



# Water Works With Otterbine



## **Large Aerating Fountain Series Owner's Manual**

A Guide to More Dependable  
Water Quality Management  
With Otterbine Barebo Inc.'s  
7.5-10 Horsepower Surface Spray  
Aerating Fountain

## **Welcome Aboard!**

Welcome to the growing family of people who depend on Otterbine products for better water quality control and aesthetic improvement. Otterbine Barebo, Inc. moves its aerating fountain line into the next century with a revolutionary platform. This design offers a two-year warranty. All Otterbine products are safety tested and approved by ETL, ETL-C and CE

## **Water Quality Specialists**

Barebo, Inc. is a team of scientists, engineers, and crafts persons who specialize in efforts to improve water quality. Otterbine aerating fountains are built at Barebo, Inc.'s 25,000 square foot factory in Emmaus, Pennsylvania. Each step in assembly is followed by a quality assurance check to maintain high quality.

The **Large Aerating Fountain Series** of Otterbine aerators, made of stainless steel and brass, reflects the results of aerator research and development programs that started in 1956, plus the experience gained through thousands of installations on commercial fish farms, golf courses, parks, and architectural applications.

## **Follow the Guidelines**

You'll find guidelines for installing, operating, and maintaining your aerating fountain in the following pages. We strongly recommend that you read, understand, and apply these guidelines. They will help you get better performance and dependability from your Otterbine product.



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Revised 2/3/2006

**WARNING:** **PHYSICALLY disconnect the unit and lights from their electrical source before entering, wading in or swimming in the water in which they are installed.**

## Aerator Equipment

Unpack and inspect your aerator, report any damage to the carrier that delivered your aerator. Make sure you have received the following:

- 1. Unit** - you will find a label located on the housing of the unit. Check the label to ensure you have received the correct horsepower and voltage aerator. The Unit will be shipped with the Main Float and Pump Chamber mounted.
- 2. Additional Items** - Wing Floats (4 total), Stainless Steel Bar Screen (2 halves), Float Ring (2 halves) and Parts/ Hardware Kit. Verify that each Wing Float has an Expansion Plug in the bottom of it.
- 3. Power Control Center** (where applicable) - you will find a label inside of the Power Control Center door. This label lists the voltage and horsepower of the control center. Verify that the aerator and control center are the same horsepower and voltage.
- 4. Power Cable Assembly** (including strain relief) - verify that you have received the correct length and gauge. For International shipments that do not include cable, only a male pigtail connector will be included.
- 5. Warranty Registration Card** - make sure to fill in your Otterbine warranty registration card and send it back to the factory. This can also be done on-line at [www.otterbine.com](http://www.otterbine.com). **WARRANTY IS VOID UNLESS CARD IS RETURNED.**

## Electrical/PCC Installation

This weather resistant NEMA 3R Power Control Center comes complete with a twenty-four hour on/off timer, magnetic contactor with overload relay, surge arrestor, disconnect, overcurrent protection, HOA switch, and ground fault protection (where applicable). All internal connections are pre-wired. All electrical specifications are located on the door of the Otterbine Power Control Center. Otterbine recommends that all **ELECTRICAL WORK BE DONE BY A QUALIFIED, LICENSED ELECTRICIAN**. Make sure that all electrical work conforms with local, state and national electrical codes.

**NOTE:** Otterbine suggests coordinating electrical installation with physical installation. The electrician will need to be on hand for a one minute maximum dry-run test of the unit and will also need to check the running amperage after installation. **These electrical tests are a crucial part of the installation process and should not be ignored.**

### **A. Install the Otterbine Power Control Center as close to the pond as possible.**



**CAUTION:** The Power Control Center should not be accessible from the water.

**ATTENTION:** la loite de control ne doit pas être accessible de l'eau.

**WARNING:** Screw connections may loosen during shipping, verify that all screw connections are tight before energizing PCC.

**CAUTION:** Otterbine recommends that the PCC not be mounted in direct sun light when installed outdoors.

### **B. Your Otterbine Power Control Center can be mounted indoors or outdoors.**

1. When mounting outdoors Otterbine suggests that you use a piece of exterior plywood and sturdy 4 x 4 post(s).
2. When mounting indoors the PCC can be mounted directly to the wall.

## Electrical/PCC Installation - continued

**C. Attach incoming power to the top of the disconnect switch in the PCC**, neutral to the neutral bar (needed in 230V 1Ph 60Hz, and 230V 3Ph 60Hz PCC's; L1 to neutral must always be 115 volts) and earth ground to the ground lug. Otterbine recommends that all exterior incoming power cable and exterior aerator cable be encased in conduit.

**D. Attach aerator power cable into the PCC with the green ground wire to the ground lug. For three phase units**, connect the aerator power cable to the contacts on the overload relay. **For single phase units**, connect the aerator power cable to the terminal block **per the marked color code**. Make sure to always use Otterbine aerator cable. If Otterbine aerator cable is not used, the **WARRANTY IS VOID**.

**CAUTION:** Each unit and/or light cable should be in its own conduit to avoid nuisance tripping of the GFCI device.

**NOTE:** Wiring schematics are located on the following pages. Please note on all 460V units EPD/GFCI (Equipment Protection Device/Ground Fault Circuit Interrupter) is an optional accessory.

**WARNING:** All Otterbine submersible aeration systems must be installed in conformance with all local, state and national electrical codes. Otterbine aeration systems require the use of GFCI for safe operation. If the proper grounding and GFCI protection are not used, serious or FATAL electrical shock may occur.

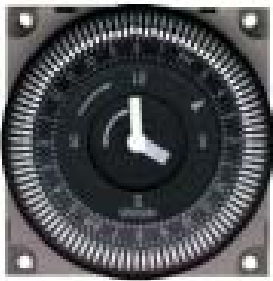
**ADVERTISSEMENT:** Otterbine® fortement suggere qu'au panneau de branchement électrique un interrupteur avec control de defaut de masse soit installé, ou les personnes se trouverai près de l'eau.

**WARNING:** A true, full three phase power supply is recommended for all three phase motors, consisting of three individual transformers or one three phase transformer. So called "open" delta or wye connections are not true three phase power supplies and are likely to cause problems of current unbalance. Open delta or wye power and phase converters often suffer from line unbalance which can cause poor motor performance, nuisance tripping or premature motor failure. **WARRANTY IS VOID** if a factory authorized phase converter is not used.



Earth Ground Symbol (used in PCC)

## Timer Operation



Grasslin Timer

**Grasslin Timer 60Hz, p/n 31-0070**

**Grasslin Timer 50Hz, p/n 31-0180**

1. Push **in** (towards center) all of the tripper pins on the timer dial.
2. Pull **out** all of the tripper pins on the dial that are between the times you want the unit to run. Example: If you want the unit on from 7:00AM - 5:00PM, you would then pull out all of the tripper pins between those times. When the dial rotates to a tripper pin that is in, it will turn off.
3. Turn the dial clockwise to set the time of day. Close the panel and apply power. In case of power failure, reset timer.

## Electrical Requirements for CE (European Union)

Otterbine suggests coordinating electrical installation with physical installation. The electrician will need to be on hand for a one minute dry-run test of the unit and will also need to check the running amperage after installation. **These electrical tests are a crucial part of the installation process and should not be ignored.**



**CAUTION:** Otterbine aeration systems require the use of a residual current device (RCD) with a rated residual operating current not exceeding 30mA for safe operation. If the proper grounding and residual current device are not used, serious or FATAL electrical shock may occur.

- All electrical work must conform with European Community, national, and local codes.
- All electrical work must be done by a qualified electrician.
- A disconnect switch must be installed to provide 3mm contact separation in all poles.
- The motor unit contains no thermal protector. Separate overcurrent protection must be provided to prevent burnout and possible fire hazard from overload or stalled motor.
- Thermal overload protection is required. The thermal overload must be set no higher than 115% of the maximum amperage stated on the motor housing label.
- If the supply cord connector is damaged, it must be replaced by a special cord available from your Otterbine Barebo distributor.

**CAUTION:** Disconnect all equipment in the body of water from the main electrical supply before physical entry into the water.

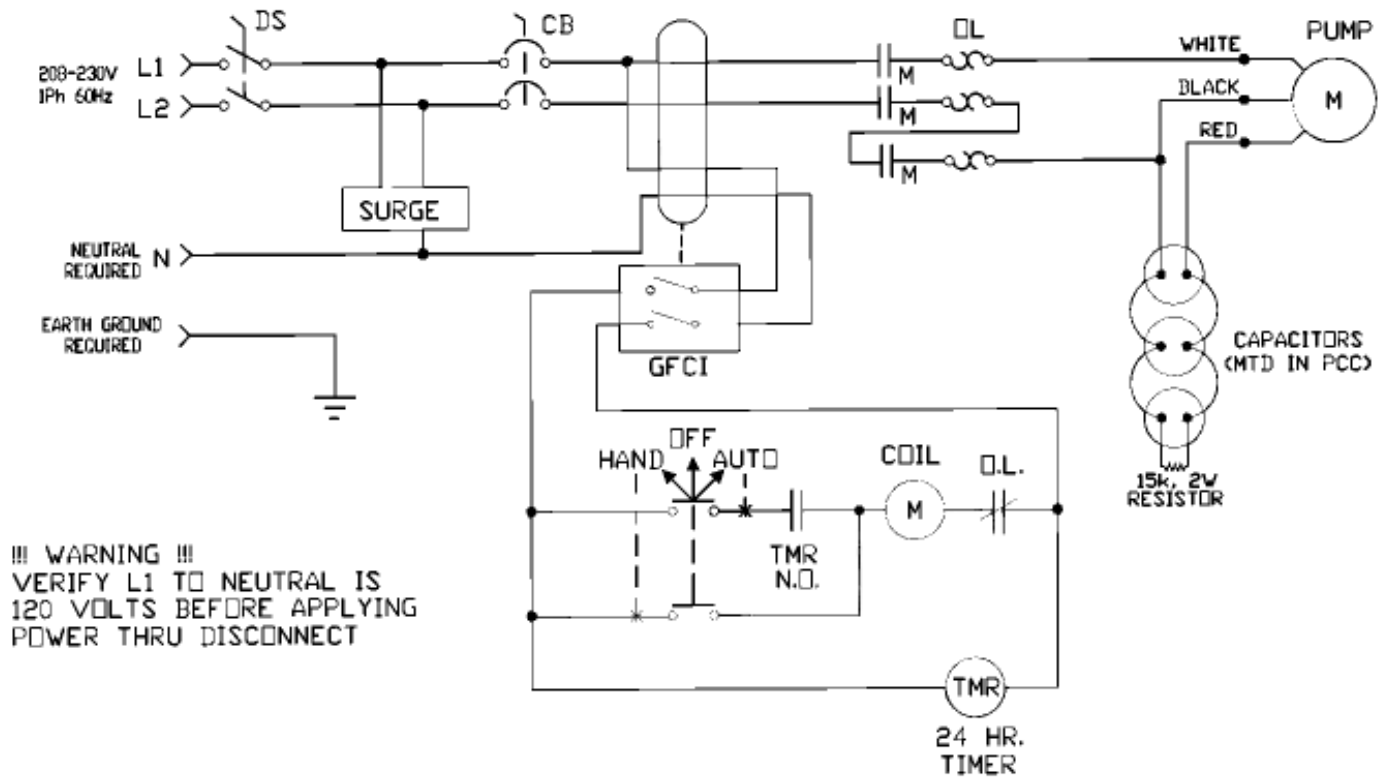
**IMPORTANT!** The conductor having green/yellow insulation shall only be connected to the ground terminal

marked  or .

