

DUCTWORK SYSTEMS FOR SOLID-FUEL APPLIANCES

DISCUSSION

This STANDATA has been developed to discuss an ongoing issue in the field with respect to solid-fuel appliance add-ons that allow for distribution of the heat from the appliance through a series of ducts, either independent or connected to existing ductwork systems serving fuel-fired appliances. Installation of these systems is non-compliant with the Safety Codes Act due to a lack of Canadian certification in relation to the Alberta Building Code 2006, the CAN/CSA-B139 Installation Code for Oil-Burning Equipment and the CAN/CSA-B149 Natural Gas and Propane Installation Code

Solid-fuel-burning appliances with add-ons that allow for distribution of the heat from the fireplace through a series of independent ducts must be certified to CAN/CSA B366.1, "Solid-Fuel Fired Central Heating Appliances." However, at the time of publication, there is no standard in Canada that deals with add-ons that tie into the existing fuel-fired appliance ductwork. As such, these add-ons are not permitted to be installed. Certification to ULC S610 is not considered adequate for installation of these add-ons, as ULC S610 does not specifically address the design requirements for these add-ons.

In addition to the certification requirements, installation of add-ons that tie into the existing ductwork of gas-fired appliances violates Clause 4.18.1 of the Natural Gas and Propane Installation Code, CSA B149, where the installation is made in parallel, as shown in several manufacturers' instructions. In order for these systems to comply with the Natural Gas and Propane Installation Code, they would have to be tested to CSA B366.1 for central systems and would have to be installed as downstream, series add-ons.

Installation of add-ons without proper certification, which tie into the existing ductwork of oil-fired appliances, violates Clause 3.1.1 of the Installation Code for Oil-burning Equipment CSA B139. An appliance, accessory, component, tank or any other item associated with the oil-burning equipment shall be certified or otherwise acceptable to the authority having jurisdiction and shall be installed in accordance with the manufacturer's certified instructions and this Code.

Unless stated otherwise, all Code references in this STANDATA are to Division B of the Alberta Building Code 2006.

CODE REFERENCES

1. Article 9.33.5.2. of the Alberta Building Code 2006 states:

9.33.5.2. Appliance Installation Standards

1) Except as provided in Articles 9.33.5.3. and 9.33.5.4., the installation of heating and air-conditioning equipment, including mechanical refrigeration equipment, and including provisions for mounting, clearances and air supply, shall conform to

...

c) CAN/CSA-B139, "Installation Code for Oil-Burning Equipment,"

d) gas regulations made pursuant to the Safety Codes Act,

...

2. Article 9.33.5.3. of the Alberta Building Code 2006 states:

9.33.5.3. Design, Construction and Installation Standard for Solid-Fuel-Burning Appliances

(See Appendix A.)

1) The design, construction and installation, including the provision of combustion air, of solid-fuel-burning *appliances* and equipment, including *stoves, ranges* and *space heaters*, shall conform to CAN/CSA-B365, "Installation Code for Solid-Fuel-Burning Appliances and Equipment."

...

3. CAN/CSA-B365-01 states:

2.1 Definitions

Add-on – a solid-fuel-burning appliance that is designed to share the heat distribution system connected to an oil-fired, gas-fired, or electric heating appliance, the controls of which are interconnected with the oil-fired, gas-fired or electric heating appliance.

...

3.1 Acceptable Appliances and Equipment

Appliances, accessories, components, and equipment shall satisfy the requirements of one of the following, whichever is applicable:

- a) CSA Standard CAN/CSA-B366.1, central systems;
- b) ULC Standard CAN/ULC-S610, factory-built fireplaces;
- c) ULC Standard S627, space heaters;

...

10. Additional Requirements for Solid-fuel-Burning Add-on Furnaces and Add-on Boilers

10.1

Solid-fuel-burning appliances and equipment shall not be connected to pipework or ductwork of oil- or gas-fired or electrical heating appliances, unless the solid-fuel-burning appliance is specifically approved for such connection, and then only in accordance with the manufacturer's instructions.

10.2

A solid-fuel-burning add-on furnace shall not be installed to allow heated air from the add-on to enter the air inlet of an existing furnace.

...

10.6

The add-on appliance shall be installed only after the existing installation has been inspected and approved and any additional procedures shown in the installation instructions provided with the appliance have been followed.

...

