



HOW TO OPERATE YOUR HOME

Winter 2005

So you own a home—and you're not sure what to do next? Here's your operating instructions!

Heating Basics 101

It's the season to think about and use your heating system. It sure does feel good on those cool nights. What type of system do you have? Is it operating properly? You're not sure? Let's look at the two basic central heating systems and what you should know.

Warm Forced Air Furnace

Many homes are heated (and cooled) with a central forced air heating and cooling system. The forced air furnace will be located in the basement, crawl space, garage, closet or attic. A duct or distribution system

delivers heated air from the furnace to the space to be heated. The distribution setup includes a return duct system that returns air from the space to the furnace. This type of arrangement circulates home air through the heated space and does not utilize outside air.

Inside the furnace there is a heat (combustion) source that may be natural gas, oil or propane. The fuel is burned inside a heat exchanger, and the products of combustion are routed up a chimney or to the outside through a vent pipe. Higher efficiency furnaces may be vented through the sidewall with a plastic pipe.

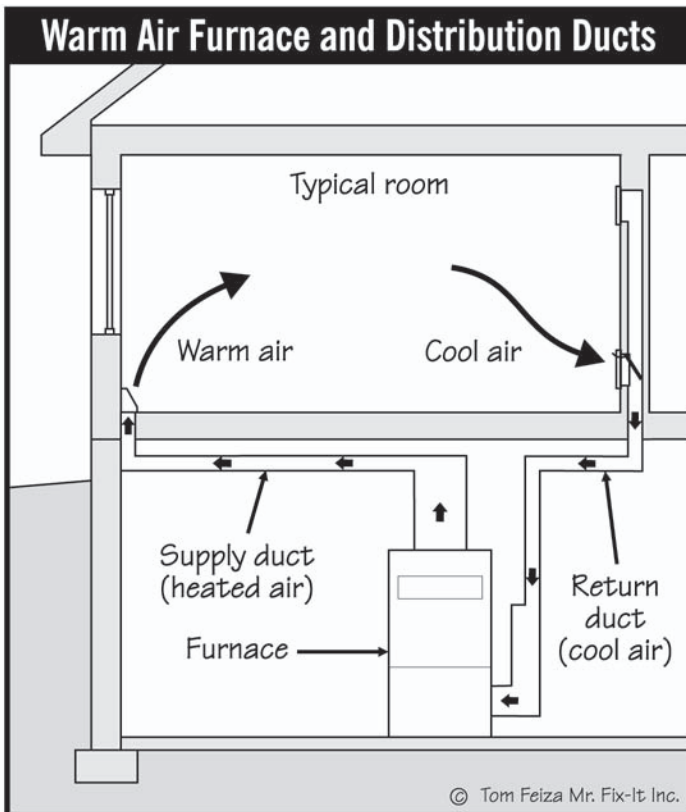
The heat exchanger separates the products of combustion from the heated air. Air from the home passes over the hot metal of the heat exchanger and is circulated with a blower or fan.

You control the system with a thermostat in the heated space. Set the thermostat to heating and the temperature you desire. When the temperature in the room drops below the setting, the furnace starts and heats the space until the temperature is raised to the setpoint.

Hydronic (Hot Water) Boiler

If you have hydronic (hot water) heat, your system warms water, and the water warms the living space. A pump circulates the water through a piping system to radiators, baseboard convectors, piping in the floor or even a coil with a fan. Older systems typically use large cast iron radiators, and newer systems typically use smaller fin tubes along outside walls.