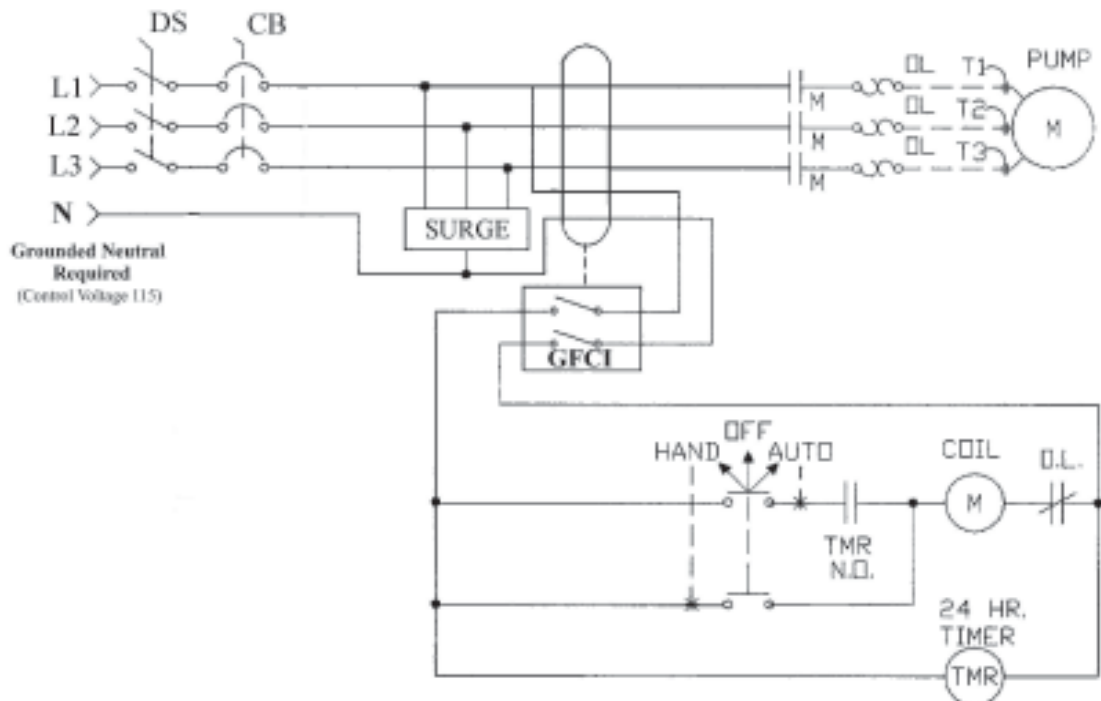
**VIGTIGT!** Lederen med grøn/gul isolation må kun tilsluttes en klemme mærket  eller .

## 208-230 Volt 1 Phase 60 Hertz Schematic

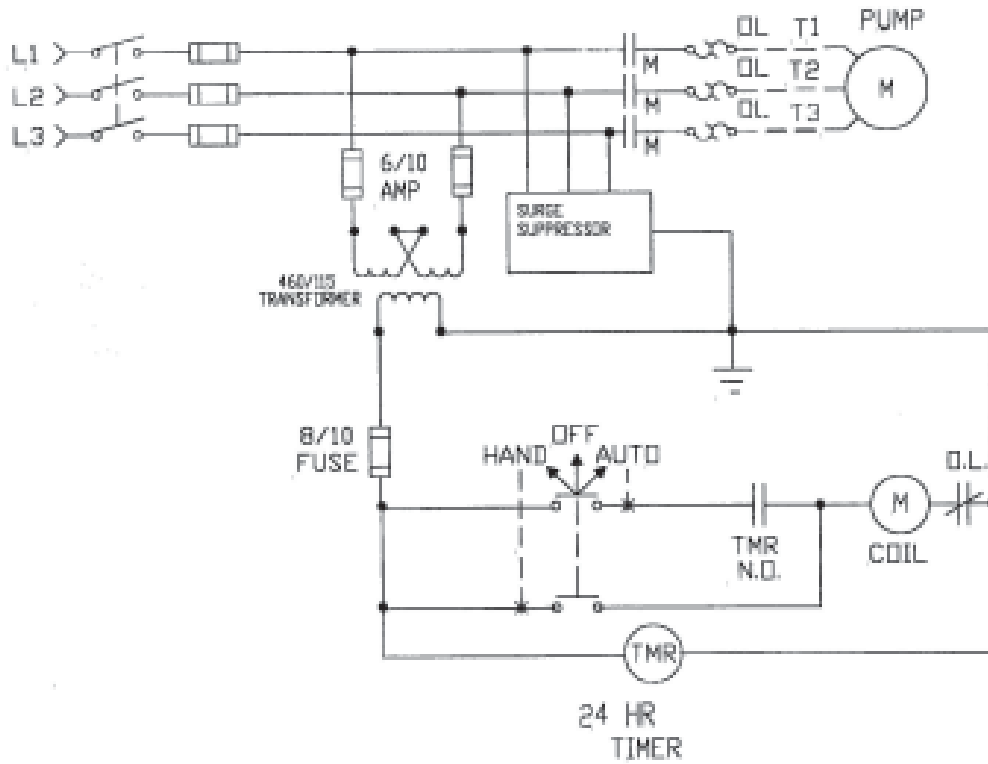
CONNECT POWER CORD  
WIRES TO TERMINAL  
BLOCK PER COLOR CODE



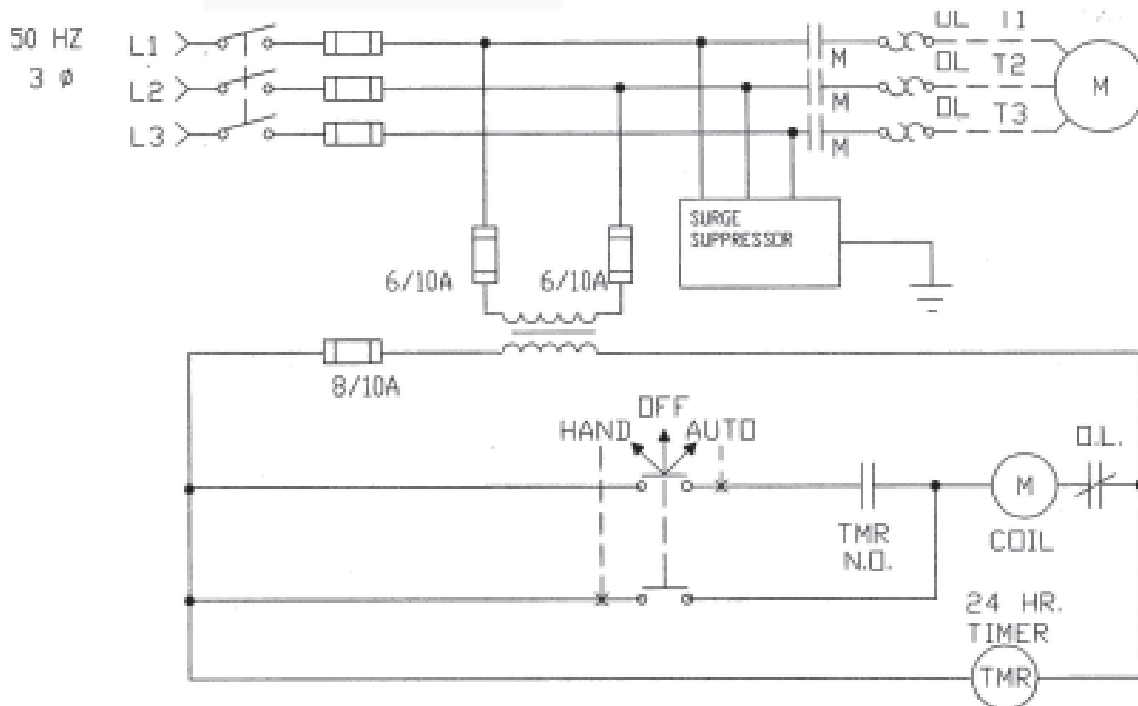
## 208-230 Volt 3 Phase 60 Hertz Schematic



### 460 Volt 3 Phase 60 Hertz Schematic



### 380/415 Volt 3 Phase 50 Hertz Schematic



## Pre-Installation Assembly Procedures

**WARNING:** Failure to complete assembly procedures as directed could result in damage to the unit.

**NOTE:** The unit will be received with the main float and the pump chamber already mounted to it.

**A.** Refer to the following parts list during the Pre-Installation Assembly Procedures.

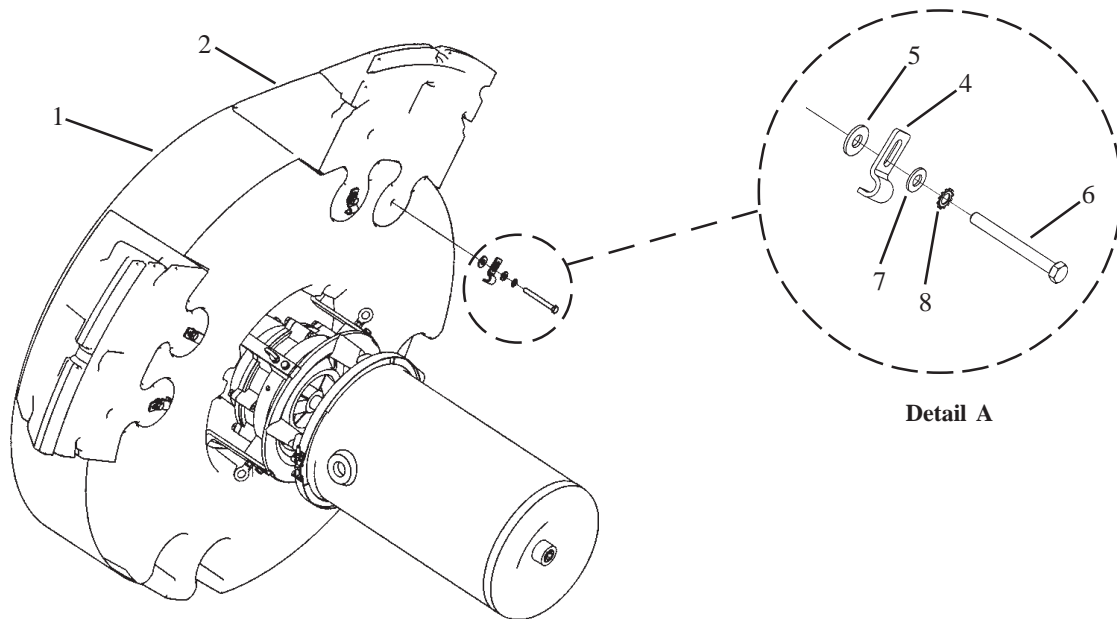
Item No	Description	Qty	Part Number
1	Main Float	1	42-0049
2	Wing Float	4	42-0050
3*	Expansion Plug, 3/4" (not shown)	4	46-0136
4**	Screen Bracket	8	40-0119
5**	Fender Washer, 5/16"	8	28-0008
6**	Hex Bolt, 5/16"-18 x 3"	8	GP1205
7**	Flat Washer, 5/16"	8	28-0018
8**	External Star Washer, 5/16"	8	28-0006
9	S/S Bar Screen, Half	2	10-0078
10**	Hex Bolt, 3/8"-16 x 2"	4	101-012
11**	Nylon Locknut, 3/8"-16	4	26-0011
12**	Fender Washer, 3/8"	8	927-009
13	Float Ring, Half	2	40-0118
14**	#8 x 1/2" Screw	2	GP8506
15**	Hose Clamp, S/S (not shown)	4	46-0138

\* The expansion plug is used in each of the Wing Floats to help level the unit in the water, if necessary.

\*\* These items are contained in the Parts Kit (P/N 12-0114)

**B.** Tilt the unit on its side as shown in Figure 1 being extremely careful not to damage the pump chamber.

**C.** Place a Wing Float in each of the top two positions on the Main Float and secure using the bracket/hardware in the orientation shown in Detail A. Only hand start the bolts, they will be tightened in a later step.



