

# North Dakota State Fire and Tornado Fund

*Providing affordable property insurance coverage for the State and its political subdivisions since 1919.*



## Furnace Tune-up and Carbon Monoxide Safety Guide



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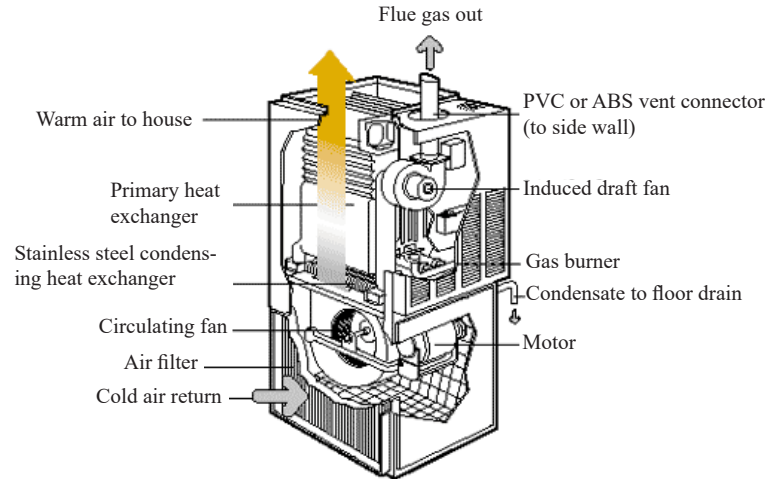
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# Home Heating Systems

Here is a quick overview of how most heating systems work:

- A heat sensor or thermostat measures the temperature in your home and determines when the heat needs to be raised.
- When the air temperature drops, the thermostat signals the heater and the blower to turn on.
- The combustion in the heater creates heat, while the blower moves air over the heat exchanger, raising its temperature and distributing it throughout the house via heating ducts.
- Cooler room air is returned to the furnace through return ducts where it is warmed. The warm-air-out, cool-air-in cycle continues until the desired temperature is reached and the thermostat signals the furnace to shut down.

## High-efficiency Condensing Gas Furnace



# How to Give Your System a Tune-up

All mechanical systems need to be maintained. You should have an HVAC professional look at your system every few years, however, you can conduct an annual tune-up and maintenance yourself to save money. Keeping your furnace tuned up can ensure your furnace is working efficiently, help your heating bills go down and will minimize your exposure to an equipment breakdown loss. Follow these steps and your furnace will be ready for winter.

1. First take a look at your furnace. There should not be any black soot or combustion residue on or around the furnace. Next, turn up the thermostat so your furnace comes on. Check the flames in the burner. They should be blue and steady, not yellow or orange and flickering. Soot build-up or yellow flames are an indication of poor combustion and if you see any signs of either, you need to call a HVAC professional to fix the problem.
2. Next, turn the thermostat back down and let your furnace cool. For added safety, turn off the circuit breaker that powers your furnace. When the furnace is cool, remove the front panel(s) and use a vacuum with a long nozzle to get rid of any dust that may have accumulated. Use a damp rag to clean the blades of the blower fan and any other areas the vacuum cannot reach. Check to see if your blower fan has oil cups at the end of the central shaft (some are sealed units and don't need oiling). If there are cups, give them a few drops of oil.
3. An electric motor and a fan belt drive many blower fans, while some are direct drive and don't use a fan belt. If your blower does have a fan belt, check its condition and tension. The underside should be free of cracks, but over time, age and heat will dry out the rubber belt. If there are cracks in the belt, replace it with one of the same size. Checking the tension of the belt is as simple as pushing down on it. There should be about a half inch of play in a properly-adjusted belt. If you have more or less movement than that, adjust the tension by loosening the electric motor mounts and moving the motor to create the proper tension.

## How to Give Your System a Tune-up cont.

4. Re-attach the furnace panels and turn the circuit breaker back on.
5. Change your furnace filter at minimum quarterly and more often during the heating season.
6. If you have a condensing furnace, make sure that the condensate drain is open and observe condensate flow with the furnace in operation to verify that the system is operable. Also check the air intake and vent pipes (usually PVC) at the exterior of your home. The air intake pipe must be kept free of snow and the vent pipe must not be iced-over in very cold weather.
7. If a furnace duct-mounted humidifier is installed, this item needs regular cleaning and maintenance as well, including checking the evaporator plates or screens for mineral buildup and for adequate water flow. Excess water flow can corrode the furnace duct or the furnace itself.

# Carbon Monoxide Safety

Combustion creates carbon monoxide (CO), a colorless, odorless gas that can be deadly. Normally, CO produced by the combustion in your furnace is exhausted up the chimney. However, a furnace that is out of adjustment can leave CO in a building. You can help protect yourself from CO poisoning by installing a CO detector in the furnace room. If the detector indicates a build up of CO, have your furnace checked by an HVAC professional immediately.

For those furnaces drawing combustion air from interior spaces, which include most older furnaces, adequate combustion air must be available in the furnace room or in the space where the furnace is located. Inadequate combustion air may result in the formation of CO. Homes of unusually tight construction or homes with dryer vents in the same space as the furnace may need installation of a separate combustion air duct. Your HVAC professional should check for adequate combustion air.

While conducting your own tune-up will help keep your furnace running efficiently, a professional inspection and tune-up every two years is a good investment. HVAC professionals have the skills to ensure that your furnace will function properly.



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A handwritten signature in black ink that reads "Jon Godfread". The signature is stylized and cursive.

Jon Godfread  
Insurance Commissioner

The Special Funds Division of the North Dakota Insurance Department endeavors to handle the needs of our customers the right way the first time—accurately, fairly and timely—and always with the benefit of prevention, safety and education.

Let's all do our part to keep  
the cost of insurance affordable.