

COMBINATION VACUUM RELIEF & AIR RELEASE VALVE

Sizes 3" through 12" Flanged Inlet -
For Sewage & Wastewater Service



FIG. 993

COMBINATION

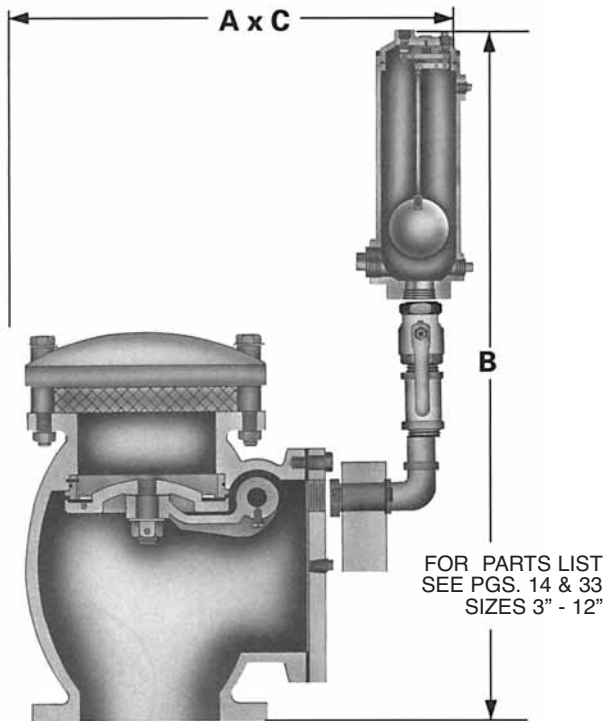


FIG. 993

GENERAL DIMENSIONS

SIZE	3"	4"	6"	8"	10"	12"
A	20-1/2"	22"	23-3/4"	27-1/4"	30-1/4"	34"
B	27-1/2"	28-1/2"	33"	33"	37"	43"
C	15"	16"	19"	22"	24"	28"
WGT. (LBS.)	160	205	285	405	600	875

ENGINEERING SPECIFICATION

The Sewage and Wastewater Service Combination Vacuum Breaking and Air Release Valve shall open to admit large amounts of air when the pressure in the pipeline or vessel falls below atmospheric, reclose upon restoration of positive pressure and release small amounts of accumulated air while pressurized. The Combination Valve shall consist of two independent valves; a Vacuum Breaking Valve and an Air Release Valve, piped together and tested as a unit.

The Vacuum Relief Valve shall be normally closed and open only when the pressure in the pipeline or vessel falls below a predetermined, adjustable vacuum pressure. The body of the valve shall be constructed of cast iron conforming to ASTM A126, Class B. The disc and seat ring shall be made of bronze conforming to ASTM B62. The disc shall be rubber faced designed for tight shut-off. The seat ring shall be bronze. There shall be no internal springs. The air inlet shall be protected by a stainless steel screen and steel hood to prevent the entry of foreign materials.

The Air Release Valve shall 2" size, suitable to release small amounts of accumulated air at up to the maximum working pressure of the system. It shall have a cast iron body and cover conforming to ASTM A126, Class B, all stainless steel internal trim and float and a rubber seat for tight shutoff. An isolating valve shall be supplied between the Vacuum Breaking Valve and the Air Release Valve.

The Sewage Service Combination Vacuum Breaking and Air Release Valve shall be as manufactured by GA Industries, Inc., their Figure 993 (formerly Figure HCARV).

APPLICATION DATA

Why Use Vacuum Relief Valves?

Most often, pressure containing systems, such as pipelines, filter canisters or tanks, are designed to withstand many times the normal pressure without damage. However, certain pipelines and pressure vessels are easily damaged when subjected to an internal vacuum caused by the closed system. In particular, thin wall large diameter pipe and vessels are susceptible to damage caused by vacuum conditions beyond their design. It is extremely important that these systems be protected by "relieving" the vacuum before it reached a critical point.

NOTE: This valve has been effective in installations where water column separations occur following a pump trip, minimizing subsequent high shock pressures when the columns rejoin. It freely admits air, but vents it slowly through the Air Release Valve, thereby providing a cushion of air to reduce the impact of the rejoining water columns, thus lessening the surge potential of the system. However, it is not suitable to vent air when filling pipeline.

What Do They Do?

Vacuum Relief Valves automatically open and admit air into a pipeline, vessel or system, when the internal pressure drops to a predetermined level below atmospheric, thereby "making-up" the vacuum and limiting the vacuum pressure to within the design of the system.

How Do They Work?

Vacuum Relief Valves are installed at points where a vacuum would first tend to form if the system would drain, either by design or in an emergency, such as line break or power outage. They are normally held closed by a spring or weight and do not open unless the internal pressure drops below atmospheric. When the pressure inside the pipeline or vessel drops to a point where the external atmospheric pressure overcomes the spring or weight, the valve opens and rapidly admits air. The valve will re-close upon restoration of pressure higher than the setting of the valve. Vacuum Relief Valves can be combined with Air Release Valves to allow residual air to escape after the Vacuum Relief valve has re-closed.

Where Are They Used?

Figure 993 Vacuum Relief Valves are used on water systems where it is necessary to prevent critical vacuum formation. They are sometimes used in conjunction with Air/Vacuum Valves to supplement the Air/Vacuum Valve's inflow. This is particularly critical when there is a wide difference in the filling and draining flow rates, such as on a steep pipeline gradient, or when thin-wall, large diameter steel pipe is used.

What Is The Difference Between Vacuum Relief Valves and Air/Vacuum Valves?

Vacuum Relief Valves are NORMALLY CLOSED and are ONE-WAY valves. They open only upon excessive vacuum to admit large amounts of air into the system to prevent a critical vacuum condition. Once internal pressure returns to the setting of the valve, it closes and air in the system cannot escape through it. Air that had been drawn in through the Vacuum Relief Valves must be exhausted by other means.

Kinetic Air/Vacuum Valves are NORMALLY OPEN and are TWO-WAY valves. They exhaust air from AND admit air into a pipeline or system. The valve is always open when it is not filled with liquid and held shut by positive pressure in the system. When system pressure drops to near atmospheric (impending vacuum) it opens and admits air. However, as liquid refills the system, air that had been drawn in can also be exhausted through the Air/Vacuum Valve.