 <p style="text-align: center;">State of Ohio Weatherization Program Standards</p>	Section	MECHANICAL SYSTEMS FINAL INSPECTION
	Subject	Domestic Hot Water

FUEL SUPPLY 401-4.1

Ensure that there is fuel available to begin the final inspection. **fuel availability**
401-4.1a

Ensure that there are no propane or natural gas leaks. **fuel leakage, gas**
401-4.1b

Visually determine that there is no fuel leakage in kerosene or fuel oil DHW units. **fuel leakage, oil**
401-4.1c

Ensure that natural gas units are not over- or under-fired by clocking the meter to determine the actual Btu input. **Btu input**
401-4.1d

ELECTRICAL POWER SUPPLY 401-4.2

Determine that the main electrical power supply to the unit is safe. **main power safety**
401-4.2a 

Ensure that the electrical line to the unit is a dedicated circuit that is properly sized and fused if one was called for by the initial inspection. **dedicated circuit**
401-4.2b 

Ensure that the wiring at or in the DHW unit is not charred, frayed, missing insulation and has no loose or improper connections. **safe wiring**
401-4.2c 

DHW UNIT CLEARANCES 401-4.3

Ensure that a combustion-type DHW tank is at the required distance from combustibles according to the appropriate NFPA code or PMI. **unit clearances**
401-4.3a

VENT SYSTEM INTEGRITY 401-4.4

Ensure that the vent system extends from the DHW unit to the outside of the dwelling and has no cracks, holes, or disconnected sections, and has no serious corrosion or rust. **vent system, visual inspection**
401-4.4a
Ensure that the venting is in compliance with the applicable NFPA codes listed in Table 401-4.

OWPS 401-4 MECHANICAL SYSTEMS FINAL INSPECTION—Domestic Hot Water

vent connections
401-4.4b Ensure that the vent-to-chimney connections are securely fastened.

vent slope
401-4.4c Ensure that the vent connector has no dips or sags and rises at least 1/4" per foot of run.

vent elbows
401-4.4d Ensure that the number of elbows does not exceed that allowed by the applicable NFPA code for the fuel type (#54 for gas, #31 for fuel oil, #211 for solid fuel).

chimney condition
401-4.4e Ensure that any chimney in use is in sound condition including liner, bricks, blocks and mortar. If a new chimney liner was required, ensure that it has been properly installed.

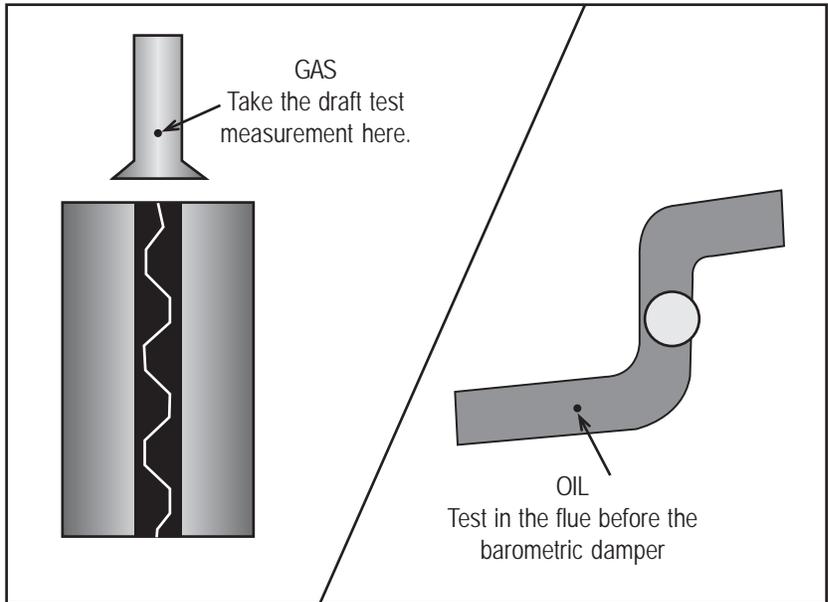
DRAFT TESTING 401-4.5

draft “worst case”
401-4.5a Perform the worst case draft test (see 1506-4), and ensure that draft is within the acceptable range as specified in Table 401-4.5. Refer to Figure 401-4.5 for probe placement.

