

# WILLY VAC<sup>®</sup>.com

by Wallace Marine Services, Inc.



**Maintain  
Your  
Equipment  
The Easy Way**

**Bill Wallace**  
843-693-4336  
info@willyvac.com  
www.willyvac.com

## Installation and Operation Manual

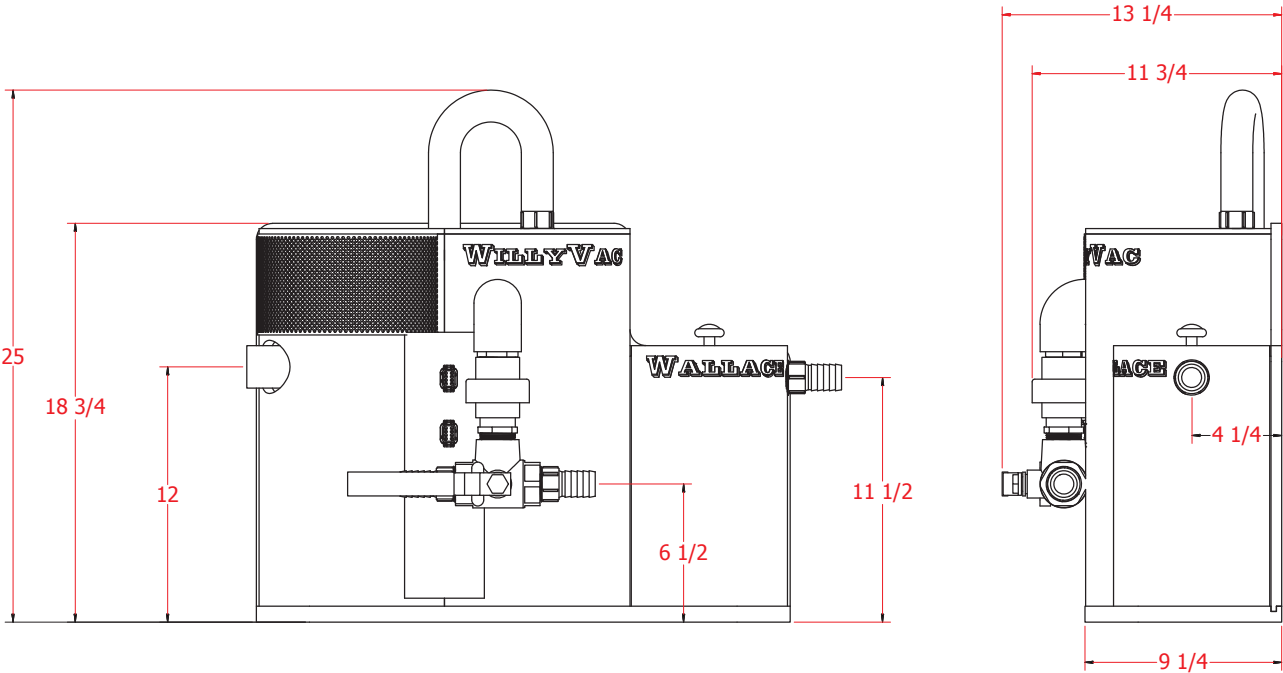
