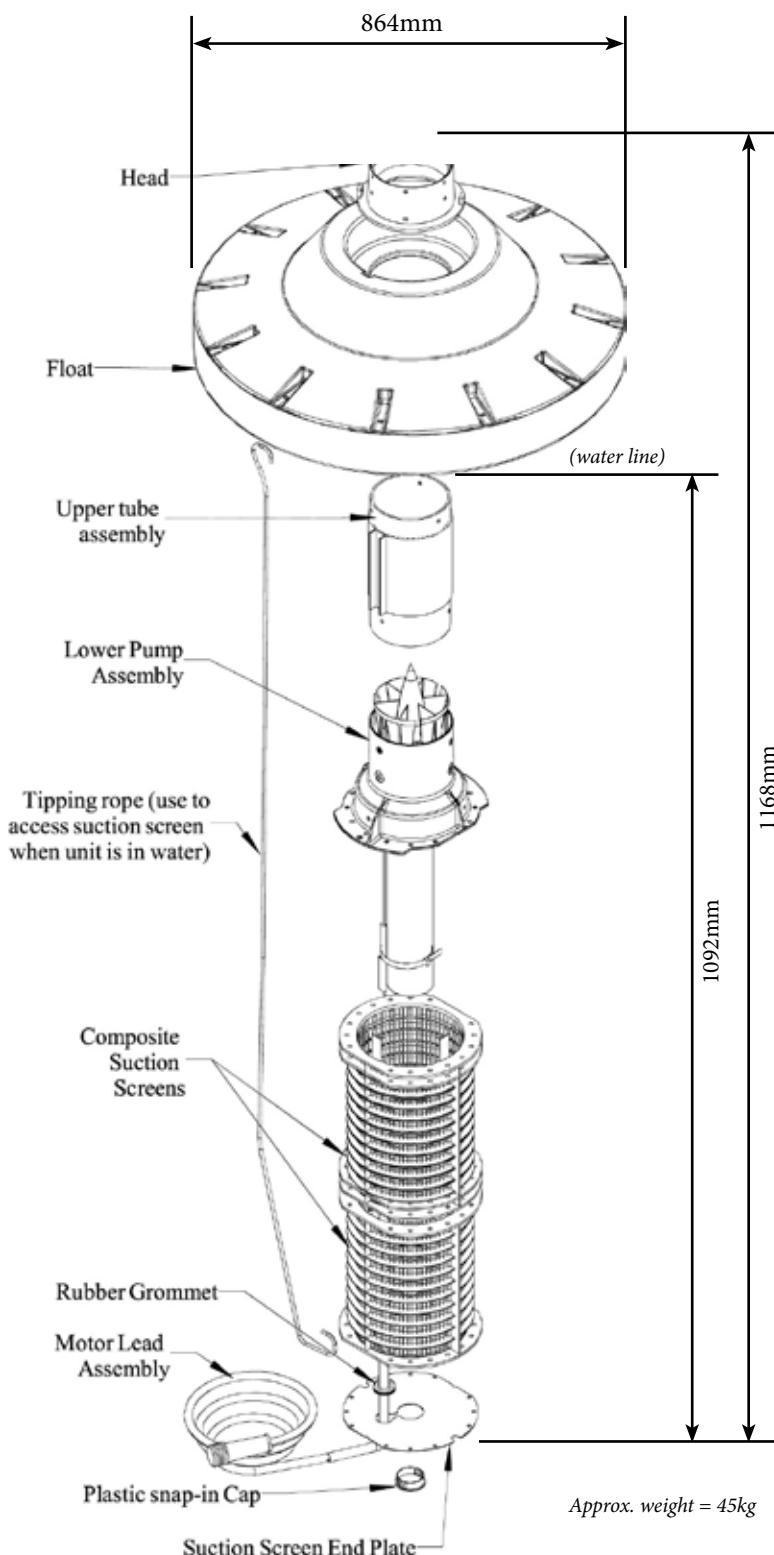
1. Remove the lower pump from its box.
2. Inspect the motor lead and connector for any shipping damage.
3. Remove the (3) three bolts with the cap nuts and lock washers from the bottom holes in the head.
4. Remove the head from the upper tube.
5. Slide the float from the upper tube, flat side of float toward the lower pump, lining up the key way in the centre of the float with the key on upper tube.



6. Open the hardware package and remove the (2) two large eye bolts. The eye bolts need the hex nut screwed all the way on with the lock washer next and the flat washer last.
7. Attach the two eye bolts to the underside of the float.



8. Slide the head over the upper tube, lining up the holes. Replace the hardware with the head of the bolt on the inside of the upper tube and the lock washer and cap nut on the outside of the head.
9. Attach the tip rope between the larger hole on the suction screen and one of the eye bolts attached to the bottom of the float.
10. The float has 12 finger pockets moulded into the underside for lifting and carrying the assembled unit.
11. See the nozzle and light set instructions for attaching these to the unit.



OPTIONAL HORIZONTAL DISPLAY AERATOR ASSEMBLY

Horizontal set ups are designed for shallower waters.

