

**MSS SP-68-2017**

# High Pressure Butterfly Valves with Offset Design

**Standard Practice**  
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Non-toleranced dimensions in this Standard Practice are nominal unless otherwise specified.

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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. In accordance with API 609 (for butterfly valves), when the bolt hole is adjacent to the shaft, engagement to a depth of 67% of the nominal bolt diameter shall be permitted.

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 (UNC/UNRC), Class 2B for bolts 1 inch and smaller and shall be tapped to ASME B1.1, 8-Thread Series (8-UN/8-UNR), Class 2B for bolts 1½ inch 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 ensure 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 the user's 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.