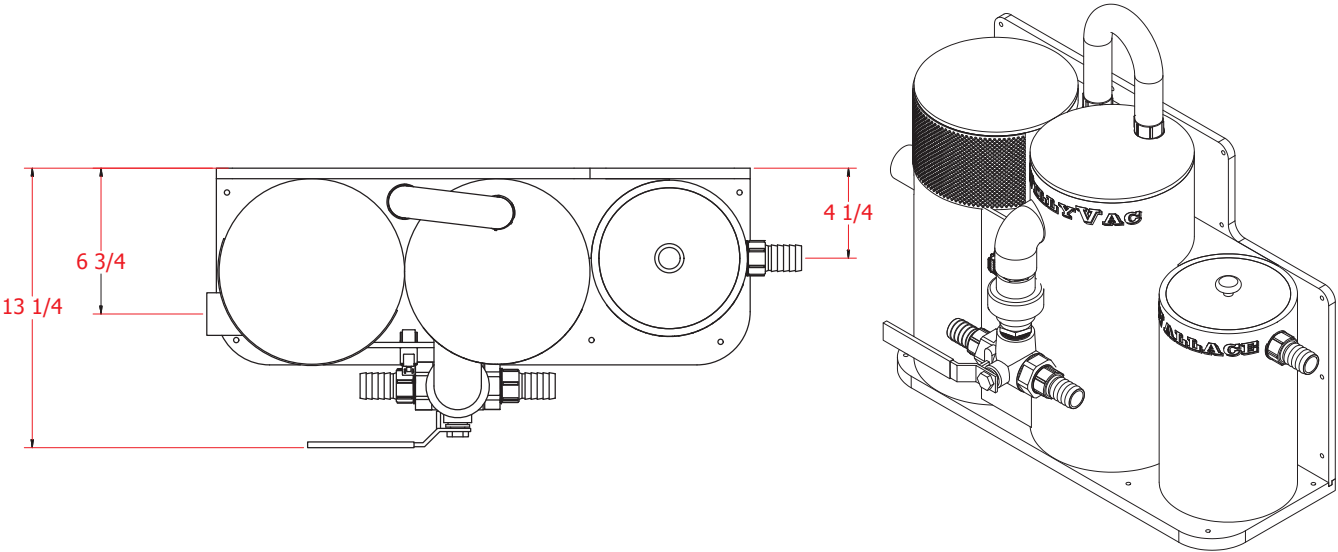
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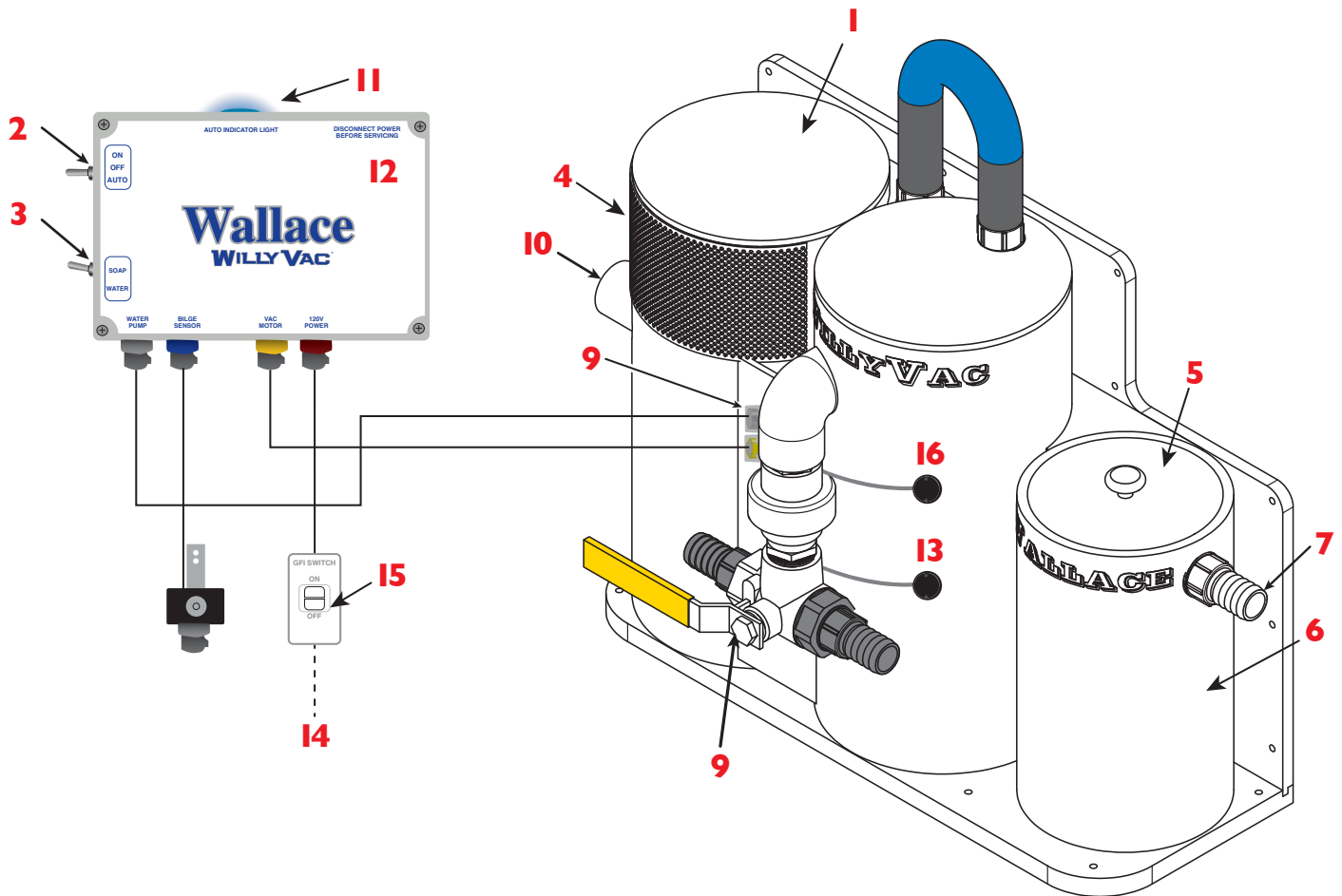
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# Willy Vac Dimensions



