

Ball Valves Vs. Butterfly Valves

Comparing Ball Valves to Butterfly Valves

By: Chris Pasquali, CEO Factory Direct Pipeline Products, Inc.

This article is hopefully a little more in-depth and tailored to the products we offer than the other articles written about this topic.

There are some applications where you can use either style valve and the decision will likely boil-down to pricing and availability whereas many applications have design requirements which favor one design or the other.

At the simplest level both butterfly and ball valves are 1/4 (90°) turn devices to control flow on, off or somewhere in-between, but that's pretty much where the similarities end.

Butterfly valves tend to be used for water and water-like applications having little or no solids and generally at lower pressures, typically commensurate with 150# ANSI flange ratings (up to 285 PSIG between -20°F to 100°F). Applications involving higher temperatures or pressures, low temperatures, gasses and high particulate loads lend themselves to ball valves.

The reason for this is the design of a butterfly valve requires the disc to always be within the flow path, thus it contributes to pressure drop and if stringy solids are present (seaweed, hair, plastic) there's more chance for impeding the sealing between the disc and seat.

The relatively simpler design of a butterfly valve often equates to reduced cost and lighter weight, especially for pipelines greater than 6".

There are three types of butterfly valve designs to learn about in our article: [Concentric \(zero offset\)](#), [double offset](#) and [triple offset butterfly valves](#).

Ball valves exist from very inexpensive and "simple" designs to the extremely complex, enabling positive shut-off for liquefied gasses and slurries as well as having specialized features involving fire safety and sanitary requirements that support CIP and SIP procedures. In the oil

and gas industry some pipelines need valves compatible with pigging service, which essentially involves equipment passing through the pipelines for cleaning and inspection purposes, thus such applications are not compatible with butterfly valves.

In applications where you can go either way, in addition to pricing and delivery concerns, sometimes the preferred method of installation might be a deciding factor. Butterfly valves are installed sandwiched between two existing pipe flanges (wafer style butterfly valve) or have flanged ends. Ball valves can be provided in "wafer" designs and with flanged ends, but also with threaded, socket (weld and glue), RTJ, sanitary tri-clamp, ringed groove (Victaulic®), tube and cam-lock (to name the most popular).

We can supply both ball and butterfly valves in both alloy and non-alloy materials; mostly you should try to match the valve material with the pipeline material because dissimilar materials have different coefficients of expansion, although cases can be made for using non-alloy valves in alloy pipelines from a reduced cost perspective when the velocity, temperature and pressure are compatible.

When you use our web-based inquiry form, we prompt you for the minimum information required to select the most appropriate valve or valves given your design criteria. It's much easier and quicker for you to complete the form and have us cross-reference your design criteria against the various valve designs we offer than it is for you to learn about all our valves and make that selection on your own.

We usually reply the same day an inquiry is received or by the next business day.

Chris Pasquali has been trained by Hayward Flow Control and Flo-Tite, having provided sales and engineering support since 2001.

