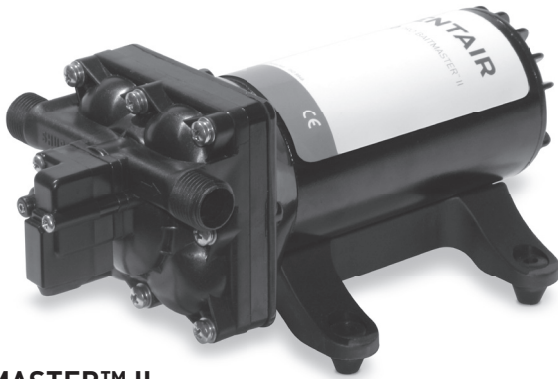


SHURFLO® PRO BAITMASTER™ II 4.0 GPM MARINE LIVEWELL PUMP

MODEL SERIES 4648

New SHURFLO PRO BAITMASTER™ II Designed for Livewell or Washdown applications.

SHURFLO's PRO BAITMASTER™ II livewell or washdown pump design was created with unique over-molded single-piece diaphragm, assuring long life and top performance in all Livewell or deck wash down plumbing systems. Designed as the next legendary pump to exceed the expectations of our customers, the Pro Baitmaster™ II pumps are designed for the toughest marine wash down and livewell applications. SHURFLO's quality reputation has been built on the reliability and dependability of every pump we build. The PRO BAITMASTER™ II Livewell or washdown automatic demand pumps are quiet, thermally protected and can run dry without damage.



PRO BAITMASTER™ II LIVEWELL PUMP

SHURFLO's Pro BAITMASTER™ II pumps are designed to handle the harsh marine environment. The motor is protected by an integral thermal breaker. PRO BAITMASTER™ II pressure switches are sealed and the motors are finished with Electro-coating to inhibit corrosion. A PRO BAITMASTER™ II pump can be mounted in an environment where "splashed water" may be present. The PRO BAITMASTER™ II pumps are enclosed to prevent incidental moisture from entering; however, they are not submersible. The PRO BAITMASTER™ II delivers water on demand. With the output side closed (valve off) the pump will turn off. As the valve is opened the pressure within the output side drops. Once the pressure drops below a pre-determined point the pressure switch closes and the pump turns on. If the output side is wide open the pump operates continuously. When

the valve is partially opened the pump may cycle ON/OFF (intermittent duty) as it is able to pressurize faster than the water is being released.

INSTALLATION TIPS

- Properly sized plumbing
- Mount in a dry location that allows easy access if maintenance is required
- Mount higher than the outside water level. The pump is capable of 6ft. vertical prime above water line.
- Properly sized wiring
- Use proper fuse size
- Install strainer on pump inlet
- Minimize plumbing elbows and valves
- Flexible high-pressure hose on inlet and outlet

FEATURES

- 4 independent chambers
- Co-Molded diaphragm
- Adjustable pressure switch
- Self-priming up to 6 feet
- Sealed switch
- Sealed motor
- Corrosion resistant electro-coated motor
- Thermally protected
- Ignition protected, CE

OPERATION TIPS

- Pump is design for continuous operation
- Turn off power to the pump when boat is unattended
- Keep your strainer clean for ultimate pump performance
- Pump will perform at best when proper voltage is provided