# Willy Vac Wiring Diagram



**Figure 1: Legend for the Willy Vac**

- |                                    |   |
|------------------------------------|---|
| 1. Willy Vac Housing               | 9. Electrical Connections               |
| 2. ON/OFF/AUTO                     | 10. Air Outlet Fitting                  |
| 3. Water/Soap Switch               | 11. Auto Blue Light                     |
| 4. Ventilation Grill               | 12. Control Box                         |
| 5. Lid                             | 13. Vac Sensor                          |
| 6. Strainer Basket                 | 14. Boat Wiring 120V A/C, 20 AMP Supply |
| 7. Inlet (Water and Air)           | 15. GFI                                 |
| 8. Diverter Valve and Water Outlet |   |

# Getting Started

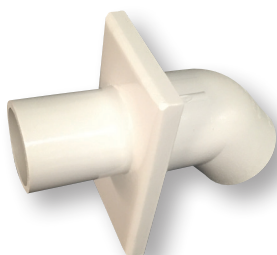
## Determine the Location of the Willy Vac

Before you start the installation process, familiarize yourself with the Willy Vac components and what they do. Every boat is different, and every captain's needs are different.

**NOTE:** Plan the hose and wire routing as you decide on your equipment locations.



- a. **Willy Vac:** Should be installed as low as possible, but no higher than 36 inches from the lowest section of the keel from which you will be vacuuming. You also want to have easy access to the lid/strainer basket, and the diverter valve. The Willy Vac comes with a short power cord connected to a GFI. You will need to connect the boat's power to the 3-pin deutch connector already installed at the end of the GFI box.



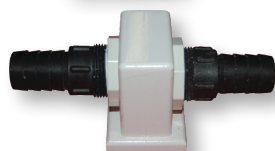
- b. **Air Box Dump Fitting:** The air box dump fitting mounts in the top of the air box. See the installation instructions.



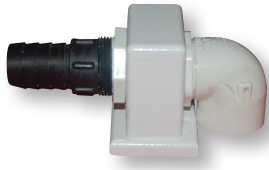
- c. **Control Box:** Mount the control box in a dry, easily accessible location.



- d. **Bilge Sensor and Bilge Pickup:** These two must be mounted very close to one another! They are typically installed at the lowest point in the bilge while the boat is at rest. Mount the bilge sensor as close to the bottom as possible leaving enough room for a finger to get between it and the keel for cleaning. Mount the pick up as close to the bottom as possible but not so close that it chokes down the water flow to the Willy Vac. (This may take some little trial and error. It should be around 1/4" to 3/8".) The bilge sensor comes with a 25 ft wiring harness.



- e. **Fixed mount hose coupler:** Mount this in the suction line between the bilge pick up and the main unit in a convenient location so a flexible hose can easily be attached for vacuuming in remote locations.



**f. Hose and Wire Routing:** Keep the [vacuum hose](#) as low as possible; the higher the unit has to lift the water, the slower it works. Strap your wires up in order to keep them out of the water.

**g. Plumb the diverter valve of one discharge overboard:** either through its own thru-hull, or an existing thru-hull. Make sure the thru-hull is large enough to accommodate the flow of water (especially if the thru-hull is accommodating other components such as an air conditioner). Remember that the Willy Vac can pump 1500 GPH.

