

# TECH TALK

TT-23

February 2006



## Sidewall Vent Terminations

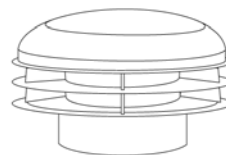
by Dave Fetters

We are often asked if our models RHW and RM gas vent caps are suitable for use on a sidewall vented appliance.

**Background:** Many unit heaters allow sidewall venting as an option to a vertical vent. With vertical venting, the hot flue gases rise in the vent creating a negative pressure in the vent. The vent joints are not required to be leak-proof or sealed, since the atmospheric (positive) pressure outside the vent is higher than the negative pressure inside the vent during firing. Leakage, should it occur, would be from the outside of the vent to the inside—from the area of higher pressure to an area of lower pressure.



RHW Cap



RM Cap

When unit heaters or other appliances are vented horizontally, the performance characteristics of the vent change. Flue gases do not naturally flow horizontally. The small combustion air blower in the appliance now pressurizes the flue gases slightly. This pressure in the horizontal vent is slightly positive (higher than) atmospheric pressure. Leakage of flue gases could now possibly occur into the occupied space. Therefore, the single-wall vent joints must be sealed.

**Cap performance:** Our RHW and RM caps are tested to Underwriters Laboratories standards requirements that must be met when installed in their natural position on top of a vertical vent.

These tests are oriented toward a vent system operating with a negative pressure. These UL standards do not address performance of these same caps for a horizontal, positive pressure vent.

Horizontal vent performance requirements for the gas-fired appliance certification process are part of the ANSI Z21 series of standards. When an appliance is tested with a horizontal vent system, the appliance manufacturer must specify which cap(s) should be used with their appliance, based on these test results. In other words, for the Hart & Cooley caps to be used for sidewall vented appliances, they must have been tested and approved for use with that appliance. To date, our RHW and RM caps have not been tested with any appliance, that we know of, and should not be used for sidewall vent terminations without the approval of the appliance manufacturer.

**What difference does this make?** Sidewall terminations must have Fuel Gas Code-specified distances from adjacent public walkways, buildings, operable windows, and other building openings for obvious reasons. More importantly for proper performance of the appliance, the ignition, firing, running, and shut-down sequences must perform in a nominal fashion without undue delays or interruptions *with a 40-mph wind blowing on the vent termination*. The amount of carbon monoxide developed during testing must not exceed .04%.

The amount of static pressure that builds up around a horizontal vent cap depends on wind speed, wind direction, and how close the cap is mounted to the sidewall. Both increasing wind speed and shorter cap distances to the wall will increase static pressure to a point where the furnace may not vent properly. Clearly, the appliance manufacturer does not want a vent termination to extend out from a building wall 4 feet just to overcome the cap's poor performance in the wind test. Six to 12 inches is usually an acceptable distance that will work with a proper cap tested with the appliance.

**Again, our caps have not been tested for use as horizontal terminations.**



**Hart & Cooley.**  
*install confidence*

Hart & Cooley, Inc. 800.433.6341 *toll-free*  
500 East Eighth Street 616.392.7855 *phone*  
Holland, MI 49423 800.223.8461 *toll-free, fax*  
info@hartcool.com 616.392.7971 *fax*  
www.hartandcooley.com