Maine Fuel Board

Pellet Fired Central Heating Appliance Authority Education

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Authority Education
For
Maine Oil Licensee's

This training consists of a review of the adopted laws, rules and standards that are applicable to the installation of pellet-fired central heating appliances.

Successful completion of this training and the subsequent State test will result in a State of Maine Master or Journeyman oil licensee being eligible to receive an authority to install and service pellet-fired central heating appliances.

Authority Education Reference Materials

- 2014 Maine Fuel Board Laws & Rules
- 2011 NFPA 70, *National Electrical Code*
- 2012 NFPA 90B, *Standard for the Installation of Warm Air Heating and Air-Conditioning Systems*
- 2013 NFPA 211, *Standard for Chimneys, Fireplaces, Vents, and Solid Fuel–Burning Appliances*

Pellet Authority

Master Oil Licensee

The pellet authority combined with a State of Maine Master Oil license allows the license holder to install, clean, service, alter and repair pellet-fired central heating appliances.

Pellet Fired Central Heating Appliance Authority

Journeyman Oil Licensee

The pellet authority combined with a State of Maine Journeyman Oil license allows the license holder to install, clean, service, alter and repair pellet-fired central heating appliances under the indirect supervision of a Master Oil licensee with either the pellet authority or with a Master Solid Fuel license.

Pellet Authority Limitations

The pellet authority does not allow the license holder to install, clean, service, alter or repair any solid fuel appliance that does not burn pellet fuel.

Example: A cord-wood boiler.

Pellet Authority

Definitions

Pellet Fuel

A solid processed fuel of specified size and composition capable of being fed to the appliance combustion system at a controlled rate.

NFPA 211 Section 3.3.78.1

Pellet Authority

Definitions

Pellet Fuel Burning Appliance

A closed combustion pellet vent or chimney-connected solid pellet fuel–burning appliance incorporating a fuel–feed control mechanism.

NFPA 211 Section 3.3.3.1

Pellet Authority

Definitions

Chimney Connector

The pipe that connects a fuel burning appliance to a chimney.

NFPA 211 Section 3.3.47.1

Pellet Authority

Definitions

Chimney Flue

The passage in a chimney for conveying the flue gases to the outside atmosphere.

NFPA 211 Section 3.3.73.2

Pellet Authority

Definitions

Pellet Vent

A venting system composed of listed, factory-built components assembled in accordance with the manufacturer's instructions for conveying flue gases from a listed pellet fuel-burning appliance to the outside atmosphere.

NFPA 211 Section 3.3.142.2

Installations

Listing

All pellet-fired central heating appliances, chimney and fireplace equipment and any accessory equipment must be listed and approved by Underwriters' Laboratories or by an independent nationally recognized testing laboratory. Such listing must be in effect at time of installation.

Pellet-fired central heating appliances shall be installed in accordance with the terms of their listing.

Maine Laws & Rules Section 9.2

Installations

Heat Loss

New Installations

Heat loss system design and system load calculations for all *new installations* must be performed prior to the installation.

The licensee must retain a copy of the heat loss system design and system load calculations such that it may be produced for inspection upon request of a Board inspector.

Maine Laws & Rules Section 9.7.1

Installations

Heat Loss

Replacement Systems

A heat loss and/or load calculation must be conducted before *replacement*. The heat loss and/or load calculation may be obtained from the original design plans.

The licensee must retain a copy of the heat loss, system design, or system load calculations and produce it for inspection upon request of a Board inspector.

Maine Laws & Rules Section 9.7.2

Installations

Compliance

Whenever a pellet-fired central heating appliance is installed, the total installation must be brought into compliance with all the standards and rules adopted by the board **BEFORE** the appliance is fired.

Maine Laws & Rules Section 9.4

Installations

Compliance

Prior to leaving the installation unsupervised, the licensed pellet fuel technician shall observe, inspect, and test the equipment to ensure that the installation is operating safely in accordance with the Board's Rules.

Maine Laws & Rules Section 9.4

Installations

Location

Pellet burning appliances shall not be installed where gasoline or any other flammable vapors or gases are likely to be present unless the unit is a sealed combustion system for which the air is taken from the outside.

Maine Laws & Rules Section 9.8.6

Installations

Location

Pellet burning appliances shall not be installed in alcoves or enclosed spaces less than 512 cubic feet unless specifically listed for such use.

NFPA 211 Section 13.2.2

Installations

Location

Pellet fired furnaces or boilers cannot be placed on floors of combustible construction unless listed for such installation.

NFPA 211 Section 13.1(1)

Installations

Location

Pellet burning appliances shall be installed a minimum of 5 feet from any fuel oil supply tank.