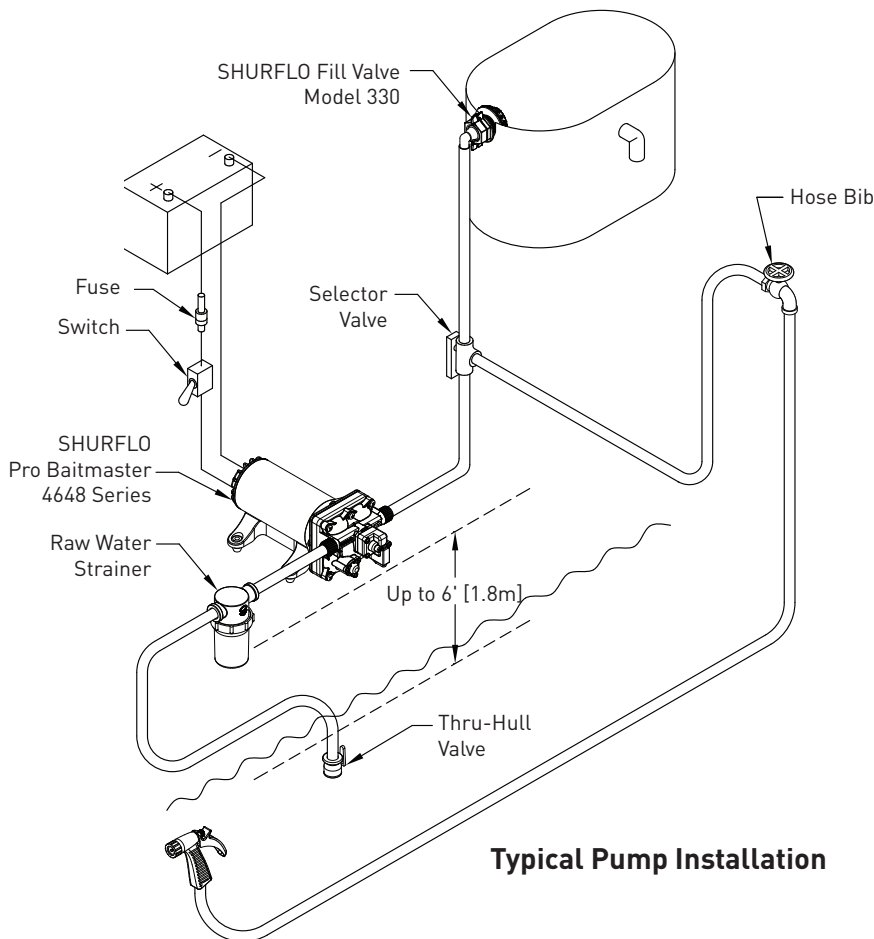
APPLICATION

- Marine 12V DC or 24V DC systems – see pump label for rated voltage
- Livewell or Wash Down application
- General water transfer

BAIT TANK CRITERIA

There are many factors that must be considered to assure the correct operation of a bait or live well system. The pump is one part of the selection. Keeping the bait healthy is dependent upon; the amount of water in relation to the quantity of bait, flow pattern, water renewal/changes, and water temperature. SHURFLO PRO BAITMASTER™ II pumps are generally suited for livewells that have a water capacity of 20 to 35 gallons [75-132 L]. Ideally, the tank should be oblong in shape. Currents within the tank should be kept in a slow, smooth, C.C.W. circulating pattern. The bait should swim freely, and not become overworked or exhausted in swift currents or turbulence. The bait will become stressed, or not receive enough oxygen if water flow/currents are incorrect. Bait is generally kept very active

and healthy within cooler water temperatures (up to the mid-60's°F [15° C]). As the temperature approaches 70°F [21°C] the water must be renewed (water changes) more often to keep the bait active and healthy. The pump should be selected based on its open flow specification. Allowing the pump to run at open flow will permit continuous low amp draw operation. A pump is correct for a particular live well if its open flow G.P.M. fills or renews within a six to ten-minute period. [Actual live well gallons divided by open flow specification] If the water temperatures are normally in the low to mid 60°F [15°C] range, water should be renewed closer to the ten-minute time span. Although, if used primarily in warm water, a pump capable of renewing the tank more often (6 min.), should be selected.



DUTY CYCLE

Bait Tank Applications: The pump is rated for "continuous duty" (no ON/OFF cycling), when operated at low pressure (less than 10 psi. [.7 bar] back pressure).

CAUTION: The motor may become hot when operated continuously. DO NOT locate near low temperature plastics or combustible material.

Wash-down Applications: If used for wash-down, the pump is rated for "intermittent duty", because it operates at higher average amperage and outlet pressures. Operating a pump in a wash-down application for more than twenty (20) minutes, within an hour, is not recommended. Actual duty cycle is determined by amp draw, temperature, and rate of cycling.

NOTE: Rapid cycling should be minimized to ensure long life. Rapid cycling is defined as ON/OFF within two seconds.

MOUNTING

■ Consider a DRY location that allows easy access if maintenance is required. The pump should not be located in an area of less than one cubic foot unless adequate ventilation is provided. Excessive heat may trigger the thermal protector and interrupt operation. When the temperature drops the thermal breaker will automatically reset and start operation.

■ Mount higher than the water level. The pump is capable of a 6 ft [2 Meter] vertical prime. The pump can be mounted in any position. If mounting the pump vertically, the pump head should be in the down position.

Caution: Do not drive screws through the vessels' hull.

