



State of Ohio  
Weatherization Program  
Standards

Section **MOBILE HOME MECHANICAL  
SYSTEMS FINAL INSPECTION**

Subject **Heating Units**

*APPROVED MOBILE HOME HEATING UNITS 801-1.1*

Determine whether the existing heating unit is approved for use in mobile homes.

**approved unit**  
801-1.1a

*OPERATIONAL UNITS 801-1.2*

Ensure that primary heating unit is operational.

**operational heating  
unit**  
801-1.2a

*FUEL SUPPLY 801-1.3*

Ensure that fuel is available (except for solid fuel units) to begin final inspection.

**fuel availability**  
801-1.3a

Ensure that solid fuel units are UL rated for mobile home use, and are free from heat exchanger leakage, excessive corrosion, and unsafe wiring (when applicable).

**solid fuel heaters**  
801-1.3b

Ensure that all venting materials meet clearances from combustible materials in accordance with the applicable NFPA code.

Use a combustible gas leak detector to ensure that there are no propane or natural gas leaks.

**fuel leakage, gas**  
801-1.3c

Ensure that there are no kerosene or fuel oil leaks.

**fuel leakage, oil**  
801-1.3d

Ensure that heating units are not over- or under-fired. Clock the meter on natural gas units. Calculate the actual Btu input by performing a gas pressure test and measuring the orifice.

**Btu input**  
801-1.3e

*ELECTRICAL POWER SUPPLY 801-1.4*

Ensure that the main electrical power supply to the heating unit is safe.

**main power safety**  
801-1.4a

Ensure that the electrical line to the unit is a dedicated circuit that is properly sized and fused, if called for in the initial inspection.

**dedicated circuit**  
801-1.4b

**safe wiring**  
801-1.4c

Ensure that all the wiring in or at the heating unit is properly insulated and in good condition, and that there are no improper or loose connections.

*HEATING UNIT CLEARANCES 801-1.5*

**unit clearances**  
801-1.5a

Ensure that clearances from combustible materials are in accordance with appropriate NFPA codes.

*VENT SYSTEM VISUAL INSPECTION 801-1.6*

**vent system visual inspection**  
801-1.6a

Ensure that the vent system extends from the heating unit to the outside of the mobile home, extends to the proper height, and has no holes, cracks, or loose, unsealed or disconnected sections. Ensure that there is no excessive corrosion or rust on the venting.

**vent connections**  
801-1.6b

Ensure that any vent/chimney connection is securely fastened. Ensure that the connection of the ceiling and the roof jack is completely sealed.

**vent elbows**  
801-1.6c

Ensure that there are no elbows.

*DRAFT TESTING 801-1.7*

**draft, "worst case"**  
801-1.7a

Set up and perform the worst case draft test scenario (see 1506-4). Ensure that draft is within acceptable limits.

Table 801-1.7 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	41-60	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 Appliances	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

*COMBUSTION SAFETY AND EFFICIENCY TESTING*

*801-1.8*

With the heating unit operating, collect a flue gas sample. Ensure that the flue gas CO reading is 100 ppm or less.

**carbon monoxide (CO)**  
801-1.8a

With heating unit operating, use a combustion analyzer to measure and record O<sub>2</sub> and net stack temperature. Ensure that they are within limits of Table 801-1.8.

**combustion analysis**  
801-1.8b

Table 801-1.8 Acceptable Combustion Test Analysis Measurements

Heating Unit Type	(O <sub>2</sub> ) Oxygen	Stack Temp.	Smoke Test	(CO) Carbon Monoxide Max. ppm
<b>GAS</b> (Natural Gas, Propane) Atmospheric	4-9%	300-600 F	N/A	100
Fan-assisted	4-9%	300-480 F	N/A	100
Condensing	PMI	PMI	N/A	100
Space Heaters	5-15%	300-650 F	N/A	100
Standard Power Burner	4-9%	275-550 F	N/A	100
<b>OIL</b>				
Standard Oil Burner	4-9%	325-600 F	1 or less	100
Flame Retention	4-7%	325-600 F	1 or less	100
Condensing	PMI	PMI	1 or less	100

*HEAT EXCHANGER INTEGRITY 801-1.9*

**visual inspection**  
801-1.9a      Ensure that heat exchanger is free of deterioration, cracks or holes.

**carbon monoxide (CO)**  
801-1.9b      Test the distribution system and the ambient air for the presence of CO, and ensure that combustion devices are not producing CO.

**oxygen fluctuation, forced-air systems**  
801-1.9c      During combustion efficiency test on forced-air systems, ensure that there is no fluctuation in the O<sub>2</sub> reading during blower operation. If fluctuation is observed, use an approved method to confirm the existence of a cracked heat exchanger.

**cracked heat exchanger**  
801-1.9d      Ensure that a cracked heat exchanger has been replaced with a new heat exchanger or that a new heating unit has been installed.

*TEMPERATURE RISE 801-1.10*

**measurement**  
801-1.10a      Ensure that the temperature rise is between 40° F and 70° F, or PMI.

*CONTROLS 801-1.11*

**fan control, forced-air units**  
801-1.11a      Ensure that the fan control properly activates the fan.

**high limit control, forced-air units**  
801-1.11b      Ensure that the high limit setting is within applicable code limits and PMI.

**blower operation/condition**  
801-1.11c      Ensure that the blower motor, belt, and fan are clean and operating properly.

**thermostat**  
801-1.11d      Ensure that the thermostat is a proper type for mobile home use and is functioning effectively.