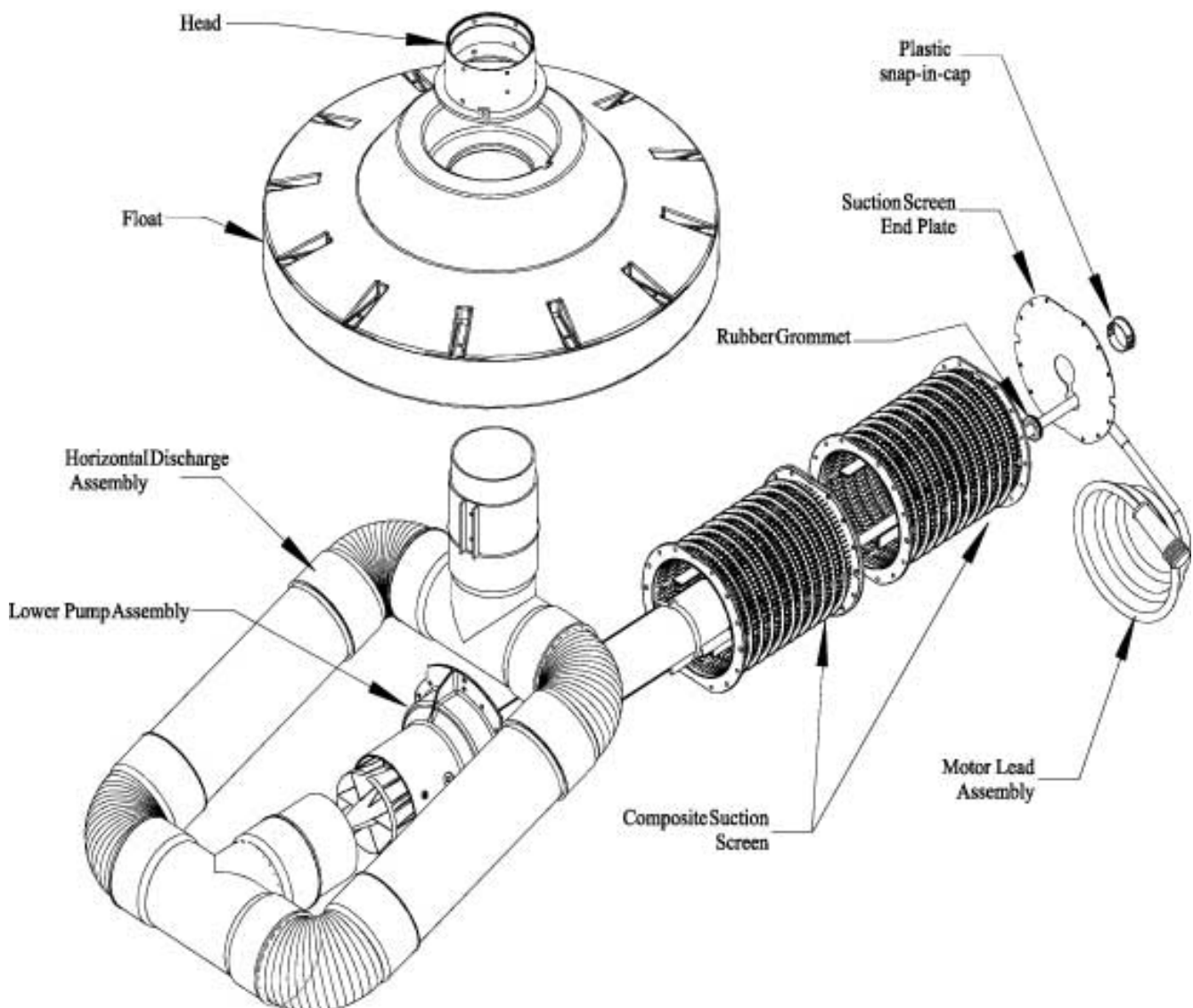
HP	Minimum Operating Water Depth (Horizontal)
2HP	0.7m
5HP	0.7m
7.5HP	0.7m

To determine the nozzle type, see page 4.

To attach the nozzle, see page 5 for the nozzle instructions.

If the unit has lights, see page 6 for the light set instructions.

The float has 12 finger pockets moulded into the underside of lifting and carrying the assembled unit.



OPTIONAL NOZZLES

Find the nozzle that is being attached to this unit in the table below. This table will tell you which of the two (2) nozzle types a nozzle falls under to locate the correct instructions. The flow straightener has been replaced by the outlet fairing in the Select Series 2.

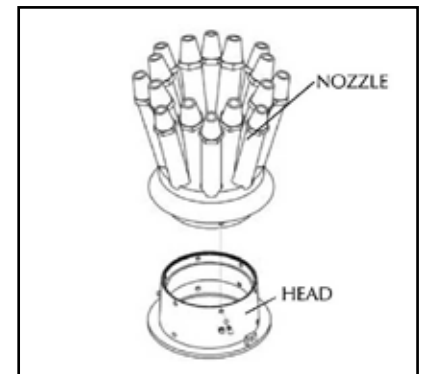
Select Series 2 aerator nozzles are not interchangeable with any other aerator or fountain.

