

# Otterbine Service Manual

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Warranty & Reference





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Made in the U.S.A.

This manual and more can be found online through Otterbine’s Distributor Extranet.

To Register: [www.otterbine.com/register](http://www.otterbine.com/register)  
To Login: [www.otterbine.com/login](http://www.otterbine.com/login)

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# Introduction

This manual has been designed to be used as a warranty/reference guide. The manual not only contains information on our Service Center Programs; but also warranty information and detailed instructions for diagnostics and analysis and should be used as a reference for troubleshooting. Please use this manual in conjunction with the service manual of the specific product being serviced.

We thank you for your continued support and dedication. We hope the structure of this manual benefits and aids you through the warranty servicing process.

Please call, write or email us with any questions, comments or suggestions you may have at [service@otterbine.com](mailto:service@otterbine.com). Quality improvements are often made from your feedback.

## Requirements to Become an Authorized Service Center

Being fully qualified to perform Otterbine Service gives you the ability to provide excellent customer service, make additional profits and become a more valuable asset to your company. Being a service provider will also lead to additional opportunities and future unit sales. ([Service Center Policy](#) can be viewed through the Distributor Extranet.)

### **To Become an Otterbine Service Center you must:**

- Request & Be Approved by Otterbine
- Sign & Return the Otterbine Service Center Agreement
- Attend an Otterbine Service Seminar and Receive Training Certification
- Maintain Minimum Stocking Inventory Levels on Parts

At this point, your company will be recognized as an official Otterbine Service Center and be eligible to receive discounts, make warranty claims, and provide additional service to your customers.

## Otterbine® Service Center Training Program

Otterbine offers factory based seminars annually which will provide instructional training regarding the specialized service methods required to maintain Otterbine products. Service training is valid for three years, after that time you need to re-certify, failure to do so will result in the loss of your Authorized Service Center status and any service discounts which you previously qualified for. Any additional branch, satellite, or other repair shop owned or operated by the designated distributorship shall also be required to maintain the same standards for repair and factory training. To enroll in one of Otterbine's factory based seminars, simply complete an Otterbine service seminar enrollment form which can be found on the Service Center Training page.



*Otterbine Service Training Room at Otterbine*

## Service Center Discount Program

In an effort to reward distributors for strong performance, Otterbine has created a tiered service center discount program. The program is based on sales revenues from the previous year and is structured as follows:

- \$0 - \$49,999 previous year's sales; no service center discount offered
- \$50,000 - \$99,000 previous year's sales; 5% service center discount offered
- \$100,000 - \$199,000 previous year's sales; 10% service center discount offered
- \$200,000+ - previous year's sales; 15% service center discount offered

### Exceptions to Discount Program:

- **Special Considerations:** Otterbine will consider and allow for sporadic sales dips with approval from your Regional Manager.
- **New Service Centers:** Receive a 1x buy-in at the 15% level on their initial parts order.
- **February Buy-In (1X-15% Discount):** Any service center that holds current certification will be allowed a 1x – 15% annual buy-in on qualifying Otterbine parts in February of a given year.
- **Certification Expires:** If your service center certification expires, discount is no longer available.
- **Late Claims:** Service centers that consistently send service ticket claims in late or in bundles may not receive top level discounts.
- **Delinquent Accounts:** If the account does not stay current Otterbine reserves the right to remove the discount.

## Otterbine® Service Center Rating Program

This program is used as our selection process for the Service Center of the Year award. Tabulated results will be provided to you at mid-year and at year-end. The following 5 categories are rated:

1. **Lead Time:** Efficiency rate of return for service ticket warranty claims
2. **Training:** 3 year certification status
3. **Repair Percentage:** Is the service center performing the work versus sending it to Otterbine for In-House Warranty?
4. **Customer Survey\*:** End-user rating of support provider
5. **Manager Rating:** Average score comprised by Otterbine's Inside Sales & Service Manager

### **\* The Customer Survey portion of the program will involve the following service provider questions:**

- **Response Time:** Was the turn-around time adequate
- **Communication:** Ease of dealing with the service personnel
- **Technical:** Were they knowledgeable
- **Service:** Was your problem resolved
- **Follow-Up:** Did they follow-up with you upon completion



# Diagnostics & Analysis

## Onsite Problem Diagnosis

In solving any problem with an aerator, the following information should be obtained and recorded before visiting the site. This data will assist you in reaching the proper and quickest solution and may provide enough information to resolve the issue over the phone, saving a service call. It will also be required, if a warranty claim is being made.

### **Obtain and Record the Following:**

1. Unit Information
  - Serial Number or Unit Series Classification
  - HP/Voltage/Phase
  - Pump Chamber Configuration
2. Cable Information
  - Cable Lengths & Wire Gauge Size
    - » Main Power Source to PCC
    - » PCC to Aerator
  - Are “Junction Boxes” being used between PCC and Aerator?
3. Power Information
  - No-Load Voltage
  - Running Voltage
  - Amperage Readings
4. Transformer Information (*3 Phase ONLY*)
  - Is a Phase Converter being used?
    - » Static
    - » Rotary
5. Description of Problem
  - Tripping Thermal
  - Tripping GFCI
6. Description of Pattern
  - Low/Weak
  - Distorted/Partial
7. Appearance in Water
  - Slanted
    - » Mooring/Anchor Issue
  - Upside Down
8. Water Quality/Depth
  - Large Amounts of Algae/Weeds
  - Is the Unit Resting on the Bottom?
9. Unit Moved/Relocated Recently
  - Did the problem start after relocation?
10. Weather Events
  - Lightning Storms
  - Brown-Outs

Collecting this information about the site for every problem may seem unnecessary; however, being consistent about data collection will save you time and prevent follow-up calls for warranty claims.

