

## HEATING SYSTEM & AC INSPECTION

**SCOPE OF THE HEATING SYSTEM INSPECTION: 266CMR: BOARD OF REGISTRATION OF HOME INSPECTORS  
266 CMR 6.00: STANDARDS OF PRACTICE:**

### **6.07 System: Heating**

- (1) The **Home Inspector** shall **Observe** permanently installed exposed **Readily Accessible** heating systems including:
  - (a) Heating equipment.
  - (b) **Normal Operating Controls.**
  - (c) The presence of **Automatic Safety Controls.**
  - (d) The exterior of the chimneys, thimbles and vents.
  - (e) Solid fuel heating devices.
  - (f) Heating distribution systems including fans, pumps, ducts and piping and supports, dampers, insulation, air filters, registers, radiators, fan coil units, convectors.
  - (g) The existence of insulation.
  - (h) The exposed flue piping and the existence of a thimble(s).
  - (i) The presence of an installed heat source in each habitable room including kitchens and bathrooms.
  - (j) The presence of a fireplace(s) and the operation of their damper(s).
- (2) The **Home Inspector** shall **Describe**:
  1. The type of energy source (coal, electric, gas, and oil, wood, other).
  2. The type of heating equipment (electric, hot air, hot water, steam, other).
  3. The type of distribution system (piping: black iron, copper, and other. Duct work aluminum, fiberglass, steel, other).
  4. The insulation.
- (3) The **Home Inspector** shall **Report On**:
  - a. The heating equipment.
  - b. The distribution system.
  - c. The flue piping and the existence of a thimble(s).
  - d. The condition of the fireplace hearth(s)
  - e. The presence of exposed flues in the smoke chamber
  - f. The fireplace damper(s).
- (4) The **Home Inspector** shall:
  - (a) If possible, have the **Seller** and or the **Seller's Representative** operate the systems using **Normal Operating Controls**. If not possible for **Seller** and or the **Seller's Representative** to operate the systems, the **Home Inspector** shall operate the systems using **Normal Operating Controls** and **Report On** condition of said systems.
  - (b) Open **Readily Accessible** and **Operable Access Panels** provided by the manufacturer or installer for routine homeowner maintenance.
- (5) The **Home Inspector** is **not** required to:
  - (a) Test and/or inspect the heat exchanger (Requires dismantling of furnace cover and possible removal of controls) HVAC technician work..
  - (b) Collect engineering data on the size of the heating equipment, the size or length of the distribution systems. (**Engineering/Heating Services**).
  - (c) **Report on** the adequacy of the in-place system(s) to heat the **Dwelling (Engineering/Heating Services)**.
  - (d) **Operate** heating systems when weather conditions or other circumstances may cause equipment damage, or when the electrical and/or fuel supply to the unit is in the off position.
  - (e) **Operate Automatic Safety Controls.** 3
  - (f) Ignite or extinguish solid fuel and or gas fires.
  - (g) **Observe, Describe, or Report On**:
    1. The interior of flues.
    2. Fireplace insert flue connections.
    3. Humidifiers.
    4. Electronic air filters.
    5. Oil Tanks.
    6. The uniformity or adequacies of heat supply to the various rooms.
  - (h) **Observe, Describe, or Report On** underground pipes, tanks, and or ducts, however, the **Home Inspector must note their existence in the Report if the existence an underground pipe, tank, and**

or duct is known to the *Home Inspector*.

3 *Home* and *Associate home Inspectors* are prohibited from testing automatic controls with the noted exceptions of the arc and ground fault protective devices.

#### 6.08 System: Central Air Conditioning

- (1) The *Home Inspector* shall **Observe**:
  - (a) Exposed **Readily Accessible** central air conditioning including:
    1. Cooling and air handling equipment.
    2. **Normal Operating Controls**.
  - (b) Exposed **Readily Accessible** distribution systems including:
    1. Fans, pumps, ducts and piping, with supports, dampers, the presence or insulation, air filters, registers, fan-coil units, condensers.
    2. The presence of an installed -cooling source in each room.
- (2) The *Home Inspector* shall **Describe**:
  - (a) The type of distribution system (Duct work: aluminum, fiberglass, steel, other) and recommend repair (if needed).
- (3) The *Home Inspector* shall **Report On**:
  - a. The distribution system
  - b. The insulation on the exposed supply ductwork.
  - c. The operation of the both the distribution and condenser fan.
  - d. Whether or not the cold gas line is insulated.
  - e. Whether there is, a service receptacle and a visible service disconnect switch in the area of the condenser and air handling equipment.
- (4) The *Home Inspector* shall
  - (a) If possible, have the **Seller** and/or the **Sellers Representative Operate** the systems using **Normal Operating Controls**.
  - (b) Open **Readily Accessible Operable Access Panels** provided by the manufacturer or installer for routine homeowner maintenance and report on conditions observed.
- (6) The *Home Inspector* is not required to:
  - (a) Collect engineering data on the size of the cooling equipment and the size or length of the distribution systems.
  - (b) Report on the adequacy of the air conditioning system(s) to cool the dwelling **Engineering Services**.
  - (c) **Observe, Describe** or **Report On** air filters and/or their effectiveness.
  - (d) Have the **Seller** and or the **Sellers Representative Operate** the cooling systems when weather conditions or other circumstances may cause equipment damage or when the electrical supply to the unit is in the off position.
  - (e) **Observe, Describe** or **Report On** evaporator coils (Requires dismantling of the plenum cover and possible removal of controls) HVAC technician work.
  - (f) **Observe, Describe** or **Report On** non-central air conditioners.
  - (g) Observe, **Describe** or **Report On** the uniformity or adequacy of cool-air supply to the various rooms.

