Tank Water Heater Maintenance

Everyone understands that when buying a car, there will be maintenance involved to keep that car engine running efficiently. A car is a large investment and with proper care, it can last a long time. But what about the appliances we depend on at home? Every home has some type of water heater to make our life more comfortable, and most of us take that for granted and never do any type of maintenance to ensure we receive not only the longest life from the heater but also the most efficient use of energy that supplies the heater. Tank water heaters are the most common type of water heater in most homes. There are two main types of tank type heaters and that is based on the "fuel" that is used to heat the water, gas or electric. The most common tank water heater in our area is a gas fired atmospheric vent water heater found in most homes in the Chicagoland area.

Residential gas water heaters range in size from 30 to 75 gallons of holding capacity and also 30,000 BTU's to 75,000 BTU's of heating capacity. The higher the BTU's on a water heater, the faster it can heat water. Most standard size homes will have a 40- or 50-gallon heater with 40,000 to 50,000 BTU's.

Every water heater manufacturer recommends that each water heater should be drained or flushed at least once per year or more depending on the quality of water going into the water heater. Homes that are on Lake Michigan water supplied by the city in which they live will normally have less minerals in the water, so there are less deposits left in the water tank. Homes that are on private or city well water will encounter harder water with more minerals so there will be more sediment in the water tank.

When water is heated, the minerals that are suspended in solution become a solid and settle to the bottom of the water heater. This can be experienced when heating a pot of water on the stove, once the water comes to a boil and starts to evaporate, it will leave a tiny white crust behind that is actually the minerals that were in solution now being exposed. This will also show up on glassware coming out of a dishwasher that has a white film on the glasses.

The same process happens in your water heater every time the unit heats up to produce hot water, those tiny minerals drop down to the bottom of the water heater and form a "crust" that will not only reduce the overall water capacity in the tank, it also forms a barrier to trap the heat from the burner or

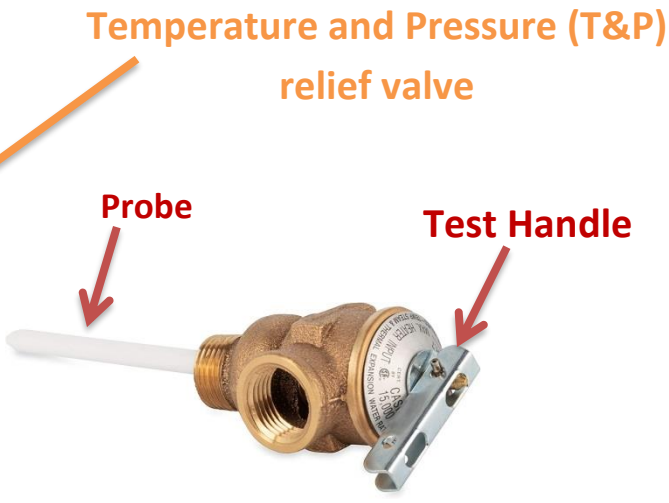
elements from reaching the water. It is almost like wearing a coat to trap the heat around your body on a cold day, the mineral deposits trap the heat at the bottom of the tank. By flushing out your water heater, you can remove that mineral deposits to help your heater not only last longer, but also to be more energy efficient.

Flushing the water heater is an easy task, one just needs to hook a garden hose onto the water heater drain valve, place the end of the garden hose into a floor drain or sump pump and slowly turn on the valve until it is fully open. There is NO need to shut off the power, gas or water supply to the heater to flush out the water tank. If the water tank has not been flushed in years, it is possible that the layer of minerals in the tank can block up the drain entrance and then little to no water may leave thru the drain. This may require more professional help to clean or replace the drain.

Some hose connections on new water heaters will require a screwdriver to open and close the water heater drain valve on the bottom of the tank.

Allow the water to run 3-5 minutes at full stream to properly flush the tank. Once the water is running clear from the end of the hose, slowly turn the water off at the drain valve and disconnect the hose.

The next item to check on the water heater is very critical. This is the water heater Temperature and Pressure relief valve, otherwise known as the T&P valve. This valve is located on the side of the water heater and is the main safety device on the water heater. When there is excess pressure or temperature in the water tank, this valve automatically opens to drain off the excess so the water heater will not explode.