To assist in finding the cause of the problem, [Troubleshooting Charts](#) can be found online through the [Distributor Extranet](#). Once the site is analyzed, please refer to the appropriate flowchart.



## Power Unit Diagnostics

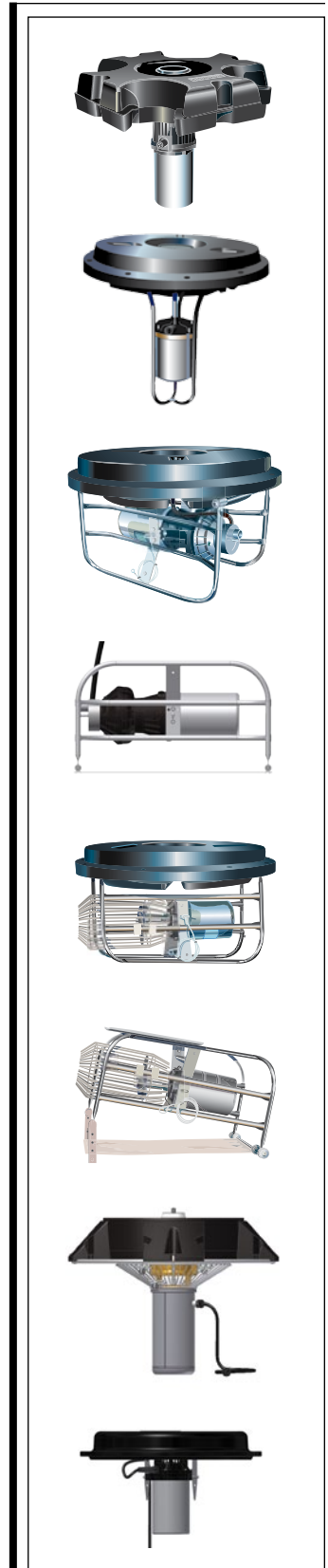
*It is important that all findings from the following diagnostics are noted and retained for future use. This information will be used in determining whether the motor itself can be reused or not.*

The Power Unit will need to be removed from float brackets in order to complete the following procedures.

You can record the following multi-point inspections on the [Otterbine Power Unit Analysis Report Form](#), which is provided preceding this process and can be downloaded from the Distributor Extranet.

**CAUTION:** ALWAYS WEAR PROTECTIVE SAFETY GLASSES WHEN PERFORMING ANY OF THE FOLLOWING PROCEDURES!

- STEP 1:** Record Serial # / HP/ Voltage
- STEP 2:** Integrity (Visual inspection) Note any abnormalities. (Examples: bulged/dented motor housing, cracked motor base plate, bent shaft.)
- STEP 3:** Confirm grounding points, before performing electrical tests. Confirm continuity between three common ground points. (Motor housing, motor shaft and the ground pin within the bulkhead connection.) All three points should share continuity with one another. Confirm ground points prior to performing Megger or Hi Pot testing. An open ground connection will provide invalid Megger/Hi Pot test results. (If the motor housing fails continuity it most likely is related to a broken ground clip.)
- STEP 4:** Perform Megger and Hi Pot testing. Reference the [Unit Analysis Using a Megohm Meter](#) (“MEGGER”) which can be found at Otterbine’s Distributor Extranet.
- STEP 5:** Record resistance reading across the motor windings at bulkhead pins. Correct motor resistance specifications can be found in the unit specific service manual.
- STEP 6:** Record no load Ampere readings. Note only check if unit is not shorted to ground (Step 4), try to start the unit and check the amperage draw at each leg. Correct motor “No Load Ampere” specifications can be found in the unit specific service manual.



*Fig. 1a | Products with Serviceable “Power Units” (Top to Bottom) Concept 3; Concept 2 (including Aspirators & Mixers); Large Aerating Fountains; and Fractional Series*

**STEP 7:** Remove oil plugs and drain oil. The condition of the oil will provide important information on the running condition of the unit. Therefore, when draining oil use a clean bucket and note the condition of the used oil; some items to look for include but are not limited to:

- **Dark, foul smell like sulfur:** Possible burnt winding, unit developed extreme internal heat.
- **Milky:** Water present in oil.
- **Dark, molasses like in color:** Blown capacitor

**DO NOT REUSE OIL!** Dispose oil in accordance with local EPA regulations.

*NOTE: It is possible to reuse a motor in which some water was present in the oil. Be absolutely sure that all moisture is out of the motor before reuse. Bearings should be inspected and may also need to be changed.*

*Should water contamination be present, the unit should be disassembled. Separate the motor's rotor from the stator and wash both in mineral spirits (a parts washer is ideal for this type of cleaning). Allow the motor to dry overnight before retesting.*

**STEP 8:** Perform a vacuum test. Insert an air fitting into one of the oil plug openings. Install an oil plug in the other opening. Apply vacuum.