DISPLAY AERATOR NOZZLES	NOZZLE TYPE
Daffodil	Type 2
Super Lily	Type2
Super Jimmy	Type 1
Spider & Arch	Type 1
Pentalator	Type 1
Trillium	Type 1
Double Arch	Type 1
Tornado	Type 2

NOZZLES

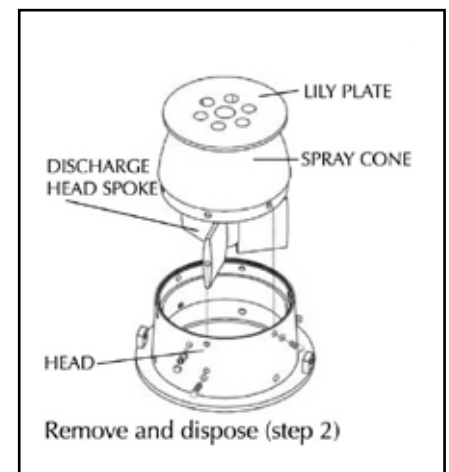
NOZZLE TYPE 1 - MULTIPLE NOZZLE CASTING/SPRAY CONE

1. Remove the screws with lock washers from the threaded holes in the nozzle.
2. Open the packet of petroleum jelly and apply it generously to the O-ring on the flange of the nozzle.
3. Slide the flange of the nozzle into the head, lining up the holes.
4. Re-attach the hardware removed in step #1.



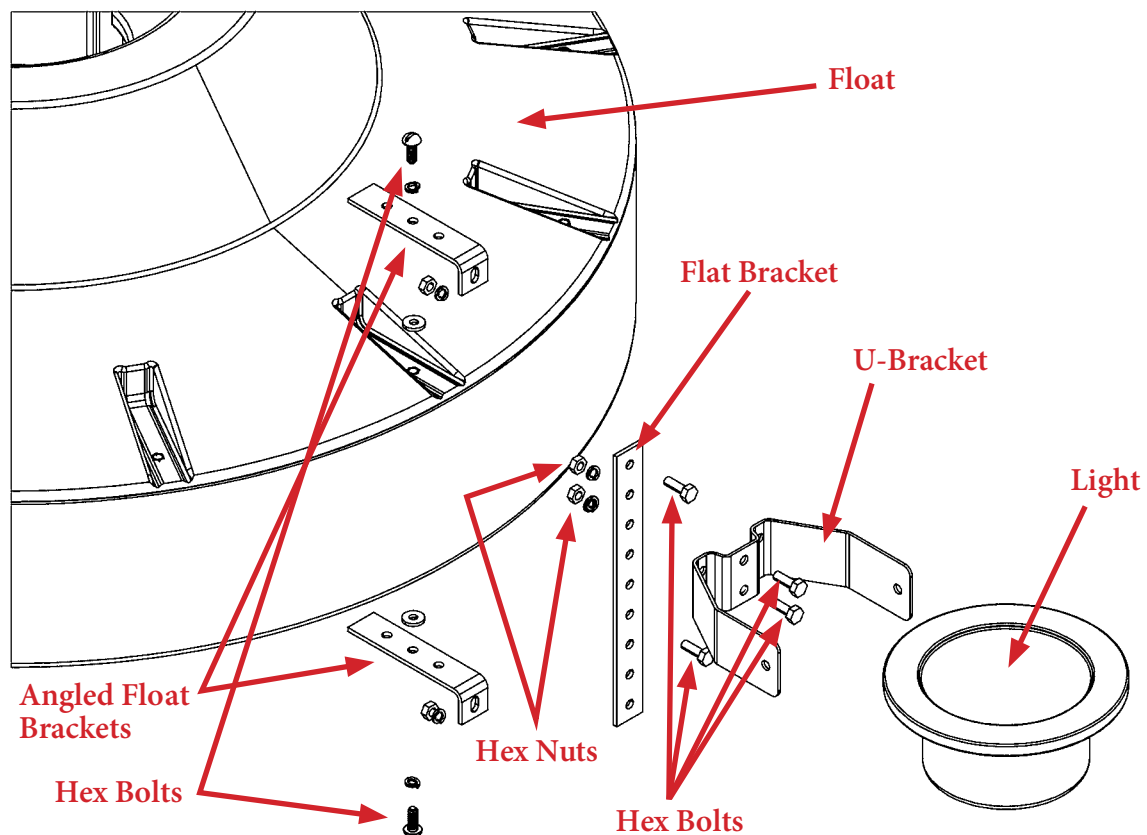
NOZZLE TYPE 2 - SPRAY CONE WITH DISCHARGE HEAD SPOKE

1. Remove the screws with lock washers from the spray cone; and the hex-head bolts, lock washers and flat washers from the discharge head spoke.
2. Remove the hardware in the center row of holes in the head using a 5/16" wrench on the cap nut. This hardware will not be reused.
3. Open the packet of petroleum jelly and apply it generously to the o-ring on the flange of the nozzle.
4. Holding the nozzle by the tip of the threaded rod, line up the threaded holes of the discharge head spoke with the center row of holes in the head. Slide the discharge head spoke inside the head and attach with the hex head bolts, lock washers and flat washers removed in step #1.
5. Slide the flange of the spray cone into the head, lining up the holes.
6. Re-attach the screws with lock washers removed in step #1.
7. The nozzle has been pre-set at the factory.



