

2026 SERIES 4 INSTALLATION AND OPERATIONS MANUAL



Arid Bilge Systems
1525 NW 3rd Street, Unit 5
Deerfield Beach, FL 33442
954-478-7066 | admin@aridbilge.com | alfred@aridbilge.com

IMPORTANT SAFETY NOTE

Arid Bilge Systems are designed to remove residual bilge water that traditional bilge pumps leave behind. Arid Bilge Systems do not replace standard emergency bilge pumps. Traditional high-volume bilge pumps must remain installed, operational, and properly maintained to protect the vessel from flooding, sudden water intrusion, or changes in vessel trim. The Series 4 system is a dry bilge management system. It is intended to keep bilge areas dry, fresh, and protected by removing trace residual water from selected low points after the primary bilge system has done its job.



Arid Bilge Systems - Dry, Fresh, & Protected



INSTALLATION OVERVIEW

The Series 4 system may be mounted in many locations aboard the vessel, but it should not be mounted directly in the bilge. The best installation location is a dry, accessible bulkhead or protected mechanical area near the discharge route. The unit should be mounted upright with the UP arrow on the faceplate pointing upward. The system uses gravity as part of its internal collection and discharge process. Do not mount the unit on its side, upside down, or in any position that prevents it from operating upright. This is especially important on sailboats or vessels that may operate at a heeling angle. If the vessel heels, the unit will heel with the boat, so the system should be mounted as upright and level as reasonably possible during normal vessel operation.

GENERAL INSTALLATION RULES

- Do not mount the Series 4 unit inside the bilge.
- Mount the unit upright with the UP arrow facing upward.
- Mount the unit in a dry, accessible service location.
- Keep the discharge hose as short and direct as practical.
- Do not cut intake tubing shorter than the required minimum length.
- Keep the unit accessible for service, inspection, and future troubleshooting.
- Keep existing emergency bilge pumps in service.

MOUNTING THE SERIES 4 UNIT



Series 4 units do not include pre-installed mounting brackets. The enclosure is made from 1/2-inch thick air-injected PVC plastic, which allows installers to fabricate a mounting approach that fits the vessel.

Common mounting methods include:

- 1/8-inch angle aluminum brackets
- 1/4-inch flat bar aluminum
- Bulkhead-mounted brackets
- Shelf-mounted brackets
- Top and bottom retaining brackets
- Side-mounted retaining brackets

Angle aluminum can be cut into 5- to 10-inch lengths and fastened to the sides, top, or bottom of the unit. Flat bar aluminum can also be placed across the back of the unit so it extends slightly beyond the sides and can be fastened to a bulkhead.

When fastening brackets to the Series 4 enclosure, use appropriate short stainless steel screws. The enclosure material is soft enough to accept screws without pre-drilling in many cases. **Use care when selecting screw length so the screw does not damage internal components.** Before fastening any bracket or mounting hardware, verify that the screw will not protrude into wiring, valves, tubing, the processor, compressor, sensors, or other internal parts.

Do not drill holes from inside the enclosure unless absolutely necessary. Internal access is limited, and the enclosure contains electronics, wiring, sensors, tubing, valves, and other components that can be damaged if drilled into or contacted by hardware.

If rear mounting holes must be added, use extreme care. Only drill through confirmed clear areas of the back of the enclosure where no internal components, tubing, wiring, sensors, or valves are present. A long screw gun or extended bit may be required to access the rear mounting surface properly. Verify screw length before installation so the screw does not protrude into or interfere with internal components.

INTAKE TUBING REQUIREMENTS

The Series 4 system is supplied with bilge pickups, spare pickups, and 3/16-inch intake tubing. Each intake tube must have a finished cut length between 20 feet and 75 feet for the system to operate correctly.

Important: Do not cut any intake tube shorter than 20 feet.

If an intake tube is shorter than 20 feet, the system may not correctly recognize when fluid is present at the pickup. This can cause the system to cycle off too early and leave the bilge wet.



For shorter runs, coil the extra tubing neatly near the system or along the route. The intake tubes do not all need to be the same length.

