FURNACE / WATER HEATER WORKSHEET

Audit/Job # _____ Date(mm/dd/yy) _____

Client Name _____ OutsideTemp _____

Address _____ Altitude _____

City _____ Btu/Ft3 (natural gas only) _____

Phone _____

Client CO Symptoms ☐yes ☐no Filter Replacement Ed ☐yes ☐no Ed Mat ☐yes ☐no

_____

_____

Structure Type	Furnace Location	Furnace Type	Delivery		Supplied Fuel
☐Single-Detached	☐Basement	☐Forced Air Ducted	☐Ducted		☐Natural Gas
☐Multifamily	☐Crawlspace	☐Freestanding	☐Non-Ductec	☐Upflow	☐Propane Gas
Build Method	☐Main Level	☐Wall Furnace		☐Downflow	☐Electric
☐Manufactured	☐Upper Level	☐Floor Furnace	☐Forced	☐Horizontal	☐Oil
☐Sitebuilt	☐Other	☐Other	☐Natural		☐Other

Appliance In Bedroom ☐yes ☐no Gas/ Oil Leaks ☐yes ☐no ☐na Proper Fuel Supplied ☐yes ☐no

	Heating Appliance / Water Heater		
Mfr	/		
Model	/		
Est Age	/		
Input	/		
Output	/		
AFUE	/		
Altitude Rating	/		
Temp Rise min/max	/	NA	
Max Temp	/	NA	
Max Static	/	NA	

Category	Gas Valve		Ignition System
☐I	☐24Volt	100% Shutoff	☐Standing Pilot
☐II	☐Millivolt	☐yes	☐Spark Ignition
☐III	☐High Voltage	☐no	☐Hot Surface
☐IV	☐na		☐na

Fused Disconnect (SSU)[1] ☐yes Size _____ ☐no Type _____

Voltage - Required / Measured

Supply Voltage _____ / _____

Control Voltage _____ / _____

Electrical Connections ☐good ☐poor _____

Burner	Heat (HEX) Exchanger	Blower	HEX Cracks	Soot Buildup	Flame Rollout Signs	Air Filter	Evaporator Coil	Condensate Drain
☐clean	☐clean	☐clean	☐yes	☐yes	☐yes	☐yes ☐clean	☐yes ☐clean	☐yes
☐dirty	☐dirty	☐dirty	☐no	☐no	☐no	☐no ☐dirty	☐no ☐dirty	☐no
						Size L x W x H _____		

	Motor Info		Motor Wire Color	Belt Condition	Pully Diam	Pully Width	Measured Belt Size
☐Direct Drive							
☐Belt Drive	HP _____	Run Cap	heat _____	☐good	sm _____	sm _____	top width _____
☐Oil Ports	RPM _____	☐yes ____ uF	cool _____	☐poor	lrg _____	lrg _____	thickness _____
☐yes ☐no	AMP _____	☐no	cont _____		shaft dist _____		circumference _____

Duct % Within Conditioned Space	Duct Leakage Characteristics	Duct Insulation Value	Thermostat	
☐90%	☐Duct Sealed w/Mastic	☐Outside Envelope > R8	☐Mechanical	☐24Volt
☐> 50%	☐No Observable Leaks	☐Outside Envelope R4-R7	☐Electronic	☐MillVolt
☐< 50%	☐Some Observable Leaks	☐Outside Envelope < R4	☐Programmable	☐High Voltage
	☐Significant Leaks		☐Non-Programmable	☐na
	☐Catastrophic Leaks		Mercury ☐yes ☐no	
			Anticipator _____	Temp Setting _____

Ducted RA	Open RA	RA Duct Size	SA/RA Duct	Problem Registers Issue/Location/Size[2]
☐yes	☐yes	L _____	☐clean	_____
☐no	☐no	W _____	☐dirty	_____
				_____

Flue Matches Category	Flue Condition	Flue Installation	Combustible Safety Issues
☐yes	☐good	☐correct	☐yes
☐no	☐poor	☐Incorrect	☐no

Furnace _____ Btu/hr ___

Water Heater _____ Btu/hr ____ +

Total Load Utilizing Combustion Air ___ Btu/hr ____ =

Combustion Combustion Air Provided? ☐ yes ☐ no (2.0201.2a)

☐Inside Air Same Story Avail Vol _____ NFA upper _____ lower _____

☐Inside Air Diff Story Avail Vol _____ NFA _____

☐Outside Air 2 Vert NFA upper _____ lower _____

☐Outside Air 2 Horiz NFA upper _____ lower _____

☐Outside Air 1 High NFA upper _____

☐Sealed Combustion Outside Air Appliance _____

☐Other _____

INITIAL TEST

Formula for Measured Gas Input
___cu Ft/___sec x ___Btu/cu Ft x 3600 = ___Btu/hr

Name _____

Baseline Pressure (2.0201.2d) _____

WCCAZ Pressure (2.0201.1e, see 2.0299 for limits per equip. type) _____

WCCAZ Draft Spillage (small appliance) After 2 min/2.0201.1f ☐yes ☐no

If Above =Yes, Nat. Condition Spillage After 2 min ☐yes ☐no ☐N/A

Draft Spillage Combined Appliances After 2 min/2.0201.1f ☐yes ☐no ☐N/A

Appliance	Furnace	Water Heater
Draft (in H2O)	_____	_____
Carbon Monoxide (2.0201.1g)	_____	_____
Combustion Efficiency %	_____	_____
Excess Air %	_____	_____
Oxygen – O2%	_____	_____
Carbon Dioxide – CO2 %	_____	_____
Flame Interference	☐ ☐ ☐	
	Yes no na	yes no
Flame Rollout	☐ ☐	☐ ☐
Measured Gas Input Btu/hr	_____	_____
Qty Orifices/Size	_____	_____
Input Gas Pressure (inH2O)	_____	_____
Manifold Gas Pressure (inH2O)	_____	_____
Thermostat Amps	_____	H2O heater burner