*NOTE: Perform a vacuum test using equipment capable of reaching 20 in. Hg maximum. Apply vacuum, clamp off vacuum source, and verify no drop in vacuum with unit.*

**STEP 9:** If unit failed vacuum perform a pressure test to determine the point of leakage. Insert an air fitting into one of the oil plug openings. Install an oil plug in the other opening. Apply air pressure.

*NOTE: The air supply must have an adjustable regulator. The unit must only be tested at a maximum of 5 PSI. DAMAGE/PHYSICAL HARM may occur if a unit is tested at a pressure greater than 5 PSI!*

**TIP:** Water dunk tank works well for leakage testing. If tank is not available use a mild soapy water solution to locate any leaks under pressure.

**STEP 10:** Evaluate results of Steps 1 through 9. Any failure will result in power unit disassembly; proceed to power unit disassembly instructions in the unit specific service manual.

If the tests indicate no failure or damage, refill unit with new Otterbine oil, re-test no load amperage. If amperage is good, re-assemble aerator unit, and re-evaluate site/other components for cause of difficulty.

### Otterbine Power Unit Analysis Report Card

*Multi-point Inspections for the Concept 3, Concept 2, Large Aerating Fountain & Fractional Series Power Units.*

**STEP 1:** Serial #: \_\_\_\_\_

HP: \_\_\_\_\_ Voltage: \_\_\_\_\_ Phase: \_\_\_\_\_

**STEP 2:** Integrity: *(Visual Inspection)*

**Results:** \_\_\_\_\_

**STEP 3:** Confirm Grounding Points, Perform Continuity Checks Between:

**S/S Housing / Motor Shaft / Bulkhead Ground Pin**

**Results:** \_\_\_\_\_

**STEP 4:** Perform MEGGER and Hi Pot testing:

**Results:** \_\_\_\_\_

**STEP 5:** Record Resistance Readings at Bulkhead Pins:

**WHT to BLK** \_\_\_\_\_ **WHT to RD (3Ph)** \_\_\_\_\_ **BLK to RD (3Ph)** \_\_\_\_\_

**STEP 6:** Record AMP Readings:

**NOTE:** Only check if unit is not shorted to ground, (Step 4).

**White** \_\_\_\_\_ **Black** \_\_\_\_\_ **Red (3Ph)** \_\_\_\_\_

**STEP 7:** Oil Condition: (Note the condition of the oil, it will provide important information on the running condition of the unit.)

**Results:** \_\_\_\_\_

**STEP 8:** Perform a Vacuum test: *(20 in. Hg maximum)*

**Results:** \_\_\_\_\_

**STEP 9:** Perform a Pressure test: (Maximum of 5 PSI)

*(Required if unit failed the vacuum test.)*

**Results:** \_\_\_\_\_

**STEP 10:** Evaluate results from Step 1 - Step 9. Any failure will result in power unit disassembly; go to **Power Unit | Disassembly** instructions found within the unit specific service manual.

# Warranty Program

## Otterbine® Warranty Repair Program

### WHAT CAN THIS PROGRAM DO FOR YOUR DISTRIBUTORSHIP?

This program establishes reimbursement allowances to a servicing distributor for repairs made to an Otterbine Aerator during the warranty period. Being fully qualified to perform Otterbine Service gives you the ability to provide excellent customer service, make additional profits and become a more valuable asset to your company. Being a service provider will also lead to additional opportunities and future unit sales.

### WHAT IS THE WARRANTY PERIOD AND WHAT TYPES OF REPAIRS CAN BE MADE?

**WARRANTY PERIOD:** The warranty period starts on the date of delivery to the end user AS SHOWN ON THE WARRANTY REGISTRATION CARD RETURNED TO OTTERBINE. If no card is returned, the warranty period will begin the day the aerator is shipped from the manufacturer's facility.

**WARRANTY REPAIRS:** Warranty repairs are to be any defects in materials or workmanship as defined in the Otterbine Limited Warranty.

### ITEMS SPECIFICALLY NOT COVERED UNDER OTTERBINE WARRANTY ARE:

- Repairs and/or service calls due to improper electrical installation or physical installation.
- Removal of a unit for service and subsequent re-installation or re-anchoring.
- External damage to power cables, such as mower cuts or animal bite marks.
- Repair of accessory materials not supplied by OTTERBINE, such as mooring lines.
- Repairs necessitated by improper maintenance techniques.
- Repairs necessitated by user neglect or abuse.
- Damage incurred in transit.

Also reference the [Otterbine Model/Warranty \(Reference Guide\)](#) for an additional list of items which will VOID Warranty consideration.

### WHY SHOULD YOU OBTAIN PRIOR AUTHORIZATION?

Otterbine requires that you obtain authorization before doing any warranty service on an OTTERBINE Aerator. Any claims that are not authorized prior to repair will not be honored.

### WHAT ALLOWANCES WILL BE GIVEN UNDER WARRANTY?

- LABOR (Domestic Only): See labor guidelines in this section.
- PARTS: The cost of replacement parts used in authorized warranty repairs will be allowed at distributor's original purchase cost including any discounts extended to the distributor by BAREBO.

- **FREIGHT:** The cost of common carrier freight from the customer's location to the service center or factory will be allowed, provided a paid freight bill accompanies the claim. C.O.D. shipments can be refused. **\*\*Note: Warranty will pay freight charges for one way only\*\*** Domestic distributors are also required to return failed components to Otterbine Service for warranty inspection therefore return freight cost can also be submitted for reimbursement credit.