**DISCLAIMERS:** A. The inspector is not required to operate systems when weather conditions or other circumstances may cause equipment damage. B. The inspector is not required to operate automatic safety controls. Systems shall be operated using normal operating controls and shall be observed via readily openable access panels. C. The inspector is not required to ignite or extinguish fires or pilots. D. The inspector is not required to observe non-central air conditioners. E. The uniformity of the supply of conditioned air to the various parts of the structure is not calculated. F. No representation is made regarding line integrity or coolant charges since the inspector does not perform pressure tests on coolant systems. G. The inspector does not check the electric draw (current) or the system. H. Testing is only performed on those systems that will respond to user controls during appropriate prevailing temperature, humidity and climate conditions. I. Systems known to be or appearing to be faulty, defective, unsafe or shut-down are not tested. J. The Inspection and *Report* do NOT include determination of adequacy of any system with regard to personal comfort needs, nor do the Inspection and Report include any determination of the efficiency of any system with regard to energy usage. K. Except where otherwise noted, we do not judge compliance with manufacture's instructions or regulatory codes, test specialized accessories, determine clearance to combustibles, or verify adequacy of combustion air.

\*\*\*\*\* **NOTICE: THE EVALUATION OF OIL TANKS AND HEAT EXCHANGERS IS EXPRESSLY EXCLUDED FROM**

**THIS REPORT PER MA RULES & REGULATIONS AS STATED ABOVE, AS THEY ARE NOT *READILY ACCESSIBLE* FOR COMPLETE VISUAL INSPECTION. I RECOMMEND THAT ALL HEAT EXCHANGERS BE EVALUATED BY A TECHNICIAN NOW PRIOR TO COMMITTING TO PURCHASE. IF YOU FAIL TO HEED THIS ADVICE, THEN THERE IS A POSSIBILITY THAT THE UTILITY COMPANY WILL DISCOVER A FAILED HEAT EXCHANGER AND "RED TAG" THE APPLIANCE AS BEING UNSAFE AND IN NEED OF COSTLY TOTAL APPLIANCE REPLACEMENT. OIL TANKS CAN BE INSPECTED BY ULTRASONIC TESTING BY SPECIALISTS.**

**GENERAL COMMENTS:** A. Equipment that is "SHUT-DOWN", not seasonally functional, out of fuel or does not respond to normal operating controls cannot be functionally evaluated. Reappraisal by a heating or air conditioning technician is recommended prior to purchase. B. As preventative maintenance, all heating and cooling systems should be inspected and serviced annually by a HVAC technician. Annual service and repair contracts and automatic fuel delivery agreements are recommended. C. If you buy the home, I recommend that you have the heating & cooling systems completely evaluated and fully serviced to establish a base date of good annual maintenance. D. Owners of rental property are required to keep heating systems in good working order and to provide adequate heat between September 15th and June 15th, unless lease agreements define occupant responsibility. E. Today's construction requires that the "emergency shut-off switch" be located outside of the basement or boiler room so that the door remains closed for safety. Updating of older nonconforming switch locations is advised. F. Be advised that when the outside temperature is less than 65 degrees F., the inspector cannot operate the central air conditioning system due to possible damage to the compressor. **G. Be advised of the following average appliance life expectancies depending on brand, maintenance and use: hot air furnace 15-20 years, steel boiler 20 years, cast iron boiler 30-40 years, compressor unit 10-12 years.** H. Consult with the owner **NOW** on any known underground, abandoned oil tanks or oil leaks or hazardous waste on the property. Any known problems should be discussed with your attorney **NOW**.