LIGHT SET ASSEMBLY

SELECT SERIES II

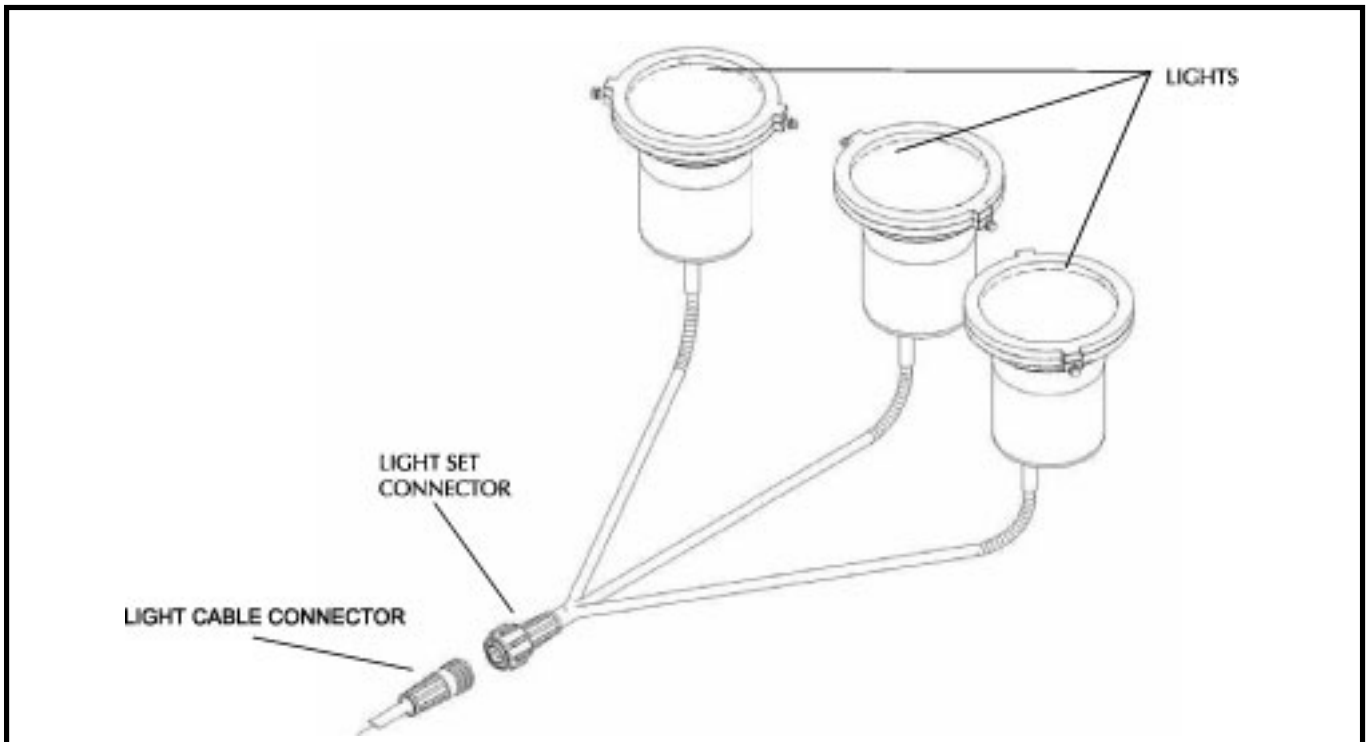


1. Open the light set box and remove the plastic bag containing brackets and hardware. The package contains (1) one straight float bracket, (2) two angled float brackets, (4) four hex head bolts, (2) two round head screws, (4) four lock washers, and (4) four hex nuts for each light set.
2. Attach (1) one of the angled float brackets to the top of the float at any one of the threaded inserts. Place a lock washer on a hex bolt and put the bolt through the middle hole or the hole furthest from the angle on the bracket. Thread the round head bolt into the insert and tighten. Repeat this step for each light in the set, placing the brackets symmetrically around the float.
3. Attach the remaining angled float brackets to the bottom of the float directly below the brackets attached in step 2, using the same hardware as in step 2. If you used the middle hole on the brackets in step 2, use the same hole in step 3.
4. Attach a flat float bracket to each set of angled brackets using a hex head bolt, lock washer, and hex nut at each angled bracket.
5. Take the light canisters with light brackets attached out of the box. Stretch out the light leads to make sure they are not tangled.
6. Using (2) two hex head bolts, (2) lock washers, and (2) hex nuts, attach the light bracket(s) to the flat float bracket(s). The slots in the light U-bracket need to be pointed up towards the top of the unit. The light U-bracket is shown attached at the optimum height if the unit is floating at the recommended depth. (See flotation info for adding weights.) If the unit is floating higher and is not going to be weighted down, then the light bracket will need to be attached lower. The lights must be 2" below the surface of the water when the unit is running.

LIGHT CABLE ASSEMBLY

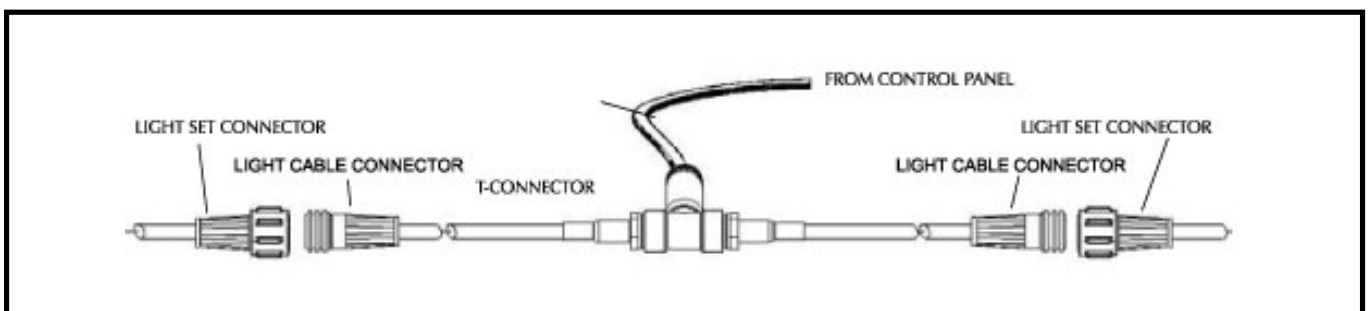
3-WIRE LIGHT CABLE (one light set)

Join and hand tighten connectors.