## GETTING A CLAIM PROCESSED:

### **PRIOR AUTHORIZATION**

Call Otterbine to obtain warranty repair authorization. Please have the following information when calling. (Reference the Pre-Onsite Problem Diagnosis for specific information required.)

- Unit, Cable, and Power Information.
- Description of Problem.
- Suspected Problem.

Otterbine will verify that the unit is under warranty. You will be issued a warranty repair authorization number (or Service Ticket). Use this number on all paper work associated with the repair of the unit.

### **PROCESSING THE CLAIM**

- Fill out the [OTTERBINE Warranty Claim Form](#) *COMPLETELY*. Your claim can NOT be processed unless we have all this information.
- Send the claim form and the defective parts back to the factory within 30 days from the date the work was authorized. (Only Domestic distributors are required to return failed components for inspection).
- The claim will be verified and a credit will be issued to your account. Note you will receive an email should the warranty be denied.

## OTTERBINE SERVICE TRAVEL POLICY (*Domestic Only*):

Otterbine is aware that in certain situations traveling to and from the customer's site is necessary for troubleshooting the power control center/cable/unit. Therefore Otterbine's Service Travel Policy has been designed to credit authorized field service centers for the mileage costs incurred while traveling longer distances. The minimum travel distance is 75 miles, and the maximum is 500 miles. Local travel zones or distances less than 75 miles will not qualify for reimbursement. Mileage can be accumulated into a round trip segment, however Otterbine will not compensate for multiple round-trip segments, or for a return trip to redeliver or install the unit. [Contact the Service Department](#) for the current mileage reimbursement rate.

## OTTERBINE WARRANTY LABOR REIMBURSEMENT POLICY (*Domestic Only*):

The labor rate covers reimbursement for the actual repair of the product. The actual labor allowance varies based on the services rendered. All allowances include time to diagnose the unit and are not cumulative. The actual Otterbine factory allowance is defined in Otterbine's Service Manual under the warranty program section. Contact the Service Department for the current Otterbine Warranty Labor Rate.

# Otterbine® Service Claim Form



**Otterbine® Barebo, Inc. 3840 Main Road East • Emmaus, PA 18049 USA**

Admin.: 610-965-6990 • Sales: 610-965-6018 • Purch.: 610-965-6010 • Fax: 610-965-6050  
 aeration@otterbine.com • www.otterbine.com

**Service Ticket Number:** \_\_\_\_\_

Service Ticket Issued Date: \_\_\_\_\_

\* For claim to be honored, customer data is required

**Distributor Information:**

**Customer Information: \***

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Contact Name (Customer): \_\_\_\_\_  
 Site Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_  
 Phone: \_\_\_\_\_  
 Email (Customer): \_\_\_\_\_

**Unit Serial Number:**  
**HP, Voltage, Phase:**  
**Average Running Hrs./Day:**

**Model:** \_\_\_\_\_ (GEM, SNB, PHX, etc.)  
**Installation Date:** \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

*Complete the fields above if known.*

**Reported Problem:**

**Electrical Information: \* Required for any related motor failures, or repeat claim events.**

Cable Length (Ft) & size (AWG) from source to control panel:  Ft  AWG

Cable Length (Ft) & size (AWG) from control panel to aerator:  Ft  AWG

Volts at panel – Unit not running:	L1/L2	<input type="text"/>	VAC	L1/L3	<input type="text"/>	VAC	L2/L3	<input type="text"/>	VAC
Volts at panel – Unit running:	L1/L2	<input type="text"/>	VAC	L1/L3	<input type="text"/>	VAC	L2/L3	<input type="text"/>	VAC
Amperage – 5 minute run time:	L1	<input type="text"/>	Amps	L2	<input type="text"/>	Amps	L3	<input type="text"/>	Amps
Amperage – 20 minute run time:	L1	<input type="text"/>	Amps	L2	<input type="text"/>	Amps	L3	<input type="text"/>	Amps

**Action Taken to Resolve Issue:**

**Parts Claim:**

Quantity	Part Number	Description	Cost

**Total Parts Claim: \$** \_\_\_\_\_

**Labor Claim:** \_\_\_\_\_

**Mileage Claim:** \_\_\_\_\_ miles

**Freight Claim:** \$ \_\_\_\_\_

*In Quarter Hour Increments  
 (Example: 1HR = 4)*

*Round Trip mileage  
 (75 minimum, 500 maximum)*

*One Way Only, Otterbine must request shipment to  
 receive credit for a freight claim*

**Authorized Service Person:** \_\_\_\_\_  
 Print Name Signature Date

Note: Service Ticket Number to be issued prior to repair of unit. All claims must be submitted with parts no later than 30 days from repair date. All information on this form must be accurate and complete before any claim will be processed.

# Completed Example | Service Claim Form

**NOTE:** **Highlighted areas** are where we currently struggle to obtain information; therefore your assistance would be greatly appreciated.