**1. TYPE OF FUEL / ENERGY SOURCE:**

**TYPE OF FUEL:** Oil.

**2. OIL TANK OR GAS PIPING:**

**TYPE OF TANK & LOCATION:**

Observation: There is a steel oil tank in the basement (approximate capacity - 275 gallons).  
Analysis: The type of tank & capacity are industry standard for residential installations. (Design life = 30 years) **Be advised that steel oil tanks tend to corrode from the inside outward and telltale signs of problems may not always be visible.**  
Recommendation: I advise that any oil tank 30 year of age or older be replaced as a precaution against leakage, environmental contamination and uninsured major expenses for cleanup. For your budget, to have an old tank removed and a new one installed costs between \$1200 and \$1500. Replacement should also include any old oil line that is not enclosed in a protective sleeve that shunts any oil leakage to the head of the pipe where the homeowner can see the leakage.



**LOCATION OF MAIN FUEL SHUT-OFF VALVES:**

The main fuel shut-off valve is located at the oil tank.



**CONDITION OF TANK OR PIPING:**

\* **FUNCTIONAL** where *readily accessible* at time of inspection and reported free, as a courtesy and without consideration. Notice: 266CMR 6.00: Standards of Practice state "that a home inspector is NOT required to **Observe, Describe or Report** on Oil tanks." As oil tanks are not readily accessible for complete inspection, and as they corrode from the inside, true conditions cannot be determined during a home inspection. If you want assurance of condition, then you should hire a specialist to perform an ultrasonic test on the tank.

**TANK OR PIPING PROBLEMS:**

Observation: The exterior of the tank was inspected as a free courtesy, without consideration and no visible problems observed where exposed and *readily accessible* at time of inspection.

Analysis: The true condition of the interior of the tank and any buried oil lines is undetermined.

Recommendation: If you want assurance of condition, then you should hire a specialist to perform an ultrasonic test on the tank.

**3. HEATING SYSTEM EQUIPMENT:**

**TYPE(S) OF HEATING SYSTEMS PRESENT:**

**FORCED HOT WATER HEAT EXPLANATION:** Forced hot water heating represents state of the art technology in terms of efficiency and comfort. Such systems may be fueled by oil or gas and require little owner maintenance, but each should be inspected and serviced annually by a licensed technician.

Analysis: The heart of the system is the boiler, which may be composed of steel or cast iron. (Note: A cast iron boiler is preferable as the service life is far superior to a steel boiler.) The boiler provides the hot water when a thermostat calls for heat. The

heated water is distributed through small diameter piping until it reaches wall convectors or baseboard heaters. The hot water continues to flow until the thermostat is satisfied, then the water is recirculated back to the boiler for re-use again. One of the greatest features of a forced hot water heating system is that the home can easily be divided into different thermostatically controlled comfort zones.

Regardless of the type of boiler, certain parts of the boiler have shorter design lifespans than the boiler itself and should be monitored for eventual maintenance replacement. Such parts include:

- Burner
- Fire chamber liner
- Gas valve
- Thermocouple
- Circulator pump
- Air vent valves
- Zone valves
- Relief valve
- Back-flow preventer valve
- Fill-valve
- Control relay
- Drain valve
- Expansion tank
- Thermostat
- Flue pipe
- Gaskets

Recommendation: You should buy a heating system maintenance plan with a local oil or gas company. Such a plan should include an annual safety inspection, cleaning, tune-up and parts replacement.

**WERE THE  
MAINTENANCE /  
ACCESS PANELS  
REMOVED?**

**YES**, the *readily accessible* operable access panels provided by the manufacturer or installer for routine homeowner maintenance were opened.

**APPROXIMATE  
AGE(S):**

Observation: The age of the heating system is unknown.

Analysis: Each type of heating system has an average design life and each type will eventually need age replacement regardless of present age.

Recommendation: Ask the owner how old the central heating system is for your decision making needs and for future budgeted replacement.

**CONDITION OF  
HEATING  
SYSTEM:**

**\*\* Observation: The heating system was FUNCTIONAL, but with exceptions as noted below:**



**HEATING  
APPLIANCE  
PROBLEMS:**

Observation: No recent maintenance tags are posted.

Analysis: The lack of maintenance tags may indicate postponed annual maintenance cleanings, tune-ups, parts replacement and safety inspection.

Recommendation: Ask the owner when the system was last serviced. You should have the heating system serviced upon occupancy to establish a good annual service schedule.



**4. DISTRIBUTION SYSTEM:**

**TYPE OF  
DISTRIBUTION  
SYSTEM:**

Observation: Copper heating pipes are present.

**CONDITION:**

\* **FUNCTIONAL** where *readily accessible* at time of inspection. The distribution system carried heat to those habitable rooms serviced.

**CIRCULATOR  
PUMP OR  
BLOWER UNIT  
PROBLEMS:**

Observation: A leak was visible at the circulator pump gasket.  
Analysis: Maintenance repair is needed.  
Recommendation: Hire a heating contractor to perform maintenance repairs as needed to stop the leak.