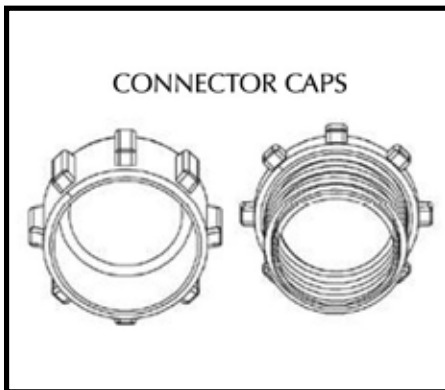
The T-Connector Light cable has two 3-wire connectors connected to one 4-wire cable. One of the two connectors is marked with red tape. The one without tape gets its power from the black wire 4-wire cable. The two connectors share the ground and neutral line.

Join connectors and hand tighten.



CONNECTORS

CONNECTOR CAPS

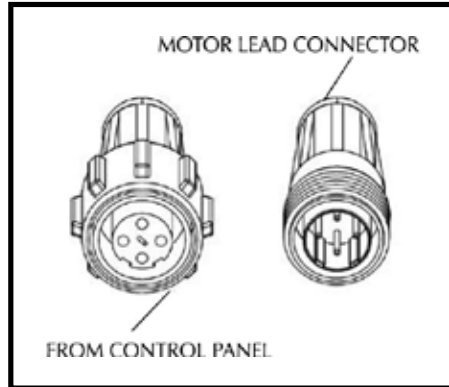


Blue connector caps are used to protect the connectors during handling and to keep them dry if submerged while unconnected to mating connectors.

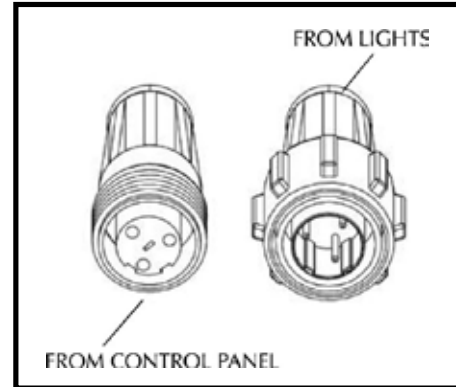
CONNECTOR IDENTIFICATION

WARNING: Do not use grease on connectors. No tools are required for tightening.

3-WIRE with GROUND PUMP CABLE

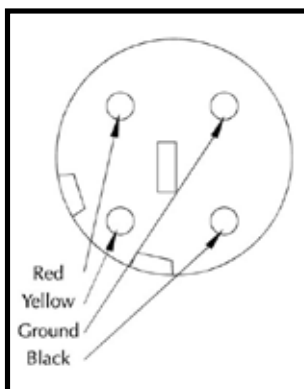


2-WIRE with GROUND LIGHT CABLE

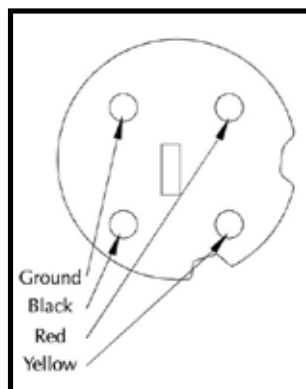


WIRE IDENTIFICATION

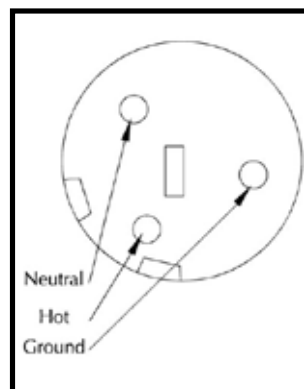
3-Wire with Ground Motor Lead Connector



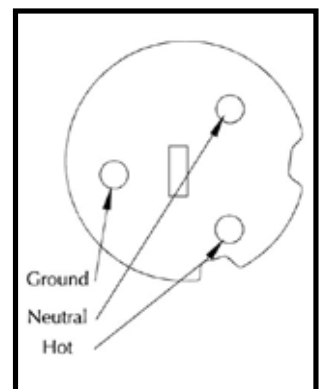
3-Wire with Ground Pump Cable Connector



2-Wire with Ground Light Set Connector



2-Wire with Ground Light Cable Connector



SELECT SERIES II CONTROL PANELS

INSTALLATION

The control panel instruction manual may be found inside control panel enclosure.

LOCATION OF CONTROL PANELS

Control panels should always be installed in a manner that minimizes heat inside the panel since the panels generate some heat and they contain heat sensitive components (motor overloads). Sunlight is the most significant source of heat so, the control panels should be installed out of direct sun as much as possible. The door of the control panel, particularly, should not face directly into sunlight.

PRE-START UP

Verify voltage at the rotary disconnect prior to start up. Confirm the supply voltage matches the rated voltage of the unit.

