WHAT'S IN A NAME?

Use precise names for components to prevent confusion

Bruce Barker, ASHI Member

It didn't matter to Juliet by what name she called Romeo. That which we call a rose by any other name would smell as sweet.

But to those who read and use your inspection reports, by what name you call a component could make all the difference in the world. Knowing the difference between components that have similar names, functions or appearances will help you make better calls and write more accurate reports. Using accurate names will reduce unnecessary and embarrassing questions and reduce liability. All code references found in this article are from the 2003 International Residential Code (IRC).

Use the correct names for components and you should live happily ever after. Use the wrong names and your business may wind up like Romeo and Juliet.

DRIPS AND SEDIMENT TRAPS

Drips (also called drip legs and drip tees) and sediment traps are components in a fuel gas system that help remove impurities from fuel gas. They look similar and are installed in the same place, but they serve different functions. A drip helps remove moisture from fuel gas, whereas a sediment trap helps remove particulate impurities from fuel gas.

Both drips and sediment traps begin with a tee fitting into which a short-capped pipe (about 3 inches long and called a nipple) is inserted and turned toward the ground. The difference between these components is where the gas connector enters the tee fitting. With a drip, the gas connector enters the tee fitting at a 90-degree angle to the nipple and in line with the gas line entering the appliance. With a sediment trap, the gas connector enters the tee fitting in line with the nipple and at a 90-degree angle to the gas line entering the appliance. The theory is that particulate impurities will more easily fall into the nipple if the gas flow is in line with the nipple and must change direction to enter the appliance.

IRC G2419.2 requires drips only if the gas supplier advises that wet gas exists. This condition is rare in modern gas systems. IRC G2419.4 requires independent sediment traps unless one is incorporated as part of the appliance. Exceptions are gaslights, ranges, clothes dryers and outdoor grills.

Left: Drip tee

Right: Sediment trap

CHIMNEYS, FLUES AND VENTS

Chimneys, flues and vents provide a generally vertical path for safely expelling gaseous combustion products outside the structure. The term chimney refers to a site-built masonry structure or a factory-built pipe system that is capable of safely handling the higher temperatures involved in burning solid fuels. The term flue is generic and describes the structure through which combustion products travel. Every chimney must have one flue and may have more than one. The current rules for constructing and installing chimneys are contained in IRC Chapter 10.

The term vent describes a type of flue used only with gas- and oil-fired equipment. Vents are factory-made components and usually are constructed of metal, although vents used with high-efficiency furnaces and water heaters may be constructed of PVC or other manufacturer-approved material. Most metal vents use double-wall construction, with an air gap between the walls for cooling. It is possible to use single-wall metal material for a vent, but the restrictions on single-wall vent installation make it impractical for most applications.

The most common vents are the Type B vent used with Category I gas appliances, and Type L vents that can be used with either gas- or oil-fired appliances. To avoid confusion between vents and flues, it probably is better to use the term flue for chimneys and the term vent for gas- and oil-fired appliances. Use of the terms "vent flue" or "flue vent" is redundant and should be avoided.

When a venting system serves a single appliance, the vent is the vertical portion of the system that extends to the outside. Parts of the venting system that connect the appliance to the vent are called connectors. A venting system serving multiple gas appliances is called a common vent. The common vent is the portion of the system after the appliances have been connected. Unlike single-appliance vents, common vents may not always be vertical. The portion of the vent that is not vertical is called an offset. The length of an offset is limited to 1.5 times the vent diameter expressed in feet.

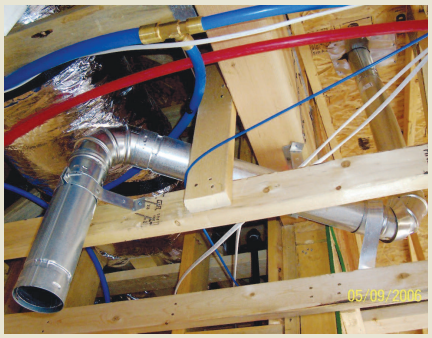
The current rules governing sizing and installation of vents are contained in IRC G2425 through G2428. Among these are rules governing the use of chimneys as vents. Using chimneys as vents was common and often acceptable for older, less fuel-efficient appliances. With newer appliances, using chimneys as vents often is not permitted. This is because chimneys are designed to accommodate much higher flue gas temperatures than are generated by newer appliances. Lower flue gas temperatures may not create sufficient draft to properly conduct the gasses up and out the chimney. This can allow spillage of flue gasses back into the home and can allow moisture to condense in the chimney. Flue gas condensate can be caustic and can rapidly deteriorate the chimney. You should closely inspect all gas- and oil-fired appliance vents connected directly to chimneys. ▸▸▸

Left to right: B vent for gas appliance with no connectors; B vent with offset; masonry chimney with one flue.