**Figure 1**

## Pre-Installation Assembly Procedures - continued

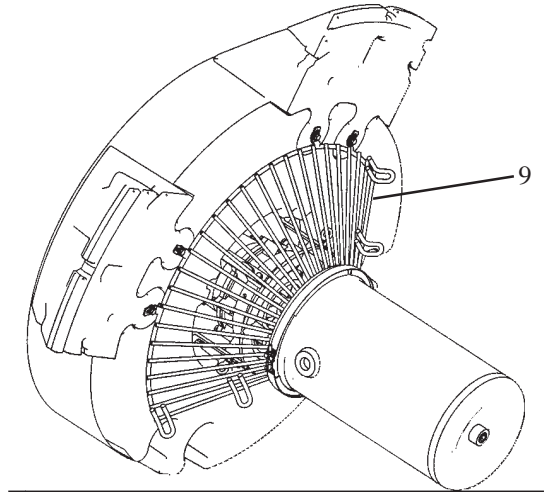
**D.** Place one of the Stainless Steel Bar Screen halves under the Main Float so the bottom small ring is in between the V-Band Clamp and Standoff of the Motor Unit as shown in Figure 2. Make sure the mooring/anchor cables from the eyebolts on the Standoff are through the bars of the Screen.

**E.** One by one loosen each bolt installed in Step C, position the Screen Bracket so it is over the top large ring of the Screen and reinstall. Once all four bolts are reinstalled with the Screen Bracket in the correct position, tighten each bolt. Do not overtighten, as it may cause damage to the float or float insert.

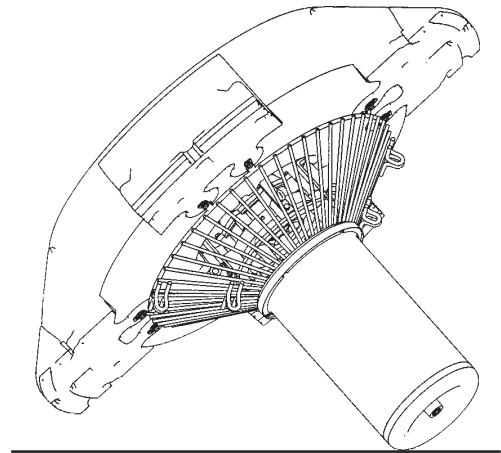
**F.** Referring to Figure 3, carefully rotate the Unit so the two Wing Floats installed in Step C are now at the bottom side of the Main Float. Repeat Steps C-E for the remaining two Wing Floats and Stainless Steel Bar Screen half.

**G.** Referring to Figure 4, fasten the Screen halves together using a bolt, two fender washers and a nylon locknut at each connection point (4 total) as shown in Detail B. ONLY hand-tighten at this step.

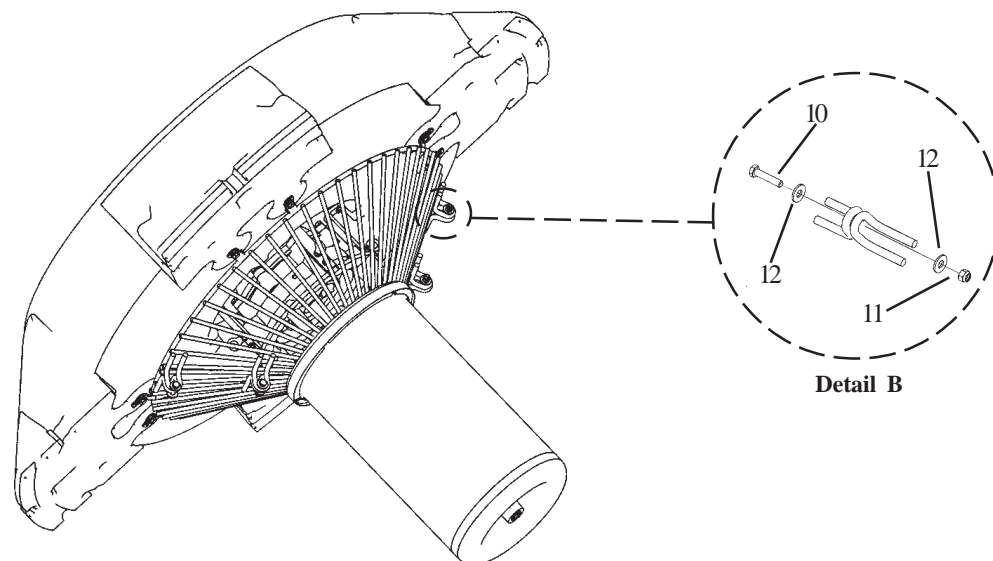
**H.** Tighten the fasteners from Step G. These fasteners only need to be snug to secure the Screen halves together. Do not overtighten.



**Figure 2**



**Figure 3**

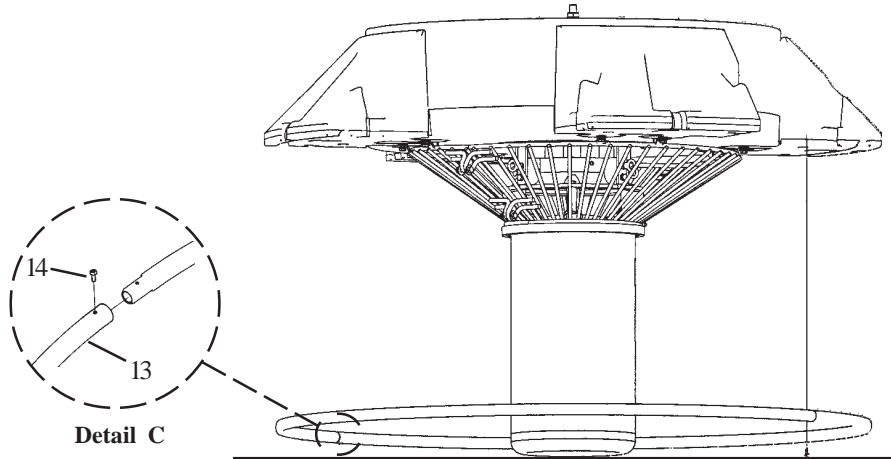


**Figure 4**

## **Pre-Installation Assembly Procedures - continued**

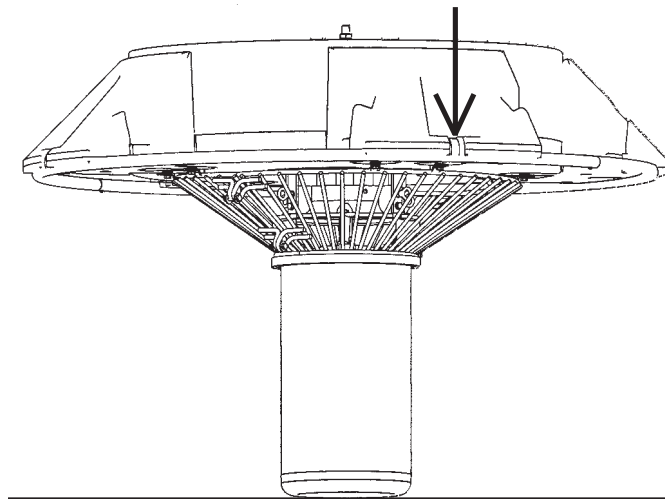
**I.** Reposition the Unit upright (i.e. - float up) with extreme caution as shown in Figure 5.

**J.** Assemble the the two Float Ring halves so the Unit is inside the ring. Secure the two Float Ring halves together using a screw at each joining point as shown in Detail C.



**Figure 5**

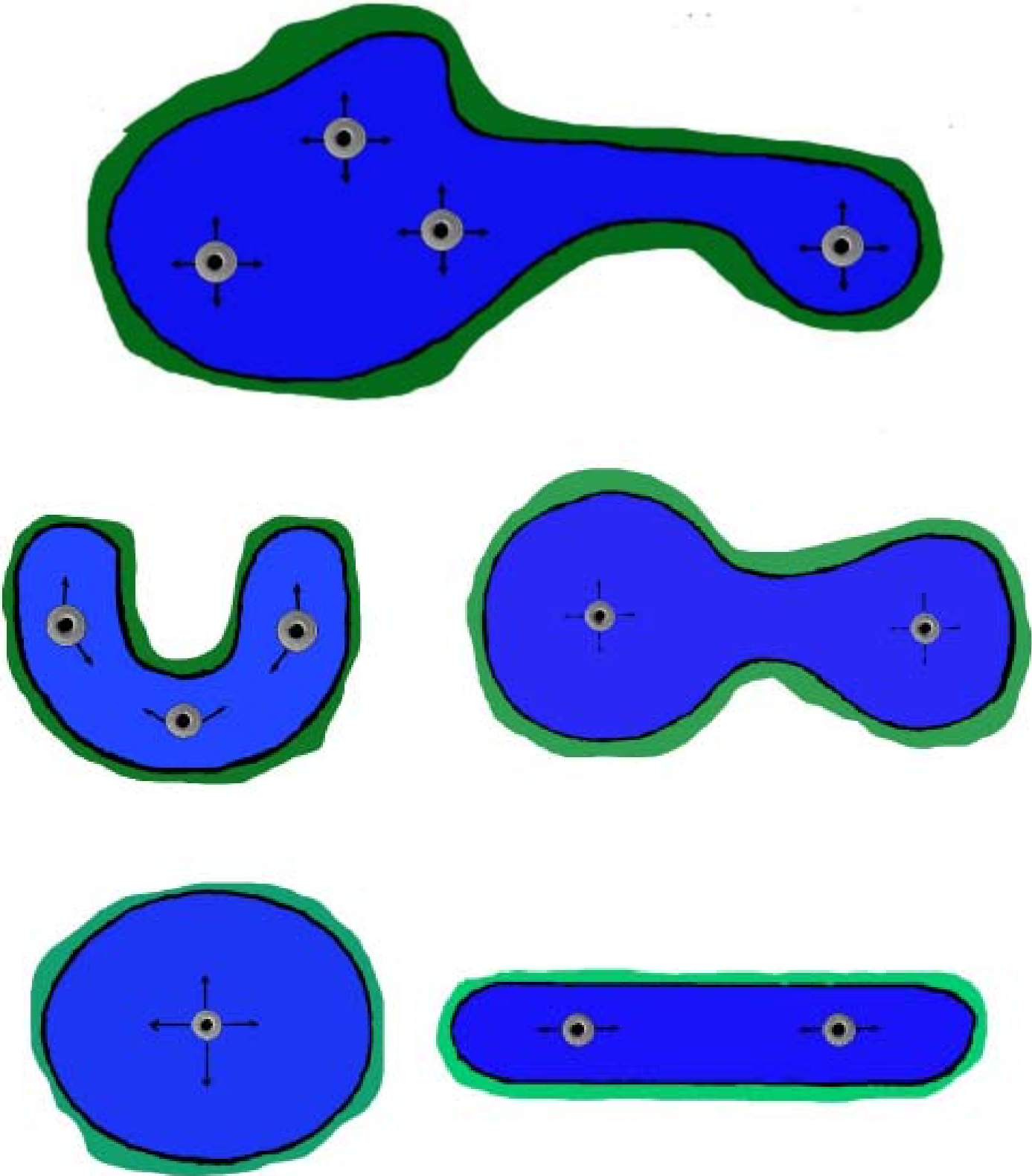
**K.** Lift the Float Ring so it is in the groove in the bottom of each Wing Float. Secure the Float Ring to each Wing Float using a Band Clamp in the area shown with an arrow in Figure 6.



**Figure 6**

**Aerator Placement**

**Aerator Placement** -Placement is crucial to how quickly and efficiently your Otterbine aerator is able to clean your pond. The following diagram shows the most common pond shapes and the most effective aerator placement in them.



## Physical Installation

Prior to installation please measure your water depth. All 7.5-10 HP Otterbine Large Aerating Fountain Series aerators require at least **40"/100cm** of water depth to run properly. If the water is too shallow, dig out a portion of the pond bottom directly under the aerator. If high waves or large fluctuations in water depth occur, it may be necessary to allow for more depth.

