

Temperature Pressure Relief Valves (TPR Valve)

The reason the **Temperature Pressure Relief Valve** (TPR valve) runs or drips water is high pressure in the water heater tank. This is usually caused by one of two things -- high main water pressure (water district or well) or a backflow prevention/check valve.

Backflow prevention valves

Houses built or renovated within the past 10 to 20 years may have a backflow prevention valve in the water supply line. These valves only allow water to go in one direction.

Newer building codes have begun to require backflow prevention valves so that once water enters your house it cannot move backward into the public water supply system. This introduces a new problem. When the water in the water heater tank is heated it expands, making a greater volume of water, and needs somewhere to go. If all the faucets in the house are closed, the water can't drip.

Before these one way valves were part of building code, water was simply pushed back out of the house and back into the public water supply. The backflow valve prevents this, so the extra water has no place to go and pressure builds in the hot water tank until it exceeds the TPR valve set point, about 120 pounds per square inch (psi), and water comes out the TPR discharge tube.

As you may have guessed this isn't good.

The solution is to install an **expansion tank** in the cold water line between the backflow valve and the water heater, giving the extra water a place to go. If the builder installed a backflow valve they also should have installed an expansion tank. However, if there is possibility the expansion tank it may have failed.

Main pressure may be too high

Another problem is that the main water supply pressure is too high, and that also can cause the pressure to exceed the TPR Valve set point. The *Uniform Plumbing Code* calls for water to be delivered to homes for domestic use at between 50 to 70 psi. Supply lines as well as appliances are designed to withstand up to 80 pounds per square inch.

The water district's water pressure regulators reduce the pressure delivered by the main supply to between 50 and 70 psi. Over time the rubber and metal parts in these regulators can fail. When the regulator fails, water pressure to the home increases, putting a strain on valves, hoses and appliances.

One solution to the problem is to install your own pressure regulator on the incoming water line. The pressure regulator will behave like a backflow valve -- it will not allow water to go backward through it -- and will require expansion tank if you install your own pressure regulator.

If you suspect the pressure in your water heater is too high you can buy a water pressure gauge for about \$10 at a local hardware store and check it incoming water pressure.

Connect the gauge to the water heater drain faucet (garden hose thread). Run a hot water faucet until the water heater begins heating. Close the faucet. If the pressure starts creeping up as the heater heats the water, there is a backflow valve or in-house regulator creating a closed system.

If the pressure does not increase as the water is heated, but the pressure reads above 80 psi all the time, your supply pressure is too high.

Another way to check the supply (main) pressure is to connect the gauge to an outdoor faucet, and turn on the faucet. Make sure the faucet is "regulated," as some outdoor faucets are unregulated. If the pipe connected to the faucet comes out of the wall it's probably regulated. If the pressure is above 80 psi, the water coming to your home (or business) is too high and you may want to install a regulator.

Contact the city or water district, and if they don't resolve the high pressure issue, consider installing your own regulator.