

Considerations for your Wood or Pellet Stove Installation

Installation Almost Always Requires a Pro

Unless you're an expert and have been trained in wood stove installation, it's better to have your stove put in by a certified hearth professional. Attempting to do the job yourself, while it may seem cheaper, is full of safety risks. Needless to say, it's not recommended. And, there is a chance that your insurance policy will not cover any fire-related damage. Find a qualified wood or pellet stove installer through the National Fireplace Institute (<http://nficertified.org>). For chimney work, contact the Chimney Safety Institute of America (<http://www.csia.org>), and for masonry stove installs, the Masonry Heater Association (www.mha-net.org).

When to Consider a DIY Job

Again, we do not suggest that you install a wood stove without professional assistance. Even replacing a stove that was installed by a pro requires the same care and attention to detail as putting in a new one. The information provided in this Fact Sheet is for educational purposes only. If you insist on installing the stove yourself, make sure you pull the required permits from your county. If your county requires an inspection after installation, this is one way to have a pro inspect the work and make your insurance company happy at the same time.

Insurance Ramifications

It is also important to contact your insurance company before you install. Failure to do so could impact your policy coverage in the event of a fire. In some cases, installing a wood stove or fireplace can raise your rates slightly, but most insurers do not charge extra. For more information see www.forgreenheat.org/stove_installation_permit_issues.doc

Permits and Inspections

Some states and hundreds of counties in the US, including 13 counties in Maryland, require permits before installing a heating stove in a residence. You should always check with your local permit office because some counties have specific requirements. For example, Garrett County, Maryland only allows stoves with UL safety listings, meaning that most old, non-EPA certified stoves cannot be installed. Local permit websites can be found by going to your county's municipal website and then to the permit department.

Weatherization

You can increase the heating benefits of your new stove and reduce the amount of wood you need at the same time by weatherizing your house. Start with 3 or 4 tubes of caulk, which can be purchased at a local hardware store, and spend a few hours caulking and then consider other options. One of the best investments you can make is to have an energy audit done on your home. An auditor will be able to show you where your house is leaking heat and recommend how you should fix it. If you own a home and your household income is 60% or below the state median, you may qualify for weatherization assistance: <http://www.dhcd.state.md.us/Website/Programs/wap/Default.aspx>.

Clearances

The area where your stove is installed must be clear of combustible surfaces such as walls and furniture. Stoves are required to rest on a non-combustible base or hearth pad. Newer stoves often require shorter clearances from combustible objects than older models because they include built-in heat shields.

Stoves that are UL "listed" (safety tested by an independent laboratory) will have minimum clearance

distances printed in the owner’s manual. Some stoves include them on their model plate as well. If you are unable to find the manufacturer’s instructions, use the following recommendations provided by the National Fire Protection Association (NFPA).

NFPA Recommended Clearances

	Radiant Stove	Circulating Stove	Stove Pipe
Ceiling	36”	36”	18”
Front	36”	24”	18”
Side	36”	12”	18”
Rear	36”	12”	18”
Floor	18”	18”	18”

Source: NFPA 211, 2010

Building Codes

Building codes may provide different clearance minimums than the manufacturer or the NFPA. Professional installers should be well versed in them, but if you attempt your own install, you will need to research this. Each local jurisdiction in Maryland has its own slightly modified version of the International Building Code that it uses. This website that links to Building Codes by municipalities is a good place to start: <http://mdcodes2.umbc.edu/amendments/amend04.htm>

Where to Install?

Stoves should be installed closest to the space you want to keep the warmest and ideally in a large room with multiple doors to other rooms. Putting the stove in a fireplace is an ideal way to avoid the stove taking up much room. Stoves work just as well in fireplaces as inserts. Before stoves were made with large glass to see the fire, many people used to install stoves in the basement and allowed hot air to naturally rise and heat upper floors. Since warm air rises through natural convection to open stairwells, consider placing your appliance near a staircase to heat upper levels of your home. Some stoves have optional fans that can help distribute warm air more evenly.