VENT CONNECTORS

When a vent cannot be located in line with one fuel-burning appliance, and when two or more appliances are connected to a common vent, pipes and fittings are used to connect the appliance to the vent. These pipes and fittings are called vent connectors, or simply connectors. A connector is the portion of the venting system installed, usually at an angle other than vertical, between the appliance and the vent. If the vent is installed directly in line with one appliance and is vertical from the draft hood or vent connection to the outside, then the system is a vent with no connectors. Connectors may be single- or double-wall pipe. A new type of flexible double-wall connector is being used in some new construction.

The current rules governing connectors are contained in IRC G2427.10. The following are some rules relevant to home inspections. Connectors and vents should be made of the same material to avoid corrosion. Single-wall connectors may not pass through interior walls and ceilings or be run in concealed space. Single-wall connectors have greater clearance to combustible requirements (usually 6" for gas equipment) than double-wall connectors. Connectors should be adequately secured to other connectors and to the vent using sheet-metal screws or listed devices that are installed according to the manufacturer's instructions. All connectors should be adequately supported so that the weight of the connectors does not place undue stress on the pipes and connections. Connectors should have a positive pitch (1/4" per foot) between the equipment and the vent unless otherwise allowed by the equipment manufacturer.



Clockwise from top left: B vent connector with fittings and a lateral connecting to a vent; two vent connectors connecting to a common vent; flexible vent connector, improperly installed without positive slope

CLOTHES DRYER "VENTS"

The term dryer vent often is used to describe the pipe that conducts the output from a clothes dryer away from the dryer. Clothes dryers, including gas clothes dryers, are not vented. They are exhausted and the correct term is a dryer exhaust duct. Dryer exhaust ducts are not subject to the same rules as gas equipment vents; however, rules governing their construction and installation exist.

The current rules governing clothes dryer exhaust ducts are contained in IRC 2439. The general rules include that the duct must be 4-inch diameter smooth-wall metal pipe with a developed length of no greater than 25 feet. Developed length counts 45-degree elbows as 2.5 feet and 90-degree elbows as 5 feet. The duct should have no obstructions (such as screws penetrating the duct) that might trap lint. Installers sometimes will increase the duct size in an attempt to compensate for developed lengths greater than 25 feet. This is not recommended unless allowed by the dryer manufacturer. A larger duct will have a reduced air flow velocity that may not transport lint out of the duct. Lint that remains in the duct is a fire hazard. ▶▶▶

Dryer duct

FIREPLACES AND DECORATIVE GAS APPLIANCES

Fireplaces are site-built masonry structures or factory-built systems intended to burn solid fuels, usually wood. Fireplaces discharge their combustion products into chimney flues. Then what are those factory-built devices that almost everyone, including the manufacturers, call fireplaces but are listed to burn only gas? Technically, they are not fireplaces. They are decorative gas appliances.

It's probably all right to call decorative gas appliances fireplaces. In fact, the standard for vented decorative gas appliances is called "Vented Gas Fireplaces" and that's how the code refers to them (IRC G2434). But when you think about and inspect these devices, think about them as gas appliances, not as fireplaces. As gas appliances, they use vents, not chimneys. Even if the vent is installed inside a masonry chimney, the former chimney now is just a chase surrounding the vent. If a chimney is used as a vent chase, it cannot be used as a chimney or as a flue for venting for other gas appliances.

Direct-vented decorative gas appliance

Masonry fireplace with gas logs

Factory built fireplace with gas logs

MAKEUP AIR AND COMBUSTION AIR

Makeup air and combustion air may be related under some conditions, but they are not the same. Makeup air replaces air that is exhausted by devices such as clothes dryers and bath and kitchen exhaust fans. Makeup air also replaces air that is used by any additional fuel-burning devices in the home, such as fireplaces. Combustion air is the air required to support the burning of fuels and to help fuel-burning equipment operate according to the manufacturer's design. The potential relationship between makeup and combustion air is: if the air exhausted by mechanical exhaust devices or used by other fuel-burning devices is not replaced, there may not be enough air to properly support combustion, venting and operation of fuel-burning devices.