**WARNING:** DISCONNECT POWER BEFORE INSTALLING, REMOVING, OR SERVICING UNIT

**NOTE:** The aerator power cord will come with a cord cap protector.

**A. Attach your Otterbine power cable to the aerator.** Connect the female pigtail connector on the cable up to the male pigtail connector on the aerator making sure to properly align the pin/tabs. Press the two connectors together as far as possible by hand.

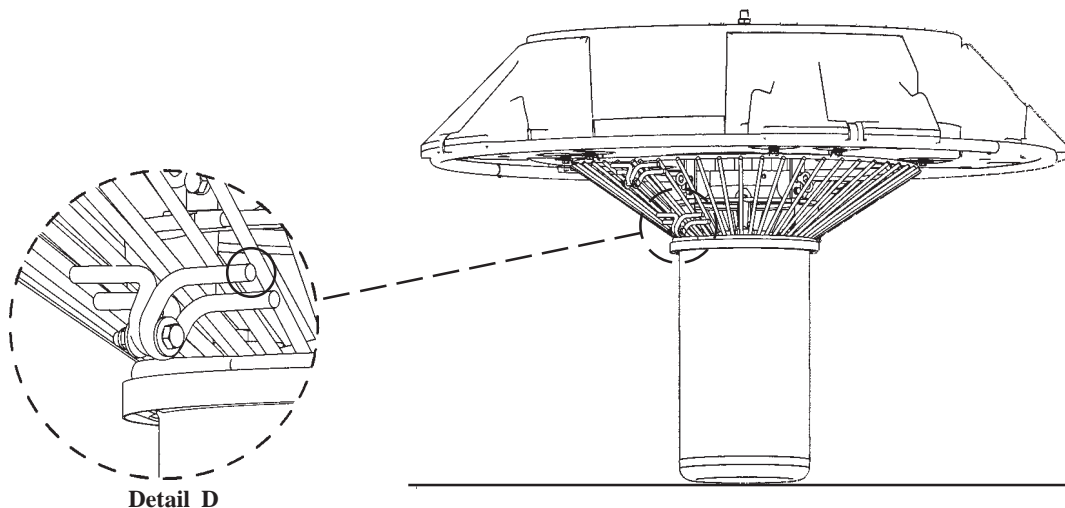
**For three phase units,** use the pigtail nuts and coupling to draw the connectors all the way together by hand. Do not use tools on the pigtail nuts. The pigtail nuts will be just touching when the connectors are all the way together.

**For single phase units,** use the pigtail couplers and bolts to draw the connectors all the way together. Start each bolt and evenly tighten in a cross pattern until the two couplers are just touching.

**NOTE:** You will notice a small amount of silicon dielectric compound in the aerator connector. This compound has been applied during assembly and is needed in order to make a proper seal between the two connectors. **DO NOT REMOVE COMPOUND!** When servicing the aerator make sure to reapply this compound (Otterbine P/N 48-0001 for single use pack or P/N 48-0002 for 5.3oz Tube).

**B. Attach the power cord strain relief device.** Pass the wire hoop from the strain relief device around a bar/bracket of the screen as shown in Detail D. Re-attach the end of the wire hoop to the strain relief device.

**WARNING:** If the strain relief device is not attached or improperly attached to the unit, damage may occur to the power cord and/or the unit which is not covered by the warranty.



**Figure 7**

## Physical Installation - continued

### C. Have your electrician perform an on shore dry-run test:

1. Check and compare the actual power supply at the site to the information on the aerator's nameplate in regard to: motor voltage, phase, and frequency. **IF THIS INFORMATION DOES NOT MATCH, DO NOT OPERATE THE UNIT!**



**CAUTION: KEEP HANDS CLEAR OF THE IMPELLER WHEN TRYING TO START THE AERATOR!**  
**ATTENTION: BARDER VOS MAINS À DISTANCE DE LA TURBINE PORSQUE VOUS ESSAYEZ DE DÉMARRER P'ÁERATEUR**

2. With the aerator on dry land, turn the disconnect handle on the exterior of the PCC to the "On" position.
3. Energize the unit by turning the "Hand/Off/Auto" switch to the "Hand" position. Run unit a maximum of 1 minute to break in seals. **DO NOT RUN UNIT FOR MORE THAN 1 MINUTE -- MOTOR DAMAGE CAN OCCUR.** Check for correct motor rotation. Correct rotation is **COUNTER-CLOCKWISE** when looking down at the motor shaft.
4. Turn the "Hand/Off/Auto" switch to "Off" and the disconnect switch to "Off".
5. IF Steps 1-4 are successful, you are ready to install the unit in the water. Proceed with following instructions.

**CAUTION:** OTTERBINE® aerators are designed to run in a **COUNTER-CLOCKWISE DIRECTION** and **CURRENT UNBALANCE BETWEEN THE LEGS ON 3 PHASE UNITS SHOULD NOT EXCEED 5%.** Step L on page 16 determines current unbalance.

**ATTENTION:** les aerateurs Otterbine® sont designes pour fonctionner dans le sens contraire des aiguilles d'une montre et tout desequilibre entre chacune des phases de l'alimentation ne doit pas depasser 5% voir L page 16 pour determiner le desequilibre.

**If the aerator is not floating level once in the water,** it can be leveled by removing the expansion plug in the bottom of appropriate Wing Float to allow water into it. This should only be done once the unit has been initially started since the downward thrust of the unit while running may level it out naturally.

There are two different methods of securing your aerator, **anchoring** and **mooring**. We describe "mooring" as securing the aerator to the shore. "Anchoring" the aerator is described as securing the aerator to weights which are dropped to the pond bottom at several points around the unit. Otterbine strongly suggests mooring the unit wherever the site permits. Installation and retrieval of the aerator will be much easier when it is moored.

**NOTE:** The aerator must be moored or anchored at four points.

#### **MOORING YOUR AERATOR:**

- A. Proceed to page 15, follow steps D-J.
- B. Proceed to page 17, follow steps K-N.

#### **ANCHORING YOUR AERATOR:**

- A. Proceed to page 16, follow steps D-J.
- B. Proceed to page 17, follow steps K-N.

## Mooring the Aerator

### **D. You will need the following items in order to moor your Otterbine aerator.**

1. Use all brass and stainless steel hardware and fittings in the installation of your Otterbine aerator.
2. Otterbine recommends using 1/4" (0.63cm) or 1/2" (1.25cm) polypropylene rope or stainless steel cable for your mooring lines.
3. A quantity of four wooden stakes, 1/2" (1.25cm) non-corrosive metal bar, or "Duck Bill" earth anchors. If your site allows, Otterbine recommends using duck bill earth anchors, see Figure 8. (**NOTE:** You will need a 3 foot (0.9m) length of 1/2" (1.25cm) rebar to drive the earth anchor into the ground and a sledge hammer)



Figure 8

- Duckbill Earth Anchors are driven into the ground, using a drive rod and heavy hammer, compacting the earth as they drive downward, until they reach the recommended depth. After removing drive rod, installer pulls up on cable. This planes or rotates the anchor into load lock position, like a toggle bolt in undisturbed earth.

**E. Choose a suitable location for your Otterbine aerator.** See the aerator location chart on **page 12** to determine the best aerator location for the most efficient and effective aeration. Place each of the four stakes or earth anchors at points centered around the location chosen for your aerator.

**F. Secure your first mooring point.** If you are using a stake or 1/2" (1.25cm) rebar, make sure to pound the mooring point securely into the ground on the outer edge of the pond. If you are mooring with an earth anchor, you will need to place the earth anchor two feet into the pond and then pound the earth anchor about two feet into the pond bottom. The earth anchor will allow your mooring lines to be virtually unnoticeable as it will be hidden two feet beneath the surface of the water. Repeat for the other three mooring points.

**G. Attach a mooring line to each of the four stainless steel leaders that are attached to the unit.** The stainless steel leaders should be fed through the screen.

**H. Attach one mooring line to one of the four stakes or earth anchors.** Be sure that you have enough length or extensions on the other three mooring lines so you will be able to walk them around the ponds edge to each of their corresponding stakes or earth anchors.

**NOTE:** If using stainless steel cable for a mooring line, first measure the lengths needed for all four points allowing several feet of excess for mistakes in measurement. Tie excess rope to each of the three cables to be walked around the pond, this will insure less wasted cable.

**I. Launch the unit into the water.** Be sure to keep a firm grasp of the three mooring lines that are still not secured.

**NOTE:** This unit weighs approximately 300 pounds (136 kg), be sure to have a firm grasp of the unit and your footing is solid when placing the unit into the water. If a crane or other type of mechanical lifting device is to be used, the unit can be lifted by the four stainless steel leaders or by the float ring.

**J. Walk the remaining three mooring lines around the ponds edge.** Pull the unit into position using the mooring line that is to be secured directly across (180 degrees) from the first line secured. Tie down your Otterbine aerator leaving enough slack in your lines to allow the aerator to turn 90° or 1/4 turn, no more. The slack in the lines will allow for proper start up, wave action, and fluctuations in the water level. Secure the remaining two mooring lines to the corresponding stake or earth anchor. **Proceed to Step K on page 17.**

## Anchoring the Aerator

### **D. You will need the following items to anchor your Otterbine aerator:**

1. Use all stainless steel and brass hardware in the installation of your Otterbine aerator.
2. Otterbine recommends using 1/4" (0.63 cm) or 1/2" (1.25 cm) polypropylene rope or stainless steel cable for your anchoring lines.
3. Four 100-125 pound (45-57 kg) anchors (one at each anchoring point).
4. Small boat.

**E. Choose a suitable location for your Otterbine aerator.** See aerator location chart on **page 12** so that you can place your aerator in the best location for the most efficient and effective aeration.

**F. Determine where to place the anchors.** The location of the anchors will be determined by the depth of your pond. Use the chart below to assist in choosing the best location for your anchors.

Maximum water depth	Distance from anchor to unit
5ft (1.5m)	10ft (3.0m)
6ft (1.8m)	12ft (3.6m)
7ft (2.1m)	14ft (4.2m)
8ft (2.4m)	16ft (4.8m)
9ft (2.7m)	20ft (6.1m)
10ft (3.0m)	25ft (7.6m)
11ft (3.3m)	30ft (9.1m)
12ft (3.6m)	40ft (12.0m)
13ft (3.9m)	50ft (15.2m)
14ft (4.2m)	60ft (18.2m)
15ft (4.6m)	70ft (21.2m)

**G. Launch the unit into the water to the desired location.** Make sure the four stainless steel leaders from the unit are out of the water and accessible once the unit is in the water.

**NOTE:** This unit weighs approximately 300 pounds (136 kg), be sure to have a firm grasp of the unit and your footing is solid when placing the unit into the water. If a crane or other type of mechanical lifting device is to be used, the unit can be lifted by the four stainless steel leaders or by the float ring.

**H. Attach an anchor line to each of the four anchors and place them according to the above chart.** Drop each anchor into location prior to attaching the line to the unit.

**I. Secure the anchor lines to the four stainless steel leaders attached to the unit.** Be sure that the anchor lines are secure and that the unit is able to rotate a maximum of 90 degrees or a quarter turn.

