

TECH TALK

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Vent Offsets

by Dave Fetters

A loyal reader of these *Tech Talk* newsletters suggested that I address vent offsets as a topic. Even though I have other *Tech Talks* already written and could have used for this month, this topic excited me and is a worthy subject for discussion. Only an engineer can get “excited” about such matters. Others are merely interested.

The National Fuel Gas Code (NFGC) and International Fuel Gas Code are not explicit in their definitions of what constitutes an offset in a vent system. A typical definition of vent offset is this one from the NFGC (2006 edition) Paragraph 3.3.107: “**Vent Offset.** An arrangement of two or more fittings and pipe installed for the purpose of locating a vertical section of vent pipe in a different but parallel plane with respect to an adjacent section of vertical vent pipe.”

Notice that the definition avoids any mention of the angle or slope of the offset. However, buried in the text of the paragraphs of Chapter 13, where the code discusses sizing, is some insight into what angle the code refers to when it mentions *lateral*. Paragraph 13.1.3 for single-appliance venting says “...venting with lateral lengths include two 90° elbows.” Clearly, this statement means that a lateral is horizontal pipe between two 90° elbows. The horizontal offset is measured along this horizontal run from the same point on each end (centerline to centerline or outside wall to the same outside wall at the other end).

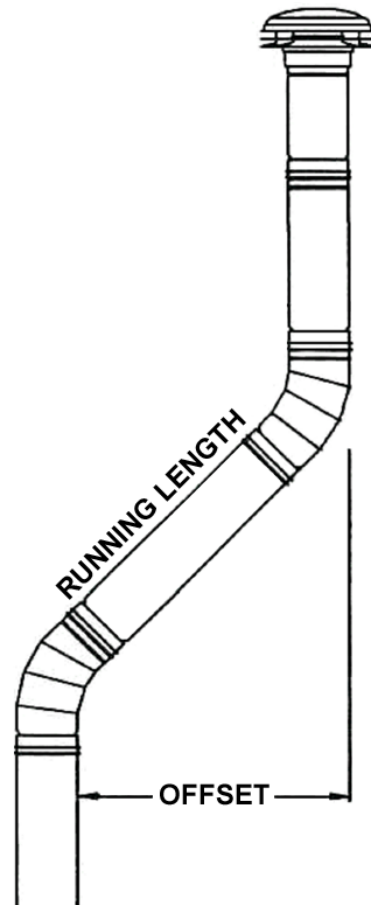
The code also speaks about *offsets* that can be pipe-installed at angles less than 90° (30° or 45° from vertical for instance) as stated in paragraph 13.2.5

Vent Offsets and paragraph 13.2.6 Elbows in Vents. When a vent has an offset, say in an attic, where the angle of the offset is 45° , the code looks at what the vertical-centerline-to-vertical-centerline, horizontal displacement is, and uses that for the offset or lateral allowance. This is the dimension labeled “Offset” in the adjacent drawing. Typically, if the vent is for a single appliance, the sizing tables show the horizontal offset allowance in the column labeled “Lateral.” For multiple-appliance common vents, the code allows the horizontal offset to be no more than 18 inches for each inch of common vent diameter.

For example, in the adjacent figure, the vent is tilted at approximately 45° , and we want to find the horizontal length labeled “Offset.” To determine this offset displacement, one would multiply the hypotenuse by the cosine of 45° (sorry). In layman’s language, take the running length of the pipe and multiply it by .7 (the cosine of 45°). So if the running length were 10 feet, the offset is 7 feet (.7 x 10).

If the vent is offset 30° from vertical, then multiply the running length of pipe by .5 to get the offset (trust me on this one).

In summary, the NFGC allows offsets in single-appliance and multiple-appliance vents. The offset in the eyes of the code is the horizontal displacement of the vent. A horizontal vent may be measured directly. A vent on some angle can be calculated as demonstrated above, guessed at (bad idea), or measured using a plumb bob from the displaced vertical. Whew!



Hart & Cooley, Inc.
500 East Eighth Street
Holland, MI 49423
info@hartcool.com
www.hartandcooley.com

800.433.6341 toll-free
616.392.7855 phone
800.223.8461 toll-free fax
616.392.7971 fax