START UP

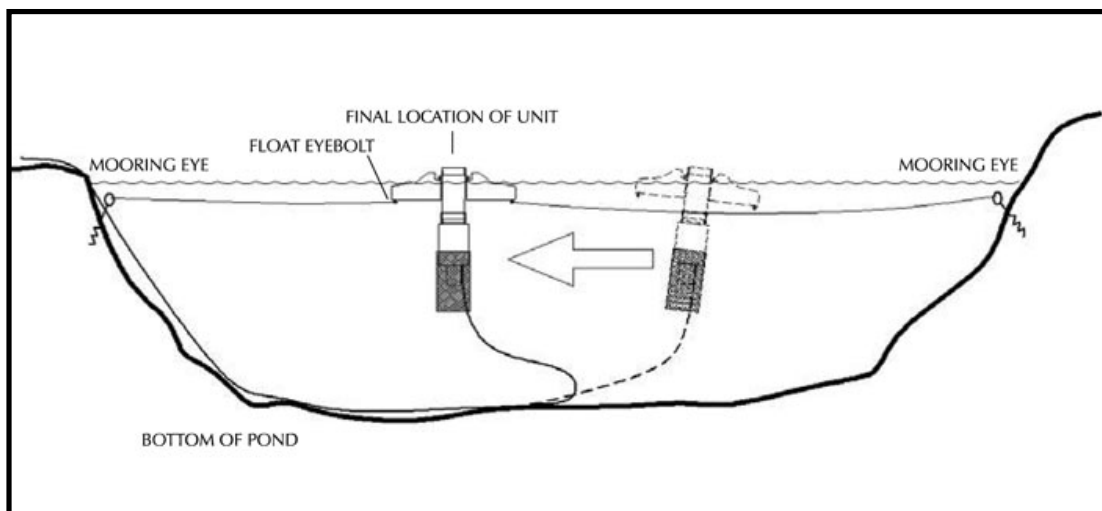
At installation and initial start up, it is recommended to record the actual voltage under load (while the unit is running) and the running amperage of the 5HP & 7.5HP three phase units. This can be kept inside the control panel for future reference. This allows for easy determination if something at site or with the installation has changed. The correct voltage and amperage ratings are on the schematic and on the door of the control panel.

Any Aqua Control, Inc. aerator can be operated continuously or intermittently as desired. If a less than normal flow is observed, it is imperative that the cause be promptly investigated and corrected. Failure to do so can cause cavitation resulting in pump and motor damage and will void the warranty. Reduced flow will usually be due to a blockage and must be resolved.

INSTALLATION

SELECT SERIES II LAUNCHING MOORING - FLOATING UNITS

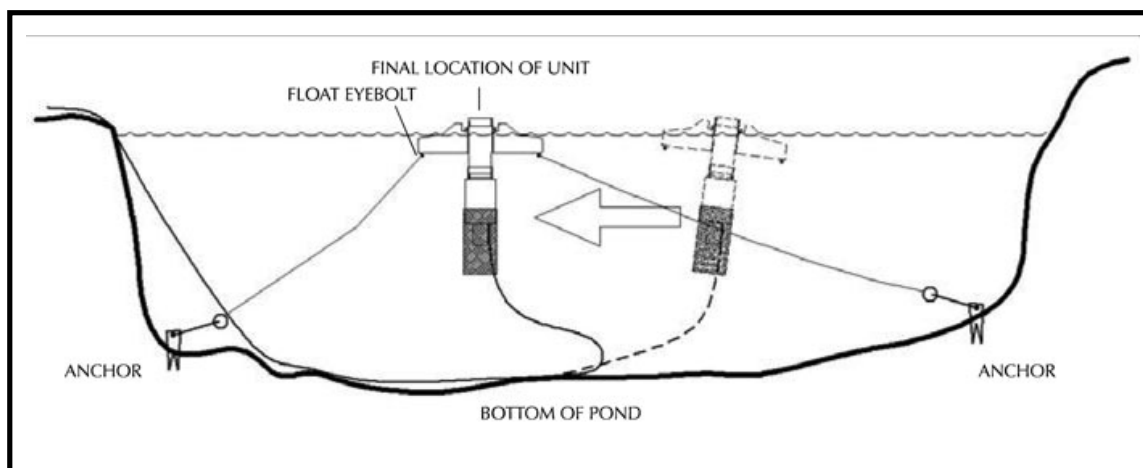
1. Tie the mooring line to the eye-bolts on the float.
2. Pull the unit past its final location by a distance at least equal to the depth of the dam at the desired final location.
3. Bring the unit back to the final position. There should be enough slack on the electric cable to allow it to hang straight down without tension on the unit causing it to tilt the spray pattern.
4. Hold the position of the unit in the water by tying the mooring lines to the mooring stakes on shore.
5. Motor torque causes the unit to try to rotate. Upon start-up, watch to make sure the unit cannot rotate more than 1/3 of a turn. If it is allowed to rotate, the electric cable can pull around the unit very tightly and cause damage.
6. Never allow long lengths of rope to float near the intake of the unit where it can be pulled in and entangled in the propeller or impeller.



