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Butterflies Under Pressure

Mechanical contractors often perform system pressure tests at the direction of the engineer or building owner. Many of these tests involve Milwaukee Valve resilient-seated (rubber-lined) butterflies, and the engineer or building owner reviews Milwaukee Valve's own product-testing procedures as part of their analysis.

There are two standards that cover Milwaukee Valve's resilient butterfly valves in sizes 2"-12". These standards are MSS SP-67 (Butterfly Valves) and API 609 Category A (Butterfly Valves: Double-flanged, Lug- and Wafer-type). The pressure tests include a shell test, and a seat or closure test. API 609 does not specifically call out testing criteria, but refers to API 598 (Valve Inspection and Testing). Resilient butterfly valves 14" and larger are tested in conformance to the MSS standard.

Using an 8-inch Milwaukee ML233E as an example, the published Cold Working Pressure (CWP) rating is 200 psig. First, the shell test... API defines a shell test as, "A pressure test in excess of the cold working pressure

(CWP) rating of the valve for the purpose of validating the soundness and strength of the valve pressure-containing structures." The pressure-containing structure here is the valve body itself. As a side note, the shell test can be performed with or without the liner in place.



Both MSS and API require a shell test of 1.5x the CWP rating of the valve. In our example; 200 psig X 1.5 = 300 psig. So, that's the pressure to which Milwaukee Valve tests every valve rated to 200 psig.

The shell test is followed by the seat (or closure) test, which is simply testing the valve after final assembly to be sure that there are no leaks either across the seat or at the stems. MSS only requires that the test be performed at the rated pressure of the valve, 200 psig.

In the case of API 598 (2"-12" sizes only), Milwaukee Valve performs a High-Pressure closure test. This test is at 110% of the rated working pressure, or 220 psig.

Regardless of the testing pressures, the valve's rated working pressure remains 200 psig. Some test their installed systems to pressures beyond the rated working pressure. It is important to note that doing so will void Milwaukee Valve's factory warranty.

For more information on factory or field testing, please contact your Milwaukee Valve Regional Manager, Product Manager or Applications Engineer.



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