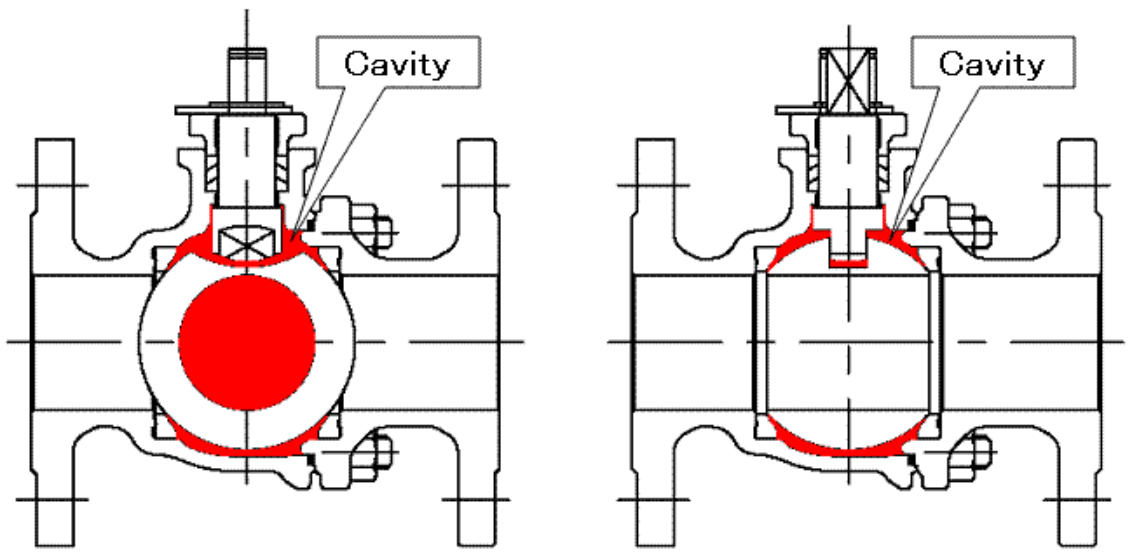
Vented Ball Handles The Pressure

Two weeks ago, we discussed the **BA-100ELD** Safety Exhaust Valve, which has generated some questions about the term “vented ball”, its meaning, and its correct application. The **BA-100ELD** features a ball that is milled flat and positioned on the bottom half of the valve when in the closed position. This milled area allows compressed air to vent out a bottom exhaust hole in the valve body for compressed air systems.

In order to properly discuss the vented ball, let’s start by defining a “vent” in general terms, which is *an opening that allows air, gas, or liquid to pass out of or into a confined space.* For our purposes, the vent is a means to equalize the pressure within and without the confined space.

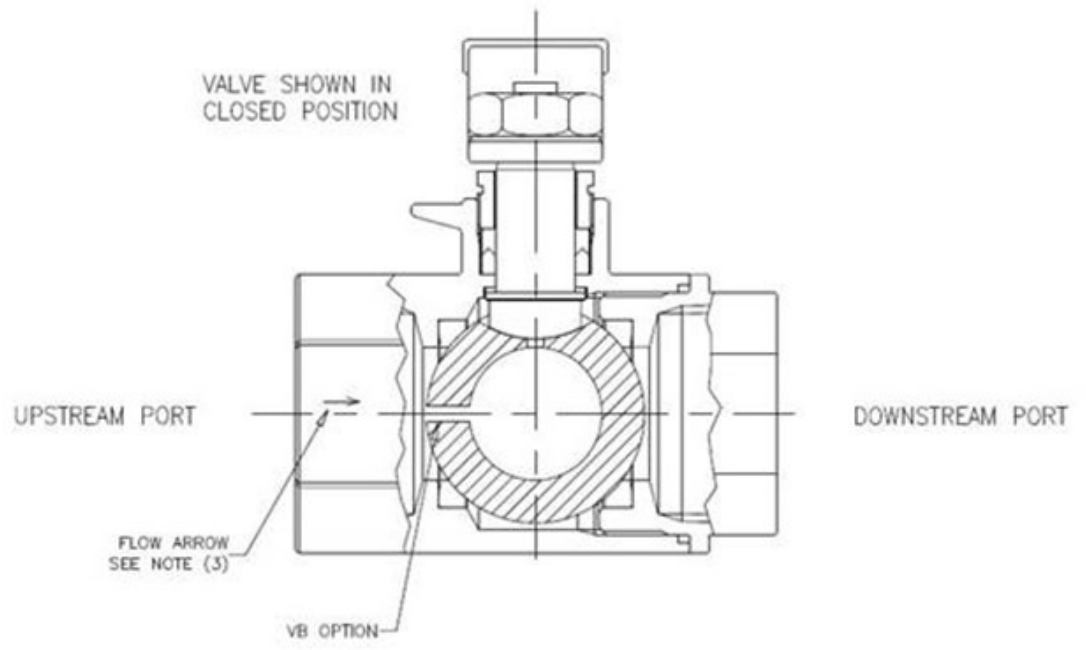
As related to ball valves, this “confined space” can be thought of as any space within the valve where the media is “trapped” by the seats on either side of the ball. In the case of an open valve, some media is always trapped behind the ball, in the body cavity. In a closed valve, the media is both in the body cavity and in the ball itself, but not allowed past the seats in either direction.



The most widely held understanding of a “vented ball” is one in which a relief hole is drilled in the upstream side of the ball (the Milwaukee Valve –VB option). When the valve is closed, any media inside the valve has a path to “vent” to the upstream piping. Many industrial applications have temperature fluctuations that can cause significant increases in cavity pressure, potentially leading to a very dangerous scenario, such as Cryogenics, Chlorine, Hydrogen Peroxide and heat transfer fluids such as Dowtherm™ and Syltherm™, to

name a few.

Note that when an upstream relief hole is introduced in the valve, it then becomes unidirectional for the reasons described in the **BA-100ELD** newsletter. Below is a drawing of our 20 Series assembly with the upstream relief hole (Vented Ball).



Commonly, the error is made when referring to the hole in the stem slot of the ball as a “vented ball”. To be sure, this hole will allow any increase in internal cavity pressure to equalize to the adjacent piping, but only when the valve is open. When the valve is closed, the media can get from the body cavity to the inside of the ball, but not past the pressure seal of the seats. However, media could do this with or without the hole in the top anyway. Therefore, it is more accurate to think of the hole in the top of the ball as a stem slot drain and not a true vent, as an increase in internal pressure has no place to go when the valve is closed. But people think of this hole as acceptable when a vented ball is called out, particularly in simple commercial applications, for better or for worse.
The vented ball option (–VB) is available in most Milwaukee Valve industrial ball valves. In the bronze commercial line, all stainless steel (SS) balls have the hole in the stem slot **but** the –VB is not an option. The chrome-plated (CP) brass balls do not vent, nor do the SS balls in the brass ball valve line, such as the BA-480S.

For more information Milwaukee Valve’s expansive line of commercial and industrial ball valves, visit our website at **www.MilwaukeeValve.com**. For questions or assistance on vented balls, contact your Milwaukee Valve sales representative or regional manager.

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