



Standard Specification for Envelope Dimensions for Butterfly Valves—NPS 2 to 24¹

This standard is issued under the fixed designation F1098; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification provides standard dimensions for manual (lever and gear actuator) butterfly valves installed in shipboard piping systems in NPS 2 to NPS 24, inclusive.

1.2 This specification covers conventional and ASME B16.34 class butterfly valves of both lug and wafer types.

1.3 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASME Standard:²

B16.34 Valves — Flanged, Threaded, and Welding End

¹ This specification is under the jurisdiction of ASTM Committee F25 on Ships and Marine Technology and is the direct responsibility of Subcommittee F25.11 on Machinery and Piping Systems.

Current edition approved Dec. 1, 2019. Published January 2020. Originally approved in 1987. Last previous edition approved in 2015 as F1098 – 87 (2015). DOI: 10.1520/F1098-87R19.

² Available from American Society of Mechanical Engineers (ASME), ASME International Headquarters, Two Park Ave., New York, NY 10016-5990, <http://www.asme.org>.

3. Dimensions

3.1 Face-to-Face Dimensions:

3.1.1 Valve body face-to-face dimensions are provided in **Table 1**.

3.1.2 The face-to-face dimensions are the metal-to-metal dimensions between the valve body flange faces that require separate gaskets or the compressed or installed condition for valves using liners that extend from the body contact faces and act as flange gaskets.

3.2 Actuator Dimensions:

3.2.1 The maximum permissible dimensions for lever- and gear-type actuators are provided in **Fig. 1**.

3.2.2 The handwheel and handle may be on either side of the valve.

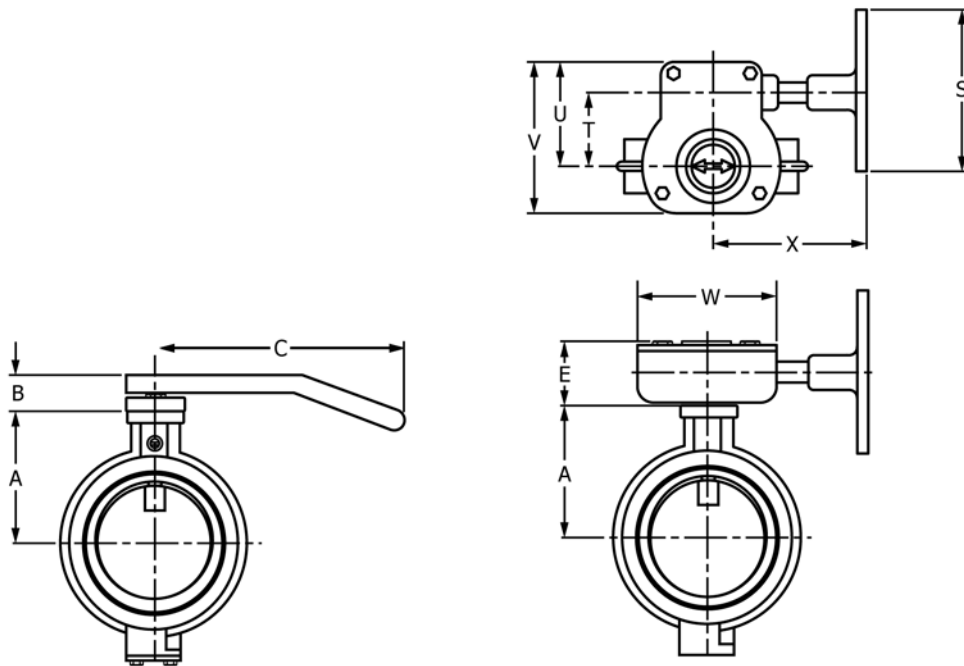
3.2.3 All handwheels and handles rotate clockwise to close the valve.

4. Tolerances

4.1 *Face-to-Face Dimensions*—A plus or minus tolerance of $\frac{1}{16}$ in. (1.6 mm) for all sizes shall be allowed (see **Table 1**).

5. Keywords

5.1 envelope dimensions; gear actuator butterfly valves; lever butterfly valves; manual butterfly valves



NOTE 1—1 in. = 25.4 mm

Dimensions, in.	Valve Size—NPS													
	2	2.5	3	4	5	6	8	10	12	14	16	18	20	24
A	8.00	9.00	10.00	10.00	11.00	11.00	12.00	14.00	17.00	19.00	21.00	23.00	25.00	27.00
B	3.00	3.00	3.50	3.50	3.50	4.00	4.00	4.00	4.00					
C	15.00	15.00	15.00	15.00	15.00	15.00	24.00	24.00	24.00					
E	4.00	4.00	5.50	5.50	5.50	5.50	5.50	6.00	6.00	8.00	8.00	9.00	9.00	10.00
S	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	24.00	24.00	24.00	24.00	24.00
T	2.50	2.50	2.50	2.50	2.50	3.50	3.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50
U	4.00	4.00	4.00	4.00	4.00	4.00	4.00	5.00	5.00	8.00	8.00	8.00	8.00	9.50
V	6.50	6.50	6.50	6.50	6.50	6.50	6.50	8.50	8.50	10.50	10.50	11.50	12.00	13.50
W	5.00	5.00	5.00	5.00	5.00	5.00	6.00	7.00	7.50	9.00	9.00	11.00	11.00	11.50
X	9.50	9.50	9.50	9.50	9.50	9.50	9.50	10.50	13.00	13.00	14.50	14.50	20.00	20.00

FIG. 1 Actuator Envelope Dimensions

TABLE 1 Face-to-Face Dimensions

Valve Size, NPS	Conventional, 200 psig, in. (mm)	ASME B16.34, 150 Class, in. (mm)
2	1 ⁵ / ₈ (41)	1 ³ / ₄ (44)
2 ¹ / ₂	1 ³ / ₄ (44)	1 ⁷ / ₈ (48)
3	1 ³ / ₄ (44)	1 ⁷ / ₈ (48)
3 ¹ / ₂	1 ¹⁵ / ₁₆ (49)	2 (51)
4	2 (51)	2 ¹ / ₈ (54)
5	2 ¹ / ₁₆ (52)	2 ¹ / ₄ (57)
6	2 ¹ / ₈ (54)	2 ¹ / ₄ (57)
8	2 ⁷ / ₁₆ (62)	2 ¹ / ₂ (64)
10	2 ⁹ / ₁₆ (65)	2 ¹³ / ₁₆ (71)
12	3 (76)	3 ³ / ₁₆ (81)
14	3 ¹¹ / ₁₆ (93)	3 ³ / ₈ (92)
16	4 ¹ / ₁₆ (103)	4 (102)
18	4 ⁹ / ₁₆ (116)	4 ¹ / ₂ (114)
20	5 ¹ / ₁₆ (128)	5 (127)
24	5 ⁷ / ₈ (149)	6 ¹ / ₁₆ (154)