INTAKE TUBING REQUIREMENTS

- The Series 4 system is supplied with bilge pickups, spare pickups, and 3/16-inch intake tubing. Each intake tube must have a finished cut length between 20 feet and 75 feet for the system to operate correctly.
- **Important:** Do not cut any intake tube shorter than 20 feet.
- If an intake tube is shorter than 20 feet, the system may not correctly recognize when fluid is present at the pickup. This can cause the system to cycle off too early and leave the bilge wet.
- For shorter runs, coil the extra tubing neatly near the system or along the route. The intake tubes do not all need to be the same length.

INTAKE TUBING BEST PRACTICES

- Use the supplied 3/16-inch intake tubing.
- Keep each finished intake tube between 20 and 75 feet.
- Coil excess tubing instead of cutting it too short.
- When possible, leave a service loop at both the system end and the pickup end.
- Route tubing cleanly and securely.
- Avoid kinks, crushing, tight bends, or heat-damaged areas.
- Label tubing when multiple zones are installed. Example: Engine Room Port / Starboard.
- Leave a service loop when possible on both ends of the tubing.

DISCHARGE HOSE ROUTING

The Series 4 discharge fitting is the standard 1/2-inch 90-degree barbed fitting supplied on the unit. This fitting can be rotated as needed for the installation. When possible, rotate the fitting clockwise.

A 1/2-inch polybraid hose is the most common discharge hose used with the system. The system is supplied with the standard 1/2-inch discharge fitting configuration.

Arid does not supply all possible discharge plumbing components because discharge routing can vary by vessel. If the standard 1/2-inch discharge fitting or hose size is not suitable for the installation, the installer may adapt or swap the discharge fitting and hose arrangement as needed, provided the discharge path remains unrestricted and properly secured.



For best performance:

- Keep the discharge hose as short as practical.
- Keep the discharge run under 12 feet whenever possible.
- Avoid running the discharge hose uphill more than 2 feet above the unit.
- Route the discharge downhill to the overboard discharge whenever possible.
- T-connect from the top of a static, vented drain when available.
- Avoid unnecessary check valves, restrictions, tight bends, or undersized fittings.
- Secure all discharge hose connections with proper clamps and verify that the final discharge path is clear.

Preferred discharge connection points include:

- Hatch drains
- Deck drains
- Sink drains
- Other static, vented overboard drains

CONNECTING TO AN EXISTING BILGE PUMP DISCHARGE

If the Arid Bilge System must be connected to an existing bilge pump discharge line, the vessel must have a proper riser loop or anti-siphon loop. The Arid discharge should be T-connected between the top of the riser loop and the thru-hull fitting.

Do not T-connect the Arid discharge between the bilge pump and the top of the riser loop. When the Arid Bilge discharge is T-connected between the top of the riser loop and the bilge pump, the discharge water can return to the bilge through most bilge pumps.

When this happens, the Arid Bilge System may continue running cycles while moving the same water in an endless loop. Over time, this can cause unnecessary pump run time and may wear out the Arid Bilge pump.

CHECK VALVE WARNING

Do not add a check valve to the bilge pump discharge line to solve backflow issues. A check valve can create a vapor lock condition. Vapor lock may prevent the bilge pump from priming properly, causing the pump to run for an extended period while air slowly escapes from the pump housing. If a check valve is already installed in the bilge pump discharge hose, it may be a good time to review whether it should be removed during the Arid Bilge System installation. Arid has a check valve built inside the system to help prevent backflow into the unit.

Arid Bilge Systems - Dry, Fresh, & Protected



ENVIRONMENTAL RESPONSIBILITY

As with all overboard discharge devices, the vessel owner or captain is responsible for ensuring that hydrocarbons, fuel, oil, or other contaminants are not discharged into surrounding waters. Once the Arid Bilge System is installed and the bilge remains dry, leaks often become easier to identify. Water, fuel, oil, or other fluids may leave visible trails through the dry bilge, making it easier to locate and correct the source. Arid Bilge Systems also offers Eco-Drain oily water separator options for customers who want an additional environmental protection layer before discharge.