**J. Now that the unit is secure, proceed with the electrical startup procedures. Proceed to Step K page 17.**

## Electrical Start-Up Tests

**K. Energize your unit.**

**L. Have your electrician do the following while the unit is in the water under load:**

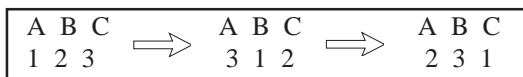
**SINGLE PHASE UNITS:** Record running voltage, running amperage and cable length & size on the sticker inside the power control panel. **Go to step M.**

**THREE PHASE UNITS:**

**1. Check for correct rotation** (this should have already been verified during the on shore dry-run tests). Three-phase motors can run in either direction depending on how they are connected to the power supply. When the three cable leads are first connected to the power supply, there is a 50% chance that the motor will run in the right direction. **Correct motor rotation is counter-clockwise when looking down at the motor shaft.** Rotation can be changed by exchanging any two of the three motor leads. **FAILURE TO DO THE ABOVE MAY CAUSE THE MOTOR TO FAIL PREMATURELY. MOTOR FAILURE DUE TO REVERSED (INCORRECT) ROTATION WILL NOT BE COVERED UNDER WARRANTY.**

**2. Check amperage readings on each leg using the three possible hook-ups.** Roll the motor leads across the starter in the same direction to avoid motor reversal. **EXAMPLE:**

**3. Calculate the percent of current unbalance:**



- A. Add the three line amp values together.**
- B. Divide the sum by three, yielding current average.**
- C. Pick the amp value that is furthest from the average current** (either high or low).
- D. Determine the difference between this amp value (line C) and the average (line B).**
- E. Divide this difference (line D) by the average (line B).**
- F. Multiply the result (line E) by 100** to determine percent of unbalance.

**4. Current unbalance should not exceed 5% at full load.** If unbalance cannot be corrected by rolling leads, locate source of unbalance & correct it. IF Leg furthest from average stays on the same power position, THEN the primary cause of unbalance is the power source. IF leg furthest from average moves on each of the hookups with a particular motor lead, THEN the primary cause of unbalance is the "motor side" of starter. Consider: damaged cable, leaking splice, poor connection, or faulty motor as possible causes.

**5. Record running voltage, running amperage and cable length & size on the sticker inside the power control panel.** Proceed to step M.

**M.** If a GFCI or EPD device is installed, have the electrician test the device for proper operation. Power must be applied to the device in order to test and reset it.

**N. Lock your enclosure with a padlock to prevent any type of vandalism.** Set the "hand-off-auto" switch located on the outside of your Power Control Center to the HAND or AUTO position. The HAND position on the switch will let your aerator run continuously. The AUTO position on the switch will allow the timer inside your aerator to operate the unit. See **page 5** for timer operating instructions. Your aerator should be running at this point and installation is complete.

**CAUTION:** The aerator should be allowed to run continuously for 12 hours after installation. This will allow the aerator to properly "break in."

**ATTENTION:** L'aérateur doit être permis de fonctionner continuellement pendant 12 heures après l'installation. Cela permettra à l'aérateur d'être correctement rodé.

# Technical Specifications

Subject to change without notice (Updated 11/18/2005)

Model	HP	Electrical Rating	Motor RPM	Typical Running Amps	Spray Height*	Spray Diameter*	Pumping Rate*
<b>Starburst</b>	7.5	230V 1Ph 60Hz	3450 @ 60Hz	35	14ft (4.3m)	35ft (10.7m)	770 GPM
	7.5	230V 3Ph 60Hz	3450 @ 60Hz	21	14ft (4.3m)	35ft (10.7m)	770 GPM
	7.5	460V 3Ph 60Hz	3450 @ 60Hz	10.5	14ft (4.3m)	35ft (10.7m)	770 GPM
	10	230V 1Ph 60Hz	3450 @ 60Hz	45	16ft (4.9m)	40ft (12.2m)	885 GPM
	10	230V 3Ph 60Hz	3450 @ 60Hz	26	16ft (4.9m)	40ft (12.2m)	885 GPM
	10	460V 3Ph 60Hz	3450 @ 60Hz	13	16ft (4.9m)	40ft (12.2m)	885 GPM
	7.5	400V 3Ph 50Hz	2875 @ 50Hz	12.5	10ft (3.2m)	34ft (10.6m)	174.9 m <sup>3</sup> /hr
	10	400V 3Ph 50Hz	2875 @ 50Hz	15	12ft (3.7m)	38ft (11.6m)	201.0 m <sup>3</sup> /hr
<b>Neptune</b>	7.5	230V 1Ph 60Hz	3450 @ 60Hz	28	5ft (1.5m)	11ft (3.4m)	1340 GPM
	7.5	230V 3Ph 60Hz	3450 @ 60Hz	16	5ft (1.5m)	11ft (3.4m)	1340 GPM
	7.5	460V 3Ph 60Hz	3450 @ 60Hz	8	5ft (1.5m)	11ft (3.4m)	1340 GPM
	10	230V 1Ph 60Hz	3450 @ 60Hz	36	6ft (1.8m)	11ft (3.4m)	1655 GPM
	10	230V 3Ph 60Hz	3450 @ 60Hz	20	6ft (1.8m)	11ft (3.4m)	1655 GPM
	10	460V 3Ph 60Hz	3450 @ 60Hz	10	6ft (1.8m)	11ft (3.4m)	1655 GPM
	7.5	400V 3Ph 50Hz	2875 @ 50Hz	10	5ft (1.5m)	11ft (3.4m)	304.3 m <sup>3</sup> /hr
	10	400V 3Ph 50Hz	2875 @ 50Hz	12	6ft (1.8m)	11ft (3.4m)	375.9 m <sup>3</sup> /hr
<b>Orion</b>	7.5	230V 1Ph 60Hz	3450 @ 60Hz	35	Inner 23ft(7.0m) Outer 8ft(2.4m)	Inner 10ft(3.0m) Outer 52ft(15.8m)	530 GPM
	7.5	230V 3Ph 60Hz	3450 @ 60Hz	21	Inner 23ft(7.0m) Outer 8ft(2.4m)	Inner 10ft(3.0m) Outer 52ft(15.8m)	530 GPM
	7.5	460V 3Ph 60Hz	3450 @ 60Hz	10.5	Inner 23ft(7.0m) Outer 8ft(2.4m)	Inner 10ft(3.0m) Outer 52ft(15.8m)	530 GPM
	10	230V 1Ph 60Hz	3450 @ 60Hz	45	Inner 23ft(7.0m) Outer 10ft(3.0m)	Inner 10ft(3.0m) Outer 57ft(17.4m)	580 GPM
	10	230V 3Ph 60Hz	3450 @ 60Hz	26	Inner 23ft(7.0m) Outer 10ft(3.0m)	Inner 10ft(3.0m) Outer 57ft(17.4m)	580 GPM
	10	460V 3Ph 60Hz	3450 @ 60Hz	13	Inner 23ft(7.0m) Outer 10ft(3.0m)	Inner 10ft(3.0m) Outer 57ft(17.4m)	580 GPM
	7.5	400V 3Ph 50Hz	2875 @ 50Hz	13.5	Inner 21ft(6.5m) Outer 7ft(2.1m)	Inner 10ft(3.0m) Outer 52ft(15.8m)	120.4 m <sup>3</sup> /hr
	10	400V 3Ph 50Hz	2875 @ 50Hz	16.5	Inner 22ft(6.7m) Outer 8ft(2.4m)	Inner 10ft(3.0m) Outer 57ft(17.4m)	131.7 m <sup>3</sup> /hr
<b>Apollo</b>	7.5	230V 1Ph 60Hz	3450 @ 60Hz	35	30ft (9.1m)	9ft (2.7m)	350 GPM
	7.5	230V 3Ph 60Hz	3450 @ 60Hz	21	30ft (9.1m)	9ft (2.7m)	350 GPM
	7.5	460V 3Ph 60Hz	3450 @ 60Hz	10.5	30ft (9.1m)	9ft (2.7m)	350 GPM
	10	230V 1Ph 60Hz	3450 @ 60Hz	45	34ft (10.4m)	9ft (2.7m)	385 GPM
	10	230V 3Ph 60Hz	3450 @ 60Hz	26	34ft (10.4m)	9ft (2.7m)	385 GPM
	10	460V 3Ph 60Hz	3450 @ 60Hz	13	34ft (10.4m)	9ft (2.7m)	385 GPM
	7.5	400V 3Ph 50Hz	2875 @ 50Hz	13.5	28ft (8.5m)	9ft (2.7m)	79.5 m <sup>3</sup> /hr
	10	400V 3Ph 50Hz	2875 @ 50Hz	16.5	32ft (9.8m)	9ft (2.7m)	87.4 m <sup>3</sup> /hr
<b>Venus</b>	7.5	230V 1Ph 60Hz	3450 @ 60Hz	35	Inner 18ft(5.5m) Outer 8ft(2.4m)	Inner 22ft(6.7m) Outer 70ft(21.3m)	530 GPM
	7.5	230V 3Ph 60Hz	3450 @ 60Hz	21	Inner 18ft(5.5m) Outer 8ft(2.4m)	Inner 22ft(6.7m) Outer 70ft(21.3m)	530 GPM
	7.5	460V 3Ph 60Hz	3450 @ 60Hz	10.5	Inner 18ft(5.5m) Outer 8ft(2.4m)	Inner 22ft(6.7m) Outer 70ft(21.3m)	530 GPM
	10	230V 1Ph 60Hz	3450 @ 60Hz	45	Inner 21ft(6.4m) Outer 10ft(3.0m)	Inner 30ft(9.1m) Outer 82ft(25.0m)	580 GPM
	10	230V 3Ph 60Hz	3450 @ 60Hz	26	Inner 21ft(6.4m) Outer 10ft(3.0m)	Inner 30ft(9.1m) Outer 82ft(25.0m)	580 GPM
	10	460V 3Ph 60Hz	3450 @ 60Hz	13	Inner 21ft(6.4m) Outer 10ft(3.0m)	Inner 30ft(9.1m) Outer 82ft(25.0m)	580 GPM
	7.5	400V 3Ph 50Hz	2875 @ 50Hz	13.5	Inner 17ft(5.2m) Outer 8ft(2.4m)	Inner 21ft(6.4m) Outer 69ft(21.0m)	120.4 m <sup>3</sup> /hr
	10	400V 3Ph 50Hz	2875 @ 50Hz	16.5	Inner 20ft(6.1m) Outer 9ft(2.7m)	Inner 27ft(8.2m) Outer 80ft(24.4m)	131.7 m <sup>3</sup> /hr
<b>Equinox</b>	7.5	230V 1Ph 60Hz	3450 @ 60Hz	35	17ft (5.2m)	52ft (15.8m)	530 GPM
	7.5	230V 3Ph 60Hz	3450 @ 60Hz	21	17ft (5.2m)	52ft (15.8m)	530 GPM
	7.5	460V 3Ph 60Hz	3450 @ 60Hz	10.5	17ft (5.2m)	52ft (15.8m)	530 GPM
	10	230V 1Ph 60Hz	3450 @ 60Hz	45	24ft (7.3m)	65ft (19.8m)	580 GPM
	10	230V 3Ph 60Hz	3450 @ 60Hz	26	24ft (7.3m)	65ft (19.8m)	580 GPM
	10	460V 3Ph 60Hz	3450 @ 60Hz	13	24ft (7.3m)	65ft (19.8m)	580 GPM
	7.5	400V 3Ph 50Hz	2875 @ 50Hz	13.5	17ft (5.2m)	52ft (15.8m)	120.4 m <sup>3</sup> /hr
	10	400V 3Ph 50Hz	2875 @ 50Hz	16.5	24ft (7.3m)	65ft (19.8m)	131.7 m <sup>3</sup> /hr

## Technical Specifications - continued

\* Specs based on actual and empirical data and may vary due to voltage, elevation, relative humidity and other relevant site conditions.

**Induced Circulation** is 10 times the primary pumping rate. Induced circulation is the mixing effect which is occurring below the water's surface.

**HP - Horsepower**

**V - Voltage**

**Ph - Phase**

**Hz - Hertz**

**RPM - Revolutions per Minute**

**ft - feet**

**m - meters**

**GPM - Gallons per Minute**

**m<sup>3</sup>/hr - Cubic Meters per Hour**

### Maximum Cable Lengths

**NOTE:** Distance measured from service entrance (main power source) to unit.

Cable with copper wire must be used.