INSTALLATION

SELECT SERIES II LAUNCHING ANCHORING - FLOATING UNITS

1. Tie the anchoring rope to the eye-bolts on the float. Use a rope at least three times the depth and be sure it has not slack.
2. Pull the unit past its final location by a distance at least equal to the depth of the pond at the desired final location.
3. Bring the unit back to the final position. There should be enough slack on the electrical cable to allow it to hang straight down without tension on the unit causing it to tilt the spray pattern.
4. Tie anchors to the anchor lines. Use multiple anchors if the bottom is smooth or slippery. Heavy or multiple concrete blocks are suitable for soft bottoms where they will sink into the mud but, they are inadequate on hard, smooth, slippery or sloping bottoms.
5. Anchors should be set out at a MAXIMUM of 45 degrees to the surface of the water. It is preferred to have the anchor line as parallel to the surface as possible. They should be on opposite sides of the float. To ensure the unit remains very close to certain position, a third (or fourth) anchor line can be used.
6. Be sure that the electrical cable has slack, hangs straight down from the unit and is not tangled with the anchor lines. The anchor lines must be kept tight enough to prevent the unit from rotating due to motor torque. If the water level changes or the anchor lines otherwise become slack, the unit will rotate and twist the electrical cable causing cable damage.



FLOATATION

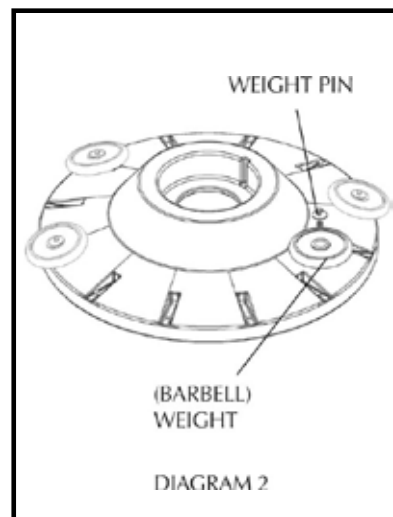
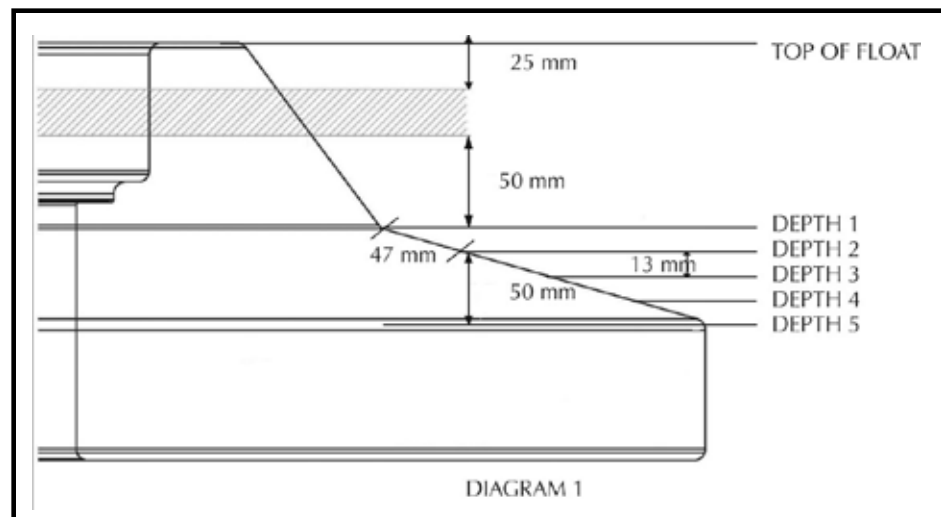
SELECT SERIES II 5HP & 7.5HP

Diagram 1 below shows the optimum floating depth for the 5HP & 7.5HP unit. The shaded area of the diagram shows the least amount of float and nozzle possible. The chart shows the amount of weight that needs to be added to sink the unit to the optimum depth. This is an optional step. The unit will operate just the same without adding any weights but, more of the float will be showing. The only time weight has to be added is to sink the unit far enough for the lights to be 50mm under water while operating. Remember that the unit must be running to decide how much weight has to be added. If you add weights to float at the optimum depth while the unit is off, the thrust of the nozzle could sink the unit.

After turning the unit on, estimate the floating depth from diagram 1 below. Refer to the chart to determine the required weights. The chart also gives recommended combinations of weights to accomplish the desired weight.

Attach the weights to the top of the float using the hardware provided in the float hardware package. There are six (6) 57mm long bolts with 25mm diameter flat washer and a hex nut on each bolt. Slide the flat washer up to the head of the bolt and put the threaded end of the bolt through the center of the weight. Thread the bolt into any open insert on the top side of the float. The 25mm diameter flat washer keeps the weight from sliding off the bolt. The weights must be distributed evenly around the float to maintain level flotation.

FLOAT Vs. WEIGHT					
DEPTH WHEN RUNNING	TOTAL WEIGHT REQUIRED	NUMBER OF WEIGHTS			
		2	3	4	5
DEPTH 1	7kg	-	5	-	-
DEPTH 2	9kg	10	-	5	-
DEPTH 3	14kg	-	10	2x10+2x5	5
DEPTH 4	18kg	-	-	10	-
DEPTH 5	23kg	-	-	-	4x10+2x7.5



MAINTENANCE

The Select Series II Aeration Fountains products do not require yearly maintenance of the motors or pumps. The motors should not be opened for maintenance and doing so will void the factory warranty.