Otterbine® Barebo, Inc. 3840 Main Road East • Emmaus, PA 18049 USA

Admin.: 610-965-6990 • Sales: 610-965-6018 • Purch.: 610-965-6010 • Fax: 610-965-6050  
 aeration@otterbine.com • www.otterbine.com

**Service Ticket Number:** 16301

Service Ticket Issued Date: 10-14-2013

\* For claim to be honored, customer data is required

**Distributor Information:**

John Smith  
 Pond Management, Inc.  
 17 Pond Management Way  
 Emmaus, PA  
 18049  
 United States

**Customer Information: \***

Contact Name (Customer): George Smith  
 Site Name: True Value Golf Club  
 Address: 19 Pleasant Valley Drive  
 City: Pleasant Valley State: PA Zip: 18059  
 Phone: 610-965-6018  
 Email (Customer): gsmith@tvgc.com

<b>Unit Serial Number:</b> <u>C3-0412 10208</u>	<b>Model:</b> <u>GEM</u> (GEM, SNB, PHX, etc.)
<b>HP, Voltage, Phase:</b> <u>2HP, 230V, 1Ph</u>	<b>Installation Date:</b> <u>05 / 15 / 12</u>
<b>Average Running Hrs./Day:</b> <u>10 hrs.</u>	

Complete the fields above if known.

**Reported Problem:** (True Value Golf Club)  
 Pulling high amps, unit just hums and will not start.  
 Please return failed components to Otterbine Service for warranty inspection.

**Electrical Information:** \* Required for any related motor failures, or repeat claim events.

Cable Length (Ft) & size (AWG) from source to control panel: 50 Ft 12/3 AWG

Cable Length (Ft) & size (AWG) from control panel to aerator: 100 Ft 10/3 AWG

Volts at panel – Unit not running:	L1/L2	<u>240</u>	VAC	L1	L3	VAC	L2/L3	VAC
Volts at panel – Uni running:	L1/L2	<u>238</u>	VAC	L1/L3		VAC	L2/L3	VAC
Amperage – 5 minute run time:	L1		Amps	L2		Amps	L3	Amps
Amperage – 20 minute run time:	L1		A ps	L2		Amps	L3	Amps

**Action Taken to Resolve Issue:** Replaced capacitor/start switch

**Parts Claim:**

Quantity	Part Number	Description	Cost
1	15-0025	Capacitor/Start Switch 2HP C3	
1	49-0038	O-ring Motor Base Plate C3	
1	12-0077	Maintenance Kit C3 1-5HP/Oil	

**Total Parts Claim:** \$

**Labor Claim:** 4  
 In Quarter Hour Increments  
 (Example: 1HR = 4)

**Mileage Claim:** 82 miles  
 Round Trip mileage  
 (75 minimum, 500 maximum)

**Freight Claim:** \$ 7.50  
 One Way Only, Otterbine must request shipment to receive credit for a freight claim

**Authorized Service Person:** John Smith 10-15-2013  
 Print Name Signature Date

Note: Service Ticket Number to be issued prior to repair of unit. All claims must be submitted with parts no later than 30 days from repair date. All information on this form must be accurate and complete before any claim will be processed.

## Factory Labor Allowance (Domestic Only)

(In quarter hour increments)

Ex. 1.5 hours = 6 increments

*Labor Allowances are not cumulative*

Labor Description	Labor Allowance
C2/C3 - Bulkhead Connector Replacement	8
Pigtail Connector Replacement (splice to Cable)	2
Splice Power Cable	2
Motor Replacement	2
C2 Brass Mount Ring (C2-110, qty-6) Replacement	3
Start Switch/Capacitor Replacement	4
C2/C3 - Motor Base Plate Assembly Replacement	8
Fractional Series - Motor Base Plate Assembly Replacement	6
Rotary Seal Replacement	8
Bearing Replacement - New Motor (never been in service)	2
Bearing Replacement - Used Motor (From Power Unit)	10
Impeller Assembly (Open throat) Replacement	1
Impeller Assembly (Decorative unit) Replacement	2
Float Replacement	2
C2 - Support Arm Replacement	2
Power Unit Replacement	2
Throat Assembly Replacement	2
Decorative Pump Chamber Assembly Replacement	2
Diffuser Replacement	1
Standoff Strainer Replacement	2
PCC - Breaker/Thermal Overload/Contactor/Timer Replacement	2

***NOTE: All allowances include time to diagnose the unit. Before proceeding with any warranty repairs, please notify Otterbine. Be prepared with the following information: Model, Serial Number, Running Voltage and Amperage, and your Diagnosis.***

## Inventory/Stocking Requirements

By committing to this investment, in stocking Otterbine parts, it will greatly improve your repair turnaround time and improve customer satisfaction and return business. Current proposed minimum stocking levels appear in the following table.



