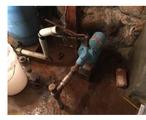
Plumbing 101

The descriptions and pictures below are designed to foster a basic understanding of the parts of your ***plumbing*** system. When you call for service, we hope they will help you to identify those parts of your system that may need service. When you receive an invoice from us, we hope the information below will help clarify which parts and systems we worked on during our service visit.

Potable water enters the home from either a private well or town water. Private wells come in two types, deep wells using submersible pumps (typically used in wells from 30' to 300' deep) and shallow wells using jet pumps (30' or less in depth). The **submersible pump** is inside a PVC (white plastic) pipe and is suspended in the well water connected to a pipe going to the home. This type of pump does not need to be primed as it is submerged in the well water.



A **jet pump** (or shallow well pump) is located inside the home near the well tank. It needs to be primed as it needs to "suck" the water out of the well. (Well, that is not quite technically correct, as the atmospheric pressure at sea level helps to "push" the water up the pipe towards the jet pump. Hence there is a limitation of 32' in depth for a shallow well.)

Both submersible pumps and jet pumps are powered by a **double pole circuit breaker** in the breaker box. An extremely common cause of no potable water is a circuit breaker in the off position.

The **well tank** is where potable water is stored under pressure for use in the home. It is fed by either a submersible pump in the well or a jet or shallow well pump on the floor near the tank. These tanks last between 5 to 10 years, depending on the water quality.

The **pressure switch** sends 240 volts to the well pump when the pressure in the tank drops due to the use of potable water in the home. Common ranges are 40 to 60 psi (the pump turns on when the tank is at 40 psi and turns off when the tank is at 60 psi) and 30 to 50 psi.

The **pressure gauge** tells us what the pressure is in the well tank. Sometimes they get clogged and are no longer accurate. One way to check is to turn off the power to the well and use some potable water. The gauge should register a drop in pressure.

The **pressure relief valve** is set to release pressure from the tank if it has a pressure higher than 75 psi. Sometimes this can happen if the pressure switch fails and no longer turns off the well pump.

The **"boiler" drain** (so-called as it is commonly found on boilers too) is used to draw off water from the well tank.

The **ball valve** is used to turn off the potable water going to the house while leaving the well tank under pressure. It is called a ball valve as it has a stainless steel ball inside the valve body that rotates to permit the flow of water.

If you have town water, then you typically do not have a well tank or any of the parts above. You will find a **water meter** in the basement on an outside wall where the town water line comes into the house.

Sometimes there will be a **curb stop** (or curb key, or jerky box, or water stop) outside that will be used to turn the water supply to a house on and off. Buried at least 4' deep below the frost line, the curb stop is typically used if there are two or more buildings served by a single source of water. These are private and are different from the town owned water stop out in the street. Here we see the long "curb key" being used to open up the buried curb stop.

Once the potable water is in the home, it is split between cold water that goes directly to each fixture and cold water that gets heated in the domestic hot water system and then sent to the fixtures as hot water. Please visit our Domestic Hot Water 101 page for more information.

Sometimes there is a **thermostatic mixing valve** installed in the home. This device is used to mix hot water from the domestic hot water tank and cold water from the well tank to create a mixed water at a certain temperature for use in the plumbing fixtures. By mixing cold water with hot water, the temperature setting on the water heater can be higher, which effectively means there is more mixed temperature water available for use in the home. These valves last 8 to 10 years depending on the quality of the water to which they are exposed.

These are **PEX plastic tubing manifolds** with individual branches running to each fixture using hot water (hence the red color). There is a valve for each of the branches which is very convenient when servicing plumbing fixtures.

These blue valves are for cold water feeds to the plumbing fixtures.

Sometimes it is necessary to add an **potable expansion tank** on the potable water system, especially if the house is using town water. Most water meters used by the towns on the Vineyard have check valves which permit water flow into the house only. This means that the water pressure in the house can build up if there is no well tank and the domestic hot water tank is heating. A solution to this is the potable expansion tank shown here.

Our goal is to be **Martha's Vineyard's premier plumbing and HVAC shop** – we appreciate the opportunity to service, install, and "rescue" your **plumbing** system!