Gas Appliance Inspection Documentation

(First Draft)

Inspection date: _____

Client/Job Information

Client name: _____ Client/Job number: _____

Client interview notes:

_____

_____

_____

_____

_____

Initial H&S Inspection

Ambient CO level: _____ PPM Gas odor: Y / N Fire hazards: Y / N

SWS detail
2.0105.1
2.0111.2

Equipment Information

Fuel type: ☐ Natural ☐ Propane

5.3003.1

Furnace type: ☐ Draft-hood ☐ 80% ☐ 90% ☐ Mobile home ☐ Space heater
Furnace Make: _____ Model: _____ Input Btuh: _____
Temperature rise range: Minimum _____ °F Maximum _____ °F
Water heater: ☐ Gas ☐ Electric
Water heater Make: _____ Model: _____ Input Btuh: _____

Gas Piping Inspection

Free of gas leaks? ☐ Yes ☐ No

2.0201.1

Does the piping have the proper materials and configuration (piping type, valves, flex connectors, support, etc.)? ☐ Yes ☐ No
Notes: _____

_____

_____

_____

Vent System Inspection

Vent type: ☐ Masonry chimney ☐ Liner ☐ Type B ☐ Factory ☐ PVC/Plastic

2.0201.1

Does the vent have the proper materials and configuration (connector materials, gauge, slope, condition, support, cap, etc.)? ☐ Yes ☐ No

Notes: _____

_____

_____

_____

Electrical Safety

Is the polarity to furnace correct? ☐ Yes ☐ No

5.3003.4
5.3003.7

Is there a shut-off switch within reach of the furnace? ☐ Yes ☐ No

Does the wiring appear to be in good condition with proper connectors? ☐ Yes ☐ No

Notes: _____

_____

_____

_____

Combustion Air

Total Btuh of equipment in the CAZ using interior air for combustion: _____ Btuh

2.0201.2
2.0203.1

Volume of combustion air needed (standard method – Btuh divided by 20): _____ Cu.ft.

Volume of combustion air available (communicates directly with the CAZ): _____ Cu.ft.

Determine if or how combustion air needs will be met.

Notes: _____

_____

_____

_____

Thermostat

Is the thermostat location functional? ☐ Yes ☐ No

5.3003.9

Has the hole been sealed behind the thermostat? ☐ Yes ☐ No

Notes: _____

_____

_____

_____

Ducts and Filter

Filter size: _____ x _____ x _____ Does the filter slot have a cover? ☐ Yes ☐ No

Does the distribution system appear to be of adequate capacity? ☐ Yes ☐ No

Are there open returns or leaky/disconnected ducts? ☐ Yes ☐ No

Is insulation required for ducts outside the conditioned space? ☐ Yes ☐ No

5.3001.2
5.3003.7
3.1602.1
4.1601.2

Notes: _____

_____

_____

_____

Water Heater

Temperature and pressure relief valve and discharge piping properly installed? ☐ Yes ☐ No

Water heater or T&P valve leaking? ☐ Yes ☐ No

7.8103.1

A leaky tank requires replacement. A leaking T&P may require the installation of an expansion tank. Expansion tanks and/or backflow preventers may be required by local code for water heater replacements.

As appropriate, adjust water temperature to approximately (but not less than) 120°F. Temp: _____ °F

Notes: _____

_____

_____

_____

Clean and Tune/Replacement

Does the burner area appear to be clean and free of debris? ☐ Yes ☐ No

Are the blower and all coils clean? ☐ Yes ☐ No

Is the condensate drain system clean and properly installed? ☐ Yes ☐ No

Are there any indications of a bad heat exchanger (visual or analyzer)? ☐ Yes ☐ No

5.3003.10

Notes: _____

_____

_____

_____

Appliance Operational Testing

Determine "Worst Case" conditions using the CAZ testing form. Test appliances under "Worst Case" conditions. **Monitor ambient CO during all testing!**

2.0201.1
5.3003.14

Fire the water heater:

Was flow established within 10 seconds? ☐ Yes ☐ No

Did spillage disappear within 2 minutes? ☐ Yes ☐ No

Carbon monoxide after 5 minutes: _____ PPM

Fire the furnace (leave water heater operating if common vented or shares combustion air):

