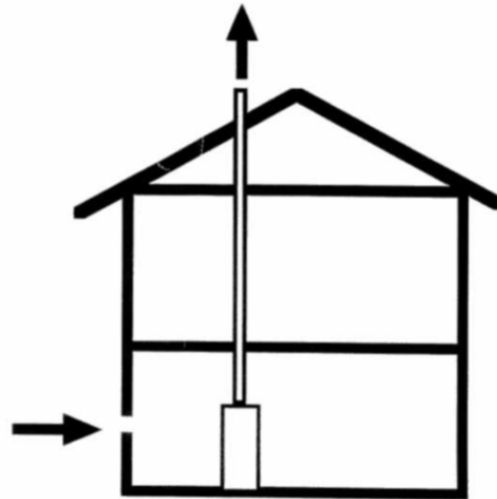


Combustion Air

- Combustion Air is air from the home (or directly from the outdoors) required to meet the combustion and dilution needs of a vented combustion device.



- Combustion air is intended to ensure safe combustion and venting of combustion by-products

A Context for Combustion Air

- Originally combustion air came from the home and was simply replaced by air coming through house leaks
- As houses got tighter, a dedicated duct was provided to the mechanical room or return air ductwork
 - Combustion air was replaced in part with air from this duct
- Today some combustion appliances have their own combustion air supply connected directly to the combustion chamber

Combustion Air and the Energy Code

The Minnesota Energy Code simply states that combustion air must be provided as required by the State Uniform Mechanical Code.

Note: Combustion air must be supplied in addition to any ventilation or make-up air requirements.

Code Requirements - General

- Openings of ducts supplying combustion air must have a net free open area not less than the minimum required common flue serving the combustion equipment
- A passive combustion air system must discharge the air not more than one foot above the floor
- Combustion air may be introduced into the cold air return of the heating system with an outlet provided on the supply duct
 - The outlet must be equal to $\frac{1}{2}$ of the cross sectional area of the common flue serving the combustion equipment

Code Requirements

Space heating

| | |
|-------------------|---|
| Sealed combustion | Per manufacturer's instructions |
| Direct vented | Per manufacturer's instructions |
| Power vented | Cross-section must be equivalent to the flue area for a comparable atmospherically vented appliance |
| Atmospheric | Cross-section must be equal to the flue size |

Code Requirements

Water heating

| | |
|-------------------|---|
| Sealed combustion | Per manufacturer's instructions |
| Direct vented | Per manufacturer's instructions |
| Power vented | Cross-section must be equivalent to the flue area for a comparable atmospherically vented appliance |
| Atmospheric | Cross-section must be equal to the flue size |

Code Requirements

Hearth – gas

| | |
|-------------------|---------------------------------|
| Sealed Combustion | Per manufacturer's instructions |
| Direct vent | Per manufacturer's instructions |
| Power vent | See section on Hearth Products |
| Atmospheric | See section on Hearth Products |

Hearth – solid fuel

| | |
|--------------------|---------------------------------|
| Closed, controlled | Per manufacturer's instructions |
| Decorative | See section on Hearth Products |

Installation Issues for Combustion Air

- Ductwork
 - Use insulated duct and proper connections to the exterior hood
 - Keep the duct work straight and supported
 - Make certain the termination is unrestricted
- Control
 - Combustion air cannot have a manual or barometric damper
 - However, it is possible to have an interlocked mechanical damper with a proving device

Installation Issues for Combustion Air

- Location
 - Generally place close to the combustion equipment
 - Keep the termination away from water pipes, softener, etc.
 - Guard against severe drafts
 - Avoid high wind pressures on exterior hood
 - Add a U-trap on the inside not higher than 12 ' from the floor
 - Place in a bucket with adequate clearances from the bottom and sides

Installation Issues for Combustion Air

- Labels
 - Place a combustion air label on the hood
 - Place a cautionary label on or near the termination
- Homeowner instructions
 - Instructions to clean the hood
 - Emphasize the need to keep the termination clear
 - Reinforce the importance of combustion air