**DISTRIBUTION  
SYSTEM  
PROBLEMS:**



Observation: The "Air Vent" mounted on top of the "Purger Valve" at the boiler is corroded or drip leaking.  
Analysis: Simple maintenance parts replacement of the air vent is most likely needed. The Air Vent is designed for use in liquid systems to purge undesirable free air that otherwise could impede system performance, increase system operating cost and contribute to the damaging effects of corrosion. The accumulation of air in the body of the Air Vent causes a float to drop allowing the air to be vented through an air eliminating orifice. As the liquid level rises in the vent body, the float also rises shutting of the flow of venting gases.  
The water that is used initially to fill a hot water heating system contains dissolved air. Make-up water subsequently added to the boiler will similarly have high air content. Heating this water releases the air and permits it to be circulated in the system, for which it must be vented. The purpose of the Air Purger is to continuously separate and collect any air from the water as it circulates so that it may be vented automatically by afloat air vent without the necessity for frequent manual venting. Replacement of the Air Vent may be needed every few years depending on the quality of the water.  
Recommendation: You should hire a heating contractor or a plumber to install a new Air Vent.

Observation: No insulation on heating pipes.  
Analysis: Insulation is now required to prevent heat loss.  
Recommendation: I advise the optional upgrading of the insulation at this location.

Observation: Inspection of the supply piping connected to the boiler revealed that a valve, called the back-flow preventer, is missing a 1/2 diameter open ended drain pipe.  
Analysis: The omission of the drain pipe is not of a critical nature.  
Recommendation: If clearances permit, I advise that a proper drain pipe be installed to direct any back-flow boiler water towards the floor.

Observation: The exposed heating distribution pipes exhibited areas of corrosion.  
Analysis: This condition indicates that portions of the distribution piping are at end of service life and that repair is needed to prevent leakage, possible interior water damage and loss of heat.  
Recommendation: In my opinion, you should hire a licensed heating contractor to perform repairs as required to restore the function of the heating pipes in question.

**5. NORMAL OPERATING CONTROLS:**

**WAS THE HEATING SYSTEM OPERATED USING NORMAL OPERATING CONTROLS?  
 CONDITION OF CONTROLS:**

YES.

\* **FUNCTIONAL.** Homeowner operated devices such as a thermostat, wall switch or safety switch appear to be operational where *readily accessible*. I recommend the use of new setback type thermostats for energy conservation and efficiency. (Note: The inspector only verified the presence of an emergency shut-off switch, he did **NOT** test it's function. You should test the emergency shut-off switch when you move into the home.)

**6. AUTOMATIC SAFETY CONTROLS:**

**CONDITION OF SAFETY CONTROLS:**

**Massachusetts Standards of Practice prohibit a home inspector from testing automatic safety controls.** While the safety controls are present and may appear to be functional, their true operational condition is undetermined and requires further investigation. You are advised to ask your service company to test all automatic safety controls during regular annual cleaning & tune-ups.

**SAFETY CONTROL PROBLEMS:**

Observation: Required automatic safety controls are present.  
Analysis: No visible problems observed where *readily accessible*, but true operational condition is undetermined.



Recommendation: Be advised that controls are not tested during the inspection. You should ask your heating technician to evaluate the automatic safety controls upon occupancy and annually there after.

**LOCATION OF EMERGENCY SHUT-OFF SWITCH:**

Observation: The emergency shut-off switch is located inside the basement staircase.  
Analysis: Be advised that this location is no longer allowed in new construction as it is necessary to open the basement door in an emergency.  
Recommendation: Inexpensive switch relocation is advised.

**7. VENTING:**

**METHOD OF VENTING:**

Observation: The heating system is vented via a metal flue pipe connected to a masonry chimney.

**CONDITION OF VENTING:**

\* **FUNCTIONAL.** Where *readily accessible*, the venting system appeared **FUNCTIONAL** at time of inspection. Annual inspection is recommended.

**VENTING PROBLEMS:**

Observation: No visible problems observed where exposed and *readily accessible* at time of inspection.  
Recommendation: Annual safety inspection of all venting systems is advised as metal parts and chimney components can fail causing deadly combustion gases to enter any home.

**IS A THIMBLE PRESENT WHERE THE FLUE PIPE CONNECTS TO THE CHIMNEY?**

Observation: A thimble is present, this is a good feature. A thimble must be present and must extend through the chimney wall to the inner face or liner, but not beyond. The thimble must be permanently cemented in place to facilitate removal of the chimney connector pipe for annual cleaning and chimney inspection. The thimble is a sleeve embedded in the chimney wall designed to accept the flue connector from an appliance. They must be



placed with the chimney end flush with the inside wall of the flue lining and cemented in place with the refractory mortar used in the flue tiles.

