

**Heating appliance clean, tune and unit replacement specifications:****CLEAN:**

- Forced air Furnace
  1. Brush down heat exchanger (dirt will fall onto burners)
  2. Brush & clean burners
  3. Brush & clean pilot assembly
  4. Brush & clean draft hood
  5. Clean blower housing assembly & blower blades. Blades must be free from dirt & lint. **Some blower assemblies cannot be cleaned unless taken to a car wash. This will be expected.**
  
- Console Heating Stoves *and Wall Furnaces*
  1. Brush down the heat exchanger
  2. Brush & clean burner(s)
  3. Brush & clean pilot assembly
  4. Brush & clean the draft hood
  5. Clean the blower housing assembly & blower blades
  
- Floor Furnaces
  1. Brush down heat exchanger (pull box out around exchanger & use shop vacuum)
  2. Brush & clean burners
  3. Brush and clean draft hood
  4. Clean top & bottom of the unit
  
- Boiler
  1. Clean fireside of heat exchanger
  2. Lubricate circulator pump, if necessary
  3. Boiler should not have low-limit control for maintaining a minimum boiler-water temperature, unless the boiler is heating domestic water in addition to space heating
  4. Test pressure tank for its rated air pressure
  5. Bleed air from radiators and piping through air vents in elbows or radiators. Most systems have an automatic fill valve. If there is a manual fill valve for refilling system with water, it should be open to push water in and air out
  6. Vacuum and clean fins, if appropriate

## Heating System Replacement

### **Sizing**

Sizing calculations must meet accepted standard such as Manual “J” or approved computerized load calculation software. Sizing should account for lower heating loads resulting from insulation and air sealing work. Sizing calculations must be included as a permanent part of the client file.

### ***The following specifications must be followed:***

1. Every heater that is existing or installed must be equipped with the following:
  - 100% safety gas valve
  - Code approved, metalbestos vent material
  - Proper gas piping and stops, installed in accordance with recommendations of the Uniform Building Code
  - Shut-off valves
  - Blower
  - Digital thermostat
  - *External filter racks should be installed outside of furnace cabinet*
  - *Yellow Energy Guide Sticker must be left on all new furnaces units*
2. Furnace in basement must be raised a minimum of 2 inches.
3. If no local codes, installation must conform to the National Gas code (NGS). *Firm must have Master Mechanical Certification and photocopy must be on file at NCRPC office.*
4. All new forced air furnaces shall be at least 92+% efficient sealed combustion, with a warranty of not less than 5 years for parts and 20 years for heat exchanger. A new thermostat shall be installed with the new unit. All replacement furnaces, console stoves, wall furnaces, etc. must be sized appropriately for the dwelling. Not to be oversized by more than 25%. It may be necessary to go to a 2-stage furnace in order to meet our sizing requirements. **95% efficient mobile home furnaces are now available that will fit into closet; 80% units will no longer be allowed.**
5. All new heating equipment must be installed in accordance with the manufacturer’s specifications and requirements for venting, clearance, combustion air, heat rise, supply & return as stated in the unit’s manual. At completion, the manual must be left onsite for the inspector and homeowner.
6. Forced air systems must *fused electrical cut-off at the furnace, excluding mobile home furnaces. Install furnace’s electrical power line in conduit or MC Cable from ceiling to junction box at furnace. Cord and plug connections are not acceptable.*
7. New heating unit must have manufacturer labels attached to the equipment.
8. The new unit must be easily accessible for servicing by the homeowner.
9. All warranty cards must be filled out and mailed to manufacturer by the heating contractor.

## **Boiler Installation**

Boilers must have a minimum AFUE of 90%.

- Maintaining a low-limit boiler temperature is not permitted unless the boiler is used for domestic water heating
- An effective air-excluding device or devices must be part of the new hydronic system
- The pressure tank must be replaced or tested for correct pressure during boiler installation
- A pressure relief valve must be installed with the new boiler

## **Space Heater**

If a space heater is repaired or replaced, an operable smoke detector must be located on the same floor as heater. Install exactly as specified by manufacturer.

## **Duct Work**

Ducts, supply registers, and return grills should be sized and selected according to the latest editions of Residential Duct Systems, Manual D, by ACCA; Residential Comfort System Installation Standards Manual by the Sheet Metal and Air Conditioning Contractors' National Association (SMACNA); or a comparable industry-accepted method.

Attempt to install all new ductwork within conditioned spaces.

Do not install ductwork within exterior walls.

All distribution-air enclosures must be hard-ducted, that is, building frame cavities, closets, crawl spaces, and chases must not be used as distribution-air enclosures. However, ductwork may be housed by, or pass through these spaces.

Ductwork must be installed at least 4 inches from any bare earth.

Panned floor joists may not be used for air distribution.

A crawl space may not serve as a distribution plenum.

Do not use a dropped ceiling cavity as a plenum.

All ductwork shall be sealed at all joints and corners using mastic, or foil tape with a 15 mil butyl sealant and properly supported before insulation is installed.

Ducts subject to human contact during service or storage activities (e.g., in garages, basements, attics used for storage) shall be insulated with a material that has a suitable facing as defined in Specification 10.7 (flame spread requirement).

The entire system including plenums and boots shall be sealed and insulated if installed outside the conditioned area of the home.

### **Orphaned Water Heaters**

Replacing an atmospherically vented furnace with a horizontally vented 92%-plus furnace will necessitate relining the chimney with a liner sized for the water heater alone. This will prevent increased condensation and decay in the old chimney.

### **Cleaning Air-Conditioning Coils**

- Identify the coil location and the coil surface where the air enters – most of the dirt will be attached to this surface.
- Remove access panel in air handler or duct; or cut access panel in duct; or disassemble duct to gain access to air-conditioning coil.
- Using a stiff hairbrush, remove surface dust, dirt, and lint.
- Spray the coil with cleanser and after a while spray water to rinse out the cleanser and dirt. Repeat the spraying if necessary.
- Observe whether the pan and drain hose are doing their job. Water and cleanser should be flowing out the end of the hose, not overflowing into the duct. Clean the pan and unplug the hose if necessary.

### **New Air Conditioner**

Shall be 14 seer or better – installed according to manufacturer's instructions with matching A-coil.

*All new A-coils must be installed in manufacturer's supplied coil cabinet. Yellow Energy Guide Sticker must be left on all new A/C condensing units.*

*Installers must have EPA certification; photocopy of certification should be on file in NCRPC office.*

### **New Hot Water Heater**

*Electric water heater must have an energy factor of at least 0.91 and have at least 3" of internal foam insulation.*

*Gas water heater must have an energy factor of at least 0.61 or have 2" of internal foam insulation. Replacement shall be wrapped with blanket unless the manufacturer recommends against.*