POWER CONNECTION

The Series 4 system is voltage-specific. It must be connected to the voltage ordered for that unit: either 12 VDC or 24 VDC.

Do not connect a 12V unit to 24V power. Do not connect a 24V unit to 12V power.

A voltage label is located near the power cord entry point on the side of the unit. Confirm the label before connecting power.

Power wiring:

- Red wire: positive
- Black wire: negative
- Protect the circuit with a 5- to 10-amp fuse or circuit breaker
- The unit also contains an internal fuse that protects the system components

Typical power draw:

- Standby: approximately 80 milliamps
- Running: approximately 0.9 amps at 12 volts when operating on a single intake

BILGE PICKUP OPTIONS

There are four pickup styles available for the Series 4 system. Pickup selection depends on the shape of the bilge, the location of the water, and the access available for installation.

Common pickup styles include:

- Mini standard pickup
- Standard pickup
- Offset pickup

Arid Bilge Systems - Dry, Fresh, & Protected



- L-shaped pickup wand

The mini standard and standard pickups are designed for flat-bottomed bilge areas where the pickup can sit properly at the water collection point. The offset pickup and L-shaped pickup wand are designed for V-bottomed bilges, tight spaces, hard-to-reach areas, or locations where the pickup needs to reach water that does not collect on a flat surface.

PICKUP PLACEMENT

Pickups should be placed where water actually collects. The purpose of the pickup is to remove residual water from the low point that a traditional bilge pump cannot reach. Initial placement should be tested before securing the pickup permanently. Run the system with the pickups loose in the bilge so the installer can confirm that each pickup is located at the true low point. Leave extra tubing near the pickup when possible. This allows the pickup to be moved during testing and makes future adjustment easier.

PICKUP INSTALLATION RULES

- Place pickups at the true low point where water collects.
- Do not drill into the pickup body.
- Do not crush or over-clamp the pickup.
- Do not block the pad or underside flow path.
- The pickup pad must be able to breathe and absorb water.
- Test the pickup location before securing it.
- The tubing should apply slight downward pressure on the pickup once it is tie-wrapped in place.

CONNECTING THE INTAKE TUBING

Route the intake tubing first, then connect it to both the pickup and the Series 4 unit. For standard fittings, push the tubing into the fitting until it is fully seated. When resistance is first felt, the tube is only partially inserted. Continue pushing until the tubing reaches its locked and seated position. If tubing is not fully inserted, the connection may create a vacuum leak. A vacuum leak can prevent the system from drying the bilge because the system will pull air instead of water, causing it to shut off. For pinch valve systems, soft-walled tubing is present at the unit intake ports. Insert the hard-walled polyethylene intake tubing from the boat's end into the soft-walled tubing and work the soft tubing over the hard tubing until there is approximately 1/2-inch overlap. A small micro tie wrap may be used over the connection for added security. Do not pull on the system-side tubing at the box. Pulling on this tubing can dislodge the soft-wall tubing from the pinch valve groove.



REMOVING INTAKE TUBING

To remove the polyethylene tubing from a push-to-connect fitting:

1. Depress the orange plastic ring around the tube.
2. Hold the ring fully depressed.
3. Pull the tubing out while continuing to hold the ring in.

For soft-walled pinch valve tubing on the system end, gently pull back the edges of the soft tubing until it releases. Do not yank the two different tubes apart.

SECURING BILGE PICKUPS

Securing the pickups is often not necessary. The pickups have a low center of gravity and a non-skid underside.

If a pickup moves or flips during operation, use one of the following methods:

1. Leave the pickup loose and monitor it during testing.
2. Tie-wrap the intake tubing to a point directly above the pickup to help hold the pickup in position.
3. Fabricate a light aluminum retaining bracket if additional support is needed.

If using an aluminum bracket, do not apply downward pressure to the pickup. The pad underneath the pickup needs to breathe and absorb water. Over-clamping can prevent proper water entry and reduce performance. For pickup wands, the vertical tube can be tie-wrapped to a nearby structure. Make sure the bottom of the L-shaped section points downward because the wand absorbs water from under the L. The wand is made of soft-walled copper and can be gently hand-bent, but it must not be kinked.

