

## **Cleaning and Maintaining a Forced Air Furnace**

A forced air furnace works best when it can move heated air as quickly as possible. How efficiently air moves is dependent on a number of factors. Dirt is the biggest factor slowing air movement. Dirty filters, fan motor blades, outdoor AC condenser coils, indoor cooling coils, and heat exchangers waste fuel, which can lower efficiencies, and increase wear and tear on all parts. HVAC systems are complicated systems requiring annual review of many items.

**Before scheduling your furnace inspection review your home inspection report for your furnace type. When selecting an HVAC company, check references and ask questions basing your decision in part on this newsletter. To learn the most about your system, we recommend you attend the entire inspection/review.**

### **Basics**

1. Regularly check and replace the furnace filter: To check the filter, take it out and hold it up to the light. If it looks clogged, replace with a new filter. Filters are rated by "Minimum Efficiency Reporting Value" or (MERV). Higher MERV rating/number means better filtration and requires more frequent changes. Pleated type filters are preferred especially when a system incorporates an air conditioning indoor cooling coil.
2. Schedule annual HVAC service cleaning/inspection: (Typical items reviewed, items may vary)
  - Pull/slide out fan blower assembly for accessibility. Inspect blades and clean if necessary.
  - Clean all accessible heat exchanger area(s)/surface(s). Secondary heat exchanger areas are typically accessible only *after fan blower assembly* is pulled out.
  - If unit incorporates inspection ports (like most oil furnaces), those ports should be opened and areas physically inspected.
  - Review ignition system for wear/tear. Repair, replace and/or adjust thermocouple, spark igniter, pilot light and/or electrode (oil furnace) as necessary.
  - Check fuel delivery system. Natural or propane gas pressure should be checked and adjusted. Oil furnace fuel filter and nozzle require replacement.
  - Check flame pattern. Remove/inspect fuel nozzle(s) for physical condition. Clean, repair, replace and/or adjust as necessary.
  - Check electronics (service boards, wires, sensors, switches, thermostats, settings etc.) for electrical functionality, physical damage and proper settings. Repair and replace as necessary.
  - Check flue(s) physical status: (loose connections/leakage/corrosion, proper support, damage etc).
  - Measure carbon monoxide levels at flue to ensure within operating parameters.
  - Measure air stream temperatures at return and supply ducting. Abnormal readings may/will indicate internal blockage concerns such as AC coil or heat exchanger blockage or cracking.
  - Check (disassemble & clean) condensate and AC drain plumbing. Check for leakage, obstruction(s), damaged part(s). Reassemble and replace part(s) as necessary.
  - Check all motors and belts for abnormal noise, excessive heat/voltage, physical wear/tear, and cleanliness. Repair/replace as necessary.
  - Clean interior surfaces checking for damage/deterioration, replace furnace filter if dirty.
  - Review add-on components (humidifiers, heat recovery ventilators, etc) repair/replace as necessary.

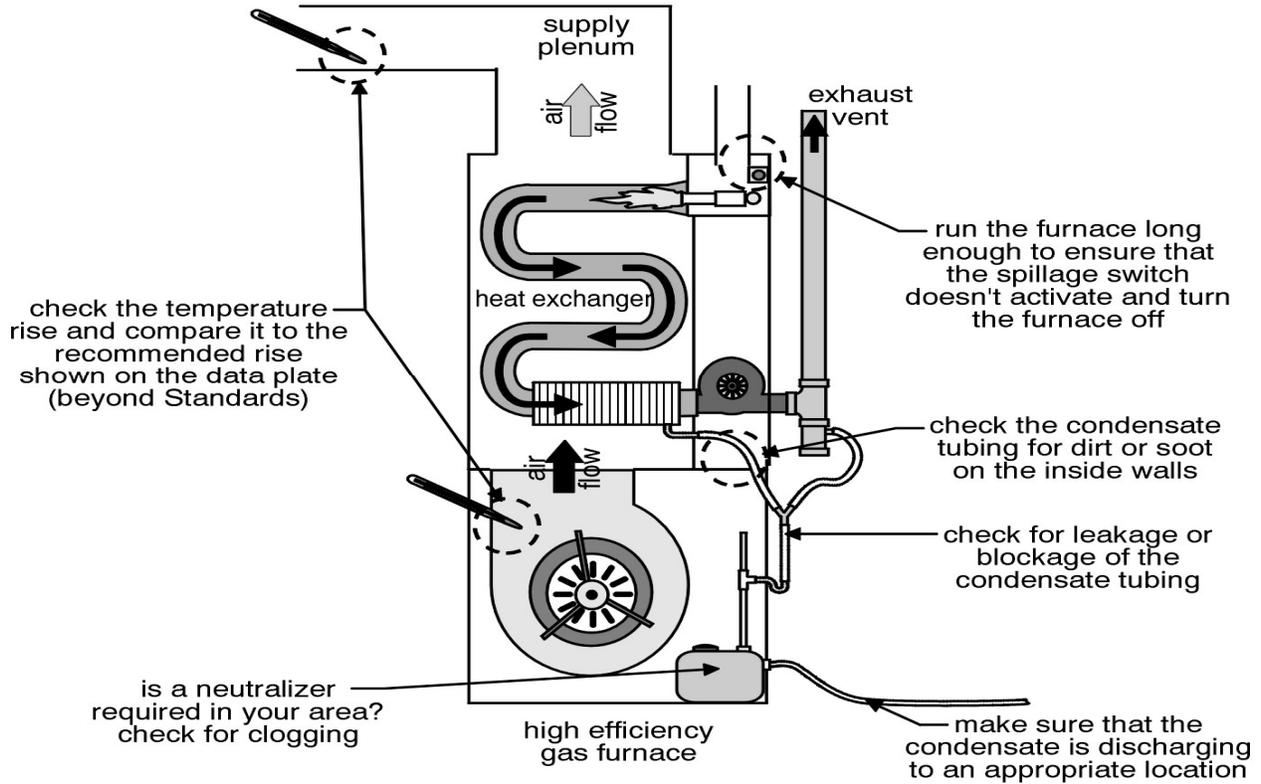
### **Considerations**

1. HVAC systems are designed to supply air to all the conditioned rooms of a home. Closing individual room supply vents in an attempt to save on utility costs may/will reduce overall airflow movement thus increasing furnace operating temperatures and possibly reducing furnace useful life.
2. A high efficiency gas furnace creates water droplets when heating. If the furnace is located in an unconditioned area (unheated basement/crawlspace or attic) additional measures may be necessary to ensure water droplets are protected from freezing. If water freezes the furnace may/will not operate.
3. New Home Construction: A home's furnace should not be used for heat during construction. Construction debris (drywall dust, sawdust etc) will be drawn and deposited in return ductwork and furnace heat exchanger(s) often voiding any warranty.
4. Maximizing Energy Efficiency: A high efficiency furnace should ideally use outside air for combustion as opposed to indoor conditioned air (heated air) for combustion. Discuss with HVAC technician options and considerations to use outside air as a combustion makeup air source.

### **Need More Information?**

Please visit [www.phiinspect.com](http://www.phiinspect.com) click our "Post Inspection Support" page and request additional documents.

### Inspecting high efficiency furnaces



### Maximizing temperature differences

in most high efficiency furnaces, heat is transferred from the coolest exhaust products to the coolest house air this maximizes the temperature differential from beginning to end of the heat exchanger for the best flow of exhaust gases and also maximizes heat transfer to the house air

