Advice from the Experts:

Water Heater Maintenance

By Simon Leizgold

The water heater is something most of us take for granted, until it suddenly stops working. As cold water imposes reality, we desperately dial a plumber or rush off to get a new water heater. All this might be avoided with some regular preventive maintenance.

In this article you will learn the following maintenance tasks:

- How to drain and clean your tank.
- How to change the anode rod.
- How to replace an electric heating element.
- How to test the pressure relief valve.
- Understanding the dip tube
- Water temperature tips

Water heater maintenance is easy to overlook because the tank just sits there and has no moving parts to worry about. But inside, two things are constantly attacking your water heater: sediment and rust.

Most steel water heater tanks are lined with glass to prevent rust. But the glass lining is never perfect, and the constant temperature fluctuations cause it to expand and contract, causing minute openings. When water eventually penetrates the lining, the tank begins to rust.

At the same time, the heated water causes calcium carbonate to form in the water. It's a type of limestone that you can probably see inside your old teapot. As it forms, the calcium carbonate settles to the bottom of the tank. In gas-fired water heaters, the sediment eventually becomes thick enough at the bottom to reduce the heating efficiency. In electric tanks, sediment collects on the heating element, forming a hard crust that eventually renders the element useless.

To keep your water heater operating correctly, and to extend its life by years, you need to carry out regular maintenance to minimize rust and calcium carbonate.

How to Drain and Clean the Tank

The first task is to drain the tank at least once a year. This will remove most of the sediment collecting at the bottom of the tank. To drain the tank, follow these steps:

- Shut off gas or electricity to the water heater.
- Attach a garden hose to the drain valve at the bottom of the tank.
- Close the incoming cold water valve at the top of the tank.

- Open the pressure relief valve on the tank to break the vacuum.
- Open the drain valve on the tank and drain it.
- When finished, reverse the process, remembering to not turn on the gas or electricity until the tank has refilled.

If your tank is located in the basement or a low area that prevents gravity flow draining, you can purchase a small electric pump, about the size of softball, in plumbing shops or large home supply centers. With this, you can pump the water from your tank to an outside drain or to an upstairs sink.

If you remove the anode rod at the same time (see below), you can insert a hose and nozzle into the water tank to blast loose the bottom sediment.

How to Change the Anode Rod

The next crucial part of maintenance, which is rarely done, is to replace the anode rod in the tank. This rod is a length of magnesium or aluminum that is suspended in the tank and acts like a magnet to attract charged water molecules that would otherwise attack the steel tank. Check it each year when you drain the tank and replace if covered with lime or eaten away. Rods will usually last 5 to 10 years without checking, but cleaning them prolongs the life. To replace the rod, which you can buy at a plumbing shop, follow these steps:

- Shut off the incoming cold water valve at the top of the tank.
- Unscrew the nut on the top of the tank that suspends the anode rod.
- Clip on new rod, insert into tank, and retighten the nut.
- Open cold water valve again.

How to Replace an Electric Heating Element

If your electric water heater has not been cleaned for years and seems inefficient, check the heating element. This is a rod that screws into the side of the water heater tank. Generally there are two of them, one high and one low. It's the low one that is usually coated with calcium carbonate. The rod is connected to electrical wires but is still easy to change. Here's how:

- Shut off electricity to the water tank.
- Test that power is off with an inexpensive electrical tester.
- Shut off the cold water supply valve.
- Open the pressure relief valve on the tank to break the vacuum.
- Connect a hose to the drain valve at the bottom and drain the tank.
- Open the cover located near the bottom of the tank to expose the heating element.
- Disconnect the electrical and ground wires on the heating element.
- Remove the screws that hold the element in place and pull it out.
- Buy a matching one at a home supply or plumbing center and install.

- Reverse the above process, remembering not to turn the power on until the tank is full.

How to Test the Pressure Release Valve

Another item to check when carrying out annual maintenance is the pressure relief valve. This is a valve on the side of the tank near the top. It should be connected to a pipe that directs the water down and away from the tank so that scalding water does not spray a person if the valve releases due to excessive pressure.

The valves should be opened at least once a year to make sure they work and do not become clogged with calcium carbonate. You can test the valve while the water tank if sull by lifting the handle slightly. Do this with caution because it will release hot water. Put a container under the drainpipe to catch the water. If the valve does not release, or if it will not shut off after the test, then it is corroded and needs to be replaced. To replace, shut off the incoming cold water valve above the tank, open a nearby faucet to release the pressure, unscrew the pressure release valve, and install a new one.

Understanding the Dip Tube

The dip tube is a little-mentioned but important part of a water heater. It is a plastic tube on the cold water inlet that caries the incoming cold water to the bottom of the tube, where the heating process goes on. Hot water, which rises, is at the top of the tank. If the dip tub breaks off, cold water will surge into the top of the tank and quickly lower the temperature of the hot water there. Dip tubes in water heaters made between 1993-96 sometimes did break. A sign of this is just a few minutes of hot water before it turns cold.

If you suspect a broken dip tube, take these steps to repair it:

- Shut off the incoming water valve.
- Remove the flex line from the incoming cold water to the water heater.
- Remove the fitting on top of the tank and pull out the dip tube.
- Buy a compatible replacement and reinstall.
- Reconnect piping and turn water back on.

Water Temperature Tips

Finally, keep the water temperature at 120F to 130F. Higher temperatures are generally necessary. Lower temperatures not only save energy, but also prevent overheating.

You may have to keep the water temperature at 140 if your dishwasher does not have a heating element in it. Open the door and if you see a gray rod going around the perimeter of the bottom well in the dishwasher, that's a heating element.

If your water heater pops and cracks on a regular basis, it is possibly because the temperature setting is too high. The excessive heat is causing the tank and pipes to

expand and contract. Pressure expansion tanks can be added to the hot water line beside the tank to control this problem.

For further question please call AZ Remodeling and Plumbing at 561.981.8666 or email us.