

MSS SP-68-2017

High Pressure Butterfly Valves with Offset Design

Standard Practice
Developed and Approved by the
Manufacturers Standardization Society of the
Valve and Fittings Industry, Inc.
127 Park Street, NE
Vienna, Virginia 22180-4602
Phone: (703) 281-6613
Fax: (703) 281-6671
E-mail: standards@msshq.org



www.msshq.org

This MSS Standard Practice was developed under the consensus of the MSS Technical Committee 407 and the MSS Coordinating Committee. The content of this Standard Practice is the resulting efforts of competent and experienced volunteers to provide an effective, clear, and non-exclusive standard that will benefit the industry as a whole. This MSS Standard Practice describes minimal requirements and is intended as a basis for common practice by the manufacturer, the user, and the general public. The existence of an MSS Standard Practice does not in itself preclude the manufacture, sale, or use of products not conforming to the Standard Practice. Mandatory conformance to this Standard Practice is established only by reference in other documents such as a code, specification, sales contract, or public law, as applicable. MSS has no power, nor does it undertake, to enforce or certify compliance with this document. Any certification or other statement of compliance with the requirements of this Standard Practice shall not be attributable to MSS and is solely the responsibility of the certifier or maker of the statement.

“Unless indicated otherwise within this MSS Standard Practice, other standards documents referenced to herein are identified by the date of issue that was applicable to this Standard Practice at the date of approval of this MSS Standard Practice (see Annex B). This Standard Practice shall remain silent on the validity of those other standards of prior or subsequent dates of issue even though applicable provisions may not have changed.”

By publication of this Standard Practice, no position is taken with respect to the validity of any potential claim(s) or of any patent rights in connection therewith. MSS shall not be held responsible for identifying any patent rights. Users are expressly advised that determination of patent rights and the risk of infringement of such rights are entirely their responsibility.

In this Standard Practice, all text, notes, annexes, tables, figures, and references are construed to be essential to the understanding of the message of the standard, and are considered normative unless indicated as “supplemental”. All appendices, if included, that appear in this document are construed as “supplemental”. Note that supplemental information does not include mandatory requirements.

The U.S. customary units and SI (metric) units in this Standard Practice are regarded separately as the standard; each should be used independently of the other. Combining or converting values between the two systems may result in non-conformance with this Standard Practice. U.S. customary units in this Standard Practice are the standard, in cases of conflict or incongruity.

Substantive changes in this 2017 edition are “flagged” by parallel bars as shown on the margins of this paragraph. The specific detail of the change may be determined by comparing the material flagged with that in the previous edition.

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

Excerpts of this Standard Practice may be quoted with permission. Credit lines should read ‘Extracted from MSS SP-68-2017 with permission of the publisher, Manufacturers Standardization Society of the Valve and Fittings Industry.’. Reproduction and/or electronic transmission or dissemination is prohibited under copyright convention unless written permission is granted by the Manufacturers Standardization Society of the Valve and Fittings Industry Inc. All rights reserved.

Originally Published: October 1984

Current Edition Approved: March 2017 (April 2017)

Current Edition Published: May 2017

MSS is a registered trademark of Manufacturers Standardization Society of the Valve and Fittings Industry, Inc.

Copyright ©, 2017 by
Manufacturers Standardization Society
of the
Valve and Fittings Industry, Inc.

Printed in U.S.A.

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
1 SCOPE	1
2 DESIGN REQUIREMENTS	1
3 FACE-TO-FACE DIMENSIONS	1
4 MARKING	2
5 TESTING	4

TABLE

1 Face-to-Face Dimensions, NPS 3 (DN 80) to NPS 24 (DN 600)	3
2 Face-to-Face Dimensions, NPS 30 (DN 750) to NPS 48 (DN 1200).....	3
3 Shell Test Duration	4
4 Seat Test Duration	4
A1 Disc-to-Pipe Minimum Nominal Radial Clearances	6

FIGURE

A1 Nomenclature and Explanation of Nominal Radial Clearance	7
---	---

ANNEX

A Disc-to-Pipe Clearance	6
B Reference Standards and Applicable Dates	8

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.