**8. COOLING SYSTEM:**

**Type of equipment:** No central cooling system present.

**9. OVER-ALL CONDITION / RECOMMENDATIONS:**

**HEATING SYSTEM / COOLING SYSTEM SUMMARY:**

The present condition of the heating system indicates that annual maintenance has been postponed. While operational, lack of routine maintenance reduces over-all efficiency, increases fuel consumption and may cause mechanical breakdown. You should have the entire heating system further evaluated and serviced as required prior to commitment. Annual maintenance contracts and safety inspections are highly recommended.

## HEATING SYSTEM & AC INSPECTION

**SCOPE OF THE HEATING SYSTEM INSPECTION: 266CMR: BOARD OF REGISTRATION OF HOME INSPECTORS  
266 CMR 6.00: STANDARDS OF PRACTICE:**

### **6.07 System: Heating**

- (1) The **Home Inspector** shall **Observe** permanently installed exposed **Readily Accessible** heating systems including:
  - (a) Heating equipment.
  - (b) **Normal Operating Controls.**
  - (c) The presence of **Automatic Safety Controls.**
  - (d) The exterior of the chimneys, thimbles and vents.
  - (e) Solid fuel heating devices.
  - (f) Heating distribution systems including fans, pumps, ducts and piping and supports, dampers, insulation, air filters, registers, radiators, fan coil units, convectors.
  - (g) The existence of insulation.
  - (h) The exposed flue piping and the existence of a thimble(s).
  - (i) The presence of an installed heat source in each habitable room including kitchens and bathrooms.
  - (j) The presence of a fireplace(s) and the operation of their damper(s).
- (2) The **Home Inspector** shall **Describe**:
  1. The type of energy source (coal, electric, gas, and oil, wood, other).
  2. The type of heating equipment (electric, hot air, hot water, steam, other).
  3. The type of distribution system (piping: black iron, copper, and other. Duct work aluminum, fiberglass, steel, other).
  4. The insulation.
- (3) The **Home Inspector** shall **Report On**:
  - a. The heating equipment.
  - b. The distribution system.
  - c. The flue piping and the existence of a thimble(s).
  - d. The condition of the fireplace hearth(s)
  - e. The presence of exposed flues in the smoke chamber
  - f. The fireplace damper(s).
- (4) The **Home Inspector** shall:
  - (a) If possible, have the **Seller** and or the **Seller's Representative** operate the systems using **Normal Operating Controls**. If not possible for **Seller** and or the **Seller's Representative** to operate the systems, the **Home Inspector** shall operate the systems using **Normal Operating Controls** and **Report On** condition of said systems.
  - (b) Open **Readily Accessible** and **Operable Access Panels** provided by the manufacturer or installer for routine homeowner maintenance.
- (5) The **Home Inspector** is **not** required to:
  - (a) Test and/or inspect the heat exchanger (Requires dismantling of furnace cover and possible removal of controls) HVAC technician work..
  - (b) Collect engineering data on the size of the heating equipment, the size or length of the distribution systems. (**Engineering/Heating Services**).
  - (c) **Report on** the adequacy of the in-place system(s) to heat the **Dwelling (Engineering/Heating Services)**.
  - (d) **Operate** heating systems when weather conditions or other circumstances may cause equipment damage, or when the electrical and/or fuel supply to the unit is in the off position.
  - (e) **Operate Automatic Safety Controls. 3**
  - (f) Ignite or extinguish solid fuel and or gas fires.
  - (g) **Observe, Describe, or Report On**:
    1. The interior of flues.
    2. Fireplace insert flue connections.
    3. Humidifiers.
    4. Electronic air filters.
    5. Oil Tanks.
    6. The uniformity or adequacies of heat supply to the various rooms.
  - (h) **Observe, Describe, or Report On** underground pipes, tanks, and or ducts, however, the **Home Inspector must note their existence in the Report if the existence an underground pipe, tank, and**

or duct is known to the *Home Inspector*.

3 *Home* and *Associate home Inspectors* are prohibited from testing automatic controls with the noted exceptions of the arc and ground fault protective devices.