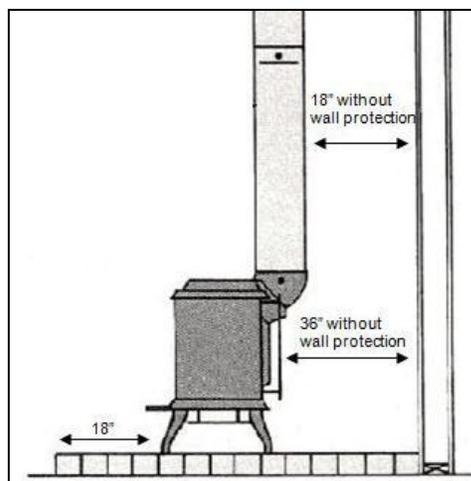
Note: It is against NFPA code to install a wood stove in a garage.

Installing a Wood Stove

Stoves require several components, including a chimney, stove pipe and floor and wall protection. In addition, not all wood stoves can be used in a mobile home. Check first to see if your appliance can be used in a mobile home, and then consult the State Manufactured Housing Board before having it installed.

Floor and Wall Protection and Clearance

Wood stoves require a non-combustible base to protect the floor from heat and any falling coals. The base or “hearth” can be made out of cement or concrete and may be layered with decorative tile, brick, marble or slate. Use a UL listed base if possible, as these have passed safety testing. The base should extend 18” beyond the length of the stove and stove pipe, unless a difference clearance specification is provided by the manufacturer. It is important to always consult the stove manual for specific requirements.



Aside from moving the stove away from combustible walls, another option is to protect them with masonry or metal barriers. Make sure to leave one inch of space between them and the wall to allow enough room for air to flow. Protection decreases the distance needed for clearance, often cutting it down from 36” to 18” (check the stove manual for specific distances). Be advised that in some homes a masonry or metal wall can be too heavy to support and cause structural damage. Ask a professional installer or building inspector for advice when exploring this option.

Installing a Chimney

Chimney connectors, also known as stove pipes, are what link stoves to chimney flues. They are metal pipes usually 6-8 inches in diameter that channel smoke from the stove to the chimney. To maximize efficiency, stove pipes should be as short and straight as possible. Stove pipes should ideally not exceed 10 feet or have more than two 90 degree elbows. They should be of 24 grade thickness or lower (lower grade = thicker). Stove piping comes in single or double-walled. Chimney connectors with single-walled piping should be at least 18" away from any combustibles unless there is some form of protection like a masonry wall described above. With protection, clearance can be cut in half to 9". Double-walled piping is better insulated and requires only a 6" clearance.



Should I Use an Existing Chimney or New Chimney?

You may be tempted to connect your wood stove to an existing chimney to cut down on the installation costs. But before you jump into this, note that not all old chimneys work well for all types of stoves or inserts and many old chimneys are too poorly constructed to be used without significant updating or repair. It's always best to seek advice from a professional before hooking up your stove. If you're planning on using a chimney you already have, it's recommended you hire an experienced chimney professional, mason, local building inspector or fire official to inspect the masonry for any cracks, deteriorating mortar or unsealed openings. These will diminish the efficiency of your stove and present safety issues. They must be sealed before you use your stove (or have an expert reline the chimney). If your house doesn't have a chimney or your old one isn't usable, you will absolutely need to install a new one. Remember, all wood stoves require a properly sized and operating chimney. It is the chimney that makes the wood stove work and

protects your home and family from hot, harmful flue gasses. When installing a new chimney, it is best to place it inside the house if possible. Chimneys that are located entirely inside the house perform better than those on the outside because they stay warmer and better insulated and thus produce a better draft and decrease creosote formation.

Masonry and Pre-Fabricated Chimney?

Masonry chimneys, typically made from brick, are rarely a practical option to add to an existing home. Masonry chimneys in many old homes can be oversized and poorly insulated for today's modern appliances. Installing a UL listed stainless steel liner may help and may be required to overcome these problems. The liner also improves draft and cleaning. Pre-fabricated (pre-fab) chimneys made in a factory are cheaper and easier to install than masonry chimneys. Another good thing about pre-fabs is that they come in all different sizes so you know it will be sized perfectly for your stove. Look for chimneys that are UL listed.

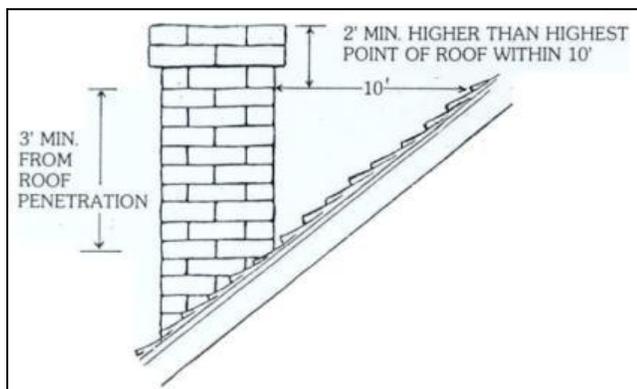


Two examples of prefabricated chimneys.