The appliance shall be located as close as practicable to the chimney or vent.

NFPA 211 Section 9.3

Installations

Location

The installation must be such as to provide reasonable accessibility for: cleaning heating surfaces; removing burners; replacing motors, controls, air filters, draft regulators, chimney connectors, and other working parts; and adjusting, cleaning, and lubricating parts requiring such attention.

Maine Laws & Rules Section 9.8.4

Installations

Location

Pellet fired furnaces used in central warm air heating systems shall maintain a minimum clearance of 18 inches to combustible material from the top, rear and sides of the appliance.

NFPA 211 Section 13.6.1

Installations

Garages

Pellet burning appliances that do not utilize sealed combustion shall not be installed in any garage unless installed in a separate room, either in or attached to the garage, that is accessible only from the outside.

For a major repair garage, the required fire wall separation is 2 hours. For a minor repair or parking garage, the required fire wall separation is one hour.

All combustion air must be taken from outside the building.

Installations

Garages

Pellet burning appliances using sealed combustion systems for which the air for combustion is taken from the outside may be installed in garages of one and two family dwellings.

Installations

Electrical

The electrical wiring and equipment used must be installed in accordance with NFPA #70, National Electrical Code (2011 edition).

Maine Laws & Rules Section 9.12.1.1

Installations

Electrical

The control circuit must include the following components:

- A **thermal cut-off switch** that must be placed directly above the unit to be fired with the thermal element pointed downwards and must be placed at the front of the unit.
- A **disconnect switch** that must be placed within 3 feet of the burner.
- An identified **emergency switch** to shut down the appliance in an emergency must be placed outside of and adjacent to the entrance to the room where the appliance is located.

