What Can I Do About the Knocking/Banging Noises in My Pipes?

Frustrated by the loud knocking noises coming from your pipes? What's most likely causing the problem depends on when you hear the knocking sound. It usually occurs at one of these 4 times:

1. *While hot water is running somewhere in the house*
2. *After a cold or hot water supply is shut off*
3. *While cold water is running*
4. *Randomly throughout the day or night*

We've broken down the most likely causes and fixes for each of these times in the sections below.

1. Knocking happens only while hot water is running

- A clicking/knocking noise starts soon after a hot water tap is turned on
- Clicking/knocking noise doesn't stop until several minutes after the hot water tap is off

Most likely cause

Poor construction of CPVC water lines. Some homes use ***CPVC (chlorinated polyvinyl-chloride)*** as their hot water supply pipes (i.e. the pipes that deliver hot water to your shower, sinks, washing machine, etc.). Now, if a CPVC line was routed through a hole or area that is too tight, you'll hear a rubbing/clicking/knocking noise anytime hot water runs through that pipe.

Why?

Well, CPVC piping naturally expands when hot water runs through it. To accommodate this behavior, a plumber *should* make sure that CPVC piping has plenty of free space around it at all times to prevent friction. If it's lodged in a tight area, you'll be stuck with the annoying knocking noises.

You'll know that poor construction of CPVC water lines is your issue if:

- You see cream-colored or light tan piping running to your hot water appliances.
- These pipes will also be marked "CPVC".
- You only hear the knocking/clicking noises when a hot water tap is turned on
- The noises stop several minutes after the hot water tap is turned off

What's the solution?

The only solution is to find the CPVC pipe(s) that are causing the noises and give it more "breathing" space (i.e. room to expand without rubbing any surrounding materials).

Because this could involve cutting into walls and/or relocating CPVC piping, we suggest you leave this job to a professional plumber.

2. Knocking happens after a cold or hot water supply shuts off

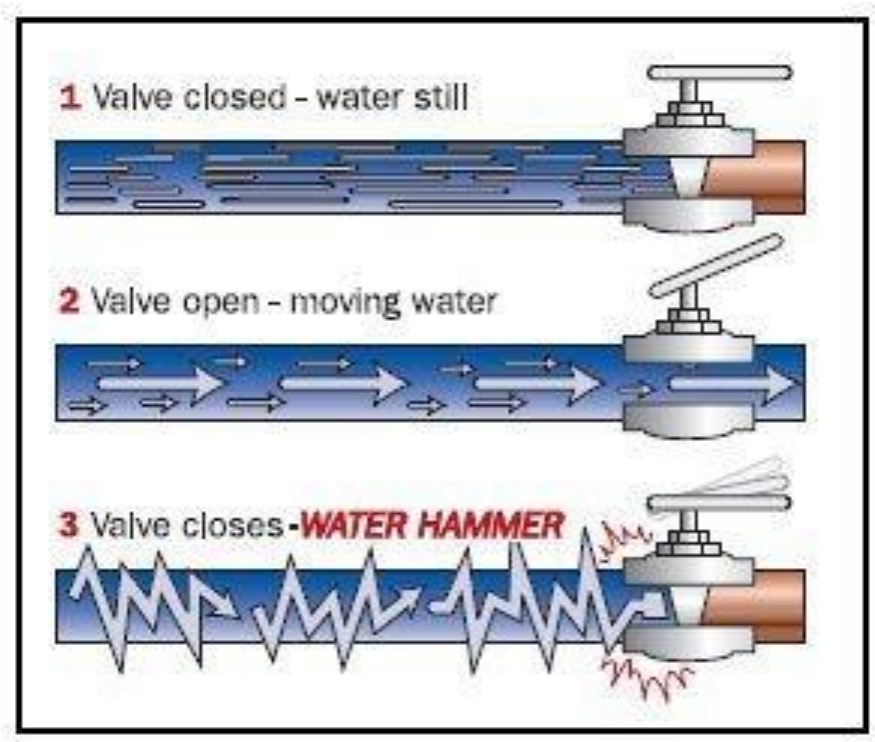
Common scenarios

- Pipes in your bathroom wall are making a knocking sound every time the toilet is flushed.
- Knocking noise happens in the laundry room when clothes washer finishes filling.
- There's a loud banging noise in the water pipes when the sprinkler system turns off.