All cable must be four conductor

Subject to change without notice (Updated 8/5/2005)

HP	Electrical Rating	Typical Running Amps	10awg (6mm <sup>2</sup> ) Cable	8awg (10mm <sup>2</sup> ) Cable	6awg (16mm <sup>2</sup> ) Cable	4awg (25mm <sup>2</sup> ) Cable	2awg (35mm <sup>2</sup> ) Cable
7.5	230V 1Ph 60Hz	35	n/a	200ft (61.0m)	325ft (99.1m)	525ft (160.0m)	825ft (251.5m)
7.5	230V 3Ph 60Hz	21	250ft (76.2m)	400ft (121.9m)	650ft (198.1m)	1025ft (312.4m)	n/a
7.5	460V 3Ph 60Hz	10.5	1050ft (320.0m)	1625ft (495.3m)	2600ft (792.5m)	4100ft (1249.7m)	n/a
10	230V 1Ph 60Hz	45	n/a	n/a	250ft (76.2m)	400ft (121.9m)	625ft (190.5m)
10	230V 3Ph 60Hz	26	n/a	325ft (99.1m)	525ft (160.0m)	825ft (251.5m)	n/a
10	460V 3Ph 60Hz	13	850ft (259.1m)	1300ft (396.2m)	2100ft (640.1m)	3300ft (1005.8m)	n/a
7.5	400V 3Ph 50Hz	13.5	675ft (205.7m)	1050ft (320.0m)	1650ft (502.9m)	2600ft (792.5m)	n/a
10	400V 3Ph 50Hz	16.5	550ft (167.6m)	850ft (259.1m)	1350ft (411.5m)	2150ft (655.3m)	n/a

### SPECIAL WARNING:

- Before entering, wading in or swimming in the water in which Otterbine Aerators or Fountains are installed, make sure they are **PHYSICALLY** disconnected from their electrical power sources.
- Aerators located in or near garden ponds and similar locations must be equipped with Ground Fault Circuit Interrupter (GFCI).
- The permissible temperature range for this equipment is -12° to 40° C/10° to 104° F.
- It is possible for the water to become slightly polluted in the rare case that an oil leakage occurs.
- If the power cord is damaged, it must be replaced by a special cord or assembly available from Otterbine/ Barebo, Inc. or an authorized Otterbine/Barebo, Inc. sales and service center.
- Les aerateurs situés à courte distance ou proche étangs de jardin et semblable endriots doivent être équipés avec un interrupteur avec control de défaut.
- La gamme de température permet pour cet équipement est de -12 a 40C/10 a 104F.
- Si la corde électrique est abimée, elle doit être remplacée par une corde special ou assemblage disponible d'Otterbine®/Barebo, Inc. ou par un centre de service de vente autorisé par Otterbine®/Barebo, Inc.
- L'eau pourrait devenir légèrement pollue dans le tres rûre cas ou l'huile fuirait.

## Trouble Shooting Guide

<u>SYMPTOM</u>	<u>POSSIBLE CAUSE</u>	<u>CORRECTION</u>
1) Small spray pattern (Spray drops <b>gradually</b> , i.e. minutes or hours).	Clogged intake  Clogged screen  Loose impeller	Remove debris  Remove debris  Tighten impeller bolt and/or set screws
2) Cavitation or low spray pattern. (Spray drops <b>suddenly</b> , less than one second.)	Low line voltage  Check for air bubbles surfacing around float  Debris between slinger and impeller	Check voltage at power control center & at aerator. Make sure the unit is within the specified voltage range.  Make sure mooring and anchoring lines are secure  Remove debris
3) Motor will not start	Breaker/fuse has tripped  Loose or broken terminals  Low voltage  Defective power cable  GFCI device has tripped	Check circuit breaker or fuse, reset and/or replace, if necessary. Check voltage.  Look for loose or broken terminals. Replace as needed.  Measure power to starter. Check acceptable maximum cable length (see table of contents)  Check cable. If defective, call distributor.  Reset and test GFCI device. If device trips again call elec./dist.

To insure proper operation of the Otterbine aerator it **MUST** have the **FULL PROPER VOLTAGE**. If actual voltage does not match the unit nameplate, consult the factory before installing or running the aerator.

## Maintenance

Your Otterbine aerator requires periodic preventative maintenance:

**A. Once a year physically inspect your aerator.** Disconnect the aerator from the power source and physically inspect the aerator and underwater cable for any cuts, cracks, breaks or animal bites, and repair as needed. These may cause oil leaks and/or electrical shorts. Inspect and clean the pumping chamber and screen. Debris may need to be cleaned out of the pumping chamber and screen more often depending on your particular site.

**B. After every three running seasons,** a simple oil change is necessary to keep your unit running smoothly. Otterbine oil must be used for this oil change. Please contact your local Otterbine distributor to order a maintenance kit, p/n 12-0115. **WARNING:** Do not overfill motor housing with oil, may cause damage.

**C. At the second oil change (ie - year six),** it is recommended that the rotary seal and o-rings of the power unit be replaced. This maintenance should be performed by an Authorized Otterbine Service Center.

When a unit is properly cared for, it will give you years of trouble free service. If a problem does arise, please contact your Otterbine distributor or the factory directly at 1-800-AER8TER or 610-965-6018.

## Winterization

If you live in a region of the country that experiences long periods of cold weather you may want to take your aerator out of the water. Otterbine strongly suggests that you take the following units out of the water:

**-ORION**  
**-APOLLO**  
**-VENUS**  
**-EQUINOX**

These models are especially prone to freezing in. If an aerator becomes frozen-in, there is a possibility of motor damage. **Damage caused to the motor due to freezing will not be covered under warranty.**

The **Starburst** and the **Neptune** pump higher volumes of water and the spray pattern will not freeze as easily. These units will freeze-in if the weather stays severe for a long enough period of time. You **MUST** run the unit 24 hours a day during long periods of extremely cold weather to insure it does not freeze-in.

## Storage

The Large Aerating Fountain Series must be stored in a place above 32<sup>0</sup>F (0<sup>0</sup>C) in climates where temperatures drop below freezing. It is recommended that the unit be stored standing in the upright position (reference Figure 5 on Page 11 for orientation) or tilted on its float (reference Figure 4 on Page 10 for orientation).

## Main Float Mounting

**WARNING:** Failure to complete assembly procedures as directed could result in damage to the unit or float.

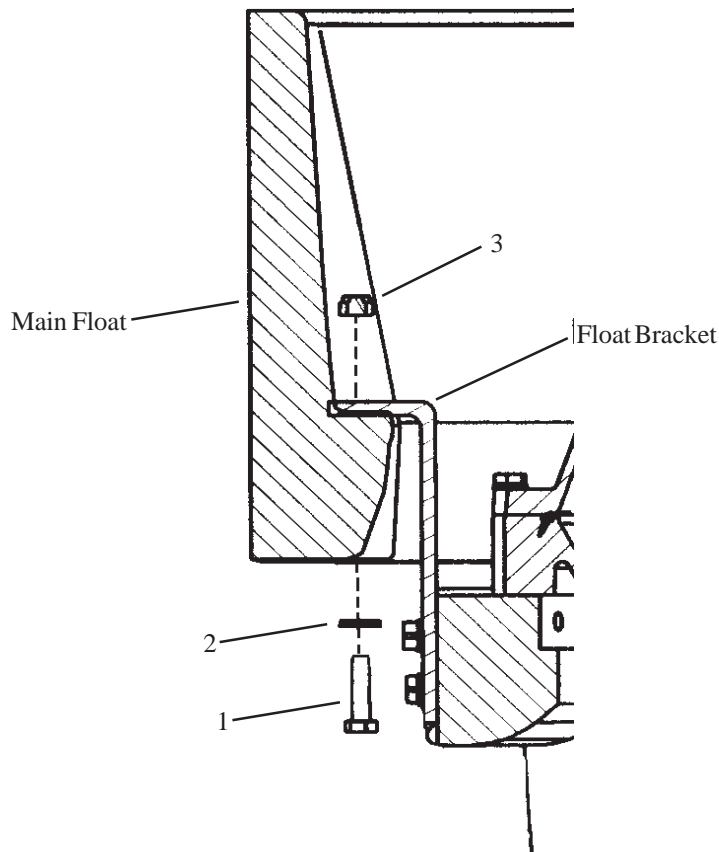
**NOTE:** The main float will be mounted to the unit when received, however, if it needs to be mounted proceed with the following procedure.

**A.** The float brackets on the motor unit sit on the top side of the mounting hole pockets in the float as shown in the cross-section view in Figure 9. The float must be lifted up to the float brackets in order to install the fasteners.

**B.** Secure the float to each float bracket (4 total) using a bolt, a flat washer and a locknut as shown in Figure 9. Do not tighten the fasteners until each one is started first.

**CAUTION:** Do not overtighten, may cause damage to the float.

Item No	Description	Qty	Part Number
1	Hex Bolt, 5/16"-18 x 1.25"	4	22-0007
2	Flat Washer, 5/16"	4	28-0018
3	Nylon Locknut, 5/16"-18	4	GP1208

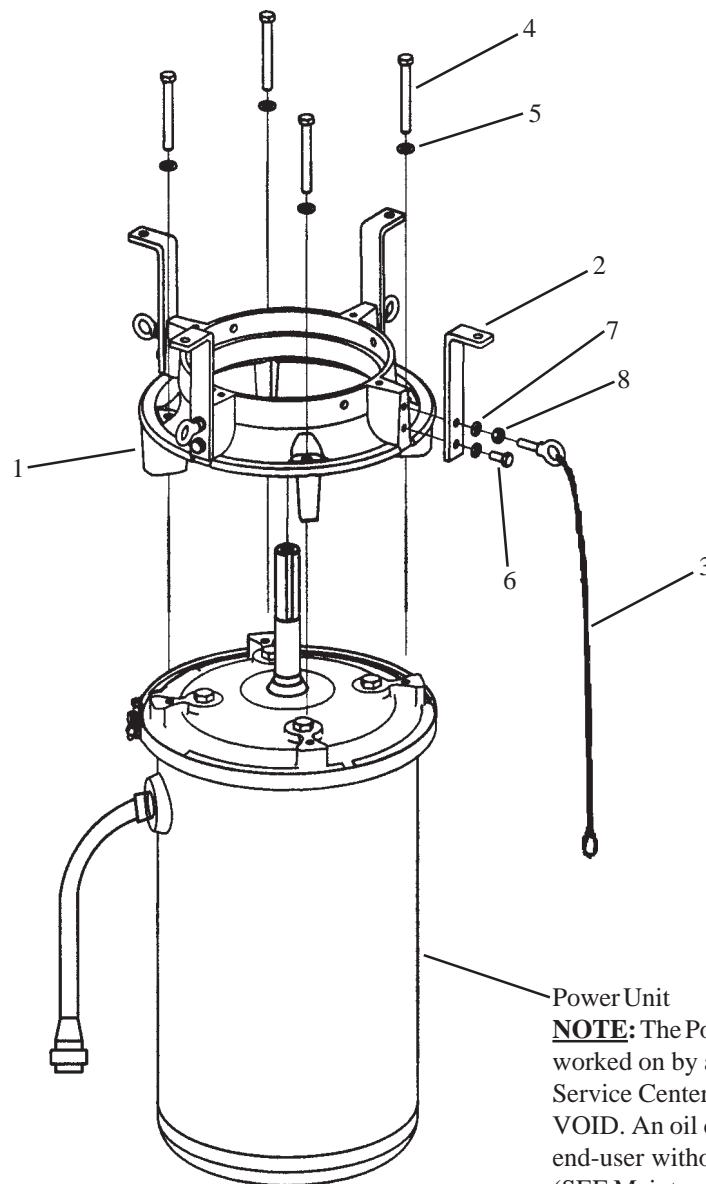


**Figure 9**  
**Cross-Section View**

## Motor Unit Exploded View Diagram - Figure 10

This diagram is for reference purposes only

Item No	Description	Qty	Part Number
1	Standoff, Brass	1	45-0011
2	Float Bracket, S/S	4	40-0117
3	Cable Assembly, Mooring/Lifting	4	10-0081
4	Hex Bolt, 3/8"-16 x 3.25"	4	22-0033
5	Split Lock Washer, 3/8"	4	EP6301
6	Hex Bolt, 5/16"-18 x 3/4"	4	106-302
7	Split Lock Washer, 5/16"	8	28-0019
8	Hex Nut, 5/16"-18	4	660-002