Table 401-4.5 Draft Test Locations and Acceptable Readings

Heating Unit Type	Draft Gauge Probe Placement	Worst Case Acceptable Draft Readings at Listed Outdoor Temperatures (F)				
		<20	21-40	41-69	61-80	>80
Gas Atmospheric Appliances (Furnace, Space Heater, Boiler Floor Furnace)	Flue (after diverter)	-5 Pa -.02 wc'	-4 Pa -.016 wc"	-3 Pa -.012 wc'	-2 Pa -.008 wc"	-1 Pa -.004 wc"
Gas Fan-Assisted	Flue (1 1/2 times the diameter of the flue from the flue collar or elbow)	-5 Pa -.02 wc'	-4 Pa -.016 wc"	-3 Pa -.012 wc'	-2 Pa -.008 wc"	-1 Pa -.004 wc"
Oil Burners	Flue (before Barometric Damper)	-15 Pa -.06 wc'	-13 Pa -.053 wc"	-11 Pa -.045 wc'	-9 Pa -.038 wc"	-7 Pa -.03 wc"
Gas 90+ Furnace	Exhaust Pipe	PMI	PMI	PMI	PMI	PMI

Figure 401-4.5 Draft Test Probe Placement

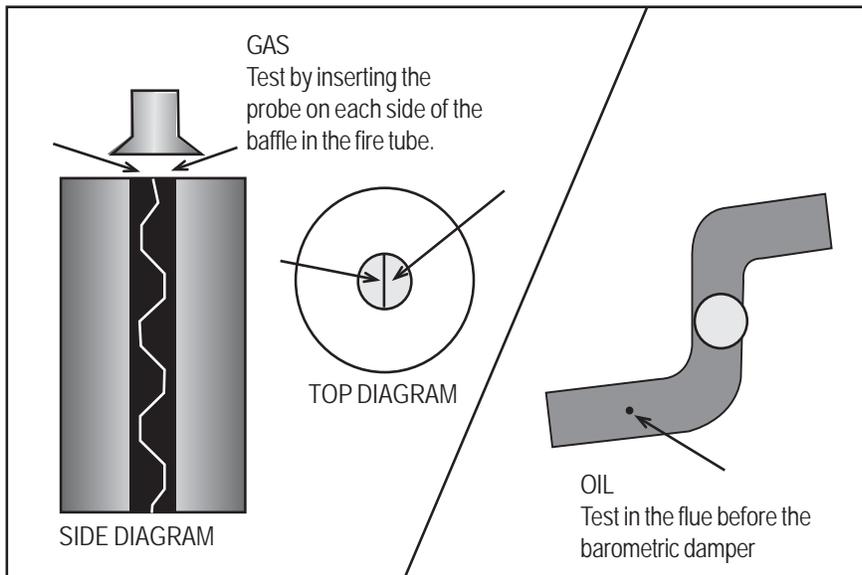


COMBUSTION SAFETY & EFFICIENCY TESTING
401-4.6

Perform the CO test by placing the probe as indicated in Figure 401-4.6. Ensure that the CO in the flue gas is at or below 100 ppm.

carbon monoxide (CO)
401-4.6a

Figure 401-4.6 Proper Probe Placement for Testing DHW Tanks



Perform the combustion analysis test placing the probe as indicated in Figure 401-4.6b. Ensure that the O₂ and the net stack temperature levels are within the limits in Table 401-4.6b.

combustion analysis
401-4.6b

Table 401-4.6c Acceptable Combustion Test Analysis Measurements

DHW Unit Type	(O ₂) Oxygen	Stack Temp.	Smoke Test	(CO) Carbon Monoxide Max. ppm
GAS (Natural Gas, Propane) Atmospheric	4-9%	300-600° F	N/A	100
	Fan-assisted	300-480° F	N/A	100
OIL				
	Standard Oil Burner	325-600° F	1 or less	100
Flame Retention	4-7%	325-600° F	1 or less	100

combustion air
401-4.6c

Ensure that the combustion air requirements are in accordance with the applicable NFPA code for the fuel type (#54 for gas, #31 for fuel oil, #211 for solid fuel).

TANK CONDITION 401-4.7

tank leakage
401-4.7a

Ensure that the DHW tank is not leaking water.

**pressure relief valve/
discharge pipe**
401-4.7b

Ensure that an operable pressure relief valve and discharge pipe are present and installed correctly on each DHW tank.

**tank insulation
warning**
401-4.7c



Document tanks which have a manufacturer's warning against insulating.

tank insulation
401-4.7d

Ensure that the DHW tank has been insulated, if required.

temperature setting
401-4.7e



Ensure that the DHW tank temperature has been lowered, when possible, without affecting the customer's lifestyle.

flame roll-out
401-4.7f

Ensure that no flame roll-out occurs when the DHW unit is activated.

If the DHW tank is gas-fired, ensure that the gas valve is working properly.

gas valve
401-4.7g

Ensure that the thermostat is operating correctly

thermostat
401-4.7h



DOMESTIC HOT WATER DISTRIBUTION 401-4.8

Ensure that the water lines leading to and from the DHW tank are not leaking.

water lines
401-4.8a

Ensure that the first 6 feet of hot and cold water lines are insulated, and that safe clearances from combustion sources are maintained.

water line insulation
401-4.8b

Ensure that there are no leaks in the hot water fixtures. Ensure that leaks in cold water fixtures have been corrected, if the leaks contribute to moisture problems.

fixture leaks
401-4.8c

Ensure that low-flow devices are installed in the shower and sink fixtures if called for by the initial inspection.

low-flow devices
401-4.8d



Ensure that the customer is provided with consumer energy education regarding DHW management.

consumer energy education
401-4.8e

