

THREE

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# Heating and Cooling



## Condensation Drain Line

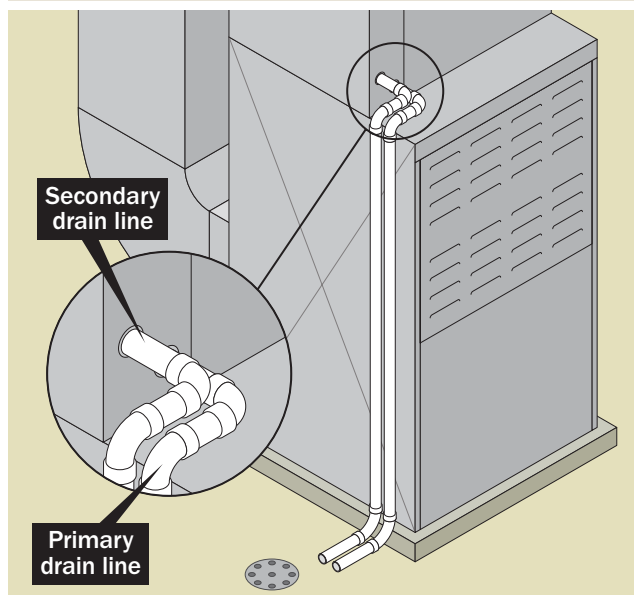
The line that drains condensed moisture away from your heating and/or cooling unit needs periodic maintenance.

Air conditioning and high-efficiency heating units have a drain line that removes condensed moisture. When algae or debris block this line, water will back up into the drain pan. This pan is very shallow and can overflow, causing potential water damage to your home.

The primary drain line is built into the unit. Some units have a secondary drain line that can drain the unit if the first line becomes blocked. Frequently, a blocked drain line becomes a problem at the start of the cooling or heating season.

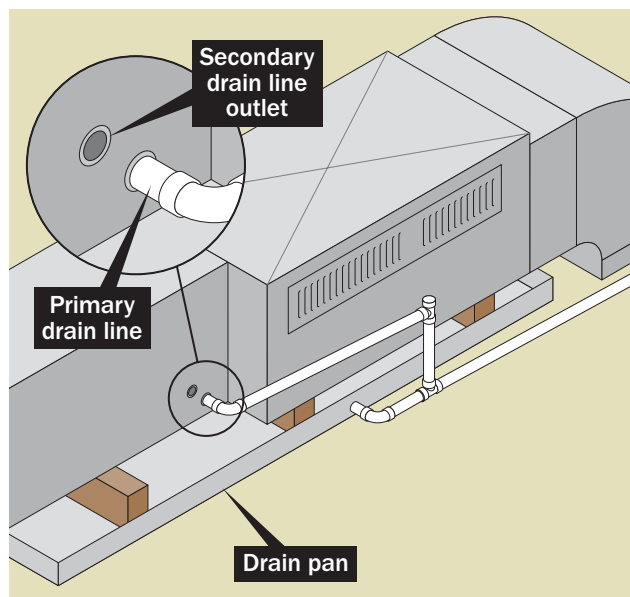
If your unit is located in the basement, the drain line runs to a floor drain.

Drain lines



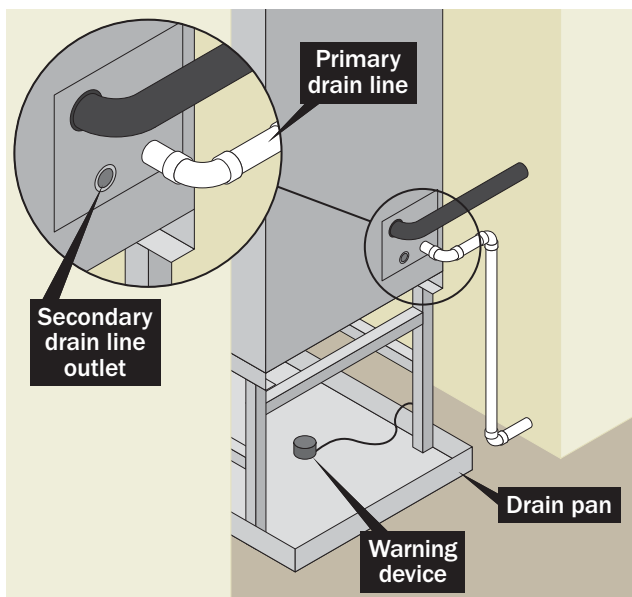
If your unit is located in the attic, the primary drain line probably runs through an exterior wall to the outdoors. All attic units have a secondary drain pan connected to a line that, like the primary line, runs through an exterior wall to the outdoors.

