

In simple terms, sewage pumps accept the waste material coming from the fixture and push it up through a discharge pipe to the home's main sewer or septic lines, where it flows by gravity in the normal fashion into the sewer or septic tank. In actual practice they're a little more involved, and a successful job depends on good equipment, proper installation and the services of a licensed plumber who's experienced with these types of systems.

Three Types of Systems

There are basically three types of sewage discharge systems, depending on the particular application. The simplest is a discharge pump, which handles liquids only. Discharge pumps are very similar to a standard basement sump pump, and utilize a float activated pump to push water uphill to a discharge point. Discharge pumps are designed primarily for sinks and similar applications where it will only need to handle liquid waste without solids of any type.

For below-grade bathrooms that have a toilet, you will need a sewage ejector pump. These more powerful pumps are capable of handling solid waste as well as liquids, and most can process solids up to 2 inches in diameter.

Third on the list is the sewage grinder pump, which would be used where other types of wastes are present. These units have a separate grinding chamber, and are used primarily when constructing a below-grade kitchen or other area where food waste, grease and other tougher-to-handle solid materials are present.

Design and Installation

After deciding on the type of pump that is suitable for your particular application, the next part of the operation is decide on the right size of pump and how it will be installed.

As with any type of electric pump, sewage pumps are rated in horsepower, ranging from less than one half horsepower to one horsepower or more. The size you need depends on how much material the pump will need to handle, the types of material being handled, and, most importantly, how far the waste material will need to be moved vertically. This vertical pumping distance from the fixture to the main sewer line – called "head" – is crucial to sizing the pump, and will typically be limited to about 10 feet of head for solids and 15 feet for liquids.

For the typical sewage ejector pump installation, the pump and the float mechanism that activates sit inside a polyethylene basin that's approximately 30 gallons in size – about 22 inches by 30 inches. There is a 3-inch or 4-inch diameter intake line that brings waste into the basin, a 2-inch-diameter discharge line with a check valve to prevent backflow, and a vent pipe. Most of the pumps utilize 115-volt power, and some of the larger units can operate on either 115 or 208/230 volts.

The pump and the basin are typically located as close to the bathroom as possible to minimize piping runs and installation costs. The basin is usually buried in order to place the pump below the level of the plumbing fixtures, and there is a lid on top of the basin that needs to remain accessible should the pump ever require servicing.

Under normal circumstances, a sewage pump should provide years of trouble-free service, although a lot depends on the quality of the equipment and how well it was installed. Since they are electric, they obviously cannot be used during a power outage, so if the power is down you need to avoid using any fixtures that depend on the pump for discharge. If all of the fixtures in the home utilize the pump, or if you are subject to frequent power outages, you should consider the installation of backup power system. The other potential problem comes from things entering the pump that shouldn't – a child's toy being flushed down the toilet, for example – so be careful about what enters the system.

Sewage pump packages can be purchased from plumbers and plumbing supply retailers, and start at about \$350. Your plumber or retailer will assist with pump sizing and other selection criteria, and it is recommended that installation be left to a licensed plumber as well.