**NOTE:** The Power Unit should ONLY be worked on by an Authorized Otterbine Service Center otherwise the Warranty is VOID. An oil change may be done by the end-user without effecting the Warranty (SEE Maintenance Section of this manual)

Figure 10

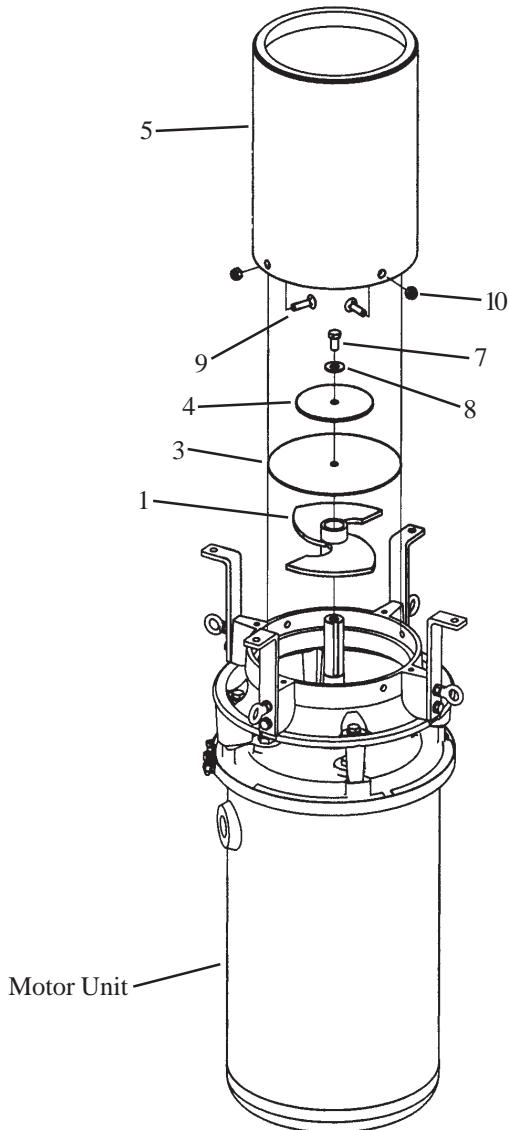
# Open Throat Pump Chambers Exploded View Diagrams - Figures 11 & 12

These diagrams are for reference purposes only

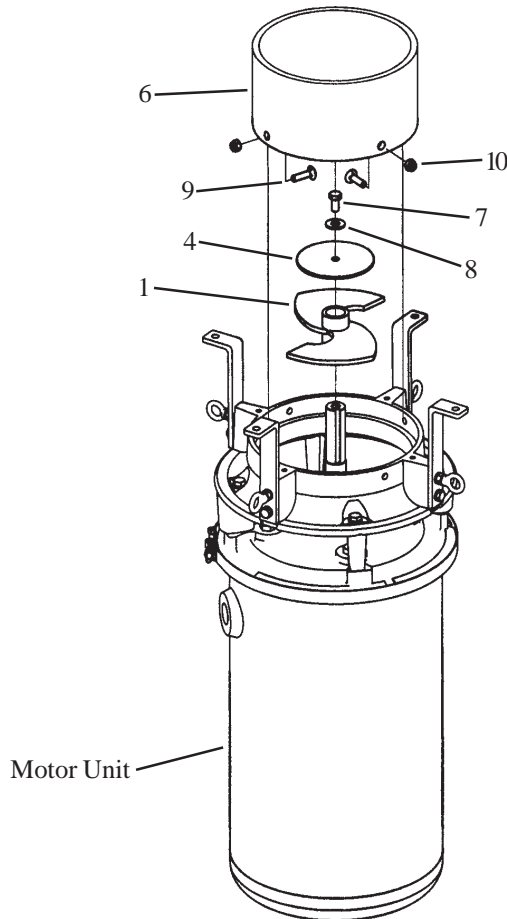
Item No	Description	Part Number	Qty per Starburst Figure 11	Qty per Neptune Figure 12
1	Impeller, S/S, 7.5HP 60Hz Impeller, S/S, 10HP 60Hz/7.5HP 50Hz Impeller, S/S, 10HP 50Hz	50-0015-001 50-0015-002 50-0015-003	1*	1*
2	Set Screw, Impeller (not shown)	BP2806B	2**	2**
3	Slinger Disc, S/S, Large (6-15/16" Dia)	155-422	1	0
4	Slinger Disc, S/S, Small (4" Dia)	47-0013	1	1
5	Throat Assembly, Starburst	10-0079	1	0
6	Throat, Neptune	41-0146	0	1
7	Hex Bolt, 3/8"-16 x 3/4"	C2-111	1	1
8	Fender Washer, 3/8"	927-009	1	1
9	Carriage Bolt, 5/16"-18 x 1"	22-0026	4	4
10	Nylon Locknut, 5/16"-18	GP1208	4	4

\* Impeller depends on the horsepower (HP) and frequency (Hz) of the unit.

\*\* Comes with impeller, however, can be purchased separately.



**Figure 11**  
**Starburst**



**Figure 12**  
**Neptune**

## Decorative Pump Chambers Exploded View Diagrams - Figures 13, 14, 15 & 16

These diagrams are for reference purposes only

**Orion Pump Chamber - Figure 13 on page 26**  
**Apollo Pump Chamber - Figure 14 on page 27**  
**Venus Pump Chamber - Figure 15 on page 28**  
**Equinox Pump Chamber - Figure 16 on page 29**

Item No	Description	Part Number	Qty per Orion Figure 13	Qty per Apollo Figure 14	Qty per Venus Figure 15	Qty per Equinox Figure 16
1	Impeller, Dec, 7.5HP 60Hz	50-0016-001	1*	1*	1*	1*
	Impeller, Dec, 10HP 60Hz/7.5HP 50Hz	50-0016-002				
	Impeller, Dec, 10HP 50Hz	50-0016-003				
2	Set Screw, Impeller (not shown)	24-0029	2**	2**	2**	2**
3	Flow Straightener	45-0009	1	1	1	1
4	Pump Chamber	45-0010	1	1	1	1
5	Throat, Decorative	41-0144	1	1	0	0
6	Throat Assembly, Venus	41-0151	0	0	1	0
7	Throat Assembly, Equinox	10-0080	0	0	0	1
8	Nozzle Assembly	10-0068	6	0	16	4
9	Orion Diffuser	41-0148	1	0	0	0
10	Apollo Diffuser	41-0147	0	1	0	0
11	O-Ring, Pump Chamber, #267	49-0034	1	1	1	1
12	O-Ring, Apollo Diffuser, #357	49-0035	0	1	0	0
13	O-Ring, Throat, #163	49-0036	1	1	1	1
14	Spacer, Orion	40-0123	1	0	0	0
15	Threaded Rod, 5/8"-11 x 11"	40-0120	1	1	1	1
16	Hex Nut, 5/8"-11	26-0009	3	2	2	2
17	Hex Jam Nut, 5/8"-11	26-0010	1	1	1	1
18	Flat Washer, 5/8"	28-0011	5	1	1	1
19	Hex Bolt, 1/4"-20 x 1/2"	22-0034	8	8	8	8
20	Split Lock Washer, 1/4"	28-0024	8	8	8	8
21	Hex Bolt, 3/8"-16 x 1.25"	22-0018	1	1	1	1
22	Split Lock Washer, 3/8"	EP6301	1	1	1	1
23	Flat Washer, 3/8"	927-003	1***	1***	1***	1***
24	Hex Bolt, 5/16"-18 x 1.5"	22-0009	4	4	4	4
25	Hex Bolt, 5/16"-18 x 2.75"	101-023	4	4	4	4
26	Split Lock Washer, 5/16"	28-0019	8	8	8	8

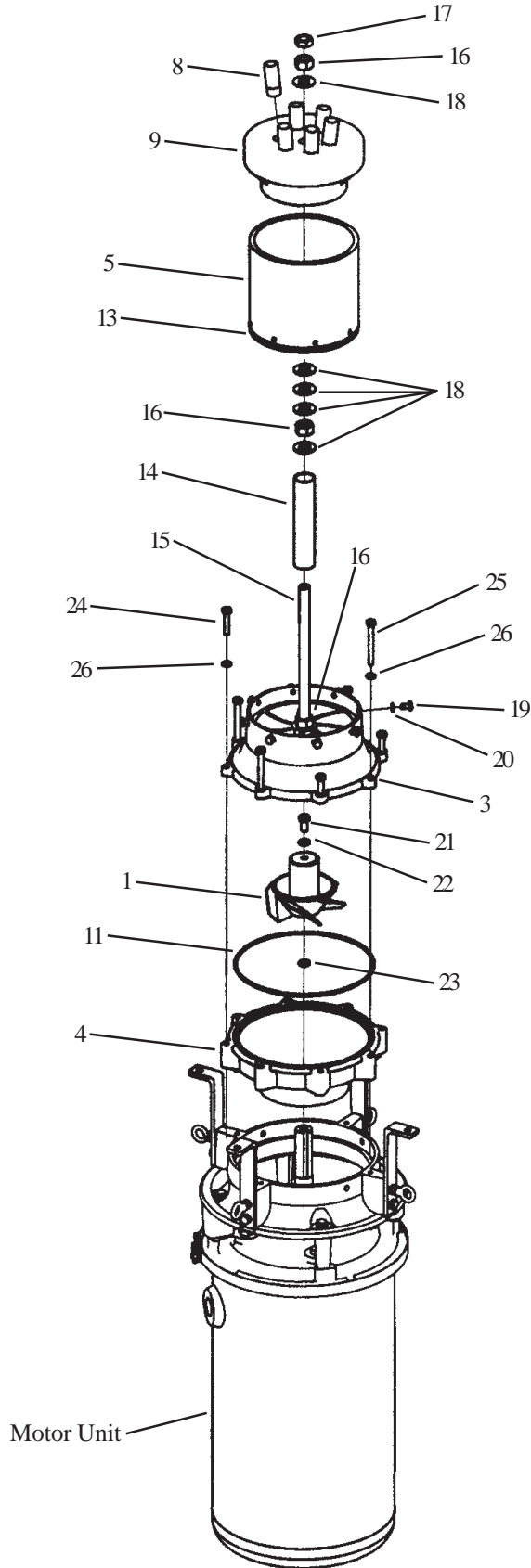
\* Impeller depends on the horsepower (HP) and frequency (Hz) of the unit.

\*\* Comes with impeller, however, can be purchased separately.

\*\*\* Used as an impeller shim to obtain the proper gap between the impeller and the pump chamber. Qty used may vary.