4. CAN/CSA-B149.1-05 states:

4.18 Combined heating systems**4.18.1**

Air heated by either an *appliance* or *fireplace* that burns a solid fuel shall not be introduced into any part of the ductwork system of a gas-fired *appliance* except where either

- a) a *certified* combination gas, and solid fuel-fired *appliance* is installed, or
- b) a *certified* solid-fuel-fired *appliance* downstream series add-on *furnace* is installed.

5. CAN/CSA-B139-04 states:

2.2 Definitions

Add-on – a solid-fuel-burning appliance that is designed to share the heat distribution system connected to an oil, gas, or electric appliance, and that has controls that are interconnected with the oil, gas or electric appliance.

...

3.1. Acceptable Equipment**3.1.1**

Oil-burning equipment shall be certified and shall be installed for its intended use. An appliance, accessory, component, tank or any other item associated with the oil-burning equipment shall be certified or otherwise acceptable to the authority having jurisdiction and shall be installed in accordance with the manufacturer's certified instructions and this Code.

APPLICATION

As a result of the foregoing discussion, there are several configurations of these systems that are possible. The next sections details which configuration are permitted and which are not.

PERMITTED

- 1) Downstream, series add-on solid-fuel appliance(s) that have been tested and certified to CSA B366.1, as shown in Figure 1.

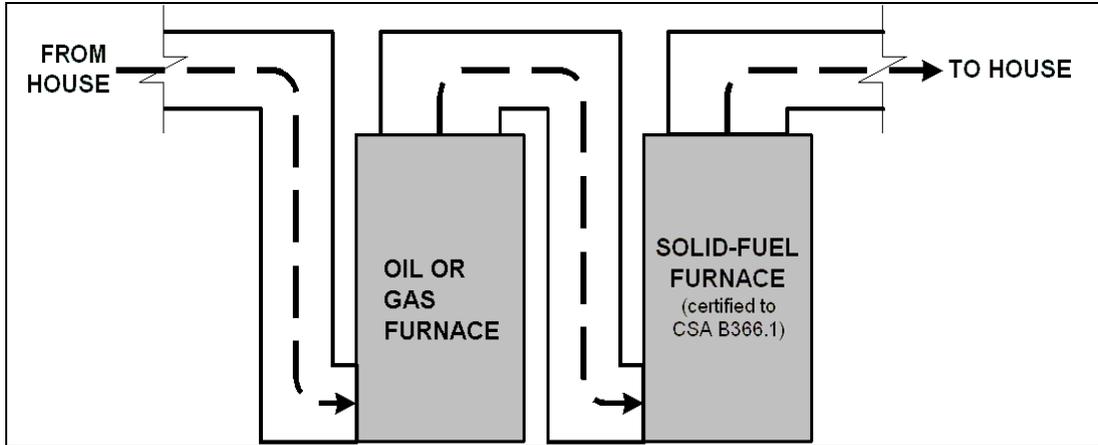


Figure 1 - Downstream Series Add-on

- 2) Fuel-fired or Electric appliance(s) and solid-fuel appliance(s) with independent ductwork systems for each appliance. Solid-fuel appliance(s) to be tested and certified to CSA B366.1, as shown in Figure 2.