The term combustion air, as commonly used, includes air for purposes in addition to air required to support fuel burning. Ventilation air is air required to maintain fuel-burning equipment at proper operating temperature. Dilution air is air entering the draft hood of natural-draft gas appliances that helps prevent condensation of moisture contained in the flue gasses.

The current rules governing combustion air are contained in G2407. Precise calculation of combustion air requirements is beyond the scope of a home inspection. For purposes of estimating if sufficient combustion air may be present, you may apply the following general rule. If the volume of indoor space where the gas appliances are located is less than 50 cubic feet per 1,000Btu/h input rating for all gas appliances in that space, then additional combustion air from another source may be required.

The current rules for providing makeup air are far more general than the rules for providing combustion air. IRC G2407.4 makes a general statement that makeup air should be considered as a factor when determining whether adequate combustion air is provided. IRC G2439.4 requires that when clothes dryers are installed in closets, an opening of at least 100 square inches must be provided. This requirement is most often is met using a louvered door.

The negative effects of failure to provide adequate combustion air include inefficient and more costly operation of the appliance, potential damage to the appliance and vent system by the potentially corrosive byproducts of incomplete combustion, potential spillage of poisonous combustion byproducts into the home, and increased risk of fire and explosion.

In addition to the potential depletion of combustion air, the negative effects of failure to provide adequate makeup air include depressurization of the home. Depressurization can draw unconditioned and moisture containing outside air from the outside into the home. In the best case, the unconditioned air increases heating and cooling costs. In the worst case, the moisture in the air condenses in wall cavities, damages materials and provides moisture for fungal growth. ■

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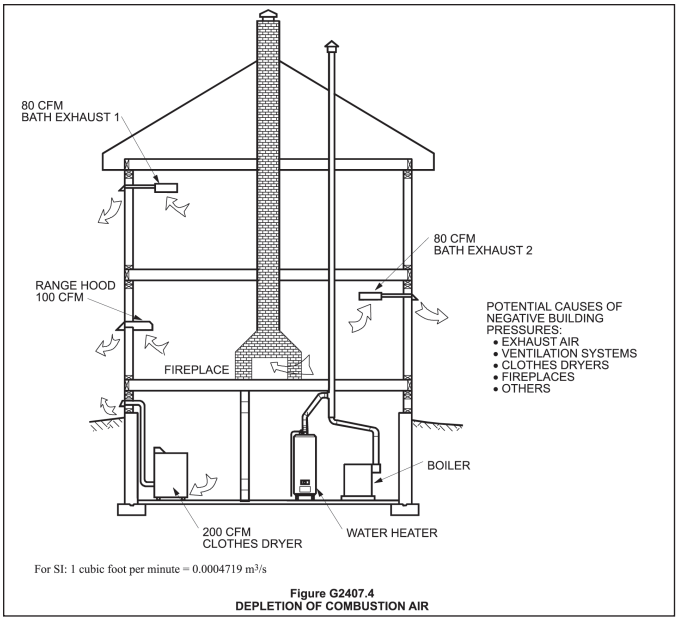

Figure G2407.4
DEPLETION OF COMBUSTION AIR

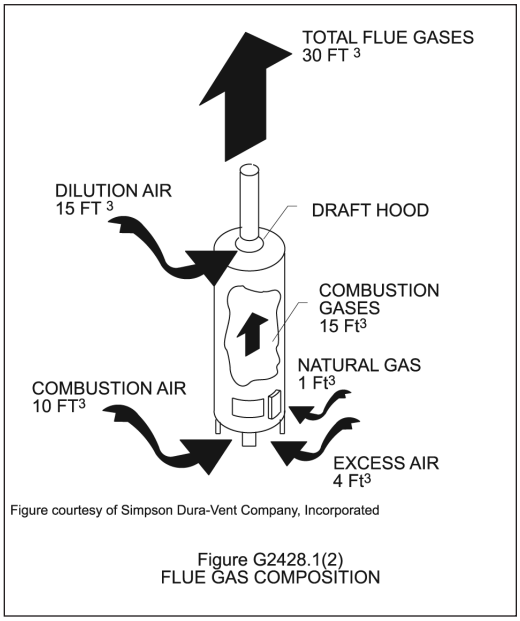

Figure courtesy of Simpson Dura-Vent Company, Incorporated

Figure G2428.1(2)
FLUE GAS COMPOSITION