### Minimum Stocking Level Requirements

Qty	Part Number	Description
3	12-0077	MAINTENANCE KIT, C3,1-5HP
3	C2-MKIT	MAINT. KIT, C2,1-5HP/ORING/OIL
6	10-0004	OIL PLUG, C-2, w/O-RING
1	106-302*10	BOLT, SUPPORT ARM BOLT, QTY 10
1	15-0017	CAP/START SW,1HP, C2, FRANKLIN
1	15-0018	CAP/START SW, 2HP, C2, FRANKLIN
1	26-0001*10	NUT, SERRATED FLANGE, QTY 10
1	28-0003-001*10	WASHER SPLIT LCK S/S #10,QTY10
4	49-0018	O-RING, C2 MNFLD&C3 PHX/TRI/GLX
2	178-015	NUT PIGTAIL ALL (C1/C2/C3)
2	614-017	SPLICE KIT LG,1"MAX,ALL12/10/8
1	614-025	STRAIN RELIEF DEVICE
2	C2-100	TOLERANCE RING, C-2
6	C2-110	BOLT, MOUNTING RING
1	C2-112*10	NUT,LOCK,316S/S,1/4"-20,QTY 10
1	C2-203	MOTOR BASE PLATE ASSY, C2
1	C2-533	CAPACITOR,3HP 1Ph,C2,FRANKLN
2	C2-700	O-RING, C-2, HOUSING
2	C2-704	ROTARY SEAL, C-2, ALL
2	C2-705	WAVEY WASHER C2
2	C2-720	SHAFT SLINGER (REPLACES#C2-703)
1	MP2004*10	BOLT HEX S/S #10-24x1.25,QTY10
1	09-0013	BULKHEAD ASSY, C2 ONLY
1*	09-0014	BULKHEAD ASSY,10/3,5HP 1Ph,C3
1	09-0016	BULKHEAD ASSY C3, (NOT 5HP, 1PH)
2	10-0067-001	MOTOR BASE PLATE ASSY,4 PIN,C3
1*	10-0067-002	MOTOR BASE PLT ASSY,5HP1Ph,C3
4	12-0001	SEAL KIT C3 OPEN HUB & ROTARY
4	12-0052	Seal Kit, C3, G Seal w/ Metal Hub
2	12-0071	HARDWARE KIT FLOAT DETACHED C3
1	15-0024	CAPACITOR/START SWITCH,1HP,C3
2	15-0025	CAPACITOR/START SWITCH,2HP,C3
6	22-0019	BOLT HEX S/S M8x20
12	22-0020	BOLT HEX S/S M8x30 SELF-SEALNG
4	24-0005	SET SCREW – IMPELLER C2
4	24-0015	SET SCREW – IMPELLER C3

Qty	Part Number	Description
8	24-0010	SCREW PANHD PHIL S/S M4x16
24	24-0013	SCREW HEX S/S M5x50 FULL THRD
8	24-0014	SCREW FLATHD S/S #8x1 SELF-TAP
12	26-0006	NUT NYLON LOCK 316S/S M5
6	26-0007	NUT NYLON LOCK 316S/S M8
6	28-0008	WASHER FENDER S/S 5/16"(M8)
8	28-0014	WASHER FLAT S/S M4
8	28-0015	WASHER SPLIT LOCK S/S M4
24	28-0016	WASHER FLAT S/S M5
24	28-0017	WASHER SPLIT LOCK S/S M5
6	28-0018	WASHER FLAT S/S 5/16" (M8)
6	28-0019	WASHER SPLIT LOCK S/S M8(5/16)
12	33-0028-001	CONNECTOR,INSULATED CRIMP,SML
24	33-0028-002	CONNECTOR,INSULATED CRIMP,MED
24	33-0028-003	CONNECTOR INSULATED CRIMP, LG
1*	35-0010	PIGTAIL C2/C3 HEAVY DUTY,12/4
1*	35-0011	PIGTAIL C3 HEAVY DUTY,10/3
1**	35-0012	PIGTAIL 12/4 CE (EUROPEAN)
1	36-0005	CAPACITOR,3&5HP 1Ph,C3,FRANKLN
4	46-0105-125	PLUG,C3 SEAL HUB,S/S
4	46-0105-250	PLUG,C3 MOTOR BASE PLATE OIL
2*	36-0006	CAPACITOR C3 5HP 1PH (DUAL CAPACITORS)
2	36-0020	CAPACITOR C3 3HP 1PH (DUAL CAPACITORS)
6	42-0015	SEAL HUB C3, CLOSED
2	42-0020	CAN RING C3
6	47-0002	GROUND CLIP, C2 & C3 MOTOR
6	49-0012	SEAL,DOUBLE ROTARY,ALL C3
6	49-0013	O-RING, SEAL HUB, C3
6	49-0015	O-RING, THROAT/PATTERN, C3
3	49-0017	O-RING, TRI-STAR, C3
6	49-0038	O-RING,MOTOR BASE PLT,C3 (NEW)

\* Only required for Service Centers servicing the 60Hz market

\*\* Only required for International 50Hz/CE Service Centers

## Otterbine Service Center Tools

### **Otterbine Service Center Tool Kit Breakdown (P/N: SS-TOOLS):**

*(Custom Tools provided by Otterbine. Parts can also be purchased separately)*

QTY	DESCRIPTION	PART #
1	Seal Seat Driver – C2 & C3 Units	SS-10
1	Bearing Driver – C2 & C3 Units	SS-C230
1	Motor Stand – C2 & C3 Units	SS-C290
1	Bulkhead Inserter Assembly – C2 & C3 Units	SS-C300
1	Air Fitting - Removing C2 & FRAC MBP	SS-C320
1	Tool Assembly Brace - C2 Arm Assembly	SS-C330
1	Torque Wrench (30in-lbs) – Motor Mount Bolts	SS-C340
1	Installation Tool – C2 MBP Seal	SS-C350
1	Dipstick/Hex Key - C2 Oil Level Check	41-0012
1	Shaft Height Gauge - Franklin Submersible Motors	46-0103
1	Dipstick – C3 Oil Level Check	97-0005

### **AFL (7.5/10HP) – Special Tools**

*(These are not contained in the Otterbine Service Center Tool Kit, and must be ordered separately)*

These tools will greatly assist with the AFL Power Unit rebuilding process.

