



Like a good neighbor, State Farm is there.®

statefarm.com®

WELCOME

MY ACCOUNT

INSURANCE

BANKING

MUTUAL FUNDS

PLANNING & LEARNING

AGENTS

ABOUT STATE FARM

insurance & financial learning

prevention & safety

life events & stages

retirement planning

college planning

small businesses

calculators

taxes

kid stuff

Search statefarm.com®



Powered by Google™

Prevention & Safety

Vehicle & road safety

[Child passenger safety](#)

[Dangerous intersections](#)

Home safety

Good Neighbor House®

[Natural disasters](#)

[Free educational programs](#)

[Business safety](#)

Find an agent by zip/postal code



[Advanced Search](#)

Water Hammer Arresters

What is Water Hammer?

Water hammer is a water pressure surge that occurs inside water pipes.

Water hammer occurs in water supply piping when a valve or faucet shuts quickly. The flowing water suddenly hits the closed valve or faucet and a wave bounces back. This bounce back continues until the water hits a point of impact and the energy from the wave of water is distributed more evenly in the piping system. The point of impact might be at the connection between two pipes or at a joint in a piping system and causes the "banging" sound often heard in pipes.

It is important to note that many valves, fittings, and plumbing fixtures are designed to operate and to resist damage up to 150 pounds per square inch. This gives a margin of safety against unexpected pressure increases since 60 pounds per square inch is the average pressure found in a city water system.

However, pressure surges can damage valves, fittings, and equipment such as water heaters and dishwashers. The damage can eventually cause water leaks or failure of equipment. Many appliances are not typically designed for the type of high water pressure that may occur in a pressure surge. Whenever a faucet is closed or the dishwasher runs through a cycle, water pressure surges occur within the water piping in your house.



What Are Air Chambers and Can They Control Water Hammer?

In many cases, a device called an air chamber is installed to control water hammer. Air chambers are simply a capped vertical piece of pipe filled with air and installed on the water line. The air is supposed to absorb the shock of water hammer. Most air chambers do work for a short time. However, there is nothing separating the water and the air. Eventually, the air is absorbed into the water and the air chamber becomes water logged. Generally, this takes just a few weeks or months to occur. Once the air chamber is water logged, it cannot protect against water hammer damage.

Test Results on Air Chambers

Tests of air chambers were conducted by the United States Testing Laboratory to see how long it would take a properly sized air chamber to lose its ability to protect the plumbing system from water hammer shocks.

The tests were run with four valve closures per minute (1900 valve closures a day) using a water pressure of 60 pounds per square inch. This is the pressure commonly found in city water systems. In all tests, the water pressure began to exceed 150 pounds per square inch after the first hour. All tests showed complete failure after the third day.

If your house has air chambers used to control water hammer, it is very difficult, and in many cases impossible, to refill those air chambers with air once they have been waterlogged. The water system in a house would have to be completely drained and recharged in order to refill a waterlogged air chamber. In most cases, this would not ensure that all air chambers had been filled with air.

A Better Solution: Water Hammer Arresters

An alternative to the air chamber is a water hammer arrester. Water hammer arresters are specifically designed to control water hammer. Water hammer arresters absorb these surges so they don't damage parts of the water piping system. When the plumbing system is installed, place water hammer arresters upstream from all quick shutting valves and faucets. Quick shutting valves can be found on washing machines, ice makers, and dishwashers. Quick shutting faucets are at your kitchen sink, bathroom sinks, bathtub, and shower.

Water hammer arresters come in various sizes to fit most common piping sizes. Water hammer arresters can be purchased at most hardware and plumbing supply stores.



State Farm® believes the information contained in the Good Neighbor House® is reliable and accurate. We cannot, however, guarantee the performance of all items demonstrated or described in all situations. Always consult an experienced contractor or other expert to determine the best application of these ideas or products in your home.

1/28/1999

[home](#) > [planning & learning](#) > [vehicle & road safety](#)

▲ TOP

[[home](#) | [sitemap](#) | [my account](#) | [login](#) | [register](#) | [contact us](#) | [privacy](#) | [terms of use](#)] Search statefarm.com®

[[insurance](#) | [banking](#) | [mutual funds](#) | [planning & learning](#) | [agents](#) | [about us](#)]



Powered by Google™