Drain lines



If your unit is located in a utility closet, the primary drain line runs through an interior wall to the outdoors. Some secondary drain pans contain a warning device that shuts off the unit if the pan fills with water. Do not tamper with the warning device.

## Drain lines



HOME TIP

*A semiannual preventative maintenance program is recommended. Semiannual maintenance is relatively inexpensive compared with the cost of repairing a leak.*

## Care and Maintenance

Follow these care and maintenance suggestions for your home's condensation drain line.

### To Keep the Unit Draining Properly

Have the primary drain line serviced by a professional to make sure it's draining correctly before the summer season each year.

If your unit has a secondary drain line, check to make sure it's draining correctly. See the unit manufacturer's instructions to check the secondary drain line.

Keep landscaping trimmed back from the outdoor condenser unit and condensation lines at all times.

Check occasionally for debris in the outdoor condenser unit. First, turn off the air conditioner. Then check the outdoor unit for shrubbery, leaves, grass, or dirt impeding the flow of air from the unit. Use a water hose with an adjustable spray nozzle to remove obstructions. Also, check the base pan under the unit, and remove any debris that has accumulated.



CAUTION

*When cleaning the condenser unit, don't apply too much water pressure; it could damage the coils.*



HOME TIP

*The secondary line is usually placed over a doorway or window. If you see water dripping, this may indicate that there's a clog in the primary line.*



SERVICE TIP

*Call for professional service if there's debris and dirt deep in the unit.*

## Fireplaces

Fireplaces add beauty and warmth to your home if you use them safely.

Using a wood-burning, gas, or electric fireplace properly and maintaining it correctly are important to your safety, as well as to the safety of your family and guests.

### Care and Maintenance

Follow the manufacturer's maintenance instructions, as well as these basic suggestions to care for your fireplace.

### Gas and Electric Fireplaces

Conduct a checkup twice a year or after an extended period of disuse.

Never burn wood in a gas or electric fireplace.

Call a licensed contractor if you see arcing, or call the gas company if you smell gas. Don't use the fireplace until after it's been repaired.

## Wood-Burning Fireplaces

Use the manufacturer's safety precautions, suggestions, and instructions for managing wood fuel; starting fires; operating the damper, doors, and other features; and cleaning the fireplace. Also, follow these basic care and maintenance suggestions:

*Conduct a checkup twice a year, following the manufacturer's instructions.*

*Clean the firebox and screens before each use.*

*Clean exterior fireplaces before each use.*

## To Start Fires

1. Prevent smoking at start-up by closing any window located near the fireplace when lighting a fire. You can reopen the windows once the chimney starts drawing.
2. Remove any debris from the hearth area before lighting a fire. Debris too close to the fireplace can catch fire.
3. Make sure the chimney damper is open.
4. Start the fire slowly to get a gradual buildup of heat and smoke.
5. Light a section of newspaper, and hold it up into the flue to start the chimney updraft more easily; this keeps the fireplace from heating too quickly and cracking the firebrick.



CAUTION

*Never build a fire directly on the fireplace floor. Always use andirons or a grate and a well-fitted fireplace screen.*



HOME TIP

*The best wood for burning is well-seasoned wood that's been stored correctly and dried for at least six months.*

## To Burn Fires Safely

Close the damper after using the fireplace to keep air conditioning from escaping through the chimney.

Add a handful of salt to the fire occasionally to help keep soot from accumulating.

Never leave a fire in your fireplace unattended.

Never burn treated lumber. It will emit creosote or poisonous gases, which can build up in the flue or enter the home.



HOME TIP

*Store firewood outside to avoid insects entering your home with the wood.*

## To Check the Damper Seal

To make sure the seal on the damper is working properly, hold a tissue near the damper and check for drafts blowing the tissue around. Call for service if the damper isn't working properly.

For more information about fireplaces, visit the manufacturer's website.

## Heating and Cooling System

Your home is equipped with an efficient heating and cooling system to keep you and your family comfortable.

Your home has one of two basic heating and cooling systems:

*A furnace and air conditioner.*

*A heat pump that provides both heating and cooling.*

These two systems work differently.

### Furnace and Air Conditioner

The furnace generates heat by burning oil, natural gas, or propane, then transfers the heat to the air and circulates it throughout your home.

The air conditioner is a split system. A cooled coil removes heat from the indoor air, and the outdoor fan unit disperses this heat into the outdoor air.

### Heat Pump

A heat pump is a combined heating and cooling system. Heat pumps are typically found only in climates with moderate heating and cooling needs. This is because current heat pumps have difficulty operating at low temperatures, making them unsuitable for climates with extended periods of subfreezing temperatures. The colder it is outside, the harder a heat pump has to work.