QTY	DESCRIPTION	PART #
1	MBP Centering Tool	97-0002
1	Seal/MBP Tool	97-0003

### **Misc. Tools for Otterbine Service**

QTY	DESCRIPTION
1 Set	Screwdrivers - Medium size (Flat and Phillips)
1 Set	Ratchets (Required: 7/16", 1/2", 9/16", 7/8", 15/16", 1" / 11mm, 13mm, 14mm, 22mm, 24mm, 25mm)
1 Set	Hex Nut Drivers (Required: 1/4", 5/16", 7/16" / 7mm, 8mm, 10mm)
1	Channel Lock Pliers
1	Wire Stripper / Cutter
1	Wire Crimpers
1	Snap-Ring Pliers
1	Needle Nose Pliers
1 Set	Allen Wrench Set (Required: 1/8", 5/32", 3/16", 7/32", and 1/4")
1	Crescent Wrench (10 inch) (25.4 cm)
1	Open End Wrenches (up to 3/4")
1	Hammer, Dead Blow Mallet

1	Bearing Puller
1	Putty Knife
1	Small Funnel
1	Small Tooth Brush
1	Wire Brush
1	Machinist Scribe (with hooked end)

**Test Equipment**

QTY	DESCRIPTION	RECOMMENDED MODELS
1	Digital Clamp Multimeter	Fluke Model 322
1	Digital Capacitor Tester	Supco Model MFD10
1	Insulation Resistance Tester – Megger	UEI DMEG3
1	Hi Pot Tester	Slaughter Model 1305
1	Otterbine Service Panel (Call for details)	
1	Water Dunk Tank - for leakage testing	Dimensions: 24” x 24” x 24” (61cm x 61cm x 61cm)
1	Parts Washer / Mineral Spirits	
1	Vacuum/Pressure Compressor*	GAST # DOA-P704-AA*

**CAUTION:** *Vacuum/Pressure Compressor – The air supply must have an adjustable regulator. **The C3, C2, & Fractional Series units must only be tested at a maximum of 5 PSI.** Damage/physical harm may occur if a unit is tested at a pressure greater than 5 PSI!*

**Consumable Supplies**

*Vendor’s Part numbers are given as reference; exact equivalent from an alternate vendor may be substituted. If equivalency is questionable, contact Otterbine.*

ITEM/SUPPLY	USE
Denatured Alcohol	Cleaning Rotary Seals Mating Surfaces
Hylomar Sealant Otterbine P/N 48-0012 - 100g Tube	Installing C2 & C3 Bulkheads
TFE Pipe Thread Sealer with PTEE Anti-Seize Technology	Installing Oil Plugs on C3
Loctite - “Thread Locker” 242 Medium Strength Loctite P/N 24231	General Use, Securing bolts
Bostik “Never Seez” Anti-Seize	Installing Hex Bolts (P/N 22-0006) on Fractional Series Units
Marine Grease - Multi Purpose Jet-Lube No. 2 EP	Lube Wavy Washer - C2 Assembly Process
Silicone Dielectric Compound Otterbine P/N: 48-0001 – single use pack Otterbine P/N: 48-0001*10 – 10 pack “single use pack” Otterbine P/N: 48-0002 – 5.3oz tube	Underwater Bulkhead/Cable Connections
Seal Lubricant (temporary lubricating agent) Otterbine P/N: 48-0003*10 – 10 pack “single use pack” Otterbine P/N: 48-0004 – 1 pint of lubricant	Lubricating agent used for installing the Motor Base Plate into S/S Housing and lubricating the Rotary Seal Bellows during the installation process.

## Serial Number Key

### SECTION 1: X(XXX) Horsepower and Electrical Rating

**CONCEPT 2 | CONCEPT 3 (1HP-5HP): X | X3**

*Concept 3 Units have a "3" after the letter to denote product line.*

- |                   |                   |                   |
|-------------------|-------------------|-------------------|
| A- 1HP, 115V, 1ph | B- 1HP, 230V, 1ph | C- 2HP, 230V, 1ph |
| D- 3HP, 230V, 1ph | E- 3HP, 230V, 3ph | F- 3HP, 460V, 3ph |
| G- 5HP, 230V, 3ph | H- 5HP, 460V, 3ph | I- 5HP, 575V, 3ph |
| J- 5HP, 230V, 1ph |                   |                   |

**FRACTIONAL SERIES: XXX**

- FSA- 1/2HP, 115V    FSB- 1/2HP, 220V    FSC- 1/2HP, 130V

**AQUA SERIES: XXX**

- |                        |                         |                        |
|------------------------|-------------------------|------------------------|
| FRA- 1/4HP, 115V, 60HZ | FRB- 1/4HP, 220V, 50HZ  | FRC- 1/4HP, 230V, 60HZ |
| FRD- 1/2HP, 115V, 60HZ | FRE- 1/2HP, 220V, 50 HZ | FRF- 1/2HP, 230V, 60HZ |