Use #8 stainless steel screws to fasten the pump. Choose a solid surface (bulkhead or stringer) that will not amplify pump sound. The mounting feet are intended to isolate the pump from the mounting surface; over-tighten, flattening or oversized screws will reduce the mounting ability to isolate vibration and noise.

ELECTRICAL

- The pump should be on a dedicated (individual) circuit protected by the specified fuse on the motor label.
- A UL marine duty switch (ignition protected) rated for 15 amps or higher is recommended, and must interrupt current flow on the positive (+ red) lead.

■ SHUT OFF POWER TO THE PUMP WHEN LEAVING THE BOAT UNATTENDED.

Ft. [m]		AWG [mm ²]	
0-20	[0-6]	14	[2.5]
20-50	[6-15]	12	[4]
50-70	[15-21]	10	[6]
70-100	[21-30]	8	[8]

Minimum Wire Size for a 10% voltage drop on a 12VDC, 15 Amp Circuit. Length is the distance from the power source to pump and back to ground.

GENERAL SAFETY PRECAUTION

- When the vessel is not in use, the main power switch should be off and seacock valves should be CLOSED. However, if left afloat, the bilge pump should still have power.
- Never operate the engine or electrical equipment if fuel vapor is detected. Locate the source and vent properly.
- Electrical connections should be soldered and insulated to prevent shorts and corrosion. Wiring should be routed away from areas prone to water, heat and excess moisture.

PLUMBING

- SHURFLO swivel hex/barb fittings provide easy removal if maintenance or access is required. The fittings are designed with a "tapered-seal", creating a water tight connection when hand-tightened ¼ turn after contact. Always secure barb tubing connections with properly sized stainless steel clamps to prevent leaks. For connecting to the pumps 1/2" threaded ports SHURFLO supplies taper-seal swivel-barb fittings for various tubing sizes.

■ Inlet tubing (1/2" I.D. min.) from the sea-cock valve to the pump should be rated for vacuum. If rigid tubing or pipe is utilized, SHURFLO recommends the inlet port be plumbed with a minimum of 1 ft.[.3M] of flexible vacuum rated tubing. Standard garden hose is not suitable as inlet tubing as it may collapse under vacuum, reducing water flow.

■ The pump outlet port should not be connected to rigid (plastic) pipe. Normal oscillation of the pump may transmit through rigid plumbing causing noise and possibly loosen or crack components. A minimum of 1 ft.[.3M] length of flexible high pressure tubing is suggested. Avoid any sharp radius in tubing that may kink over time. Route tubing away from any heat (exhaust manifolds etc.) and fasten securely.

WINTERIZING

Refer to the boat owner's manual for specific winterizing instructions. If water is allowed to freeze in the system, serious damage to the plumbing and pump may occur. Failures of this type will void the warranty. The best guarantee against damage is to completely drain the pump and perform the following:

1. Drain the water tank. If the tank doesn't have a drain valve, open the spray nozzle allowing the pump to operate until the tank is empty.

NOTES

- To prevent cavitation, through hull fittings should be located at least 12 inches off the centerline of the water pick-up for the motor.
- The through hull fitting must have a seacock valve to shut-off in case of an emergency.
- Always use high quality non-corrosive fittings, valves and hardware to assure long-term reliability.
- Properly seal all pipe threads before the strainer to prevent unforeseen leaks. Never use Teflon tape or sealing compounds on SHURFLO pump threads or fittings. Sealer may enter the pump causing a failure not covered under warranty.

MAINTENANCE

Normal pump maintenance is all that is needed: Checking and cleaning of the strainer, normal sanitizing and winterizing and occasionally checking all plumbing hardware and fittings for tightness. Lack of sanitizing is the number one reason for premature pump failure and poor performance over time. Lack of sanitizing will cause scale build-up on the diaphragm and valves, causing low flow and leak back (occasional pump cycling with spray nozzle closed).

2. Allow the pump to purge the water from the plumbing, and then turn the pump "OFF."
3. Using a pan to catch the remaining water, remove the plumbing at the pump's inlet/outlet ports. Turn the pump "ON", allowing it to operate until the water is expelled. Turn OFF the power to the pump once the plumbing is emptied. Do not reconnect the pump plumbing. Make a note at tank filler as a reminder: "Plumbing is disconnected".

TROUBLESHOOTING

Vibration induced by driving can loosen plumbing, strainers and pump hardware. Check for system components that are loose. Also, refer to the chart below for trouble-shooting tips.