The most common type of heat pump is an air-source heat pump, which transfers heat between your home and the outdoor air. It provides cooling by removing heat from your home and transferring it to the outdoors, which is similar to the way an air conditioning system works. It provides heating by removing heat from the outdoors and transferring it to your home. In other words, heat pumps move heat, rather than generate heat.

The air is circulated using a system of ducts and registers. Supply ducts and registers carry air from the air handling unit to the home. Return ducts and registers carry air from the home back to the air handling unit. Some heat pump systems also have a supplementary electrical heat source to provide additional heat, if needed.

As with all heating and cooling systems, it's essential to properly maintain a heat pump system in order for it to work efficiently.



*If you have a heat pump, the warm air delivered through your registers is cooler than the warm air produced by a furnace, but this more gradual heating does keep the home comfortable.*

See also *Registers* (p. 24).

### Condensation Drain Line

See *Condensation Drain Line* (p. 18).

### Filter

The filter protects the unit from dust and debris. Never operate your unit without an air filter.

## Care and Maintenance

Follow these recommendations to keep your system running properly:

*During the off-season, run the heating and cooling system at least once. It isn't good for the system to be out of operation for long periods of time.*

*Your outdoor air conditioning unit might have an external cartridge fuse or some other disconnect mechanism located in a small box next to the service panel or unit. If you experience a problem with this fuse, contact a licensed electrician to install a new cartridge.*

**S**  
SERVICE TIP  
*Have a professional check all units according to your instruction manuals.*

**S**  
SERVICE TIP  
*Have a professional inspect the furnace and the stack at least once a year before the heating season.*

**!**  
CAUTION  
*If you smell gas, call your gas company immediately.*

**H**  
HOME TIP  
*On hot days, you can close drapes, blinds, and shutters to block heat. On cold, sunny days, you can open window coverings to speed heating.*

Follow these recommendations to keep your heat pump system running properly.

*Have a professional technician service your heat pump system at least once a year. The technician should perform dozens of tasks to ensure that your heat pump system is working correctly and efficiently.*

*Replace or clean the filter on a monthly or an as-needed basis. Follow the manufacturer's instructions.*

*Remove any debris, leaves, shrubbery, and grass from the outdoor unit.*

*Clean the supply and return registers throughout your home whenever they appear dusty or dirty. If the fins are bent, straighten them.*

See also Registers (p. 24).

## Condensation Drain Line

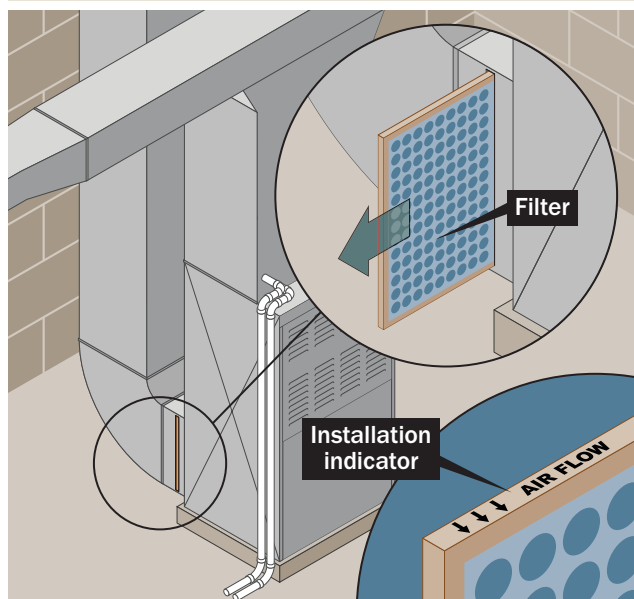
See *Condensation Drain Line* (p. 18).

## Filter

Replace or clean the filter monthly for maximum efficiency. Clogged filters can cause the heating and cooling unit to malfunction.

The manufacturer's instruction manual for your system will tell you the location of the filter and how to clean and/or replace it. Make sure the unit is off before you clean or replace the filter. When replacing your filter, be sure to use a new filter of the exact same size and type.