**INSTANT FOUNTAIN: XX**

- FA- 1/2HP, 115V, 60HZ    FB- 1/2 HP, 230V, 50HZ    FC- 1/2, 230V, 60HZ    FD- 3/4HP, 230V, 60HZ

**LARGE AERATING FOUNTAIN: X## (Letter + 2-digit code)**

- A- 7.5HP    B- 10HP
- 21- 230 1Ph 60Hz                  23- 230V 3Ph                  43- 460V 3Ph

**GIANT FOUNTAIN: X### (Letter + 3-digit code)**

- |                   |                    |                    |                    |
|-------------------|--------------------|--------------------|--------------------|
| A- 7.5HP          | B- 10HP            | C- 15HP            | E- 25HP            |
| 216- 230 1Ph 60Hz | 236- 230V 3Ph 60Hz | 336- 380V 3Ph 60Hz | 436- 460V 3Ph 60Hz |
|                   |                    | 335- 380V 3Ph 50Hz | 435- 415V 3Ph 50Hz |

**MISC: X(XX)**

- AF- Air Flo    AF2 - Air Flo 2    P6- Bunker Pumper    P8- Hale Pump    M- 1/6HP Fractional

**FOUNTAIN GLO™ LIGHTS: XX**

- LM- Low Voltage/MR-16    LD- LED Lights    LH- High Voltage Lights    LP- Par 64 Lights

### SECTION 2: #### Date Code (Month/Year unit was manufactured.) \*\*

EX: H3-0508-XXXX(X) = 5HP, 460V, 3ph unit produced in May of 2008

### SECTION 3: #####(##) Internal Code (Sequential code for internal purposes.)\*\*

*\*\*March 2003 serial numbers were automated causing slight revisions to the layout, primarily swapping the location of the 'Date Code' and 'Sequential Number Code' between Section 2 and Section 3 for all product lines.*

EXAMPLE: 2HP, 230V, 1ph C3  
 Prior to March 2003 = C3 - 0025 - 0403 | After March 2003 = C3 - 0403 - 10025

There are three sections to  
Otterbine Serial Numbers

SECTION 1	SECTION 2	SECTION 3
<b>X(XXX)</b>	<b>XXXX</b>	<b>XXXX(X)</b>
HP & Electrical Rating	Date Code	Internal Code

## Otterbine® Model/Warranty (Reference Guide)

PRODUCT	WARRANTY PERIOD
Air Flo 2	2 Years
Fractional Series	2 Years
C2 Units	3 Years on motor & moving parts 5 Years on non-moving parts
C3 Units	5 Years
Giant Fountain (GF)	2 Years
Giant Fountain with Subtrol-Plus	3 Years
Instant Fountain (IF)	2 Years
Fountain Glo Lights (All Lights)	1 Year
Large Aerating Fountain (AFL)	2 Years
All Purchased Parts	1 Year
Aqua Series Motor Cartridge (purchased as a part)	1 Year
C2 Power Unit	2 Years
C3 Power Unit	2 Years
AFL Power Unit	1 Year
C2/C3/AFL/GF/IF Motor (purchased as a part)	1 Year <i>(If installed by certified Otterbine Repair Center)</i>
C2/C3 Panels (purchased as a part)	1 Year
Wind Controls	1 Year
Bunker Pumper	1 Year

### Common Items that Void Warranty:

*(List is not all-inclusive, contact Otterbine Service department for more information.)*

#### General:

- Lightning Strikes/Power Surges
- Non-Certified/Trained Personnel Working On Otterbine Units
- All Items Which Are Not Considered A Defect In Material And Workmanship
- Environmental Conditions

#### PCC Related:

- Improper Wiring Of PCC
- Damaged PCC Components Due To Ant/Insect Infestation
- Using Non-Approved Otterbine Replacement Components In PCCs

#### Negligence:

- Broken Motor Base Plate and/or Standoff Strainer Assemblies Due To Abuse Or Mishandling
- Dented Motor Cans

- Improper Cable Sizing
- Non-Use Of Dielectric Compound When Attaching Cables

#### Power Units:

- Rewound Motors
- Damage To Power Unit Caused By Fishing Line, Plastic Bags, Or Other Debris/Material Wrapped Around Motor Shaft
- Using Twist On Cable Connectors vs. Crimp Connectors For Motor/Bulkhead Connections
- Damage/Rotor Strike Due To Reverse Or Clockwise Rotation Of 3Ph Motors
- Using Non -Approved Otterbine Replacement Components During Power Unit Repairs (Capacitors)
- Tampering With Aqua Series Motor Cartridge
- Bent Motor Armature Due to Debris

## Otterbine® Product Limited Warranty Statement

*See Otterbine Model/Warranty Reference Guide for specific warranty period information.*

### Otterbine Warranty

**WARRANTY:** Barebo, Inc 3840 Main Road East, Emmaus Pennsylvania 18049, U.S.A. hereby warrants, subject to the conditions here in below 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 guaranteed 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 Warranty Registration Card should be mailed to BAREBO 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.



## Water Works with Otterbine®



Otterbine® Barebo, Inc.

3840 Main Road East

Emmaus, PA 18049 U.S.A.

Ph: 610-965-6018 or 1-800-AER8TER (237-8837)

Fax: 610-965-6050

Email: [service@otterbine.com](mailto:service@otterbine.com)

**Made in the U.S.A.**

*For our most current product specifications  
and owners manuals, please visit us online at*

*[WWW.OTTERBINE.COM](http://WWW.OTTERBINE.COM)*