STARTUP SEQUENCE AND NORMAL OPERATION

Once discharge, intake tubing, and power are connected, the Series 4 system will begin its automatic cycle after power is applied.

The basic operating sequence is:

1. Power is applied.
2. After a short delay, the compressor starts.



3. The system begins a discharge cycle to clear any previously collected water.
4. The compressor then builds a vacuum inside the collection chamber.
5. Once the target vacuum is reached, the compressor shuts off.
6. The system uses the stored vacuum to pull bilge fluid through the intake tubing and into the collection chamber.
7. One intake valve opens at a time, allowing the active zone to be checked.
8. Water, oil, air, or a mixture may be pulled through the intake tubing into the collection chamber.
9. The system repeats this process for the next intake zone.
10. When all zones are dry, the system enters its three-hour rest mode.

The compressor does not run while water is being drawn from the bilge. The compressor runs to create a vacuum inside the collection chamber. Once that vacuum is reached, the system uses the stored vacuum to pull bilge fluid through the intake tubing and into the collection chamber. In other words, the compressor builds the vacuum first. The bilge water is then drawn in using the vacuum already stored in the collection chamber, without the pump running during the fluid intake moment.

The timing of each cycle can vary depending on:

- Intake tube length
- Height of the unit above the pickup
- Whether the pickup is pulling water, air, oil, or a mixture
- The condition of the pickup pad
- Whether the intake line is clear

When all zones are dry, the system enters a three-hour rest mode. During this time, the unit remains silent. The system power light and low vacuum light remain lit. To wake the unit from rest mode, turn power off for approximately three seconds, then reapply power

PROCESSOR LIGHT LEGEND

If access to the inside of the unit is needed, carefully pull out on the lower corners of the faceplate to release the Velcro.

Processor light meanings:

- **X0: Low Vacuum** — less than approximately 8 inches of vacuum
- **X2: High Vacuum** — more than approximately 18 inches of vacuum
- **X4: System float switch flooded**
- **Y0: Air pressure / discharging**
- **Y1: Intake 1 active**
- **Y2: Intake 2 active**
- **Y3: Intake 3 active**



- **Y4: Intake 4 active**
- **Y5: Vacuuming chamber**
- **Green light: System power on**

The X2 / High Vacuum light is an important system health indicator. With the X0 / Low Vacuum indicator out, the X2 / High Vacuum light should illuminate approximately 3 seconds before the compressor shuts off during normal operation.

HOUR METER UNITS

For hour-meter-equipped units, the small LCD display shows runtime for each zone. The hourglass icon appears on the left side of the display, with the runtime shown to the right. When a zone is active, the hourglass icon will blink off and back on.

ALARMS AND TROUBLESHOOTING

Several conditions can cause a Series 4 unit to go into alarm. The following checklist outlines the most common alarm scenarios and the recommended troubleshooting steps.

ALARM 1: BLOCKED INTAKE

A blocked intake means the system is unable to move air or fluid through one intake zone properly.

Typical behavior:

- The unit runs normal cycles on the unaffected zones.
- While attempting to pull from the blocked zone, the **X2 / High Vacuum** light remains lit for approximately **4 1/2 minutes**.
- The compressor then starts running again, turning off the **X2 / High Vacuum** light.
- Once the other zones are dry, the system may alarm with the compressor running as it attempts to blow air backwards through the clogged or restricted zone.
- Five- to eight-zone versions will activate the piezo buzzer.
- Four-zone units do not have a piezo buzzer and may instead blow air backward through the affected zone for approximately two minutes.

