



OTTERBINE BAREBO, INC. CE OWNER'S MANUAL



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Aerator Equipment

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

Aerator - you will find a label located on the housing of the aerator. Check the label to make sure you have received the correct horsepower and voltage aerator. The aerator is supplied with a mating connector assembly or with 1 meter of cable for splicing.

Electrical Requirements

Otterbine suggests coordinating electrical installation with physical installation. The electrician will need to be on hand for a two 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 ground fault protection for safe operation. If the proper grounding and ground fault protection 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 main disconnect switch must be installed. The disconnect must have a rating of at least 40A and must conform with all national and local electrical codes.
- The motor unit contains no thermal protector. Separate over current 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 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 supply mains before physical entry into the water.

Physical Installation

All Concept₂ Otterbine aerators require at least **1m** of water 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 than the required **1m**. Shorter support arms are available upon request. The shorter support arms change the minimum operating depth to **77.5 cm**.

A. The aerator is supplied with 2 meters of H07RN-F cable. Additional cable of the same or higher rating must be spliced to this cable. The splice must be waterproof and conform to all electrical codes for underwater connections.

NOTE: For Concept₂ 1/2hp units, omit Step B through E.

B. Attach your Otterbine power cable to the aerator. Using a screwdriver, remove clamp from connector nut. Align the pigtail connector on the cable up to the pin configuration on the bulkhead on the aerator. **HAND TIGHTEN** the coupling nut onto the bulkhead connector. **DO NOT OVER TIGHTEN -- OVER TIGHTENING WILL CAUSE A FRACTURE IN THE CONNECTOR AND COULD LEAD TO A SHORT CIRCUIT--**see Figure 1. Using a screwdriver, refasten clamp around connector nut.

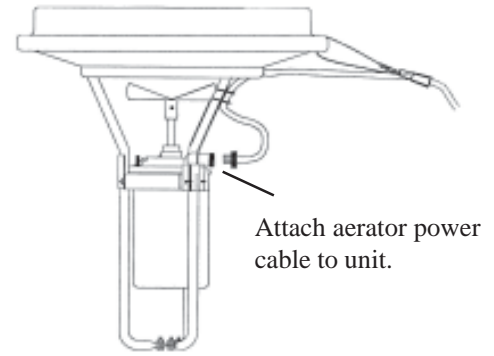


Figure 1

NOTE: You will notice a small amount of silicon compound on the female end of the aerator connector. This compound has been applied during assembly and is needed in order to make proper seal between the two connectors. **DO NOT REMOVE COMPOUND!** When servicing the aerator make sure to re-apply compound (Otterbine part# 48-0001).

CAUTION: KEEP HANDS CLEAR OF THE IMPELLER WHEN TRYING TO START THE AERATOR!

C. Have your electrician perform these on-shore tests.

1. Verify that the actual power supply at the site conforms to the information on the aerator's nameplate. (motor voltage, phase, and frequency). IF VOLTAGE VARIATIONS ARE NOT WITHIN THE RANGE ON THE FOLLOWING CHART, DO NOT OPERATE THE UNIT!

50 HZ	Minimum	Maximum
220-240	197	250
380-415	380	436

2. With the aerator on dry land, attach the power cable to the aerator and power supply.

3. Start the unit on shore.

4. Run unit 2 minutes to break in seals. DO NOT RUN UNIT FOR MORE THAN 2 MINUTES -- MOTOR DAMAGE CAN OCCUR.

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 THREE SUPPLY LINES ON 3 PHASE UNITS SHOULD NOT EXCEED 5%.** Steps "L-M" on page 6 determine current unbalance.

D. Install the cable strain relief device. Pass the wire hoop through one of the holes in the float and around the aerator power cable. Re-attach the cable strain relief --see Figure 2. The splice must be on the aerator side of the cable strain relief.

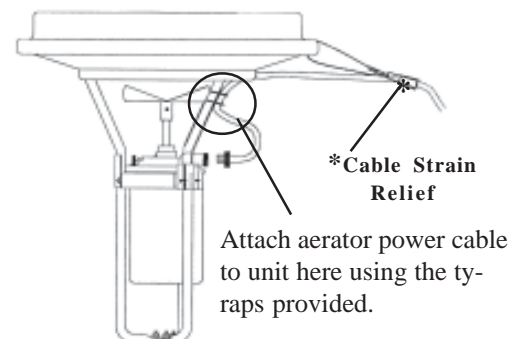


Figure 2

E. Attach your aerator power cable to one of the support arms with the ty-raps provided.

NOTE: For 1/2hp units, attach the cable to the bottom of the unit using cable tie provided. The splice must be on the aerator side of the cable tie.

There are two different methods of securing your aerator, anchoring and mooring. Otterbine suggests mooring as it will be easier to install and service the aerator. On the next page you will find instructions for mooring the aerator; if you prefer to anchor your aerator, please see "Anchoring Your Aerator."

NOTE: Units with a Triton pumping chamber must be moored.

Mooring the aerator

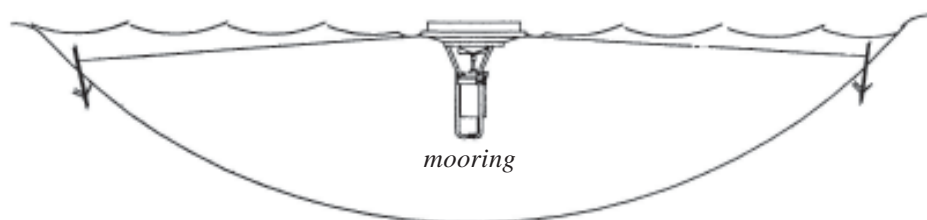


Figure 3

E. You will need the following items in order to moor your Otterbine aerator.

1. Use all brass and stainless steel fasteners in the installation of your Otterbine aerator.
2. Otterbine recommends using .6 cm black polypropylene rope or stainless steel cable for your mooring lines.
3. At the mooring points themselves you will need a wooden stake, 1.25 cm of rebar or earth anchor.

