

# Adjustable Radiator and Main Line Vent Valves for One Pipe Steam Systems

# VARIVALVE®

## Laboratory Study:

The venting capacity of radiator air vents and main line air vents used in single pipe steam heating systems has an important effect on the operation of these systems. In order to obtain a better understanding of these effects, the Center for Energy and Environment conducted experiments both in laboratory and in the field to investigate the properties of single pipe steam air venting. Commercially available radiator and main line air vents were tested and compared. Main line air vents in one building were replaced with open pipe orifices of different sizes, and the resulting fill characteristics of the main steam lines were observed. The purpose of the main line air vent is to rapidly vent the relatively large amount of air in the main lines. This allows the main line to fill more quickly and thus reduces the time difference of steam arrival at the different risers. A large orifice allows the air to be pushed out as a lower back pressure. The function of the radiator air vent is to provide a means for air to be driven out of the radiator as steam enters. At a given pressure, the fill time of a radiator varies proportional to its heat capacity and inversely proportional to the venting capacity of the radiator air vent. It is possible to control the speed at which a radiator will fill with steam by installing a radiator air vent with a certain venting capacity. Used in this manner, radiator air vents are helpful in evening out the heat distribution in a building. The results show that the larger the vent, the more quickly you can vent a system, which lowers operating pressure requirements.



## Achieve a More Balanced Steam Heating System with the Most Advanced Air Valve Available.

- **Exclusive Fingertip Adjustment:** Simply sliding a lever allows you to adjust the venting rate.
- **Each Radiator Has Its Own Venting Speed:** In hard to heat areas, the radiator VARIVALVES® can be adjusted for quicker venting. In overheated areas, the VARIVALVES® can be adjusted for slower venting. This allows steam to be evenly distributed in the system.
- **Long Term Fuel Savings:** Because Heat-Timer VARIVALVES® vent more quickly, it takes less time to fill your system with steam. By adjusting the venting to balance the system, there is no need to raise the steam pressure to reach under heated areas. Shorter boiler runtimes and lower pressure results in fuel savings.
- **Replace Valves with VARIVALVES®:** Using Heat-Timer adjustable vent rate VARIVALVES® throughout the system allows you to balance the heat to your requirements.

# VARIVALVE® Steam Radiator Vents

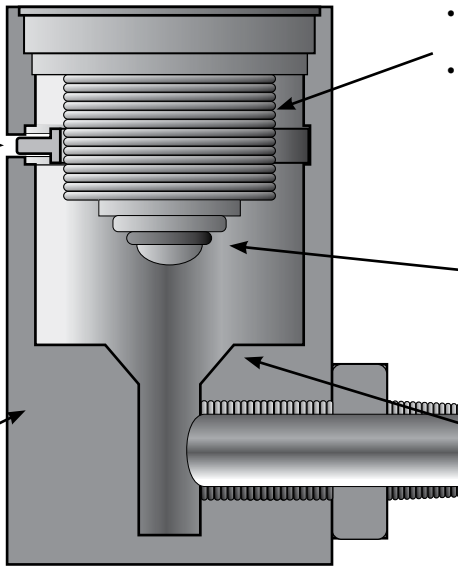
## It's All in the Venting

### Large Variable Orifice

- Allows adjustment up to 5/16".  
Makes radiators heat up FAST (when required).
- Simplifies balancing of systems by providing the fastest heat for hard-to-heat rooms and allowing reduction of heat to overheated areas
- For low-pressure one pipe steam heating systems.

### Heavy Duty Construction and Contemporary Styling

- Solid brass case with heavy chrome plating: available in straight or angle shank. VARIVALVE® is the first valve that looks as good as it works.



### Phosphorus Bronze Bellows

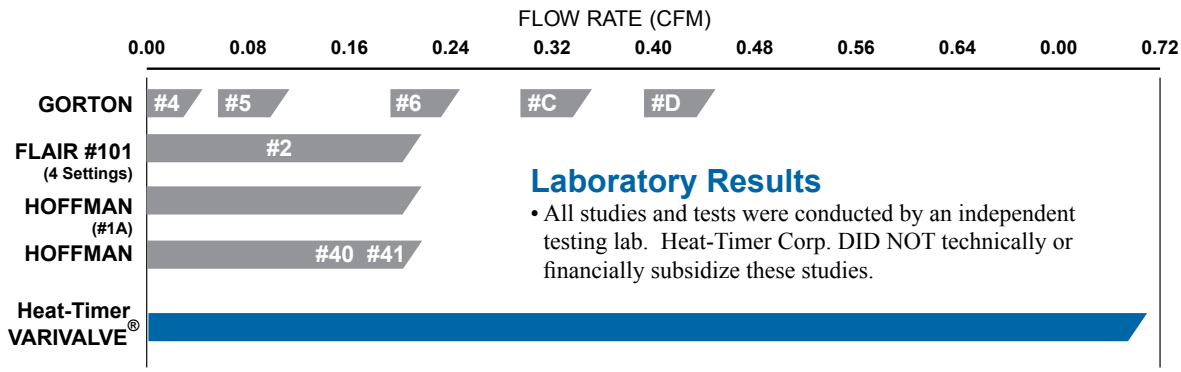
- Insures positive shutoff! Quiet operation! No clicking or hissing.
- Outlasts bimetal air-vents.

### High Temperature O-Ring Seal

- For positive sealing.

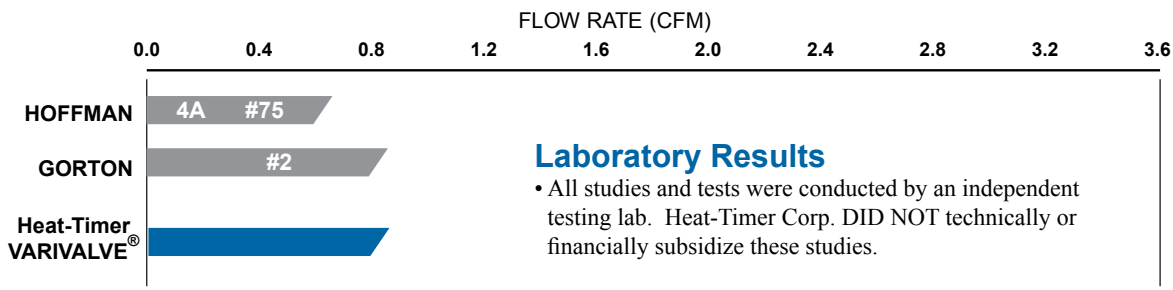
### Seat and Puppet at Inlet to Valve

- Steam or condensation does not enter valve body.



**FIGURE 1 - RADIATOR AIR VENT COMPARISON**

This is a comparison of the radiator air vents tested. This figure is also based on a gauge pressure of 1" W.C. and once again the relative positions do not change up to a pressure of 28" W.C.



**FIGURE 2 - MAIN LINE AIR VENT COMPARISON**

This comparison is based on a gauge pressure of 1" W.C. The results at 1" W.C. were chosen as most representative of actual operating conditions. The relative positions of the vents do not change significantly up to a pressure of 28" W.C.

ISO 9001:2000  
CERTIFIED