Possible causes:

- Clogged pickup pad



- Crushed, kinked, restricted, or blocked intake tubing
- Debris in the intake line
- Intake valve not opening
- Pickup pad saturated, damaged, or unable to breathe freely
- For pinch valve units, the soft-walled tubing may be stuck to itself
- Incorrect tubing routing or improper installation causing restricted flow

Blocked intake troubleshooting steps:

1. Identify the affected zone.
2. Inspect the pickup pad for dirt, debris, oil, or clogging.
3. Remove and clean the pickup if needed.
4. Test the intake tube without the pickup attached with a clean cup of water.
5. If the issue clears, the pickup was likely the problem.
6. If the issue remains after an alarm, disconnect the intake tubing from the Series 4 unit.
7. If the issue clears after disconnecting tubing, inspect the intake tubing for a blockage, kink, or crushed section.
8. If the alarm remains even with the tubing removed, the intake valve may not be opening and **the unit will require service.**

CLEANING A PICKUP

To clean a pickup:

- Remove the pickup from the tubing.
- Spray degreaser onto the pad.
- Massage the pad gently.
- Backwash the pickup using a garden hose or sink over the fitting.
- Inspect the pad for separation or damage.
- Reinstall if the pickup is clean and intact.

ALARM 2: BLOCKED DISCHARGE

A blocked discharge means the system cannot discharge collected fluid properly.

Typical behavior:

- The unit alarms shortly after power reset.
- The compressor may run.
- The system flooded fault light may be lit.

Common causes:



- Closed seacock
- Blocked discharge hose from dirt or debris
- Incorrect discharge routing
- Obstruction in the discharge path
- Internal discharge issue

Blocked discharge troubleshooting steps:

1. Confirm any discharge seacock or thru-hull valve is open.
2. Reset power to the system.
3. Watch whether the system flooded fault light clears.
4. If the alarm continues, remove the discharge hose from the 90-degree discharge fitting.
5. Hold a cup or small bucket under the discharge fitting.
6. Reset power and observe whether water discharges from the unit.
7. If water discharges from the unit, the blockage is downstream in the discharge hose or thru-hull path.
8. If the system goes into alarm immediately when power is restored, the collection chamber may already be full and the internal float switch may be triggered. In this condition, the system may need assistance draining the collection chamber before normal operation can resume.
9. If no water discharges and the alarm remains, the compressor, air valve, float switch, or internal discharge pathway may require service.

ALARM 3: COMPRESSOR NOT RUNNING

Alarm 3 indicates that the processor is calling for compressor operation, but the compressor is not running as expected.

First confirm that the unit is receiving power.

Troubleshooting steps:

1. Look through the processor window for lights.
2. Reset power and watch the processor lights.
3. For 5- to 8-zone Series 4 systems, remove the faceplate by carefully tugging on the lower corners of the moldings.
4. Apply power to the unit and observe the **Y0** and **Y5** processor lights.
5. When either **Y0** or **Y5** is lit, the compressor should be running.
6. If either **Y0** or **Y5** is lit and the compressor is not running, the compressor may be stuck, worn, or failing.
7. While **Y0** or **Y5** is lit, lightly tap the metal body of the compressor located at the very bottom of the box. Do not tap wiring, fittings, tubing, the processor, or plastic components.



8. If the compressor starts running after a couple of light taps, the system may resume normal operation temporarily. However, this should be treated as a warning sign. The compressor may continue working for a short period, but the pump should be scheduled for replacement soon.
9. A compressor that requires tapping to start should not be considered fully reliable for long-term operation. Contact Arid Bilge Systems for service guidance.

Service Note:

If the compressor starts only after tapping, the unit may operate temporarily, but the compressor is showing signs of wear or failure. Plan to replace the compressor soon. Do not rely on repeated tapping as a permanent repair.

ALARM 4: INTERNAL VACUUM LEAK OR VACUUM FAILURE

An internal leak or vacuum failure means the system is unable to build or hold proper vacuum.

Typical behavior:

- The system runs cycles and then alarms.
- The compressor may not speed up before shutting off.
- The low vacuum light may remain on.
- The high vacuum light may not illuminate.
- Clicking may be heard during the alarm condition.