With a hydronic system, fuel is burned in a closed container below a series of coils or a cast iron housing holding water. The flame and hot products of combustion



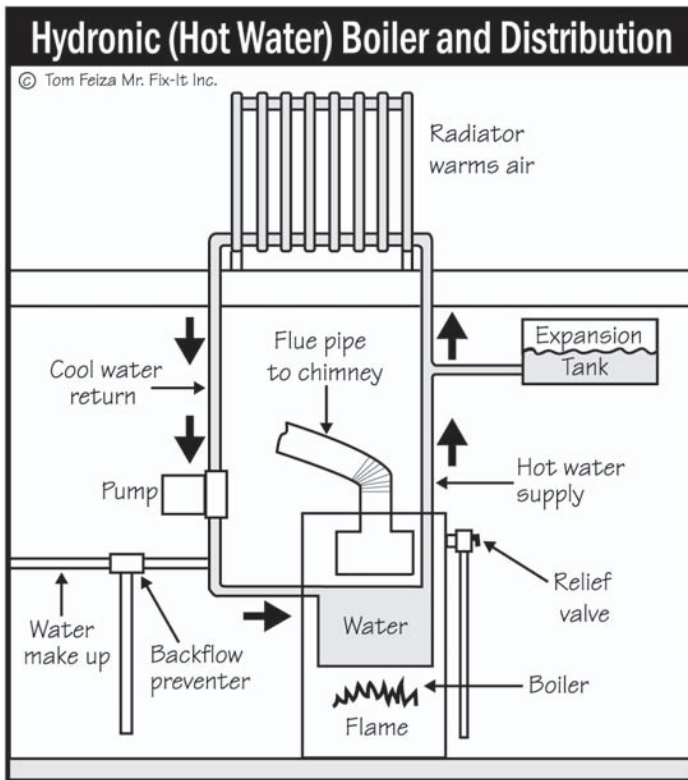
Winter Checklist

- Schedule maintenance of the heating system. Change filters and lubricate as necessary. Listen for strange sounds and watch for problems.
- Keep gutters clean, and extend downspouts as needed.
- Change the batteries in smoke and fire alarms; test the alarms.
- Test the sump pump to be sure it removes water from the crotch.
- Check supply hoses on the washing machine; clean the screens on the hose connections if the water flow is slowed.
- Lubricate door hinges with light oil.
- Test the carbon monoxide alarm or, if there is none, consider installing one.



heat the metal housing, and the water inside is circulated with a pump. The products of combustion are discharged up a chimney.

A thermostat in the heated space controls the system. When the room temperature drops below the setpoint, the pump and the burner start. Warm water is circulated through the piping and radiators until the room is warmed to the setpoint. A special thermostat in the boiler controls the water temperature and will turn the burner on and off as required to maintain a moderate water temperature.



Hydronic systems are closed water loops. As the water is heated, it expands in volume, and it is stored in an expansion tank, where it compresses air in the tank. This type of system operates at a low pressure—just enough pressure to circulate water to the top of the system. Most hydronic systems have a connection to the home's drinking water system for water make-up as needed. A reducing valve and a backflow preventer protect the drinking water from contamination.

Must Know / Must Do:

1. Understand your type of system and its basic maintenance requirements, including filter and lubrication. If you don't understand the system, have a contractor explain its operation and basic maintenance.
2. Identify switches and valves you can use to turn off the system if necessary.
3. Listen and watch; leaks and strange noises may indicate a problem.
4. Schedule yearly maintenance—and if possible, talk to the service technician to pick his brain for information.

Simple Tips To Save Energy:

1. Maintain your heating system, have tune-up every year. Maintain the filter on a forced air system.
2. Turn the thermostat down - for every degree lower temperature you can save 2 to 3 % of your heating bill.
3. Consider installing a digital thermostat to turn the temperature down when your home is not used or during the evening.



The Mystery of the Thumping Water Heater

By Tom and Gayle Feiza

Tom: Honey, I'm home! Where are you?

Gayle: Over here, at the water heater. I'm wondering why it's making these thumping sounds. Can you hear that?

Tom: This isn't unusual for a gas water heater. It means sediment has built up on the bottom of the tank. When the gas flame is on, the water boils, just like water in a metal pan on the stovetop. Sediment at the bottom of the tank interferes with heat transfer and releases steam bubbles. As the bubbles rise into colder water at the upper part of the tank, they collapse—and the collapse makes those popping, pounding sounds.

Gayle: Doesn't that hurt the water heater? Or the pipes?

Tom: Not really. It's just that when a water heater gets to be 10 or 20 years old, it has already exceeded its normal lifespan. We'll have to replace it eventually.