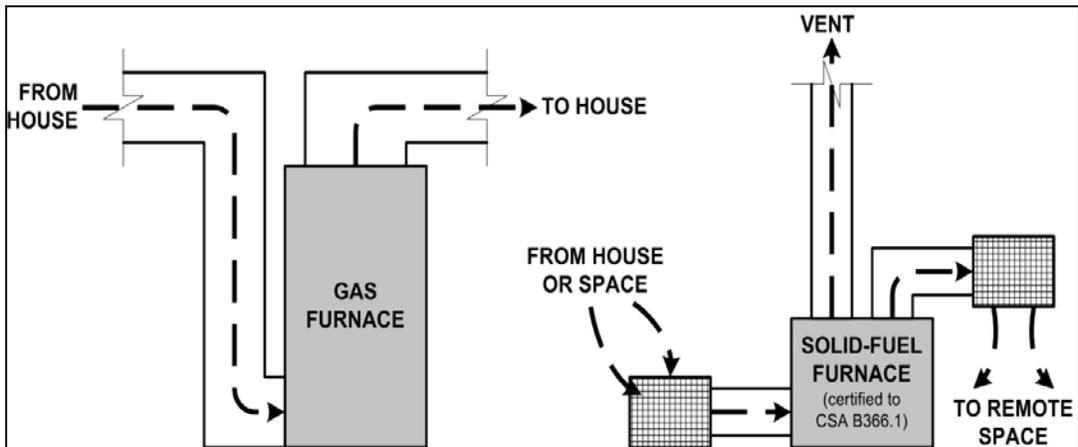


Figure 2 - Independent Ductwork

NOT PERMITTED

Solid-fuel appliance(s) that have add-on kits that tie into the existing ductwork for a fuel-fired or electric appliance, either at the supply plenum (Figure 3) or at any other point in the ductwork (Figure 4). There is currently no Canadian certification standard that accepts these systems.

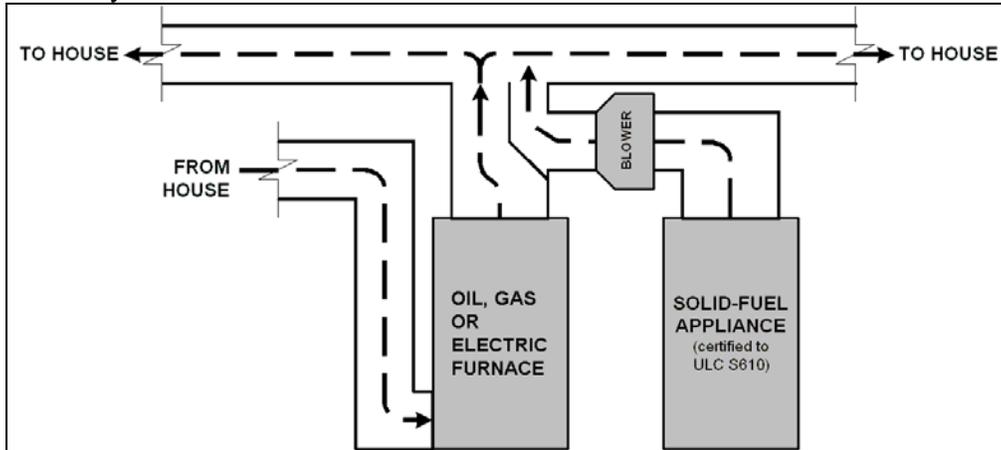


Figure 3 - Supply Plenum Connection

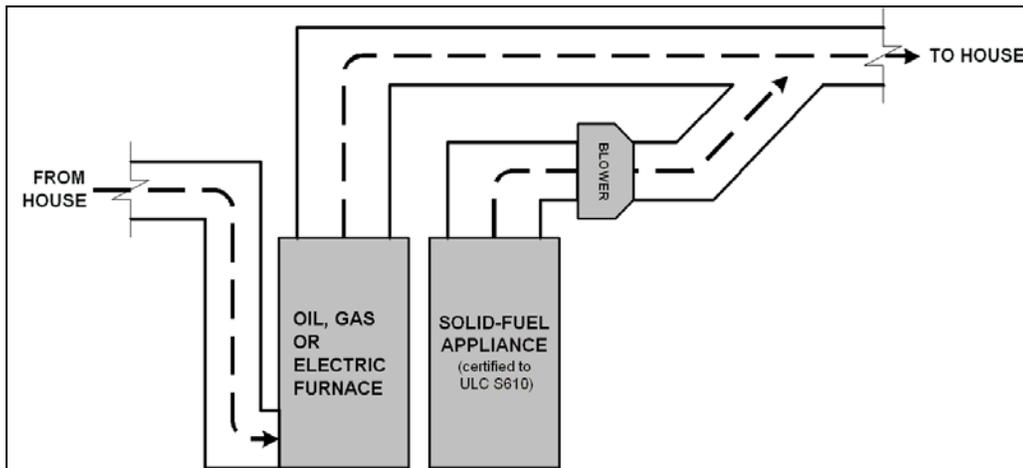


Figure 4 - Ductwork Connected Anywhere

CONCLUSION

Advice and follow-up services can be provided by either Building or Gas Safety Codes Officers as the certification issue applies to both disciplines.

Accredited municipalities, agencies and Safety Codes Officers are urged to carefully review permit applications and installations involving all solid-fuel-fired appliances.

For more information please contact Building or Gas Safety with Alberta Municipal Affairs, Safety Services at (866) 421-6929