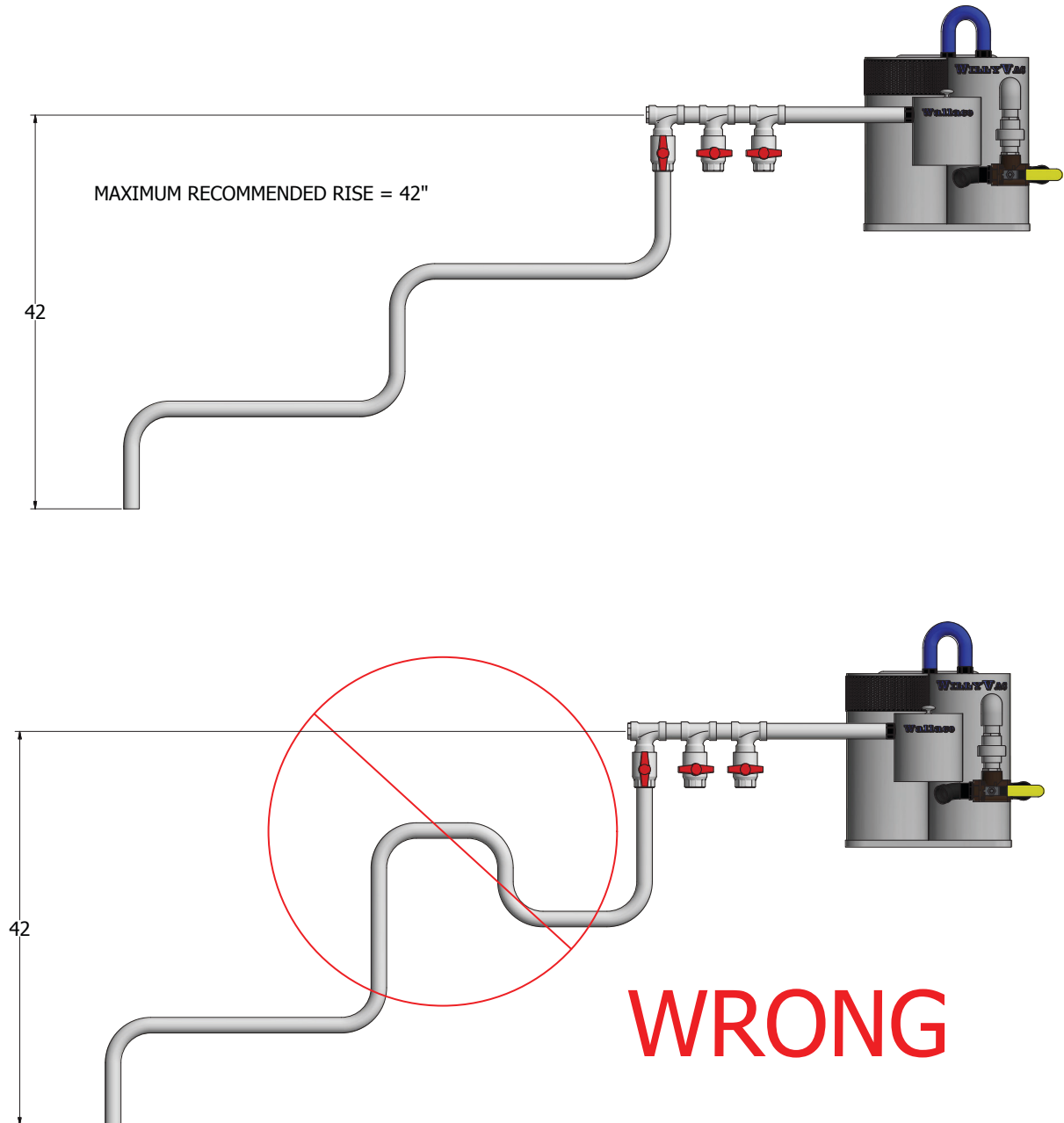


**h. Optional Wireless Remote**

# Installation

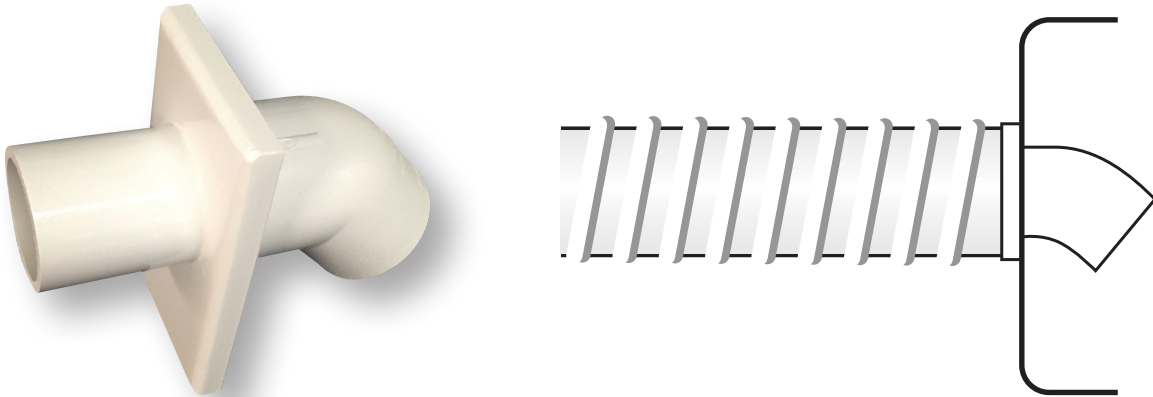
Once the location has been determined for the above components, mount them firmly in place and plug in the components.

