

## Basic Instructions For Winterizing Plumbing Pipes

**Note-We found this online and it seems to be a good guideline to follow. There is no guarantee that if you perform the steps outlined below that you will not have any freeze damage in your home. Please proceed with caution.**

**Also remember that if the sewer system has issues, you CANNOT drain any of your pipes or equipment into the sewer, you must get all of the water outside via a hose, pump, bucket, etc. If your sewer system has issues, you may want to also cover the drains as best possible to avoid sewage and sewage gasses escaping into your home as they repair/replace the sewer system.**

**PLEASE ALSO MAKE SURE YOU SHUT OFF THE WATER MAIN COMING INTO YOUR HOUSE!! There is typically a shut off valve inside your home or on the outside attached to your home if your water meter is outside. There is also one and usually two shutoffs at the water meter. It is recommended that you shut off as many of these as possible.**

**Feel free to contact us for any help/info you may need.**

If the temperature inside a house gets below 32 degrees Fahrenheit (0° Celsius) it's likely that the water supply pipes and the drain traps will freeze.

When water freezes it expands 9 percent, and if there is no room for expansion it's possible that the pipe will burst. When the ice thaws the pipe will leak, and in the supply system this leak could occur *anywhere*. Fixing a burst pipe can be expensive, but the damage from uncontrolled water leakage can easily reach into the thousands of dollars. Believe me, you **do not** want to experience the hassle and expense of having a pipe burst and spraying water all over your basement, or anywhere in your home.

A properly-insulated house built to current building codes will probably never experience this problem under normal conditions. What do I mean by **normal conditions**? The heating system runs properly, the electricity supply stays on, and the furnace fuel supply never runs out.

## Basic Procedure For Draining Supply Pipes:

1. Shut off the water supply.
2. Open one or more faucets at the **highest** point in the system.
3. Open a faucet or drain valve at the **lowest** point in the system.



Since this house had municipal water service, there was a pipe entering the basement with a water meter just above the entry point. Sometimes this meter is outside adjacent to the home or near the street under some type of plastic or metal cover.

Note that there are red handles above and below the water meter. This is done so the water meter can be removed for service and the pipes do not need to be drained.

## Step 1: Shut Off The Water

Turn off **both** valves if present/possible. These are ball valves, which only require a **quarter turn**.

If your water meter is outside and not adjacent to your home it is likely that there is some type of shutoff inside your home as well. Try to locate this and shut it off as well.



## Step 2: Let Air Into The System

When draining a water supply system, always open the faucet at the **highest point** in the house, such as a second-floor bathroom. Since this was a one-story house, the kitchen faucet was the highest point in the system.

### Step 3: Open A Valve At The Lowest Point



The water heater (in the basement) was the lowest point in the water supply system, so the water heater drain was the logical point to drain the water out.

Some larger homes have more than one water heater and some even have instaheat water heaters in multiple locations. Follow the manufacturer's instructions for draining these.

Turn off the water heater's gas supply by turning the gas valve to "OFF" if you have a gas water heater. If you have an electric water heater, shut off the breaker(s) that supply power to the unit.

The off position is reached when the OFF marking is aligned with the metal tab in molded into the front of the valve body (green arrow). That large red button to the left of the valve dial may need to be pressed down or lifted up in order for the dial to be turned past the PILOT position. This button is designed to prevent the dial from turning directly from OFF to ON without first stopping at the PILOT position.





### Water Heater Drain Valve:

This water heater drain valve doesn't have a normal handle... it had a short stem with a screwdriver slot (red arrow).

Many water heaters may also have a plastic drain valve with a normal handle.

Place a small plastic bucket under the drain valve and opened the drain valve with a large flat-blade screwdriver. It is also possible on most water heaters to attach a garden hose to the drain valve. If your sewers are operational, it is OK to drain the water heater directly into your house drains. If the sewer system is not operational, you must drain it to the outside.

If you were able to open up a faucet upstairs, the water will flow out vigorously.

**Opening a faucet is important.** If there was no opening to let air into the supply pipes, the water will drain slowly or flow out in surges followed by moments of trickling flow. Gurgling sounds will be heard as air tries to enter the system from the drain opening. And it will take f-o-r-e-v-e-r to drain the system.

Let the water drain from the water heater until the bucket is nearly filled. Then shut off the drain valve and carry the bucket upstairs and dumped the water down the toilet or outside if the sewer system is shut down by the authorities.

(You can pour the water from this pail into a larger pail, start draining water again, and carry the larger pail upstairs. Use as many buckets/pails as possible to make the job easier.)



### **Note About Electric Water Heaters:**

Since gas water heaters have a burner beneath the water tank, the bottom of the tank (and therefore the drain valve) is usually about a foot above the floor. But... electric water heaters often have a drain valve that is very close to the bottom of the appliance, and since most plumbers install a water heater directly on the floor, the drain valve on an electric heater may be very close to the floor. This is hard to drain. You can usually connect a short piece of garden hose to the water heater drain valve and place the hose in a bucket. When water will no longer flow from the hose into a bucket you will need to place the end of the hose in something shallow, such as a dishpan or even a cake pan.