Was flow established within 10 seconds? ☐ Yes ☐ No ☐ N/A

Did spillage disappear within 2 minutes in a warm vent or 5 minutes in a cold vent? ☐ Yes ☐ No □ N/A

Recheck the water heater for spillage with the furnace operating: Spillage? ☐ Yes ☐ No

Carbon monoxide after 5 minutes: _____ PPM Further combustion analysis:

Oxygen: _____ % Stack temperature: _____ °F Steady state efficiency: _____ %

Supply temperature: _____ °F Return temperature: _____°F Temperature rise: _____ °F

Is temperature rise within manufacturers specifications? ☐ Yes ☐ No

Notes: _____

_____

_____

_____

Client Education

Basic operation of the equipment explained to the client	☐ Done
Operation of the thermostat explained to the client	☐ Done
Electrical disconnect and fuel shut offs shown to the client	☐ Done
Proper filter selection and how/when to change filter will be explained	☐ Done
Identified and explained importance of not blocking combustion air inlets	☐ Done

Optional

High heat rise problems with a forced air furnace can be caused by air flow problems, overfiring the unit or improper blower speed adjustment.

Air flow problems can be caused by any number of things ranging from dirty filters, dirty blower, dirty coils, undersized ducts or a variety of restrictions from carpet/furniture blocking a register to a crushed duct. Static pressure measurements can be used to help isolate a potential problem.

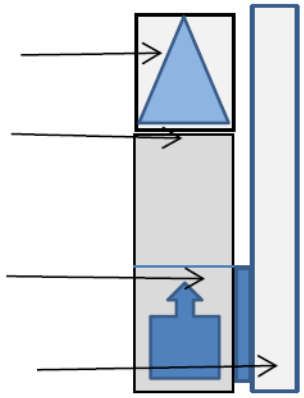
Firing rate is an easy thing to check by clocking the gas meter to see how many cubic feet of gas per hour the unit is using. Adjustments to firing rate must be made by a qualified heating professional.

Important: Air flow problems and firing rate must be checked and verified to be adequate **BEFORE** adjusting blower speed. It is not advisable to "fix" a dirty coil problem (for example) by increasing the blower speed to compensate for it.

See: Static Pressure Readings and Clocking the Meter

Static Pressure Readings

A: Supply duct static pressure		**Pa**
B: Furnace total supply static pressure		**Pa**
C: Furnace total return static pressure		**Pa**
D: Return duct static pressure		**Pa**



Total or External static pressure: (Add **B:** Furnace total supply static pressure to **C:** Furnace total return static pressure)		**Pa**
Pressure drop across filter: (Subtract **D:** Return duct static pressure from **C:** Furnace total return static pressure)		**Pa**
Pressure drop across coil: (Subtract **A:** Supply duct static from **B:** Furnace total supply static pressure)		**Pa**

Typical design Total External static pressure: 125 Pa
Typical design pressure drop across a filter: 17 Pa
Typical design pressure drop across an A/C coil: 45 Pa

5.3003.3

Clocking the meter

The gas meter will have a variety of dials that you may use – ¼ ft, ½ ft, 1 ft, 2 ft. These dials will tell you the cubic feet of gas used per revolution. For example, the ½ ft dial will show ½ cubic feet of gas usage per revolution.
Process for natural gas:

- Make sure only the appliance you are measuring is operating (be aware of cooking).
- Using an accurate timing device, determine the number of seconds it takes for 2 cubic feet of gas flow (example: 4 revolutions on the ½ ft dial).
- Divide 7200 by the number of seconds for 2 cubic feet of flow to get cubic feet per hour.

- Multiply the number of cubic feet per hour by the average Btu content of the gas per cubic foot (can be estimated using the conversion factor on the gas bill – example: a conversion factor of 1.030 means there were an average of 1,030 Btu's per cubic foot for that bill).
- Compare the calculation to the input Btuh for the unit listed on the data tag.

7200 ÷ _____ Seconds for 2 cu.ft. of gas flow X _____ Avg Btu/cu.ft = _____ Btuh measured
(Example: 7200 ÷ 90 seconds x 1000 = 80,000 Btuh input)

Btuh input (from Data Tag): _____ Btuh

Measured input Btuh should be within 5% of rated input without going over