

SEPTIC SYSTEM PUMP CHAMBERS



What is a Septic System Pump Chamber?

Your septic system consists of several important parts. One of the most critical is the pump chamber which processes discharges from your household or commercial building and moves waste water into your leaching field. For the most part 1,200 gallon septic tanks are commonly used but depending on what you are trying to accomplish the tank may be larger or smaller.

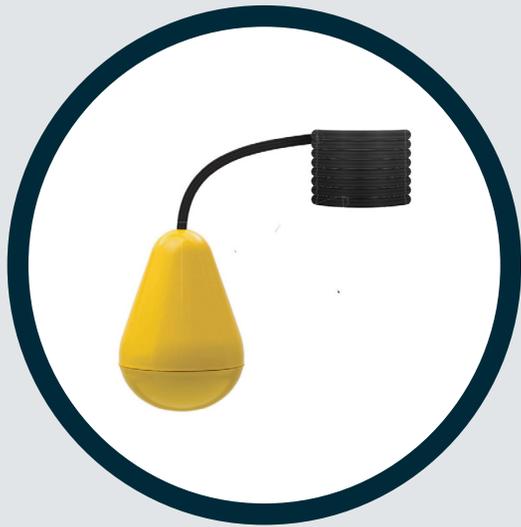
Next to the pump are three float switches. The lowest float is the “pump enable/off” float. In the ‘up’ or ‘on’ position it enables the pump to run. This means the pump can run when the middle or pump ‘on’ float also tips to the on position. After the pump ‘on’ floats tips back down the pump will continue to run until the lower float turns the pump off. In normal operation, effluent from the septic tank fills the pump chamber and the pump controls keep the effluent that is between the two lower floats.

These floats are typically set to discharge a volume of effluent somewhere between the daily flow from the house and one-quarter of the daily flow. For a four bedroom house this means between 150 and 600 gallons of effluent per dose. This volume is set by changing the distance between the two floats. Since most 1,200 gallon septic tanks have a liquid depth of 48”, each inch of liquid depth amounts to about 22 gallons. This means the floats should be set between 7 and 22 inches apart. The pump chamber is a concrete, fiberglass, or polyethylene container that collects the septic tank effluent.

Effluent flows into the pump chamber from the septic tank. In this case the septic tank is located off to the left out of sight. The septic tank liquifies the wastewater and retains most of the solids. This is important because most effluent pumps cannot pass large solids and in any event, we don’t want to send solids to the drainfield where they can damage the absorptive interface of the soil.

The chamber contains a pump, pump control floats, and a high-water alarm float. The blue box like object at the bottom of the tank is the pump. These vary in size depending on how far you will be pumping, how high you need to lift the effluent, and the reason you are pumping. Some systems just need to overcome an elevation difference while other systems use the pump to distribute effluent evenly. These later systems usually need to have a little more power to pressurize piping. In general, it’s rare to see a pump smaller than 1/4 horse power or larger than 1/2 horse power on a residential system. The pump is the main workhorse of the pump chamber and a piece of machinery you want to carefully maintain.

The Three Pump Float Switches



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One of the other goals in designing the system is keeping pump constantly submerged. Sewage is somewhat corrosive but sewer gasses are even more corrosive. Keeping the pump covered with effluent slows the corrosion process. A bigger tank would allow a greater pumping volume but the larger tank is more expensive and there is no advantage to a bigger dose, only greater cost.

The top float is a high water alarm. If for some reason the pump does not start when the 'on' float tips up, the high water alarm will give an audio visual alarm to signal the user that there's a problem. If pump timer controls are used, the alarm also will warn you of excessive water use in the home.

The float is set to start when the effluent in the pump chamber rises above the "ON" float. The alarm should consist of a buzzer and an easily visible light. It should be on an electrical circuit separate from the pump. The pump discharge pipe should have a union and valve for easy removal of the pump. A piece of nylon rope or other non-corrosive material should be attached to the pump for taking the pump in and out of the chamber.

Properly Care for your Pump System

1

Check the pump chamber, pump, and floats every year and replace or repair worn or broken parts. Pump maintenance should follow the manufacturer's recommendations. Electrical parts and conduits should be checked for corrosion. If the alarm panel has a "push-to-test" button, that should then be checked regularly.

2

Install a septic tank effluent filter or pump screen if your system does not have one. Screening or filtering the septic tank effluent provides an effective way of preventing solids from clogging the pump and drainfield pipes. Inspecting a screen or filter, and cleaning it when necessary, is quick and easy and prevents costly damage from solids entering the system.

3

Protect the drainfield from overloading after a prolonged power outage or pump failure. Effluent will continue to collect in the pump chamber until the pump starts operation. With additional effluent in the chamber, the pump may dose a volume more than the drainfield can handle. If all of the reserve storage in the chamber is used, the plumbing in your home can backup.

When the pump is controlled by float controls and is off for more than 6 hours, the following measures can be taken to help protect the drainfield

(timer controls will automatically correct this problem)

Reduce your water use to a minimum.

Turn off the pump at the control panel.

After power is restored or pump service is completed, switch the pump on and let it run for 5 minutes maximum, and turn it off again. Repeat this manual switching every 6 hours until the effluent drops to the "OFF" float level and the pump turns off automatically. If there is little water use during the problem, the pump may just automatically turn off.

Pump chambers and their systems can be confusing. Leave all of your worries with the experts. Call us at All Clear Septic and Wastewater Systems with all your questions and let them take the worry out of your septic system.