SUCTION SCREEN CLEANING: Routine cleaning or inspections 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 the spray pattern can be diminished. The mooring and anchoring installation instructions suggest a trip rope for the vertical units so the suction screen can be lifted to the surface of the water for cleaning. The suction screens on the horizontal units are close to the water's surface to make them easy to reach. A stiff bristled household cleaning brush can be used to remove any debris.

LIGHT LENS CLEANING: The light lenses should be cleaned to prevent algae and dirt build-up on them. Build-up dims the amount of light that comes through the lenses and can cause them to overheat.

TROUBLESHOOTING

GENERAL TROUBLESHOOTING

1. Set Up the Multimeter
 - a.
 - i. Know the range of Ohms available for you multimeter and whether your meter is auto-ranging
 - ii. Set the multimeter to the lowest Ohm (resistance) setting. Resistance is designated by Ohms.
 - iii. Determine how your multimeter designates open line. Observe the reading when both probes are held in the air, not touching.
 - iv. Determine how your multimeter designates continuity. This is done by touching the two (2) probes. This should be either zero or very close to zero. If not zero, this may be resistance internal to the meter and should be subsequent readings. If your meter has an "auto-zero" feature, use it to zero the meter.
 - b. Volts
 - i. Set the multimeter to the highest setting.
 - ii. Select AC volts. This is usually designated by VAC .
 - c. Amps - Use only a clamp ammeter e.g. Amprobe.
2. Check Neutral to Ground Voltage
 - a. Set multimeter to AC voltage, highest rating.
 - b. Check the voltage between Neutral and Ground.
 - c. The voltage should be zero.
 - d. If the voltage is other than zero, the neutral line may be bad.
 - e. A bad neutral may lead to faulty GFCI tripping.
3. Check Input Voltages - reading should be within 10% of nominal voltage.
 - a. Verify voltage rating of control panel matches supply voltage at the rotary disconnect prior to start up.
4. Check Output Voltages
 - a. 1-Phase: Black - Yellow
 - b. 3-Phase: T1 - T2, T1 - T3, T2 - T3
 - c. Analysis
 - i. Each reading should give source voltage.
 - ii. If good, problem is not in control panel although overloads or GFCIs may be too sensitive and cause premature tripping.
 - iii. If zero voltage: Backtrack through components, checking input vs. output voltages, to determine which one is tripped or faulty.
 - iv. If low voltage: Very unlikely, control panel wired incorrectly.
5. Check Amps - reading should be within 10% of nominal voltage.
 - a. 1-Phase - check yellow wire.
 - b. 3-Phase - check each hot wire; readings should be within 5% of one another.
6. If overload tripped - perform "Overload Troubleshooting Procedures"

TROUBLESHOOTING

CABLE TROUBLESHOOTING

Two problems affect cable integrity, shorted lines and broken or open lines. The following procedures will determine cable integrity. The cable should be disconnected from both the motor and the control panel. Verify the power is off before removing the cable.

1. Set up the multimeter
 - a. Set the multimeter to the lowest Ohm (resistance) setting. Resistance is designated by Ohms
 - b. Determine how your multimeter designates open line. This is done by observing the reading when both probes are held in the air, not touching.
 - c. Determine how your multimeter designates continuity. This is done by touching the two probes. This should be either zero or very close to zero. If not zero, this may be resistance internal to the meter and should be subtracted from all subsequent readings.
2. Disconnect the cable from the control panel and the load (pump or lights). Both ends must be dry. Verify the power is off before removing the cable.
3. Check for shorted lines. A short is an unintentional electrical path and can be caused by faulty insulation.
 - a. Set the multimeter to the highest Ohm (resistance) setting.
 - b. Take readings by touching the probes to each pair of wires; e.g. red-black, red-yellow, black-yellow, etc.
 - c. Analyse the readings.
 - i. The readings should be the same as the open line readings you observed in step 1b.
 - ii. If the readings designate continuity by giving a zero reading or any reading less than open line, a short exists.
 - iii. If any of the readings with green (ground) indicate continuity, a leak to ground exists.
 - d. Determine the action to take.
 - i. Visually inspect the cable.
 - ii. Any manual connection sites are candidates for inspection, e.g. junction boxes, splices.
 - iii. It may be impossible to determine the location of the short and a new cable may be the best solution.
4. Check for open lines. (An open line is a break in a wire.)
 - a. Set the multimeter to the lowest Ohm (resistance) setting.
 - b. At the control panel, with the cable disconnected from the control panel, join two (2) wires, e.g. red and white, by wrapping the end together. If you have four (4) wires, you may wish to connect the other two (2) together. Note which wires are connected.
 - c. From the other end of the cable select one of the pairs of joined wires and take readings by touching the probes to each wire or socket of the connector.
 - d. Analyse the readings.
 - i. The readings should indicate continuity, (either zero or close to zero). The readings should not exceed a few Ohms.
 - ii. If the readings indicate either open line or a very high number, a break or partial break exists.
 - iii. If a break exists, one or both of the wires tested may be involved.
 - iv. Determine the action to take.
 1. Visually inspect the cable.
 2. Any manual connection sites are candidates for inspection, e.g. junction boxes, splices.
 3. It may be impossible to determine the location of the open line and a new cable may be the best solution.
 - e. Perform these steps for each combination of wire pairs.

AQUATIC TECHNOLOGIES

Thank You for Purchasing your Fountains Australia

Aqua Control 2HP, 5HP & 7.5HP Series II Fountain