

MSS SP-68-2011

High Pressure Butterfly Valves with Offset Design

Standard Practice
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HIGH PRESSURE BUTTERFLY VALVES WITH OFFSET DESIGN

1. SCOPE

1.1 This Standard Practice covers design requirements, test performance, marking requirements, and nomenclature for butterfly valves designed for high pressure performance, having a seat plane offset from the plane of the stem centerline.

1.2 This Standard Practice covers flangeless (wafer-type) and single flanged (lug-type) body designs, compatible with ASME B16.5 flanges for sizes NPS 3 (DN 80) through NPS 24 (DN 600) and ASME B16.47 Series A flanges for sizes NPS 30 (DN 750) through NPS 48 (DN 1200). Reference Tables 1 and 2.

1.3 This Standard Practice covers valves having body pressure temperature ratings in accordance with ASME B16.34.

1.4 Definitions may be found in MSS SP-96.

2. DESIGN REQUIREMENTS

2.1 **Valve Flange Gasket Surfaces** The flange gasket surfaces of the valve body (against the mating flanges) shall be flush with or raised from other body surfaces within the outside diameters of the mating flanges.

2.2 **Flange Bolting**

2.2.1 Threaded holes used for flange bolting shall provide for full thread engagement to a depth of not less than 1.0 times the nominal bolt diameter.

2.2.2 Unless otherwise specified by the customer, threaded holes for flange bolting shall be tapped in accordance with ASME B1.1 Coarse Thread Series Class 2B for bolts 1 in. and smaller and shall be tapped to the 8-Thread Series Class 2B for bolts $1\frac{1}{8}$ in. and larger.

2.3 **Minimum Disc-to-Pipe Clearance**

2.3.1 The valve disc will upon rotation project beyond the body flange gasket surfaces and therefore requires care on the part of the user to insure that, when installed, there is no interference between the valve disc and adjacent components such as piping, strainers, check valves and other valve related components. Also mating pipe flanges should be carefully aligned prior to tightening of the companion flange bolts.

2.3.2 The valves shall be designed to be compatible with Schedule 40 pipe for all sizes of Class 150 (PN 20); with Schedule 80 pipe for all sizes of Class 300 (PN 50); and with Schedule 80 pipe for the NPS 3 (DN 80) through NPS 6 (DN 150) sizes; and Schedule 100 for NPS 8 (DN 200) through NPS 24 (DN 600) sizes of Class 600 (PN 100).

2.3.3 All valves shall be designed for disc-to-pipe clearance according to the requirements of Annex A.

2.3.4 When the user elects to use a heavier schedule pipe than listed in Section 2.3.2, it shall be his responsibility to insure disc-to-pipe clearance.

2.4 **Minimum Wall Sections** All valves shall have a minimum wall thickness as required by ASME B16.34 for the rating marked on the identification plate.

2.5 **Special Requirements for Single Flange (Lug-Type) Valves** Single flange (lug-type) valves may be designed for closure in dead-end piping when installed against a single flange. Such condition may also occur after removing the companion flange and piping from one side of the valve. Single flange (lug-type) valves which have every flange bolt hole threaded shall be designed such that all parts which are necessary to support pressure loads acting across the seating element safely