#### 6.08 System: Central Air Conditioning

- (1) The *Home Inspector* shall **Observe**:
  - (a) Exposed **Readily Accessible** central air conditioning including:
    1. Cooling and air handling equipment.
    2. **Normal Operating Controls**.
  - (b) Exposed **Readily Accessible** distribution systems including:
    1. Fans, pumps, ducts and piping, with supports, dampers, the presence or insulation, air filters, registers, fan-coil units, condensers.
    2. The presence of an installed -cooling source in each room.
- (2) The *Home Inspector* shall **Describe**:
  - (a) The type of distribution system (Duct work: aluminum, fiberglass, steel, other) and recommend repair (if needed).
- (3) The *Home Inspector* shall **Report On**:
  - a. The distribution system
  - b. The insulation on the exposed supply ductwork.
  - c. The operation of the both the distribution and condenser fan.
  - d. Whether or not the cold gas line is insulated.
  - e. Whether there is, a service receptacle and a visible service disconnect switch in the area of the condenser and air handling equipment.
- (4) The *Home Inspector* shall
  - (a) If possible, have the **Seller** and/or the **Sellers Representative Operate** the systems using **Normal Operating Controls**.
  - (b) Open **Readily Accessible Operable Access Panels** provided by the manufacturer or installer for routine homeowner maintenance and report on conditions observed.
- (6) The *Home Inspector* is not required to:
  - (a) Collect engineering data on the size of the cooling equipment and the size or length of the distribution systems.
  - (b) Report on the adequacy of the air conditioning system(s) to cool the dwelling **Engineering Services**.
  - (c) **Observe, Describe** or **Report On** air filters and/or their effectiveness.
  - (d) Have the **Seller** and or the **Sellers Representative Operate** the cooling systems when weather conditions or other circumstances may cause equipment damage or when the electrical supply to the unit is in the off position.
  - (e) **Observe, Describe** or **Report On** evaporator coils (Requires dismantling of the plenum cover and possible removal of controls) HVAC technician work.
  - (f) **Observe, Describe** or **Report On** non-central air conditioners.
  - (g) Observe, **Describe** or **Report On** the uniformity or adequacy of cool-air supply to the various rooms.

**DISCLAIMERS:** A. The inspector is not required to operate systems when weather conditions or other circumstances may cause equipment damage. B. The inspector is not required to operate automatic safety controls. Systems shall be operated using normal operating controls and shall be observed via readily openable access panels. C. The inspector is not required to ignite or extinguish fires or pilots. D. The inspector is not required to observe non-central air conditioners. E. The uniformity of the supply of conditioned air to the various parts of the structure is not calculated. F. No representation is made regarding line integrity or coolant charges since the inspector does not perform pressure tests on coolant systems. G. The inspector does not check the electric draw (current) or the system. H. Testing is only performed on those systems that will respond to user controls during appropriate prevailing temperature, humidity and climate conditions. I. Systems known to be or appearing to be faulty, defective, unsafe or shut-down are not tested. J. The Inspection and *Report* do NOT include determination of adequacy of any system with regard to personal comfort needs, nor do the Inspection and Report include any determination of the efficiency of any system with regard to energy usage. K. Except where otherwise noted, we do not judge compliance with manufacture's instructions or regulatory codes, test specialized accessories, determine clearance to combustibles, or verify adequacy of combustion air.

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**GENERAL COMMENTS:** A. Equipment that is "SHUT-DOWN", not seasonally functional, out of fuel or does not respond to normal operating controls cannot be functionally evaluated. Reappraisal by a heating or air conditioning technician is recommended prior to purchase. B. As preventative maintenance, all heating and cooling systems should be inspected and serviced annually by a HVAC technician. Annual service and repair contracts and automatic fuel delivery agreements are recommended. C. If you buy the home, I recommend that you have the heating & cooling systems completely evaluated and fully serviced to establish a base date of good annual maintenance. D. Owners of rental property are required to keep heating systems in good working order and to provide adequate heat between September 15th and June 15th, unless lease agreements define occupant responsibility. E. Today's construction requires that the "emergency shut-off switch" be located outside of the basement or boiler room so that the door remains closed for safety. Updating of older nonconforming switch locations is advised. F. Be advised that when the outside temperature is less than 65 degrees F., the inspector cannot operate the central air conditioning system due to possible damage to the compressor. **G. Be advised of the following average appliance life expectancies depending on brand, maintenance and use: hot air furnace 15-20 years, steel boiler 20 years, cast iron boiler 30-40 years, compressor unit 10-12 years.** H. Consult with the owner **NOW** on any known underground, abandoned oil tanks or oil leaks or hazardous waste on the property. Any known problems should be discussed with your attorney **NOW**.

**1. TYPE OF FUEL / ENERGY SOURCE:**

**TYPE OF FUEL:** Oil.

**2. OIL TANK OR GAS PIPING:**

**TYPE OF TANK & LOCATION:**

**Observation:** There is a steel oil tank in the basement (approximate capacity - 275 gallons).  
**Analysis:** The type of tank & capacity are industry standard for residential installations. (Design life = 30 years) **Be advised that steel oil tanks tend to corrode from the inside outward and telltale signs of problems may not always be visible.**  
**Recommendation:** I advise that any oil tank 30 year of age or older be replaced as a precaution against leakage, environmental contamination and uninsured major expenses for cleanup. For your budget, to have an old tank removed and a new one installed costs between \$1200 and \$1500. Replacement should also include any old oil line that is not enclosed in a protective sleeve that shunts any oil leakage to the head of the pipe where the homeowner can see the leakage.