**Walk Out Basements:** If a house had a "walk-out" basement, then a garden hose could be connected to the water heater drain valve. The hose can be run out the door and the system will drain itself with minimal effort.

**Pumping:** You can use a cheap drill-powered pump (that connects to a couple of garden hoses) to push the water up and out of a basement window. Be careful that all of your connections are secure or you may get water all over the basement.

### **Gravity Makes It Easy:**

It is important to know how the plumbing pipes are ran. If you have a basement and all of the pipes run up/down then your system should drain effortlessly using gravity. Often the pipes will turn down and then up, leaving a "trap" or "valley" that won't drain by gravity. To fully drain those pipes **compressed air** is the logical solution.

### **Forcing Out Water With Compressed Air:**

If the plumbing can't be drained by gravity, then an air compressor can be used to blow the water from the supply pipes. The trick is getting air *into* the pipes.

Washing machine connections and outdoor faucets are the easiest because a garden hose can be adapted to an air hose.

A kitchen or bath faucet isn't as easy. Perhaps the simplest way to force compressed air into these faucets is to remove the aerator and insert a simple blow gun, wrapping a rag around the nozzle to seal the connection.

## Letting More Air Into The System:



When the water flow had slowed to a trickle, you can go outside and open up the outdoor faucet.

You can set the clothes washer control to the beginning of a normal wash cycle and start it. Check to see if any water comes out and you should hear a low hum from the solenoid-operated fill valves being held open.

Stop the cycle after a few seconds.



## Water Meter Remaining Fluid (Meters Inside Only)

You may have a water meter where the water comes in from the street from above that may have water in it. Look for a bleeder valve on one of those ball valves used to shut off the main incoming water line.



This picture shows a "**Stop and Waste**" ball valve.

This is different from a regular ball valve because it has a cap that covers a **small opening**. When the water is shut off, this cap can be unscrewed so the water downstream of the valve can be drained.

This valve is supposed to be installed with the bleeder downstream of the ball valve, otherwise it's useless.



### **Other Details:**



Since the washing machine water supply hoses ran down behind the appliance, they formed a trap. Unless forced out or drained out by gravity, water will stay in these hoses.

Remove the washing machine supply hoses and drained each hose into a cup.

Even though you may have already flushed the toilet once, the tank may still about half full.

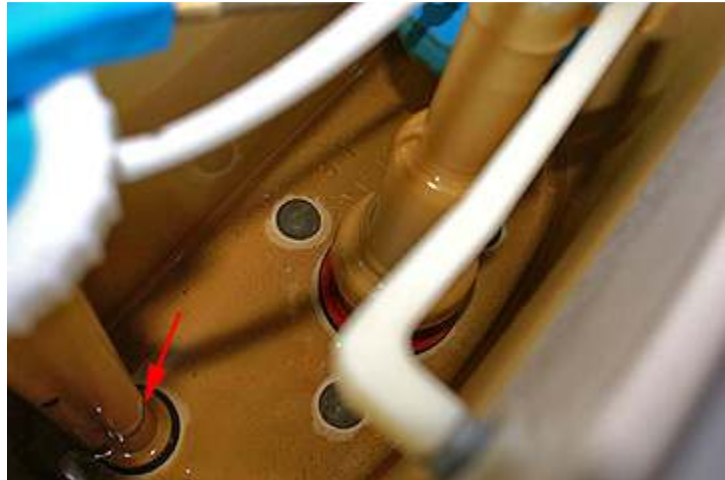
These newer 1.6 gallon per flush toilets have the same size tanks as older units; the only change is that the flush valve closes sooner, thereby letting less water into the bowl.



To drain the remaining water from the toilet tank, flush again and hold the flush lever down until the water level reaches its lowest possible point.



There may still be about a ¼ inch of water left in the tank. You could remove this water with a sponge, some towels, or a turkey baster, but as water freezes and expands there should be plenty of room left in the tank without causing issues, use your own judgment here.



### **Adding RV Antifreeze:**



To prevent this small amount of water from freezing, I poured about a cup of RV antifreeze into the toilet tank.

Even if this water froze, it's unlikely to cause any damage because when the ice forms it would have room to expand.

You can use a plunger to remove some of the water from the toilet bowl.



Then pour about a quart of RV antifreeze into the bowl. It's important to make sure the liquid covers the opening, or else sewer gases could enter the building.

Pour about two cups of RV antifreeze into each sink drain.



Pour a similar amount into the bath tub drain.

If you are worried about the antifreeze staining the tub, wipe up the excess antifreeze around the drain.

Pour antifreeze into the kitchen sink.