Gayle: There wasn't any way to prevent this buildup?

Tom: Some homeowners remove several gallons from the tank twice a year. That helps flush out the sediment before it gets too hard.

Gayle: "Some" homeowners, hmm? But not Mr. Fix-It?

Tom: I've been meaning to get around to it....

Gayle: Uh-huh. Well, can't we at least try to get rid of some sediment now? Maybe that would stop the pounding noises.

Tom: Sure, we can take a stab at it. There's no guarantee this will work, though. Usually the sediment consists of hard water scale that's literally bonded to the tank. It's the same kind of scale that sticks to our plumbing fixtures. You know how hard it is to get rid of that stuff.

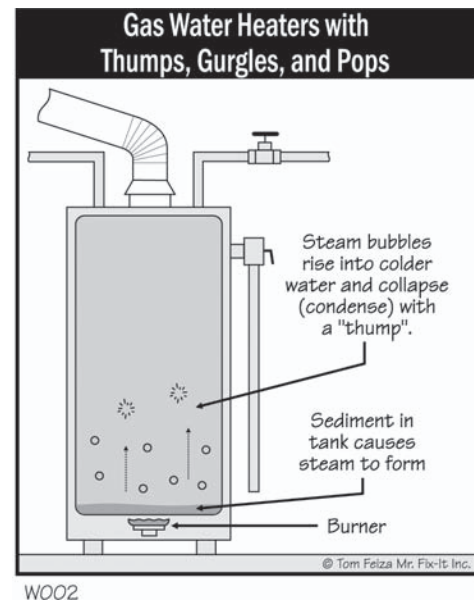
Gayle: Do I ever! But let's try anyway. What do we do?

Tom: First, it would be a good idea to get ready in case the drain valve leaks. Hand me that garden hose

cap, would you? The rubber washer inside this cap will help if there's a leak in the valve. Also, if there's a leak at the stem, we'll tighten the valve stem to stop it.

Gayle: I think we're set. Now what?

Tom: Now we'll try draining several gallons of water from this drain valve near the bottom of the tank. I'll attach this hose to the valve...okay, now we'll route the other end of the hose into the drain and let some water out.



Gayle: Do you have to empty the water heater?

Tom: No. We'll just drain 5 or 10 gallons. Watch out now—the water will be hot. Do you see any sediment coming from the hose?

Gayle: Yes, I see some. It's working!

Tom: In that case, we should do this again several times over the next few days. Want me to add it to my honey-do list?

Gayle: I think I'd better handle the follow-through. But thanks for your help. Maybe from now on our water heater won't be quite so "clunky."

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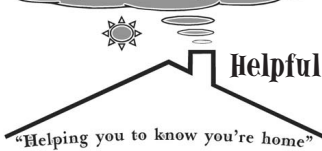
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- Winter Checklist
- Honey Do: Thumping Water Heater

Publisher: Tom Feiza (tom@misterfix-it.com)
Layout: Tom Feiza III (tomfeiza@yahoo.com)
Editing: Leah Carson (www.excellentwords.com)

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Helpful Home Inspectors, LLC



Alan G. Fastman
Helpful Home Inspectors, LLC
405 Palmers Lane
Wallingford, PA 19086-6544

place
stamp
here

THE  EXPERIENCE.
WE SPEAK HOUSE.

Alan G. Fastman Helpful Home Inspectors, LLC

610-565-1366

fax: 610-565-7744

afastman@helpfulhomeinspectors.com

www.helpfulhomeinspectors.com

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Planning to get away this winter?



If you are planning a winter vacation, and will be leaving the house vacant for a week or two, you will want to lower your thermostat to save on the heating bill while you're away. Be careful, though. Don't be tempted to turn the heat down too low during the winter months. Heat must be maintained in your home to protect your pipes from freezing. Few things will ruin a vacation faster than returning home to burst pipes. Also, whether home or away, don't forget to protect your hose bibs (exterior hose faucets) from freezing this winter. Remove the hose, turn off the inside valve, leave the outside valve open and drain the water from the pipe.

I hope this is helpful.