**LOCATION OF MAIN FUEL SHUT-OFF VALVES:**

The main fuel shut-off valve is located at the oil tank.



**CONDITION OF TANK OR PIPING:**

\* **FUNCTIONAL** where *readily accessible* at time of inspection and reported free, as a courtesy and without consideration. Notice: 266CMR 6.00: Standards of Practice state "that a home inspector is NOT required to **Observe, Describe or Report** on Oil tanks." As oil tanks are not readily accessible for complete inspection, and as they corrode from the inside, true conditions cannot be determined during a home inspection. If you want assurance of condition, then you should hire a specialist to perform an ultrasonic test on the tank.

**TANK OR PIPING PROBLEMS:**

Observation: The exterior of the tank was inspected as a free courtesy, without consideration and no visible problems observed where exposed and *readily accessible* at time of inspection.

Analysis: The true condition of the interior of the tank and any buried oil lines is undetermined.

Recommendation: If you want assurance of condition, then you should hire a specialist to perform an ultrasonic test on the tank.

**3. HEATING SYSTEM EQUIPMENT:**

**TYPE(S) OF HEATING SYSTEMS PRESENT:**

**FORCED HOT WATER HEAT EXPLANATION:** Forced hot water heating represents state of the art technology in terms of efficiency and comfort. Such systems may be fueled by oil or gas and require little owner maintenance, but each should be inspected and serviced annually by a licensed technician.

Analysis: The heart of the system is the boiler, which may be composed of steel or cast iron. (Note: A cast iron boiler is preferable as the service life is far superior to a steel boiler.) The boiler provides the hot water when a thermostat calls for heat. The

heated water is distributed through small diameter piping until it reaches wall convectors or baseboard heaters. The hot water continues to flow until the thermostat is satisfied, then the water is recirculated back to the boiler for re-use again. One of the greatest features of a forced hot water heating system is that the home can easily be divided into different thermostatically controlled comfort zones.

Regardless of the type of boiler, certain parts of the boiler have shorter design lifespans than the boiler itself and should be monitored for eventual maintenance replacement. Such parts include:

- Burner
- Fire chamber liner
- Gas valve
- Thermocouple
- Circulator pump
- Air vent valves
- Zone valves
- Relief valve
- Back-flow preventer valve
- Fill-valve
- Control relay
- Drain valve
- Expansion tank
- Thermostat
- Flue pipe
- Gaskets

Recommendation: You should buy a heating system maintenance plan with a local oil or gas company. Such a plan should include an annual safety inspection, cleaning, tune-up and parts replacement.

**WERE THE MAINTENANCE / ACCESS PANELS REMOVED?**

**YES**, the *readily accessible* operable access panels provided by the manufacturer or installer for routine homeowner maintenance were opened.

**APPROXIMATE AGE(S):**

Observation: The age of the heating system is unknown.

Analysis: Each type of heating system has an average design life and each type will eventually need age replacement regardless of present age.

Recommendation: Ask the owner how old the central heating system is for your decision making needs and for future budgeted replacement.

**CONDITION OF HEATING SYSTEM:**

**\*\* Observation: The heating system was FUNCTIONAL, but with exceptions as noted below:**

**HEATING  
APPLIANCE  
PROBLEMS:**

Observation: No recent maintenance tags are posted.

Analysis: The lack of maintenance tags may indicate postponed annual maintenance cleanings, tune-ups, parts replacement and safety inspection.

Recommendation: Ask the owner when the system was last serviced. You should have the heating system serviced upon occupancy to establish a good annual service schedule.



**4. DISTRIBUTION SYSTEM:**

**TYPE OF  
DISTRIBUTION  
SYSTEM:**

Observation: Copper heating pipes are present.

**CONDITION:**

\* **FUNCTIONAL** where *readily accessible* at time of inspection. The distribution system carried heat to those habitable rooms serviced.

**CIRCULATOR  
PUMP OR  
BLOWER UNIT  
PROBLEMS:**

Observation: A leak was visible at the circulator pump gasket.  
Analysis: Maintenance repair is needed.  
Recommendation: Hire a heating contractor to perform maintenance repairs as needed to stop the leak.