**Figure 3: Rack Assembly Layout**



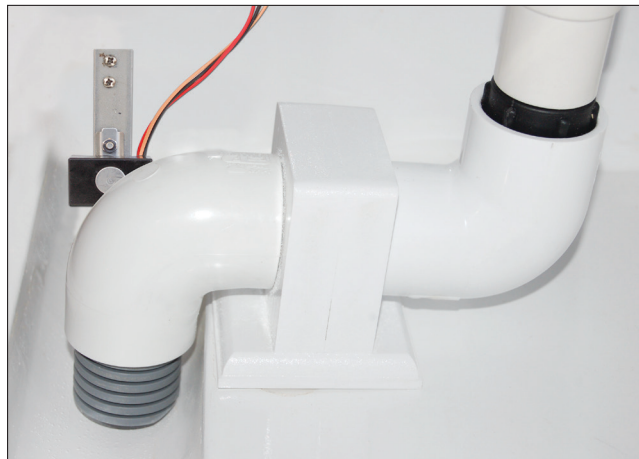
1. **Air Box Fitting:** DRILL A 2½" HOLE INTO THE AIR BOX AND INSTALL THE AIR BOX DUMP FITTING INTO THE END OF THE AIR BOX MAKING SURE IT IS WITHIN THE TOP ⅓ OF THE AIR BOX AND THAT THE ELBOW IS POINTING DOWN.

**Figure 4: Air Box Fitting**



2. **Bilge Sensor and Pickup:** using your wet vac, vacuum out all the water in the bilge and dry the bilge as best you can. Keep in mind that this is the last time you have to deal with your portable wet vac!  
Use screws and sealant to mount the bilge sensor and pickup.

**Figure 5: Bilge Pickup**



3. **Willy Vac:** using #14 x 1½" screws, screw down the Willy Vac to the deck or bulkhead using the included ¾x25x2 support.

**Figure 6: Willy Vac**



4. **Manifold Assembly (Optional):** If installing the optional suction valve manifold, once again, mount this as low as possible.

**NOTE:** *Still only one valve at a time should be open.*

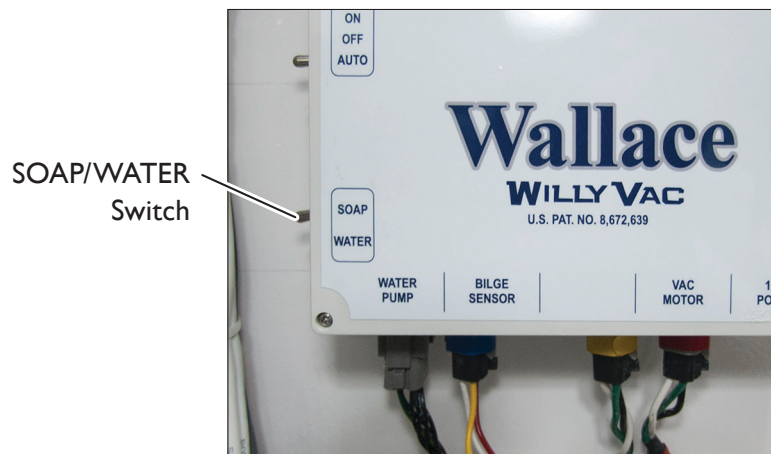
**Figure 7: Manifold Assembly**



5. **Control Box:** Mount the control box and attach the wires matching colors on cables to colors on the components.

Note that the control box has a WATER/SOAP switch. This switch should *always* be in the **WATER** position *unless you are vacuuming soap suds*.

**Figure 8: Control Box**



**NOTE:** *This SOAP switch should only be used in the manual mode and for a limited amount of time.*

The purpose of the SOAP switch is this: the controlling sensor on the side of the Willy Vac sees that soap as water. Once the soap enters the sump assembly and foams up to the top, the sump assembly responds the same as if it were full of water: the vacuum motor shuts down. Now, because the Willy Vac water pump has difficulty pumping suds, the vacuum motor will not restart until the suds have left the Willy Vac; which could take a considerable amount of time. The WATER/SOAP switch bypasses this sensor and cycles the vacuum motor on and off.