F. Choose a suitable location for your Otterbine aerator.

G. Secure your first mooring point. If you are using a stake or 1.25cm rebar, make sure to pound the mooring point securely into the ground on the outer edge of the pond. It is allowable to have the mooring points slightly below the water surface.

H. Attach the mooring lines to the holes in the float. Use a strong, tight knot as it will secure the Otterbine aerator in its place. For 1/2hp models, install mooring clips through slots in float and attach lines to clips.

I. Launch your aerator into the water. Walk one mooring line around to the mooring point on the opposite shore. Concept₂ aerators with Triton pumping chambers require 3 mooring points, placed 120 degrees apart.

J. Pull your Otterbine aerator into your previously chosen location.

K. Put in the other mooring stake. Tie down your Otterbine aerator leaving enough slack in your lines to allow the aerator to turn 90° or 1/4 turn. The slack in the lines will allow for proper start up, wave action, and fluctuations in the water level. Proceed to step L (**page 6**).

Anchoring an aerator

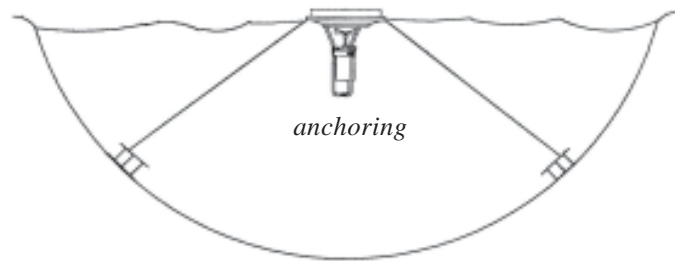


Figure 4

E. You will need the following items to anchor your Otterbine aerator:

1. Use all stainless steel and brass fasteners in the installation of your Otterbine aerator.
2. Otterbine recommends using .6 cm black polypropylene rope or stainless steel cable for your anchoring lines.
3. Two 27 - 36 kg anchors.
4. Small boat.

F. Choose a suitable location for your Otterbine aerator.

G. Launch your aerator into the water upside down, with the motor housing up. Take a piece of rope and pass it through one of the holes on the float. For 1/2hp models, install mooring clips through slots in float and attach rope to clips.

H. In a small boat tow the aerator into your previously chosen location.

I. Determine where to locate the anchors. Where the anchors are located will vary depending on the depth of your pond. See the chart below to determine the best location for your anchors.

MAXIMUM DEPTH	DISTANCE BETWEEN ANCHORS
meters	meters
1.5m	3.4m
1.8m	4.6m
2.1m	6.1m
2.4m	9.1m
2.7m	12.0m
3.0m	16.7m
3.3m	21.2m
3.6m	26.8m
3.9m	30.3m
4.2m	36.4m
4.6m	42.4m

J. Drop in the first anchor line. Place your aerator in the desired location and securely tie the anchor line to one of the holes on the outside edge of the float.

K. Drop in the second anchor line. Securely tie the anchor line to the hole on the outside edge of the float which is directly opposite of the first anchor line that was tied onto the float. Make sure the unit can rotate 90° or 1/4 turn. The slack in the anchoring lines will allow for proper start up, wave action, and fluctuations in the water level. Flip the unit over. Proceed to step L (next page).

L. Start your unit.

M. Your electrician must do the following while the unit is running in the water.

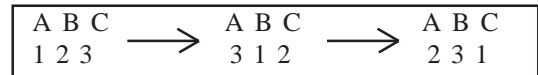
1 PHASE UNITS: Record running voltage & running amperage and cable length and size on the inside of the motor control panel. Go to step N.

3 PHASE UNITS:

1. Check the direction of the rotation. Three-phase motors can run in either direction depending on how they are connected to the power supply.

2. Establish the correct motor rotation by running in both directions. Change rotation by exchanging any two of the three motor leads. **The rotation that gives the lowest current readings is always correct. Failure to do the above MAY CAUSE THE MOTOR TO FAIL WITHIN ONE WEEK OF RUNNING TIME. MOTOR FAILURE DUE TO REVERSED POLARITY WILL NOT BE COVERED UNDER WARRANTY.**

3. Check current readings in amps on each lead using the three possible hook-ups. Roll the motor leads across the starter in the same direction to avoid motor reversal. EXAMPLE:



4. 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.

5. Current unbalance should not exceed 5% at the service factor load. If unbalance cannot be corrected by rolling leads, locate source of unbalance & correct it. IF lead furthest from average stays on the same power lead, THEN the primary cause of unbalance is the power source. IF lead 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.

6. Record running voltage & running amperage and cable length and size on the inside of the motor control panel.

N. Have the electrician test the ground fault protection device for proper operation.

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

Maintenance and Service

Your aerator requires periodic maintenance:

Maintenance and service must be performed by an authorized Otterbine service center. Please contact your distributor for service.

A. **Once a year**, disconnect the unit from the power source and physically inspect the aerator and underwater cable for any cuts, cracks, or breaks in the power cable or connector. Inspect and clean the pumping chamber components.

B. **After every three operating seasons**, a simple oil change is necessary on 1,2,3, and 5hp units.