**DISTRIBUTION  
SYSTEM  
PROBLEMS:**



Observation: The "Air Vent" mounted on top of the "Purger Valve" at the boiler is corroded or drip leaking.  
Analysis: Simple maintenance parts replacement of the air vent is most likely needed. The Air Vent is designed for use in liquid systems to purge undesirable free air that otherwise could impede system performance, increase system operating cost and contribute to the damaging effects of corrosion. The accumulation of air in the body of the Air Vent causes a float to drop allowing the air to be vented through an air eliminating orifice. As the liquid level rises in the vent body, the float also rises shutting of the flow of venting gases.  
The water that is used initially to fill a hot water heating system contains dissolved air. Make-up water subsequently added to the boiler will similarly have high air content. Heating this water releases the air and permits it to be circulated in the system, for which it must be vented. The purpose of the Air Purger is to continuously separate and collect any air from the water as it circulates so that it may be vented automatically by afloat air vent without the necessity for frequent manual venting. Replacement of the Air Vent may be needed every few years depending on the quality of the water.  
Recommendation: You should hire a heating contractor or a plumber to install a new Air Vent.



Observation: No insulation on heating pipes.  
Analysis: Insulation is now required to prevent heat loss.  
Recommendation: I advise the optional upgrading of the insulation at this location.

Observation: Inspection of the supply piping connected to the boiler revealed that a valve, called the back-flow preventer, is missing a 1/2 diameter open ended drain pipe.  
Analysis: The omission of the drain pipe is not of a critical nature.  
Recommendation: If clearances permit, I advise that a proper drain pipe be installed to direct any back-flow boiler water towards the floor.

Observation: The exposed heating distribution pipes exhibited areas of corrosion.  
Analysis: This condition indicates that portions of the distribution piping are at end of service life and that repair is needed to prevent leakage, possible interior water damage and loss of heat.  
Recommendation: In my opinion, you should hire a licensed heating contractor to perform repairs as required to restore the function of the heating pipes in question.

**5. NORMAL OPERATING CONTROLS:**

**WAS THE HEATING SYSTEM OPERATED USING NORMAL OPERATING CONTROLS? CONDITION OF CONTROLS:**

YES.

\* **FUNCTIONAL.** Homeowner operated devices such as a thermostat, wall switch or safety switch appear to be operational where *readily accessible*. I recommend the use of new setback type thermostats for energy conservation and efficiency. (Note: The inspector only verified the presence of an emergency shut-off switch, he did **NOT** test it's function. You should test the emergency shut-off switch when you move into the home.)

**6. AUTOMATIC SAFETY CONTROLS:**

**CONDITION OF SAFETY CONTROLS:**

**Massachusetts Standards of Practice prohibit a home inspector from testing automatic safety controls.** While the safety controls are present and may appear to be functional, their true operational condition is undetermined and requires further investigation. You are advised to ask your service company to test all automatic safety controls during regular annual cleaning & tune-ups.

**SAFETY CONTROL PROBLEMS:**

Observation: Required automatic safety controls are present.  
Analysis: No visible problems observed where *readily accessible*, but true operational condition is undetermined.



Recommendation: Be advised that controls are not tested during the inspection. You should ask your heating technician to evaluate the automatic safety controls upon occupancy and annually there after.

**LOCATION OF EMERGENCY SHUT-OFF SWITCH:**

Observation: The emergency shut-off switch is located inside the basement staircase.  
Analysis: Be advised that this location is no longer allowed in new construction as it is necessary to open the basement door in an emergency.  
Recommendation: Inexpensive switch relocation is advised.

**7. VENTING:**

**METHOD OF VENTING:**

Observation: The heating system is vented via a metal flue pipe connected to a masonry chimney.

**CONDITION OF VENTING:**

\* **FUNCTIONAL.** Where *readily accessible*, the venting system appeared **FUNCTIONAL** at time of inspection. Annual inspection is recommended.

**VENTING PROBLEMS:**

Observation: No visible problems observed where exposed and *readily accessible* at time of inspection.  
Recommendation: Annual safety inspection of all venting systems is advised as metal parts and chimney components can fail causing deadly combustion gases to enter any home.

**IS A THIMBLE PRESENT WHERE THE FLUE PIPE CONNECTS TO THE CHIMNEY?**

Observation: A thimble is present, this is a good feature. A thimble must be present and must extend through the chimney wall to the inner face or liner, but not beyond. The thimble must be permanently cemented in place to facilitate removal of the chimney connector pipe for annual cleaning and chimney inspection. The thimble is a sleeve embedded in the chimney wall designed to accept the flue connector from an appliance. They must be



placed with the chimney end flush with the inside wall of the flue lining and cemented in place with the refractory mortar used in the flue tiles.

**8. COOLING SYSTEM:**

**Type of equipment:** No central cooling system present.

**9. OVER-ALL CONDITION / RECOMMENDATIONS:**

**HEATING SYSTEM / COOLING SYSTEM SUMMARY:**

The present condition of the heating system indicates that annual maintenance has been postponed. While operational, lack of routine maintenance reduces over-all efficiency, increases fuel consumption and may cause mechanical breakdown. You should have the entire heating system further evaluated and serviced as required prior to commitment. Annual maintenance contracts and safety inspections are highly recommended.