PUMP WILL NOT START/ BLOWS CIRCUIT

- ✓ Electrical connections, fuse or breaker, main switch, and ground connection.
- ✓ Is the motor hot? Thermal breaker may have triggered; it will reset when cool.
- ✓ Is voltage present at the switch? Bypass pressure sw. Does the pump operate?
- ✓ Charging System for correct voltage ($\pm 10\%$) and good ground.
- ✓ For an open or grounded circuit, or motor; or improperly sized wire.
- ✓ For seized or locked diaphragm assembly (water frozen?).

WILL NOT PRIME/SPUTTERS (No discharge/Motor runs)

- ✓ Is the strainer clogged with debris?
- ✓ Is there water in the tank, or has air collected in the hot water heater?
- ✓ Is the inlet tubing/plumbing sucking in air at plumbing connections (vacuum leak)?
- ✓ Is inlet/outlet plumbing severely restricted or kinked? Restrictive valves?
- ✓ Proper voltage with the pump operating ($\pm 10\%$).
- ✓ For debris in pump inlet/outlet valves or swollen/dry valves.
- ✓ Pump housing for cracks or loose drive assembly screws.

RAPID CYCLING

- ✓ For restrictive plumbing and flow restrictions in faucets/shower heads.
- ✓ Water filter/purifier should be on separate feed line.
- ✓ Shut-off pressure set too low.

PUMP WILL NOT SHUT-OFF / RUNS WHEN NOZZLE IS CLOSED

- ✓ Output side (pressure) plumbing for leaks, and inspect for leaky valves or toilet.
- ✓ For air trapped in outlet side (water heater) or pump head.
- ✓ For correct voltage to pump ($\pm 10\%$).
- ✓ For loose drive assembly or pump head screws.
- ✓ Are the valves held open by debris or is the rubber swollen?
- ✓ Pressure switch operation. By-pass set higher than shut-off.

NOISY OR ROUGH OPERATION

- ✓ For plumbing which may have vibrated loose.
- ✓ For a restricted inlet (clogged strainer, kinked hose, restrictive valves).

- ✓ Is the pump plumbed with rigid pipe causing noise to transmit?
- ✓ Does the mounting surface amplify noise (flexible)? Does it bang like a drum?
- ✓ For mounting feet that are loose or are compressed too tight.
- ✓ For air in the system. Check all fixtures for air and bleed system.
- ✓ The motor with pump head removed. Is noise from motor or pump head?

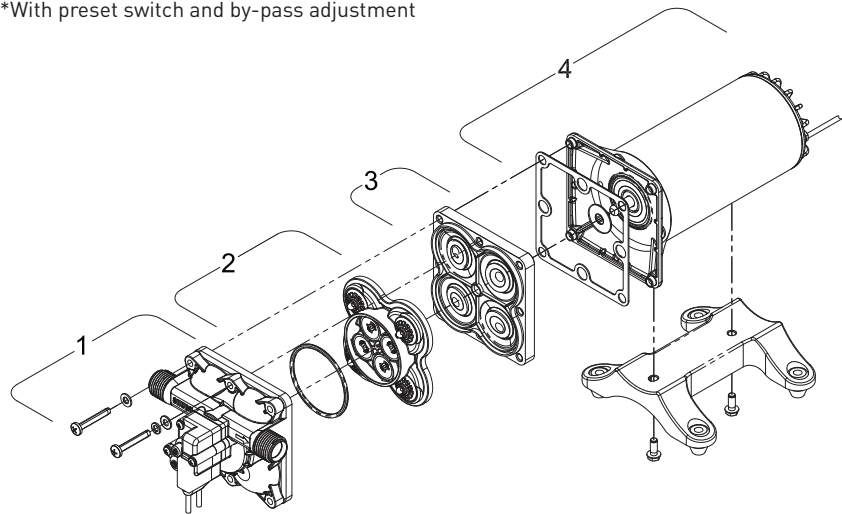
LEAKS FROM PUMP HEAD OR SWITCH

- ✓ For loose screws at switch or pump head.
- ✓ Switch diaphragm ruptured or pinched.
- ✓ For punctured diaphragm if water is present in drive assembly.

SERVICE KITS

ITEM	4648-153-X07 (12 V)	4648-163-X07 (24 V)
1	94-805-01*	94-805-01*
2	94-800-01	94-800-01
3	94-801-02	94-801-02
4	94-71-001-07	94-71-001-03
1, 2, 3	94-805-02*	94-805-02*
Check Valve (not shown)	94-800-03	94-800-03

*With preset switch and by-pass adjustment



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