# Orion Pump Chamber Exploded View Diagram

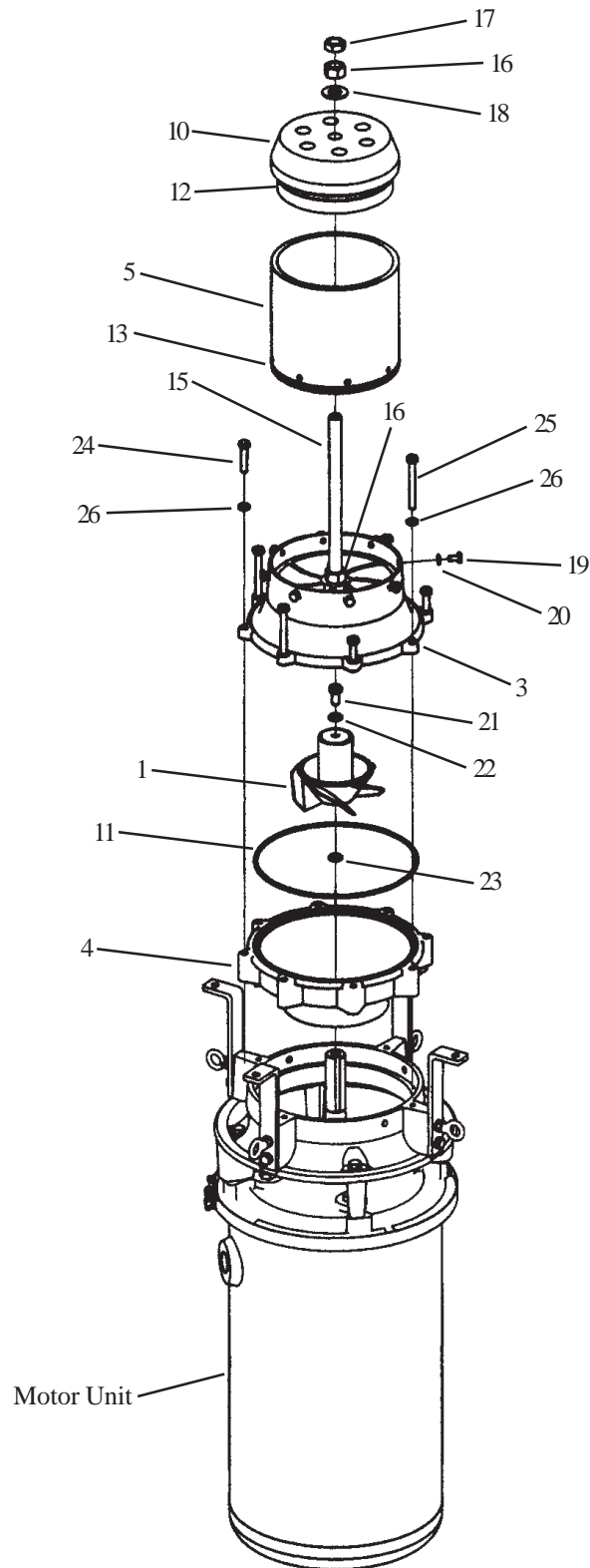
Reference Parts List on Page 25



**Figure 13**  
**Orion**

# Apollo Pump Chamber Exploded View Diagram

Reference Parts List on Page 25



**Figure 14**  
**Apollo**

# Venus Pump Chamber Exploded View Diagram

Reference Parts List on Page 25

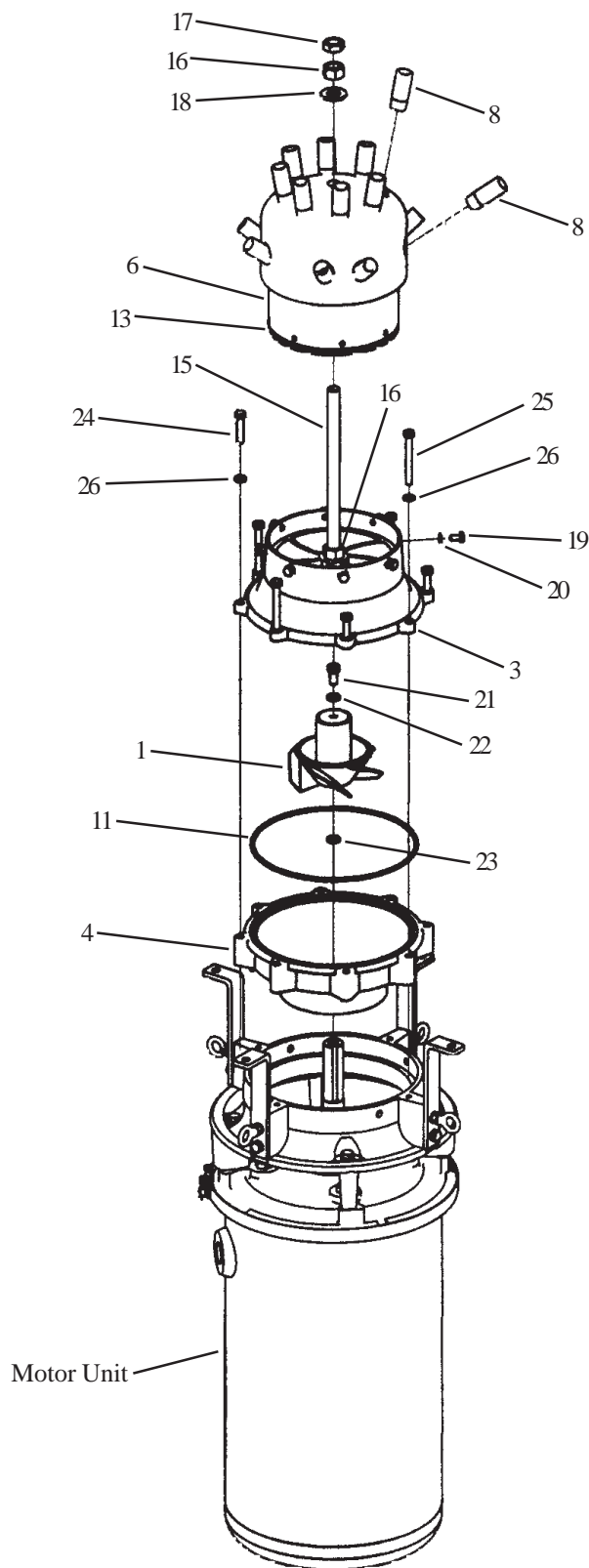
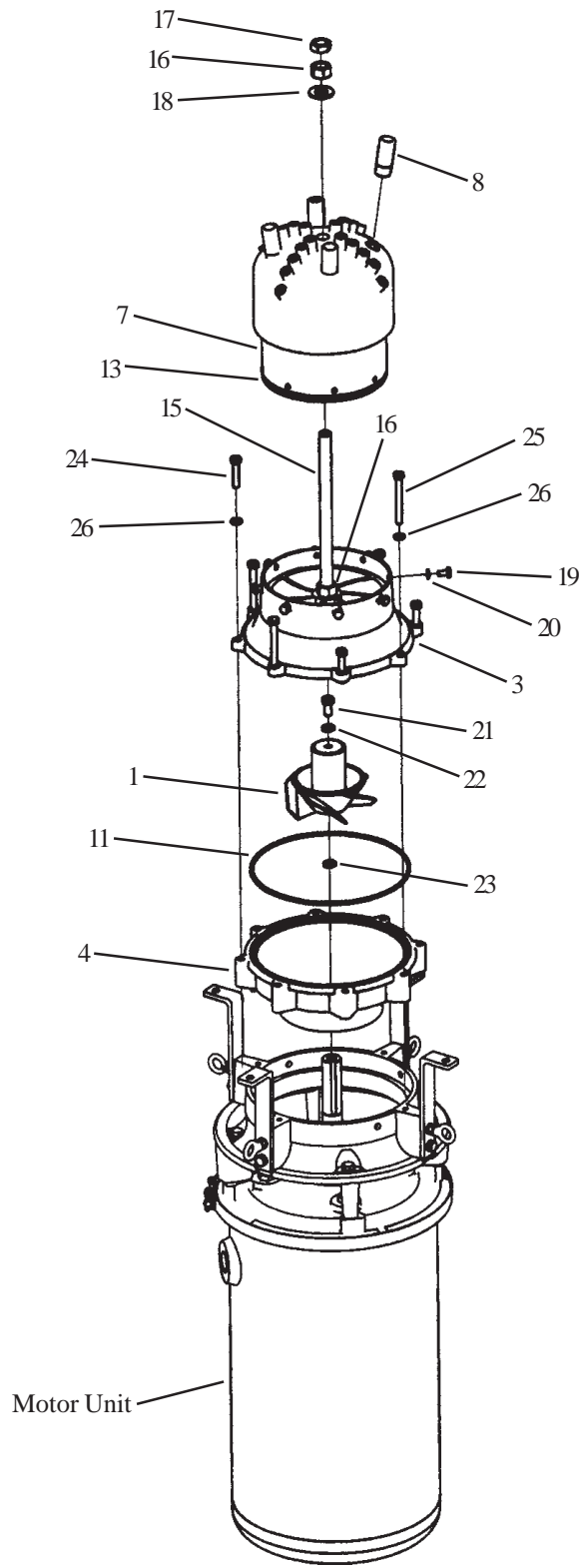


Figure 15  
Venus

# Equinox Pump Chamber Exploded View Diagram

Reference Parts List on Page 25



**Figure 16**  
**Equinox**

**Limited 2 Year Warranty**  
**Otterbine® Product**

**WARRANTY:** Barebo, Inc 3840 Main Road East, Emmaus Pennsylvania 18049,U.S.A. hereby warrants, subject to the conditions hereinbelow set forth, that should the **OTTERBINE** product prove defective by reason of improper workmanship or materials at any time during the warranty period the Purchaser at retail will be guarantee that **BAREBO** will repair or replace the said **OTTERBINE** product as may be necessary to restore it to satisfactory operating condition, without any charge for materials or labor necessarily incident to such repair or replacement, provided that:

- a) The enclosed Warranty Registration Card should be mailed to **BAREBO** or registered on-line within fifteen (15) days of the original receipt by the Purchaser at retail in order to avoid delays:
- b) The **OTTERBINE** product must be delivered or shipped, prepaid, in its original container or a container offering an equal degree of protection, to **BAREBO** or a facility authorized by **BAREBO** to render the said repair or replacement services or, if purchased from an authorized **OTTERBINE** dealer, to such dealer;
- c) The **OTTERBINE** product must not have been altered, repaired or serviced by anyone other than **BAREBO**, a service facility authorized by **BAREBO** to render such service, or by an authorized **BAREBO** dealer, and the serial number of the **OTTERBINE** product must not have been removed or altered: and
- d) The **OTTERBINE** product must not have been subjected to lightning strikes and other Acts of God, vandalism, freezing-in, accident, misuse or abuse, and must have been installed in conformance with applicable electrical codes (including proper electrical protection), and also installed, operated and maintained in accordance with guidelines in the Owner's Manual shipped with the Otterbine product.
- e) The **OTTERBINE** product must be physically inspected on an annual basis to insure the unit, the connector and the power cable are not damaged and are in proper working condition.

No implied warranties of any kind are made by **BAREBO** in connection with this **OTTERBINE** product, and no other warranties, whether expressed or implied, including implied warranties of merchantability and fitness for a particular purpose, shall apply to this **OTTERBINE** product. Should this **OTTERBINE** product prove defective in workmanship or material, the retail Purchaser's sole remedy shall be repair or replacement as is hereinabove expressly provided and, under no circumstances, shall **BAREBO** be liable for any loss, damage or injury, direct or consequential, arising out of the use of, or inability to use, the **OTTERBINE** product, including but not limited to retail Purchaser's cost, loss of profits, goodwill, damages due to loss of product or interruption of service, or personal injuries to Purchaser or any person.



MODEL (circle one):    Starburst                      Orion                      Apollo  
   Venus                      Equinox                      Neptune

HORSEPOWER (circle one):    7.5    10

VOLTAGE (circle one):    230                      380/415                      460

PHASE (circle one):    Single                      Three                      HERTZ (circle one):    50    60

CORD GAUGE & LENGTH \_\_\_\_\_

UNIT SERIAL NUMBER \_\_\_\_\_

PANEL SERIAL NUMBER \_\_\_\_\_

OPTIONS \_\_\_\_\_



## Water Works With Otterbine!

Otterbine/Barebo, Inc.  
3840 Main Rd. East  
Emmaus, PA. 18049  
U.S.A.

1-800-AER8TER • (610) 965-6018

FAX: (610) 965-6050

e-mail: [aeration@otterbine.com](mailto:aeration@otterbine.com)

[www.otterbine.com](http://www.otterbine.com)