



# Standard Specification for Envelope Dimensions for Butterfly Valves—NPS 2 to 24<sup>1</sup>

This standard is issued under the fixed designation F 1098; 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 ANSI 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 the standard. The values given in parentheses are for information only.

## 2. Referenced Documents

2.1 *ANSI Standard:*

B 16.34 Small Butt Welding End Valves<sup>2</sup>

## 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:*

<sup>1</sup> 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.

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<sup>2</sup> Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

TABLE 1 Face-to-Face Dimensions

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

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.

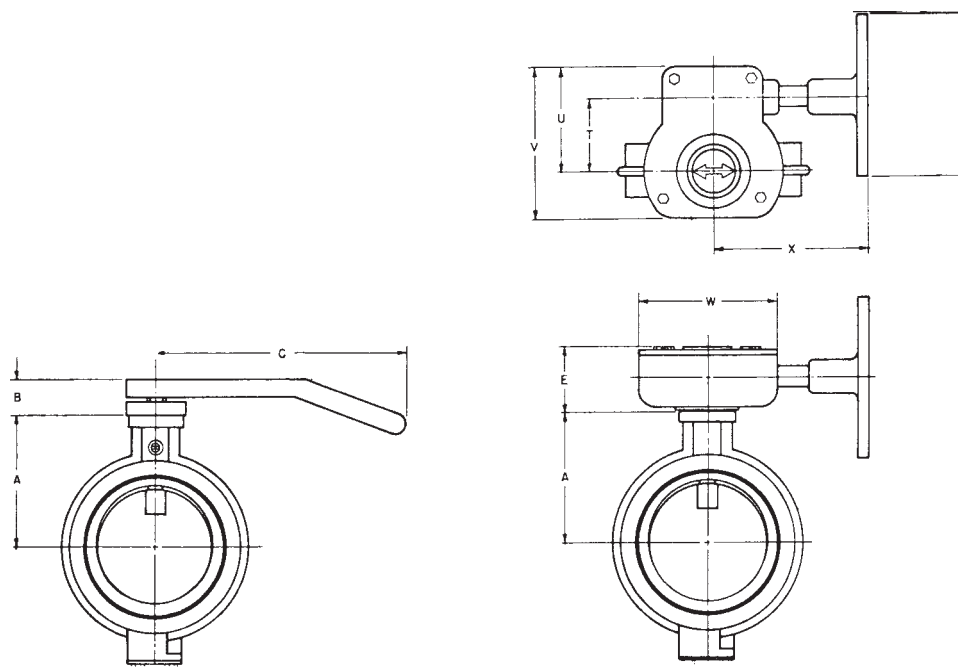
3.2.3 All handwheels and handles rotate clockwise to close the valve.

## 4. Tolerances

4.1 *Face-to-Face Dimensions*—A plus or minus tolerance of <sup>1</sup>/<sub>16</sub> 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

TABLE 1 Continued

| Dimensions,<br>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

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