



What is a SUMP PUMP?

A sump pump is a pump placed in the basement to prevent water build-up in the soil from seeping into the house. The pump is placed on crushed stone inside a pit in the basement floor and crushed stone under the house into the sump, or ground under the house. This sump hole is generally dug into the deepest part of the basement. It collects groundwater from a drain tile that is around the house

How do Sump Pumps work?

Sump Pumps are generally activated by a ball float similar to that used in toilets. As the groundwater level (the "water table") begins rising, it seeps into the sump hole. When the water table reaches the critical level, the sump pump activates and pumps the accumulating water out and away from the house, thereby preventing excess groundwater from seeping through the basement walls and foundation.

Types of pumps

There are different types of sump pumps, each work well with proper maintenance

Pedestal Pump (approx \$70)



The motor is placed above the water level, so that the motor does not get wet

The pedestal pump has the motor on top of the pedestal and the pump at the base, which sits on the bottom of the sump. The motor is not meant to get wet. The pump is turned on and off by a ball float. One advantage of this type of pump is that the on/off switch is visible so the action of the ball float

can be easily seen.

Submersible Pump (approx \$70 - \$90)

Submersible pumps are designed to be submerged in water and sit on the bottom of the sump. The on/off switch is attached to the pump and can be either a ball float connected to an internal pressure switch or a sealed, adjustable, mercury-activated float switch. The sealed mercury switch is generally more reliable than the pressure switch.



Checking your pump (Maintaining)

- A sump pump should have its own dedicated power source and circuit. Because it is always near or in water, a sump pump should have an outlet with a ground fault interrupter.

- The PVC piping from the pump to the outside should be outfitted with a check valve, which only allows water to flow in one direction. This way, the pumped water will not rush back into the sump pit.

- When purchasing a sump pump, you should determine whether or not a 1/3 horsepower (hp) is sufficient for your needs. Alternatively, you may consider a 1/2 hp pump. In most situations, a 1/3 hp pump is sufficient, though in areas with heavy water build-up, a 1/2 hp pump will pump the water out faster and higher. Sump pumps usually come with charts explaining their pumping rates.

- Sump pump piping should not be diverted into sewage systems or septic tanks. These are usually already heavily taxed during heavy rainfall or snowmelt, and pumping more water in would further stress either system. It is also illegal in most municipalities, including Naperville.

- The pumped water should be evacuated at least 5 to 10 feet away from the house, down the grade away from the house.

Backup System Pump and Power

Battery back-ups can be installed to power electric-motor-driven pumps in case of power loss, which can occur during adverse weather conditions. Generally however, if a reliable power current is available, there is no reason not to install an electric sump pump. On the other hand, in areas with heavy storm activity, a battery back-up for the electric pump or a secondary water-powered pump may be necessary precautions.

SOME FREQUENTLY ASKED QUESTIONS

Q. How do you check or test a sump pump?

A. First, make sure the outlet pipe is not frozen shut or plugged and that it directs water away from the house. Next make sure the pump is plugged in. Remove the lid (if the sump has one) and use a flashlight to check if the sump is clean and that the pump inlet is not plugged. Then slowly pour about 5 gallons of water into the sump. Try to simulate the speed that water would normally flow into the sump. Watch the action of the on/off switch and listen to the pump. Make the pump turn on and off at least twice. If something doesn't work right, fix it as soon as possible.

Q. Can you burn the pump out if the outdoor pipe is frozen shut, or will it automatically shut off?

A. Most pumps will not burn up, but they can overheat if left in this condition. Almost all sump pump motors have thermal protection built in. If they do overheat you just have to shut them off and let them cool down. The thermal relay will reset.

Q. What size pump should I have for my house?

A. There is no "correct" size. The horsepower requirement for a house is determined by the area of drainage connected to the sump, the depth to groundwater, the depth of the basement, and many other factors. A 1/3 hp pump is satisfactory for most houses.

Q. Are there any problems with replacing a 1/3 hp pump with a 1/2 hp pump?

A. When used in similar conditions, a 1/2 hp pump will pump water faster and lift it higher than a 1/3 hp pump. Most new sump pumps will have a chart or graph in the instructions or on the box that shows the flow versus height of lift for both sizes. The flow is usually given in either gallons per minute or gallons per hour (multiply gpm by 60 to convert to gph). The height of lift is given in feet of vertical lift. There shouldn't be any problem with a larger pump, but where the flow into the sump is relatively slow there would be no advantage to using the larger pump. However, in situations where water flow can become rapid, a 1/2 hp pump may be able to keep up with the flow where a 1/3 hp pump may not.

Q. Do sump pumps have filters which need to be cleaned or replaced?

A. Sump pumps do not have filters, but they do have screens or small openings where the water enters the pump. These can sometimes be plugged.

Q. Can or should you pump into a sewer drain or basement floor drain?

A. No, you should not. If you have a septic system, under no circumstances should the sump be pumped into the basement floor drain. During wet conditions the drain field of the septic system is usually saturated and struggling to handle the normal flow of water from the house. Adding to it with a sump pump can damage the septic system. Even if you are connected to a public system the sump should not be pumped into a floor drain. Putting additional water into the sewer system can overload the public system, and it is also illegal in most municipalities.

Q. Where should the sump pump drain hose be run?

A. Preferably, sump water should be discharged at least 10 feet away from the house in such a way that it drains away from the house. It should not be directed onto a neighbor's lot, into window wells, or onto a septic system drain field.

Q. Can the average person replace a defective sump pump or does it require specialized tools or the expertise of a plumber?

A. Almost all sump pumps come with a list of required tools and directions for installation. It should not be difficult for the average person to replace a sump pump.

Q. How big should the sump pit be? What kind of hole liner should you use? How much gravel do you put under and around it?

A. Sump pits should be about 2 feet in diameter. This allows space for the pump and associated piping and to store water between pumping events (about 15 to 25 gallons). Metal or plastic liners can be used, but plastic is easier to work with and it is usually the material of choice. When the sump liner is installed, about 3 to 4 inches of coarse gravel should be placed in the bottom of the hole. The gravel forms a solid base for the pump as well as helping to prevent mud and other debris from clogging the pump.

Q. Should the sump pump be on an isolated electrical circuit?

A. A standard 15-amp, three-prong grounded outlet is sufficient to handle a ¼ to ½ HP sump pump. A sump pump is always in or near water, so it is best to have an outlet with a ground fault interrupter (GFI).

FREQUENTLY ASKED QUESTIONS continued

Q. I don't have a sump in my basement but am concerned about water leaking in. What can I do?

A. You can push the water to the floor drain, but if water backs up in the floor drain or drains very slowly a pump is needed. Small pumps sometimes referred to as "skimmer" pumps are designed to sit on a flat surface and pump when water on the floor is only 1/4 to 1/2 inch deep. They can often be used with a common garden hose. A 50-foot garden hose run out through a basement window will usually carry the water far enough away from the house. You can remove more water by taking the cover off the floor drain and placing the pump in the drain bowl -- these pumps are usually small enough to fit in the bowl.