In SOAP mode, the vacuum motor is doing most of the work; it is vacuuming the suds and discharging them out of the air outlet of the vacuum motor.

This SOAP mode should only be used for a very short period of time. Continual use of this mode will shorten the life of the vacuum motor.

Once the soap has been vacuumed up and the sump and vacuum motor have dispelled the soap and water, return the switch to the water mode.

**NOTE:** *Do not leave the switch in the SOAP position! If you leave the switch in the SOAP position, the unit will not work properly it will result in premature vacuum motor failure.*

**⚠ CAUTION**

**DO NOT SUPPLY POWER TO THE MACHINE UNTIL ALL COMPONENTS ARE MOUNTED AND PLUGGED IN.**

# Operation

**NOTE:** *The Willy Vac should have fresh water run through it weekly to keep water pump operational.*

**IMPORTANT!** *Never pump flammables through the Willy Vac!*

## Manual Operation

**In the manual mode the Willy Vac will run continuously as a vacuum-assisted pump similar to a wet vac.**

- If your system is equipped with the optional suction valve manifold , open the valve that corresponds to the desired bilge to be vacuumed.**

**Figure 9: Willy Vac Manifold**



2. **Locate the diverter output valve on the sump assembly and turn the handle to the desired outlet location. (Keep in mind that one of the outlets is plumbed to send the contents overboard.)**

**Figure 10: Diverter Output Valve**



3. **Make sure the strainer basket and Plexiglas lid on the unit are properly in place.**

**NOTE:** *There is no latch to hold the lid in place, it is critical that the gasket remain free of debris that would prevent the lid from sealing when vacuum is applied.*

**Figure 11: Strainer Basket and Plexiglas Lid**



4. **Switch the toggle switch located on the control box to the ON position.**

**The vacuum motor will run as long as this switch is ON. The liquid pump inside the sump assembly will run continuously as well.**

On initial start up or after the unit has been drained, it is common for the Willy Vac to take a couple more seconds than usual to purge itself. This is realized by the vacuum motor stalling during liquid vacuuming. Once the pump has purged itself, the vacuum motor will resume running and the system will be fully operational.

**NOTE:** *This could be critical information to remember to prevent a mess if you are using the Willy Vac to keep up with a leak or if you are draining fluid directly into the vacuum hose. We strongly recommend to pre-purge the Willy Vac with some fluid initially to prevent a long delay in the vacuuming process causing a fluid spill.*

**NOTE:** *It is normal for the vacuum motor to cycle on and off during maximum water/liquid transferring. The machine will not vacuum liquids **in** any faster than it can pump them out.*

### *Automatic Operation*

**In the auto mode the unit will operate similar to a bilge pump. Use this mode during normal boat storage and operation.**

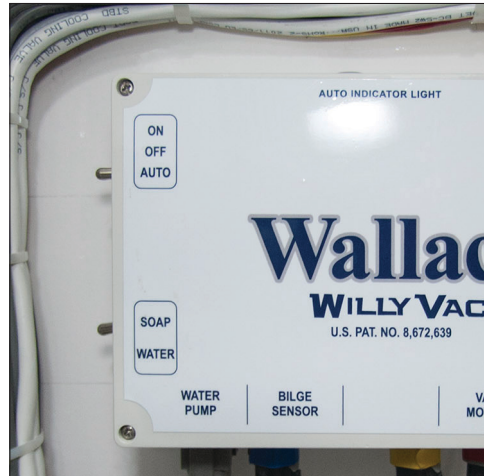
- a. Open the valve (located on the suction valve manifold) that corresponds with the bilge area fitted with the auto water sensor.

**NOTE:** *Be sure that only one manifold valve is open at any time.*

- b. Locate the diverter valve on the sump assembly, turn the handle to the overboard discharge position.

- c. Switch the ON/OFF toggle switch down to the auto position. The blue LED light in the top of the Willy Vac should illuminate. The SOAP/WATER switch should be switched to the WATER position.

**Figure 12: Control Box Switches**



If there is water in the bilge compartment that is being monitored, the unit will turn on automatically and not turn off until:

- This water has been vacuumed from the bilge, *OR*
- The unit has run continuously in AUTO for 5 minutes.

Once the water has been removed from the water sensor, the Willy Vac will continue to run for approximately 45-60 seconds. This should be adequate time to vacuum the remaining water from the bilge and suction hose to prevent the water from draining back down the hose and into the bilge.