

Chapter 8: Fireplaces and Wood Stoves

[51-51 WAC] To ensure indoor air quality and reduce heat loss, Washington State's amendments to the *International Residential Code* (IRC) place installation requirements on all solid fuel combustion appliances, including:

- All wood stoves, including cook stoves.
- Pellet stoves.
- Fireplaces.
- Masonry heaters (must have Washington State Department of Ecology approval).

Combustion Air

In order to prevent backdrafting, an adequate supply of combustion air must be supplied to each solid fuel combustion appliance (see Figure 8-1).

[R1006] Combustion air must:

- Come from outside the building structure.
- Originate from a point below the firebox.
- Enter through a minimum 4-inch diameter duct (minimally 6 square inches for fireplaces) less than 20 feet in length.
- Be directly connected to the appliance (see Figure 8-1).

Exceptions: Combustion air may be supplied to the room in which the solid fuel combustion appliance is located rather than directly to the appliance when either:

- The appliance is part of a central heating system installed in an unconditioned space in accordance with the *International Mechanical Code* (IMC).
- The appliance is installed in existing construction directly on a concrete floor or surrounded by masonry as in a fireplace.

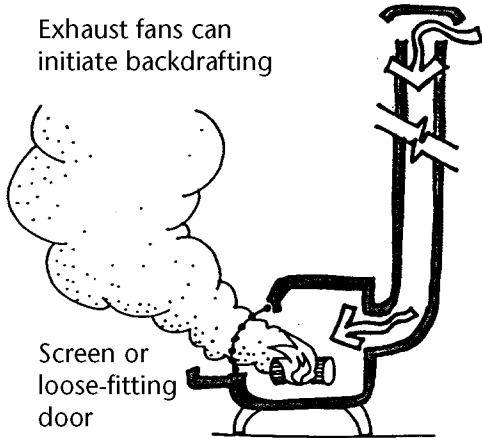
Figure 8-1

Backdrafting

Caused by reduced air pressure relative to outside

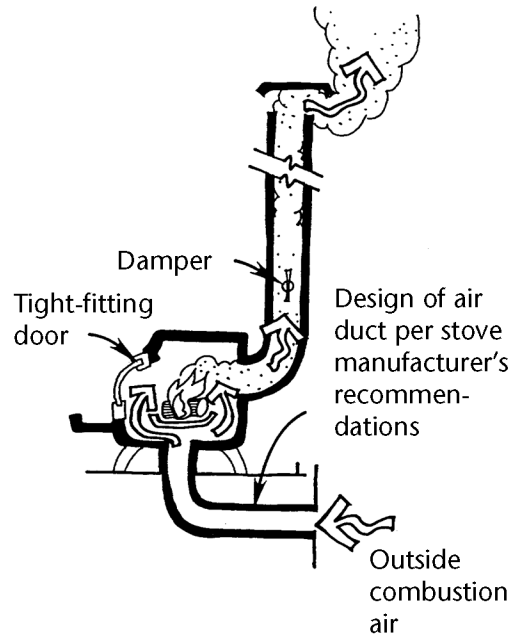
Wind can initiate backdrafting

Exhaust fans can initiate backdrafting



Screen or loose-fitting door

Correctly Operating Stove with Outside Combustion Air



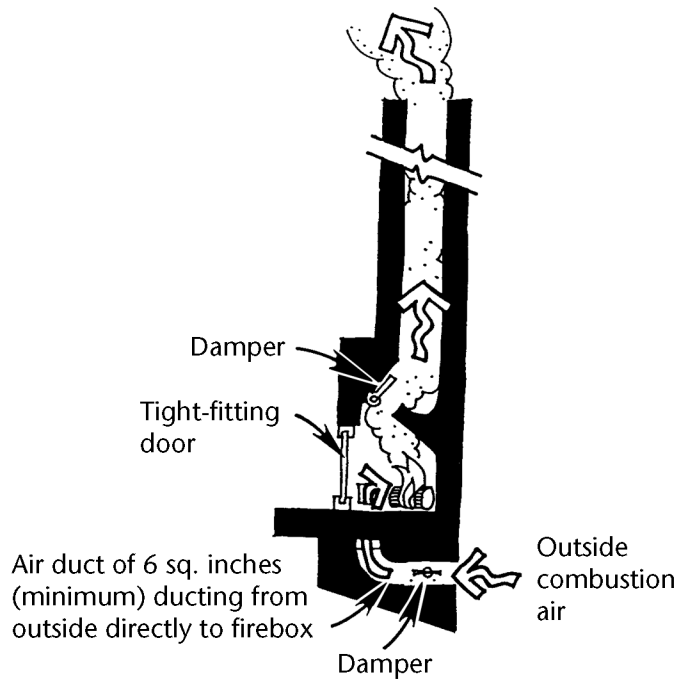
Damper

Tight-fitting door

Design of air duct per stove manufacturer's recommendations

Outside combustion air

Correctly Operating Fireplace with Outside Combustion Air



Damper

Tight-fitting door

Air duct of 6 sq. inches (minimum) ducting from outside directly to firebox

Outside combustion air

Damper

Site-built fireplaces may use a flue draft induction fan instead of doors.

In addition: Alternative methods of providing combustion air (using the manufacturer's specifications) are allowed if the unit and combustion air supply have been certified. They must have passed a test specified by the IRC Section 1006.2 and the test must have been done by an independent lab.

Tight-Fitting Doors

[R1001.7.1] All solid fuel burning appliances, fireplaces and masonry heaters must have tight-fitting ceramic glass or metal doors.

Exception: Site-built fireplaces may use a flue draft induction fan instead of doors.

Note: Although a flue draft induction fan will minimize potential backdrafting, glass doors are also recommended to prevent heat loss when the fireplace is not in use.

Flue Dampers

[R1001.7.1] Fireplaces must have a tight-fitting flue damper.

Exception: Fireplaces with gas logs must be installed in accordance with the IMC.