Most likely cause

Water hammer. While many people incorrectly use the term water hammer to mean any loud banging in your pipes, it's actually a specific phenomenon.

A water hammer occurs when a water valve is suddenly shut off. All the water that was running then crashes into the valve, shaking your pipes, creating the knocking noise you hear.



A visual showing how water hammer can create knocking pipes.

In some cases, water hammer can be violent enough to shake the pipes loose of their joints and cause leaks.

How to fix water hammer

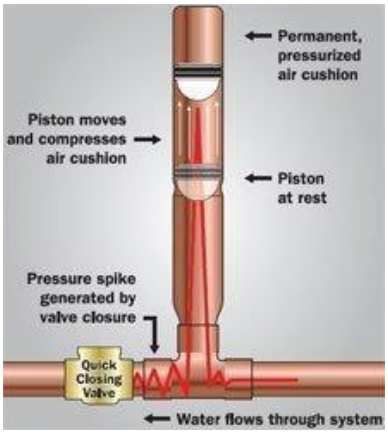
The solution to water hammer usually depends on the age of your home.

Homes built before the 1960s usually have air chambers. Air chambers are basically T-sections of pipe that contain air and act as shock absorbers. However, over time the air in the chamber can become displaced by water.

If you have air chambers, you can reduce water hammer by draining all the water out of your home's plumbing and then refilling it. Here's how:

1. Shut off the water to your home at the main
2. Open the highest faucet in your home
3. Open the lowest faucet (it's usually outside or in the basement) and let all the water drain out. At this point the air will be "refilled" in the air chambers
4. Turn the lowest faucet off (the one you opened in step #3) and turn the water main back on
5. Let the top faucet run until it stops sputtering, then turn it off

Homes built since the 1960s should have water hammer arrestors installed. Water hammer arrestors are the modern replacement for air chambers. They are spring-loaded and rarely fail. So if you're experiencing water hammer, your home may not have the arrestors installed.



A visual representation of how a water hammer arrestor prevents water hammer.

3. Loud banging noise while cold water is on/running

Common scenarios

- Knocking sound from the pipes in the wall when the water is running
- Turning on the cold water tap at the sink produces a knocking sound

Most likely cause

High water pressure. The scientific explanation for why high pressure creates knocking noises is that when the water's flow rate in the pipe is above a certain level (which varies based on the diameter of the pipe), the flow goes from laminar (flowing in even, parallel layers) to turbulent (chaotic).

In plain English: when water flows through a pipe too fast, it begins to bounce of the sides and into itself, which shakes the pipe. The shaking pipes can rattle against walls and other pipes, making the knocking noise you hear.

How to fix high water pressure

Check your home's incoming water pressure. You can do this with a simple water pressure test gauge.

You want to attach the gauge to the hose bib that is closest to your water main. Make sure no other water is being used in your home and then turn on the hose bib completely. Your water pressure should read 40-80 PSI.

If it's too high, you'll need a plumber to add, replace or adjust your home's pressure reducing valve (PRV).

4. Random loud banging even when no water is running

Common scenario

Loud knocking and banging noises happen seemingly randomly, while water isn't running. The noises are often in the morning or evening.

Most likely cause

In Sarasota, the most likely reason for random banging noises when there's no water running is **sediment buildup in your water heater**. It can be loud enough that the reverberations carry and make it seem like the knocking noise is coming from the pipes in the wall.

The noise is steam bubbles escaping the sediment that has built up at the bottom of the water heater tank. It's just like how boiling water in covered pot on the stove starts pushing up the pot's top.

Your water heater's heating element is at the bottom of the tank, right where the sediment has settled and mixed with water.