Blower Amps	_____ ☐clean ☐dirty
Total System Amps	_____
Blower on Temp	_____ H2O Htr HEX
Bower off Temp	_____ ☐clean ☐dirty
Heat Rise SA temp – RA temp	_____ H2O Htr Soot Bldup
High Limit Temp	_____
Appliance Cycling High Limit	☐yes ☐no ☐na ☐yes ☐no

RE-TEST

Formulas To Convert Pressure _____inH2O x 250 = _____Pascal
_____Pa/250 = _____inH2O

Name _____

Baseline Pressure (2.0201.2d) _____

WCCAZ Pressure (2.0201.1e, see 2.0299 for limits per equip. type) _____

WCCAZ Draft Spillage (small appliance) After 2 min/2.0201.1f ☐yes ☐no

If Above = Yes, Nat. Condition Spillage After 2 min ☐yes ☐no ☐N/A

Draft Spillage Combined Appliances After 2 min/2.0201.1f ☐yes ☐no ☐N/A

Appliance	Furnace	Water Heater
Draft (in H2O)	_____	_____
Carbon Monoxide (2.0201.2d)	_____	_____
Combustion Efficiency %	_____	_____
Excess Air %	_____	_____
Oxygen – O2%	_____	_____
Carbon Dioxide – CO2 %	_____	_____
Flame Interference	☐ ☐ ☐	
	yes no na	yes no
	☐ ☐ ☐	☐ ☐
Measured Gas Input Btu/hr	_____	_____
Qty Orifices/Size	_____	_____
Input Gas Pressure (inH2O)	_____	_____
Manifold Gas Pressure (inH2O)	_____	_____
Thermostat Amps	_____	Furnace Accessories

Blower Amps	_____ Humidifier
Total System Amps	_____ ☐yes ☐no
Blower on Temp	_____ Elect Air Cleaner
Blower off Temp	_____ ☐yes ☐no
Heat Rise SA temp – RA temp	_____ UV Light
High Limit Temp	_____ ☐yes ☐no
Appliance Cycling High Limit	☐yes ☐no ☐na

SWS 2.0201.2e and 2.0201.2d - CO in oven flue at steady state not to exceed 200ppm

Gas Cooktop/Oven Carbon Monoxide – CO (ppm) Oven _____

Burners #1_____ #2_____ #3_____ #4_____

Gas Cooktop/Oven Carbon Monoxide – CO (ppm) Oven _____

Burners #1_____ #2_____ #3_____ #4_____

Notes: _____

_____

_____

_____

_____

_____

_____

Technician _____ Company _____ Date _____

Inspector _____ Company _____ Date _____

Client _____ Date _____

Type of Ambient CO Monitoring used during testing (not to exceed 35ppm ambient per SWS 2.0105.1b) _____

REMEMBER -_check for flame interference when the fan comes on – interference is an indication of a cracked heat exchanger
Fuse – 1.25 times total amperage of all the furnace components and should be rated for time delay or slow burn.

Target Fan Off Temp - 90°F (85°F to 95°F)
Target Fan On Temp - 120°F to 140°F not to exceed 160°F
High Limit Switch 200°F and not greater than 250°F

Desired Heat Rise 30 to 50°F Maximum 80°F (or per nameplate) – After 5 Minutes

---

Carbon Monoxide (CO) in appliance vent must be less than 200 ppm per 2.0201.1g

70% Efficiency Furnace	**80% Efficiency Furnace**	**90% Efficiency Furnace**
CO < 200 ppm	CO < 200 ppm	CO < 200 ppm
O_2 5% - 10%	O_2 4% - 9%	O_2 4% - 9%
CO_2 6% - 11%	CO_2 7% - 12%	CO_2 7% – 12%
Stack Temperature 350°F - 475°F	Stack Temperature 325° - 450°F	Stack Temperature <120°F

Note: CO_2% is calculated based on the O_2 % utilizing the following formula (20.9 -% O_2) x Max CO_2 produced by fuel/20.9.
Nat Gas Max CO_2 = 11.9
LP Gas Max CO_2 = 13.9

Draft Measurements for atmospheric combustion (outside temperature directly affects draft readings) **Need updated SWS section HERE**

- >80°F outside draft must be > -.005 inches H_20
- 30°F to 80°F outside draft must be > -.010 inches H_20
- <30°F outside draft must be > -.020 inches H_20

Typical Gas Pressures

Natural Gas	LP Gas
Supply pressure 5 – 7 inches H_20	Supply pressure 11 – 14 inches H_20
Manifold pressure 3.5 inches H_20	Manifold pressure 10 inches H_20

De-rate Gas Input for Altitude – 4% of the rated BTU input for every 1,000 feet above sea level
Cold Air Return (CAR) minimum size 2 square inches per 1000 Btu output

NOTE: The manufacturer's specifications may vary from these recommended values; the manufacturer's specifications supersede all listed values.

*Combustion Air 50Ft3 /1000 Btu for atmospheric per 2.0201.1a and 2.0201.2a