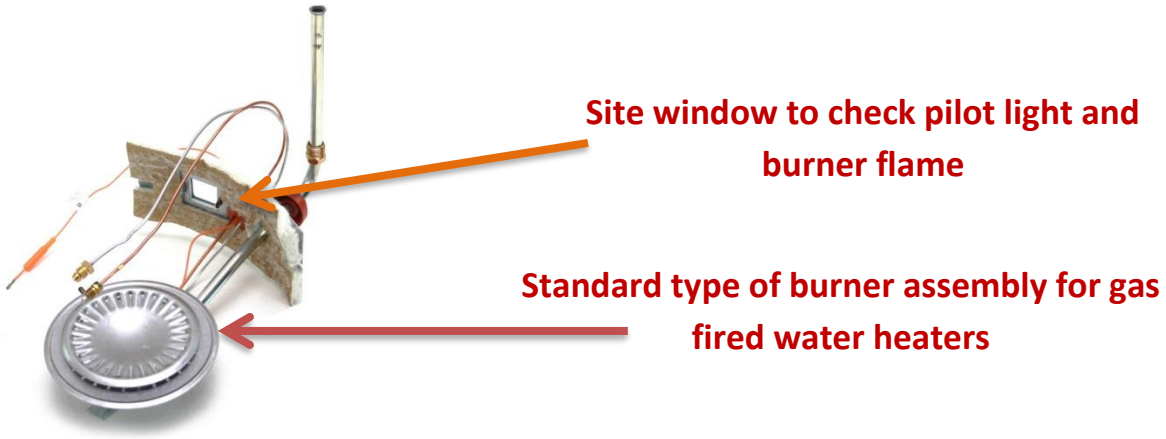
The T&P relief valve should be checked at least one a year to ensure is opens and closes properly. This is a very simple task by putting a small bucket under the drain pipe from the T&P valve and then lifting the silver handle to allow a bit of water to leak out. Once the handle is released, the valve should close and stop the flow of water. There is a small probe on the T&P that enters the water tank. It is possible for the probe to be covered in mineral deposits and not open or close properly. T&P manufactures recommend that the T&P is replaced once every four years to insure the safety of the heater and occupants of the building.

The next item to check is the flue pipe on the top of the water tank. The flue pipe removes the toxic gases from the water heater to the outside of the home. A simple test is to check and see if the vent is drafting naturally while the water is running is with a simple match or lighter. When the flame is close to the edge of the draft hood should be pulled into the vent. If the flame is pushed away from the vent, that means there is an obstruction somewhere in the vent pipe or chimney. This can also happen on very cold days with masonry or brick chimney as cold air is denser than warm air, so it may take a few minutes for the chimney to heat up enough to allow the exhaust to flow out of the pipe.

On some water systems, there may be a pressure reducing valve or check valve in the incoming water supply from the street or roadway. If there happens to be such a device installed on the incoming water service line, you most likely also have an expansion tank connected to the incoming cold water supply to the water heater. An expansion tank is another safety device that takes up minimal thermal expansion when the water heater turns on and off. Water is always moving in and out of an expansion tank each time a faucet is opened and closed as the heater turns on and off. This safety device requires a bit more work to test the expansion tank. There is an air valve on the bottom of the expansion tank to test the tank and put air into the tank. If water comes out of the air valve, the tank seal is broken and the tank needs to be replaced. To set the pressure in the expansion tank, the system needs to be empty and drained. First the incoming water pressure needs to be tested and then the pressure is set at approximately 5lbs OVER the incoming water pressure. For example, if the incoming water pressure is 60 PSI, then the tank pressure should be set at 65 PSI. Once the tank pressure is set, then water can be turned on back to the system and the water tank can be filled again.

The gas supply to the water should be checked for leaks, either with an electronic gas “sniffer” or a gas leak solution. There are different types of electronic gas sniffers that can detect just natural gas or multiple types of combustible gas such as propane and gasoline fumes. Better quality detectors will also detect smaller gas leaks. Gas leak solution is almost like a soapy water that is spread on the gas piping with a dauber or small paint brush. When a gas leak is detected, the solution will bubble up showing exactly where the leak is located. Often times a combination of electronic and liquid are needed to pinpoint a gas leak.

The last item to consider is the actual burner assembly. This should be left to the pros as the main gas line, pilot line and thermal coupler or flame device is all connected to the water heater gas control valve.



Water heaters made after 2003 will have a sealed burner chamber. There will be a small glass window to view the pilot light and main burner. The flames should be a light blue in color when lit. If the flame is more orange than blue, the burner will need to be cleaned. Again, this is something to leave to a professional.

There are other gas water heaters on the market for homes that do NOT have a chimney or space for the flue pipe to run up and out thru the roof. Depending on the application, this will be either a power vent water heater or direct vent water heater. Both of these systems are much more complex and with the exception of flushing the tank or checking the T&P valve, all other safety checks should be left to the professionals.

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