The point here is to try to replace the water in the sink trap with antifreeze... but the antifreeze won't displace the water, it will mix and displace some of the water. The only way to ensure that the antifreeze has its maximum protection (i.e. -50 degree freezing point) is to remove all of the water before adding antifreeze. Use your judgment here as well taking into account the expected temperatures in your home during this time period.

### **But Wait... Appliances Hold Water Too:**



You may not see any water, but normally a dishwasher holds some water below its drain.

Underneath this point there is (normally) a pump that has water in it all the time. Pour about a quart of water into the dishwasher drain.

Then run the dishwasher until you can hear the pump run. If your dishwasher has a manual timer (a rotary dial with many positions) you can turn it to a point in a rinse cycle, turn on the machine and manually advanced the timer until the pump runs.

If your dishwasher has an electronic control (as pictured), select a short cycle (rinse only) and pressed the ON button. When you hear the fill valves open (they should make a slight hum), press the CANCEL button, the pump will run for a short period.



Pour about a quart of antifreeze into the clothes washer...

...then turn the control to the SPIN cycle and pulled the knob to start the machine. Let the washer run for about 30 seconds, until you can no longer hear any water going down the drain.



Pull the drain hose out and pour in a cup of antifreeze.

### **The Refrigerator Icemaker:**

The other water-containing appliance in a typical house would be the refrigerator, if it was equipped with an icemaker. Pull the refrigerator away from the wall and disconnected the icemaker water line and let the water flow out into a pail. Any water remaining in the appliance should be fine (it's meant to freeze).

**Furnace-Mounted Humidifier:** It may be necessary to manually open the humidifier float valve to let the water drain out. Many humidifiers have a basin of water that may need to be drained. Do not put antifreeze in a humidifier, it'll ruin it.



## The Furnace:

You wouldn't think that a furnace would contain water, but some do. High-efficiency furnaces (also called condensing furnaces) generate a significant amount of condensation from the water vapor in the flue gases. A central AC unit will also have the same. These furnaces always have a condensate drain line. Sometimes the condensate drains into a floor drain, but if there's no drain available the condensate drains into a small pump which pumps the fluid uphill into the plumbing drain.

You can tell this is a high-efficiency furnace because the chimney is the white plastic pipe visible in the upper right of the picture.



The condensate pump (1) was located just above the floor. This unit contains a small electric pump, a plastic basin for the water, a float device that turns the pump on and off.

Arrow 2 points to a gray plastic trap device on the side of the furnace. Two small white plastic tubes lead into this trap, and a larger plastic tube drains the trap into the condensate pump.

Arrow 3 points to the flexible plastic discharge tube that leads from the pump to the drain pipe.

Pour some RV antifreeze into the trap. As you pour, the pump will kick on if you have electric, if not do your best to drain and then mix the antifreeze with the remaining water. Continue to pour antifreeze into the drain until I saw some pink color in the discharge tube.



Note that this discharge tube is always filled with water... at least up to the level where the tube turns downhill and goes into the drain.



When you are done putting antifreeze in the condensate drain system, turn off the power to the furnace.

### **Hot Water Heating Systems:**

A hot water (or hydronic) heating system would also need to be drained if the heat was going to be shut off during the winter. Draining a hydronic heating system is slightly more complicated than draining the potable water system.

1. Shut off the power to the boiler.
2. The "make up" water supply needs to be shut off. All hydronic heating systems have a connection to the cold water supply, and there is always a shutoff valve on this line.

3. The system drain needs to be opened. There will be a drain valve at the lowest point in the system.

4. Air needs to be allowed in. Every radiator should have a bleeder valve, which is typically a small cap on the elbow at the end of a baseboard radiator. Old cast iron radiators have a bleeder valve near the top, which can be opened with a special key (available at a plumbing supply or hardware store). Needle-nose pliers work too.

All of the bleeder valves need to be opened while the water drains out. This can take a while, perhaps an hour.

**Refilling:** All of the bleeder valves need to be opened. The system drain needs to be closed, of course. The make-up water supply valve is opened. When water spurts out of a bleeder, close it. When all of the bleeders have been closed the system can be run. Odds are you will hear occasional gurgling sounds as air bubbles circulate through the system. Many systems have an automatic bleeder valve above the boiler that lets these bubbles escape. Otherwise it may be necessary to open a bleeder to let the air out. First try the highest bleeder in the system, because air will often accumulate at the highest point.

## Well Water:

If a house has a well instead of municipal water, then the well pump needs to be shut off and the pressure tank drained.

To turn off the well pump, the breaker can be turned off, or look for a disconnect switch near the well tank.

A well system can be emptied at the pressure tank drain valve (red arrow).

This valve is often close to the floor, so a short garden hose is helpful. The last few gallons will need to be drained into a shallow container, such as a dishpan or cake pan.



If the entire system is drained through this valve, the water heater will still need to be drained.