

**Ensure the optimal performance of your sump pump.  
Choose carefully, install properly and maintain routinely.**

If your building is located in an area that is prone to flooding, if your basement floor is located below the water table, or if you are in an area where climate change has resulted in more extreme weather, a sump pump can be a highly effective risk management tool. Simply put, a sump pump is designed to collect the excess water that causes basement flooding – for example, rainwater, natural ground water or water from overflowing drains. If you use your basement to store equipment, files, valuables or items that aren't required regularly or if the space has been finished for use as a meeting hall, classroom etc., a sump pump can help prevent serious water damage to your property and protect your contents.

Given the important role a sump pump can play, it should be chosen carefully, installed properly and maintained routinely.

**Sump Pump Drainage Systems**

General overview

A sump pump drainage system includes a sump pit, a sump pump and a discharge pipe. The sump pit is dug into the basement floor. As groundwater level rises, it is diverted into the pit. When the water reaches a certain level, the pump which sits inside the pit, is activated by a 'float switch' and pumps out the excess water through the discharge pipe. The pump can channel this water to a drainage system, a dry well, or a sanitary sewer. It can also channel water outside onto the building's grounds. In the latter case, the water should be routed onto a lawn or flower bed and not to a public area, like a laneway or a neighbouring property.

Types of sump pumps

The following are the four most popular sump pumps:

The **pedestal** is an upright style electric sump pump whose motor is located above the sump pit to avoid direct contact with water. When water reaches a certain level, it has a float-activated switch that turns the pump on. It is ideal for basements needing frequent water drainage.

The **submersible** is an electric sump pump designed to function underwater. It is installed right in the sump pit and has the same float-activated switch as the pedestal. Submersible pumps are more expensive than a pedestal version however they generally last longer. They are more effective at breaking up sediment and they are also quieter since their sealed, oil-cooled motors are protected from moisture and dust.

**Water-powered** sump pumps are non electric; they run off water pressure from the building's plumbing system. However, they activate in the same way that pedestal and submersible pumps do.

**Floor sucker** sump pumps can be used manually or can be set up to work electronically. They are generally used in basements and crawl spaces that don't, or can't, have a sump pit. This type of pump can be set up to suck water up from within 1/8 of an inch of a ground floor.

When choosing a sump pump, another thing to consider is the material used to manufacture the device. While plastic pumps eliminate the risk of erosion, their life span is generally 4-5 years after which they may begin to crack and split due to repeated use. Commercial grade sump pumps often have an exterior that is constructed of high quality cast iron. These pumps are generally more durable and longer lasting.

## **Preventing Sump Pump Failure**

### Adequate capacity and power

When a sump pump can't keep up with the amount of excess water, it's most likely because the device isn't large enough or powerful enough. To choose the most suitable and most durable sump pump for your building, horsepower and head pressure are essential factors to consider. For sump pumps, horsepower (hp) is a measurement of the power in the pump's electrical motor. All types of electrical sump pumps have a horsepower rating, as well as a capacity measurement but effectiveness depends largely on horsepower. If you have a larger basement or if you are in an area that experiences a higher level of flooding, you should consider a larger and more powerful sump pump. The pump should be sized to meet the worst-case scenario of water volume entering the sump pit.

### Regular Maintenance

Sump pumps are prone to blockage and malfunction if they are not routinely inspected and maintained. The Sump and Sewage Pump Manufacturers Association (SSPMA), a North American organization representing over 90% of the manufacturers in the industry, recommends maintenance throughout the year, including checking the pump every three or four months. Some manufacturers recommend that you run and test your sump pump every two months; others recommend undertaking a comprehensive yearly cleaning prior to spring thaw or the rainy season. The fact is, cleaning and maintaining your sump pump will increase its functionality...and its longevity. If you follow the maintenance guide provided by the manufacturer, your sump pump should perform well for the longest possible time.

### Power Outages

While a sump pump wired-in to a building's electrical system functions well during normal conditions, it is critical to have backup options in the event of a power failure. Power outages, electrical surges and blown fuses are common causes for sump pump failures. Typically these occur during heavy rains when your sump pump is needed most. It is advisable to have surge protection in place between the sump pump equipment and the power supply. Several options are available to combat the power outage problem:

*Sump Pump Alarm:* Designed to sound when the pump stops working and/or when water reaches a certain level in the pit, a sump pump alarm is only useful if there is someone on the premises who can hear the alarm and take corrective action. To ensure the effectiveness of such an alarm, it is best to have it connected to a remotely monitored, centralized alarm system. When the alarm goes off, the designated person in your organization will be contacted immediately. It is highly advisable to have an emergency response plan in place. If water is found to be rising, having a detailed plan will enable you to move stored goods to a safe area, quickly and efficiently.

*Battery Backup:* Battery backup sump pump systems ensure that your primary sump pump will continue to work when your electricity fails. They are intended to sit beside the main sump pump and sound an alarm when the main pump has failed. There are several types of battery backup systems. Some run on 12 volt batteries, others on rechargeable batteries. Battery maintenance is an important issue to consider with this option.

*Water powered backup:* Water powered backup pumps use your building's water pressure to power the sump pump. As with the battery backup sump pumps, this type of pump may be installed in the same pump pit as the main pump. Essentially, a water powered backup pump doesn't require any maintenance so there is less to go wrong.

*Generator:* If feasible, a back-up generator should be installed and wired into your building's electrical system. Generators are usually diesel engine driven, although smaller buildings may use a gasoline engine driven generator and large buildings a gas turbine. This generator should be intended to provide emergency power to your entire building, as well as the sump pump.

## **Conclusion**

Many factors come into play before you can make a decision about what kind of sump pump to install. Whichever you choose, however, it is important to note that sump pump installation can be fairly complex. Given that it includes electrical wiring as well as mechanical work, it is advisable to engage a professional company. Sump pump specialists can provide advice about the most effective solution for your premises, help you determine the most appropriate backup system and determine the level of maintenance that can be handled by your staff.

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