Maine Laws & Rules Section 9.12.2

Installations

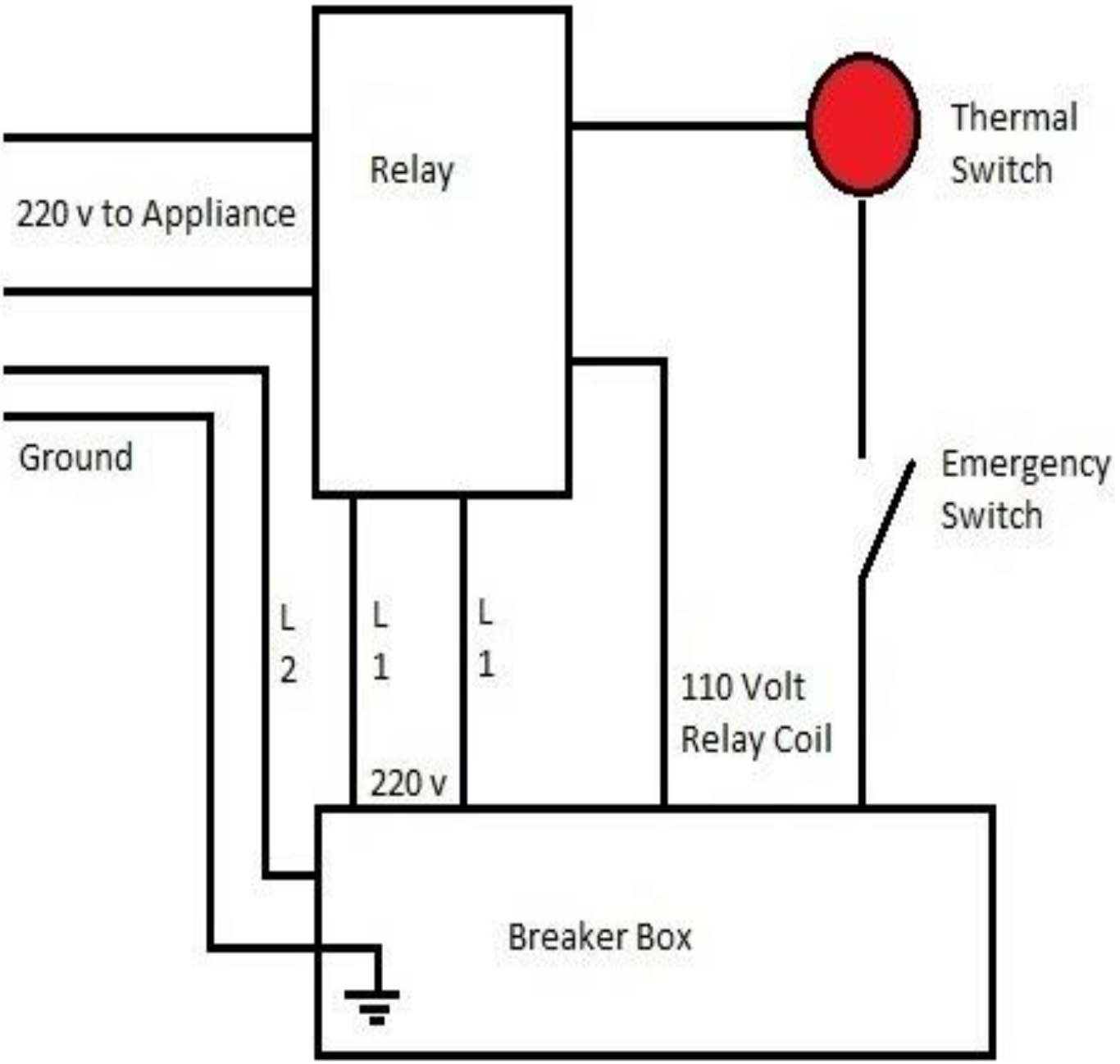
Electrical

Safety control circuits must be two-wire, one side grounded, having a nominal voltage not exceeding 150 Volts.

Ex. – Some pellet-fired appliances require a 220 volt circuit to operate them. In this case, two circuits will need to be installed. The control circuit and the operating circuit.

Please see next slide as an example.

Maine Laws & Rules Section 9.12.1.2


Relay
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Ground
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1
220 v
L
1
110 Volt
Relay Coil
Breaker Box

Installations

Electrical

All pellet-fuel fired boilers must be provided with a properly installed and operating low water cut-off.

No valves or other obstructive devices shall be installed between the boiler and any safety controls or devices.

Maine Laws & Rules Section 9.16.1

Installations

Electrical

Whenever a pellet fuel appliance is installed to work in conjunction with an oil burning appliance, the wiring of the oil burning appliance must be brought into compliance with the requirements of the Board's rules before the unit is fired.

...(see next)

Maine Laws & Rules Section 9.8.7

Installations

Electrical

The wiring update must include properly rated, installed and/or located:

- Fuse or breaker.
- Wiring.
- Emergency switch.
- Thermal electric switch.
- Service switch.
- Low water cut-off.

Maine Laws & Rules Section 9.8.7

Installations

Overheat Protection

A normally-open zone valve and a manual bypass loop ***are not*** required on pellet-fuel burning appliances for which the interruption of power will arrest combustion and interrupt fuel supply as long as the appliance is a residential-type heating appliance as defined in NFPA #211.

Maine Laws & Rules Section 9.10.4

Installations

Chimneys

A State law was enacted in September of 2011 allowing both an oil fired appliance and a pellet-fired appliance to be vented into a single chimney flue. There are two parts of this law that we will review over the next two slides.

Installations

Chimneys

Part one of this law allows for the continued use of an existing connection of a pellet burning appliance to a chimney flue to which another appliance burning oil or solid fuel is connected for any chimney existing and in use *prior* to February 2, 1998 as long as:

(1) Sufficient draft is available for each appliance;

(2) The chimney is lined and structurally intact; and

(3) A carbon monoxide detector is installed in the building near a bedroom

Installations

Chimneys

Part two of this law allows for the connection of a pellet fuel burning appliance to a chimney flue to which another appliance burning oil or solid fuel is connected for any chimney existing and in use *on or after* February 2, 1998 as long as the previously stated conditions (1,2,3) are met, as well as… (see next slide)

Installations

Chimneys

(4) The pellet burning appliance has been listed by Underwriters Laboratories or an independent, nationally recognized testing laboratory or other testing laboratory approved by the Maine Fuel Board

(5) The pellet burning appliance is installed in accordance with the manufacturer's installation specifications.

Installations

Chimneys

Clearances

A minimum of 2″ clearance to combustible material must be maintained from existing interior chimneys.

A minimum of 1″ clearance to combustible material must be maintained from existing exterior chimneys.

This space shall not be filled.

NFPA 211 Section 7.3.1

Installations

Chimneys

Clearances

Chimneys constructed with listed chimney liners shall be built with clearances in conformance with the listing of the liner system.

Ex. If the chimney does not have the required 2” of clearance from combustibles, a listed liner system that is approved for reduced clearance may be used.

NFPA 211 Section 7.3.2

Installations

Chimneys

Firestopping

All spaces between chimneys and the floors and ceilings through which the chimneys pass shall remain fully open but shall be firestopped with noncombustible material.

Gaps between firestopping and the chimney shall not exceed 1⁄16 in.

NFPA 211 Section 7.1.6

Installations

Chimneys

Firestopping

The firestopping of spaces between chimneys and wood joists, beams, or headers shall be of galvanized steel not less than 26 gauge thick or of noncombustible sheet material not more than 1/2 inches thick.