You should note that both kinds of chimneys can break down during chimney fires and cause structural damage. If you are using an appliance that operates with its door closed (virtually every wood stove or insert), you must select a chimney that has a UL listing of 103 HT.

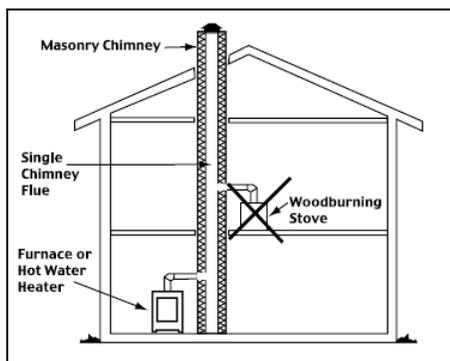
Chimney Clearance

A chimney should extend at least 3 feet above the roof opening and be at least 2 feet higher than any point of the roof or building within 10 feet. The actual recommended height depends on the elevation of the home. Higher altitudes need higher chimneys to achieve a good draw. Consult the stove or chimney product manual to determine the ideal height of the chimney.



Source: Maine Office of Energy Resources

Try to position the chimney at the roof peak so that air enters through the structure at the highest point. This not only minimizes the effects of wind turbulence, it also helps prevent the “stack effect” that results in “back drafts” or smoke entering into the house through the stove instead of exiting through the chimney. No two appliances should be connected to the same chimney flue according to national and local codes. It is less likely that the two appliances will obtain sufficient draft and it will be more difficult to put out chimney fires.



Source: National Association of Mutual Insurance Companies

Do Stoves Need Outside Air?

A few building codes in North America, such as Oregon, require wood stoves to have a source of combustion air

from outdoors. Connecting stoves to an outside air supply is a must for air-tight mobile homes and something to consider in super-efficient newer homes. However, there is little consensus among wood burning experts as to whether a supply of outside air is important or makes a stove more efficient. For more visit

<http://woodheat.org/the-outdoor-air-myth-exposed.html>

Cost of Installation

The cost of installing a wood stove can vary from several hundred to several thousand dollars.

Item	Estimated Cost
Wood Stove	\$1,500 - \$3,000
- with serviceable chimney	\$300 - \$900 for labor and materials (permit extra)
- build a chimney	\$2,000 for metal chimney
Pellet Stove	\$2,000 - \$3,500
- with chimney	\$600 - \$700 for labor and materials

Installing a Pellet Stove

Pellet stoves typically require less clearance from combustible surfaces than wood stoves. Some require as little as 3”, according to the Pellet Fuels Institute. Like wood stoves, pellet stoves cannot sit directly on combustible floors. There are pellet stove inserts just like wood stove inserts that can be installed directly into a fireplace. Always check the individual pellet stove manuals for specific installation instructions. Unlike wood stoves, pellet stoves do not require the same need for a full chimney system. They can be vented out through the wall or roof using special insulated double walled pellet piping. If venting into a masonry chimney, it’s recommended to use a stainless steel liner. Most manufactures require using 4” diameter liner if the run is higher than 14 feet. See the manual for specific instructions.

In the Event of a Chimney Fire

You should take all necessary precautions to avoid chimney fires, but also prepare for the worst. Educate everyone in your home about the warning signs of a chimney fire – shaking pipes, loud roars and crackling sounds – and practice an escape plan. If a fire does break out, follow these steps:

1. Call the fire department immediately

2. Close all dampers on the stove or chimney pipe to cut off the air supply
3. Leave the house and watch for sparks or flames
4. Use a fire extinguisher to put out the flames on the house if safe to do so

It is not advisable to douse a burning chimney with cold water because the sudden change in temperature may cause the structure to crack and cause more damage.

Chimneys can become severely damaged after a fire. It is necessary to have them inspected and replace all parts before using your stove again.

Additional Resources

NFPA 211: Standard for Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances
http://www.nfpa.org/aboutthecodes/AboutTheCodes.asp?DocNum=211&cookie_test=1

Hearth Design for Wood, Pellet and Coal Stoves
http://www.hearth.com/econtent/index.php/articles/hearth_design

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