Possible causes:

- Dry discharge check valve losing prime
- Stuck open intake valve
- Leaking fitting
- Bad three-way air valve
- Faulty vacuum sensor
- Weak compressor
- Other internal leak point

Basic vacuum check:

1. Remove the discharge hose from the 90-degree discharge fitting.
2. Reset power.
3. After the system changes into vacuum mode, place your thumb over the discharge fitting.
4. Check whether suction is felt.
5. Watch whether the low vacuum light turns off and the high vacuum light turns on.



If suction is present and the vacuum lights behave normally, the system may need a small amount of water to reseal the discharge check valve.

To reprime:

1. Rotate the 90-degree discharge fitting upward if possible.
2. Pour approximately 8 ounces of water into the discharge fitting.
3. Run the system and observe whether normal vacuum operation returns.

If suction is not present and the high vacuum light does not come on, contact Arid Bilge Systems for service guidance.

LOOP TEST FOR INTAKE VALVES

If an intake valve leak is suspected, short pieces of tubing may be used to loop intake ports together for testing.

General process:

1. Disconnect the intake tubing from the unit.
2. Cut short 4-inch pieces of spare intake tubing.
3. Loop two intake ports together at a time.
4. Reset power and listen for the compressor to build vacuum and speed up before shutting off.
5. Turn power off just after the compressor shuts off.
6. Remove looped tubing one at a time and listen for suction or a hiss.
7. If suction is heard at a port while power is off, that valve may be leaking.

If a valve issue is identified, contact Arid Bilge Systems for the correct service procedure. Different valve versions may require different service steps.

SYSTEM CAPACITY

The Series 4 system is designed to remove residual bilge water, not to manage major leaks or emergency flooding.

Approximate total capacity:

- 11 gallons per hour total system capacity
- Approximately 260 gallons per day total system capacity

Approximate single-zone capacity:



- Up to about 6 gallons per hour on one zone
- Approximately 140 gallons per day on one zone

If the vessel has a slow but continuous leak, the leak should be located and repaired. If the volume of water entering the vessel exceeds the capacity of the Arid Bilge System, the bilge will not become dry.

WINTERIZING

If the system may be exposed to freezing conditions, winterization may be required. The system is pneumatically driven, and water does not pass through the compressor. However, if the discharge hose or internal discharge riser can remain filled with water, it should be protected.

Winterizing process:

1. Place approximately 8 ounces of biodegradable antifreeze at the pickup locations.
2. Reset power to the system.
3. Allow the system to run several cycles and pull the antifreeze through the system.
4. Once the system enters rest mode, shut power off until spring.
5. In spring, verify that any discharge seacock or thru-hull valve is open before restoring power.

Running biodegradable antifreeze through the system may also help protect and lubricate internal valve components.

SHIPPING THE UNIT FOR SERVICE

If the unit must be returned to Arid Bilge Systems for service, prepare it carefully before shipping.

Shipping preparation:

1. Dismount the unit.
2. Take the unit to an area where water can drain safely.
3. Rotate the unit so the 90-degree discharge fitting is at the lowest point.
4. Rock the unit gently side to side and back toward the discharge fitting.
5. Continue until no more water drips from the discharge fitting.
6. Wrap the discharge fitting with electrical tape to help contain remaining moisture.
7. Do not place the unit inside a sealed plastic bag.
8. Pack the unit securely in a cardboard box with protective material.
9. Complete the Arid Bilge Systems Repair Request Form before shipping the unit whenever possible. The form can be found on the Arid Bilge Systems website under



Owners' Central / Repair Request. If the form cannot be completed online or printed, include a written note inside the box with the following information: first and last name, company name if applicable, return shipping address, phone number, email address, unit model, serial number, and a clear description of the issue.

Do not seal the unit in plastic. If moisture escapes during shipping, it is better for a small amount of moisture to enter the cardboard box than to trap water against the electronics inside a sealed plastic bag.

CONTACT INFORMATION

Questions, service requests, or troubleshooting support:

Arid Bilge Systems

1525 NW 3rd Street, Unit 5

Deerfield Beach, FL 33442

Phone: 954-478-7066

Email: admin@aridbilge.com

Email: alfred@aridbilge.com

Stay Dry, Fresh, and Protected!