NFPA 211 Section 7.1.6

Installations

Chimneys

Lining

Masonry chimneys shall be lined.

Where masonry chimneys are relined, the liner shall be listed or of approved material that resists corrosion, softening, or cracking from flue gases at temperatures appropriate to the class of chimney service.

NFPA 211 Section 7.1.10 & 7.2.2

Installations

Chimneys

Lining

Lining materials approved for Pellet-Fuel burning appliances are:

(1) Clay flue lining or fireclay brick

(2) Listed chimney lining systems

(3) Factory-built chimneys or chimney units listed for installation within masonry chimneys

(4) Pellet vents listed for installation within masonry chimneys

NFPA 211 Section 7.2.4

Installations

Chimney Connectors

Galvanized steel pipe shall not be used for pellet-fuel burning appliances.

A connector shall be as short and straight as practicable.

NFPA 211 Section 9.3

Installations

Chimney Connectors

Minimum steel connector thickness for a pellet appliance shall be in accordance with the following chart.

Metal Thickness for Steel Pipe Connectors	
Diameter of Connector in.	Sheet Gauge No.
<6	26
≥6 to ≤10	24
>10 to ≤16	22
>16	16

NFPA 211 Section 9.2.2.3

Installations

Chimney Connectors

Clearances from connectors to unprotected combustible material shall be 18 inches.

This clearance shall be permitted to be reduced to the distances in the Minimum Clearance column of Table 9.5.1.2 in NFPA 211.

NFPA 211 Section 9.5.1

Table 9.5.1.2 Reduction of Connector Clearance with Specified Forms of Protection

Clearance Reduction Applied to and Covering All Combustible Surfaces Within the Distance Specified as Required Clearance with No Protection*	Maximum Allowable Reduction in Clearance (%)		Minimum Clearance			
			As Wall Protector		As Ceiling Protector	
	As Wall Protector	As Ceiling Protector	in.	mm	in.	mm
3½ in. (90 mm) thick masonry wall without ventilated air space	33	—	12	305	—	—
½ in. (12.7 mm) thick noncombustible insulation board over 1 in. (25 mm) glass fiber or mineral wool batts without ventilated air space	50	33	9	229	12	305
0.024 in. (0.61 mm), 24 gauge sheet metal over 1 in. (25 mm) glass fiber or mineral wool batts reinforced with wire, or equivalent, on rear face with ventilated air space	66	50	6	152	9	229
3½ in. (90 mm) thick masonry wall with ventilated air space	66	—	6	152	—	—
0.024 in. (0.61 mm), 24 gauge sheet metal with ventilated air space	66	50	6	152	9	229
½ in. (12.7 mm) thick noncombustible insulation board with ventilated air space	66	50	6	152	9	229
0.024 in. (0.61 mm), 24 gauge sheet metal with ventilated air space over 0.024 in. (0.61 mm), 24 gauge sheet metal with ventilated air space	66	50	6	152	9	229
1 in. (25 mm) glass fiber or mineral wool batts sandwiched between two sheets 0.024 in. (0.61 mm), 24 gauge sheet metal with ventilated air space	66	50	6	152	9	229

Installations

Duct Connections

Pellet fired furnaces and heating boilers used in central warm air heating systems shall maintain a minimum clearance of 18 inches to combustible material from the top and sides of the plenum.

This 18 inch clearance to combustibles must be maintained from any duct connected to the plenum for a distance of 3 feet.

NFPA 90B Section 5.1.2

Installations

Duct Connections

The clearance from ducting to a combustible material shall be not less than 6 inches for the distance between 3 feet to 6 feet from the plenum.

The clearance from ducting to a combustible material shall be not less than 1 inch for any distance beyond 6 feet from the plenum.

NFPA 90B Section 5.1.2

Installations

Clearances

Where an appliance, ductwork, or a chimney or vent connection is listed for different clearances, the listed clearances shall apply.

NFPA 90B Section 5.1.1.2

Instructions For Applying To Add This Authority

1. Print a copy of the test from the link below (or from the Fuel Board's home page) and answer all questions.
2. Print out a copy of the "Add an Authority to Oil License" application from the link below (or from the Fuel Board's home page) and fill out completely.
3. Mail completed test and application to address indicated on application.
4. Incomplete applications will be returned.
5. Tests will be scored by Board Staff. The passing grade is 70%.
6. Applicants who receive a passing test score, will receive an updated license (via e-mail) with the Pellet Fired Central Heating authority.
7. There is no fee to add this authority.

http://www.maine.gov/pfr/professionallicensing/professions/fuel/pdf/PelletTest.pdf