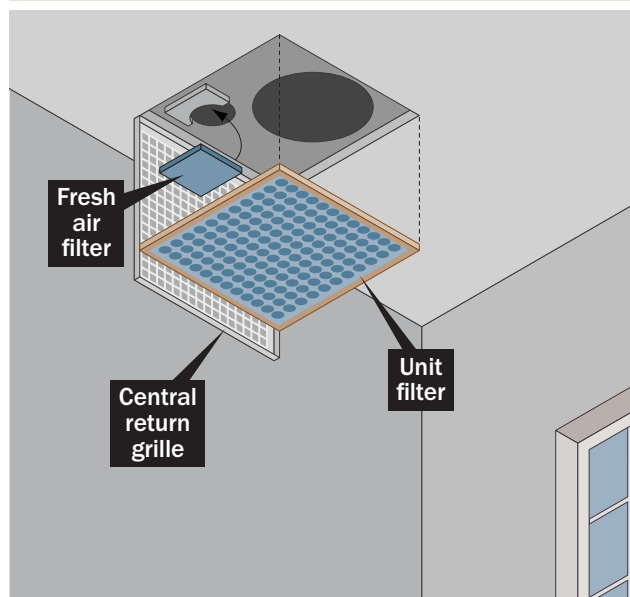
### Changing the air filter



## If Your Unit Is Located in the Attic

You can access the filter by opening the return grille. The return grille is located in the ceiling just below the attic. If your unit has a fresh air intake, you'll need to change the fresh air filter, which is also located in the return grille.

### Changing the air filter



## Insulation

Your home has the proper insulation for your climate. Inadequate heating and cooling is caused less often by inadequate insulation and more often by open doors, windows, fireplace flues, and clogged filters, as well as a lack of proper window coverings and the misuse of registers. If you feel the insulation may be inadequate, you may contact your Customer Service department.

## Cooling Coils

If your air conditioner freezes up, first check your filter to make sure it's not dirty. If the filter is clean, turn the system off until the ice melts. If the system continues to freeze up, call a certified technician.

## Registers

Registers throughout your home help to regulate airflow and temperature.

At least one of the registers in your home is connected to an air return system that sends air back to the heating and cooling unit, where it's heated or cooled again and sent back out to registers throughout the home.

### Care and Maintenance

Follow these care and maintenance suggestions for your home's registers.

### To Adjust the Registers

You can regulate individual room temperatures by adjusting the registers. By opening and closing the registers and dampers, you can adjust the amount of warm or cool air that enters a room.

Partially closing registers in rooms that get a lot of air forces more air into the rooms that don't get enough air. But don't close any registers completely.

#### If you close off registers

Even if you close off some registers, the system will continue working at the same pace; it can't sense that some of the registers are closed. In addition, all undesirable cold or hot air from the unoccupied room will mix with the rest of the air in the home.

**H**  
HOME  
TIP

*You won't increase the comfort level or reduce energy costs by completely closing off registers in unoccupied rooms. This is because your system was designed to heat and cool a specific square footage of living space.*

### To Get the Most From the Registers

Make sure the registers have plenty of clearance around them. Blocking registers with furniture and drapes can prevent much of the warmed or cooled air from distributing itself throughout the room. A blocked register, just like a clogged filter, will cause operational and maintenance problems for the heating or cooling unit.

If you can't avoid blocking registers, invest in some extenders that fit under or around furniture. Never block return intake registers. If stale air can't leave the room, fresh air won't come into the room.

### To Clean the Registers

It's normal for the registers to get dusty as dust-laden air is pulled through them. Vacuum the registers periodically to remove dust and dirt.

**S**  
SERVICE  
TIP

*Professional duct cleaning not only leaves your home with cleaner, healthier air, but it can also help your heating and cooling equipment to run more efficiently. Duct-cleaning contractors clean your registers, piping, and ductwork, as well as the furnace air filters and blower motor, removing dust and debris so they won't be moved through the indoor air.*



## Thermostat

The thermostat helps to maintain a comfortable interior temperature in your home.

The thermostat controls the heating and cooling systems in your home. It helps keep your home at an even temperature throughout, although individual room temperatures can vary.

### Care and Maintenance

Follow these care and maintenance suggestions for your home's thermostat.

### To Maintain a Comfortable Temperature

Set your thermostat to comfortable temperatures for you and your family. Recommended thermostat settings are 72°F for heating and 78°F for cooling.

Keep your thermostat settings constant to avoid energy-wasting fluctuations in temperature and to maximize energy efficiency.

Run the furnace recirculating fan more consistently to minimize temperature variations throughout your home. If you have a second floor, it's likely to be warmer than the lower levels.

**H**

HOME  
TIP

*Your thermostat might contain controls you can use to convert from the cooling system to the heating system and vice versa.*

### To Activate New Functions

Your thermostat has a five-minute time delay, which means there is a five-minute wait when switching functions. If you change functions during the five-minute delay, an additional five minutes will be added to the delay time. Wait the full time before expecting activation of the new function.



CAUTION

*Overheating your home, especially in the first year, can cause excessive shrinkage in framing lumber, causing cosmetic damage inside the home.*

### To Determine if You Need Service

According to the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), your system should be able to produce an indoor temperature of 70°F for heating and 78°F for cooling.

If the outside temperature exceeds 95°F, it should be at least 15°F cooler indoors than it is outdoors.