

## For HVAC, Irrigation, OEM, Commercial and Institutional Applications

|                    |                           |
|--------------------|---------------------------|
| Job Name _____     | Contractor _____          |
| Job Location _____ | Approval _____            |
| Engineer _____     | Contractor P.O. No. _____ |
| Approval _____     | Representative _____      |

# Butterfly Valves

## Series BF-03-NSF Full Lug and BF-04-NSF Wafer

**Sizes: 2" – 12" (50 – 300mm) 200psi (13.8 bars)**  
**14" – 24" (350 – 600mm) 150psi (10.3 bars)**

Watts Series BF-NSF resilient seated butterfly valve is available in sizes 2" – 24" (50 – 600mm), wafer or lug body design. This series was designed to meet the stringent requirements of NSF-61 and is certified by NSF to NSF/ANSI 61 Section 8.

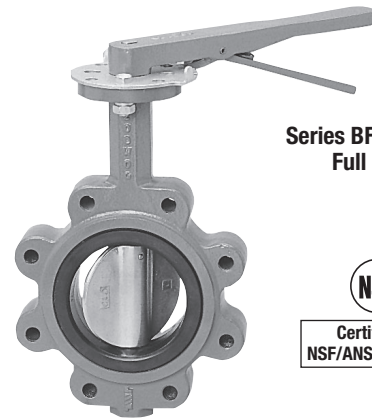
Incorporating a 200psi (13.8 bars) pressure rating for 2" – 12" (50 – 300mm) and a 150psi (10.3 bars) pressure rating 14" – 24" (350 – 600mm), the Series BF is standardly constructed of a ductile iron body, aluminum bronze or 316SS disc and 416SS shaft. A phenolic-backed seat prevents the seat from collapsing or dislodging. Standard seat material is EPDM. In addition to the above features, the Series BF ISO mounting pad design can easily accommodate a lever handle, gear operator, and electric or pneumatic actuators.

The Watts Series BF butterfly valves are designed and manufactured for use with ANSI 125 or 150 Class flanges and to comply with API 609 and MSS-SP-67.

### Features

- **HANDLE** - Ten-position handle is standard. Manual, worm-gear operators are available for all valves and are recommended on 8" – 24" (200 – 600mm) sizes. Watts butterfly valves are also available with chain wheel operators to satisfy a wide variety of requirements.
- **SHAFT** - One-piece shaft delivers positive disc-to-seat location with maximum strength. 416SS is standard with aluminum bronze discs. 316SS shaft with diameters in accordance with AWWA C504-94 class 75B for sizes 3" – 12".
- **SHAFT BUSHINGS** - Duralon® bushings (3) provide shaft support for proper shaft alignment and minimize shaft deflection.
- **SHAFT SEAL** - Bidirectional shaft seal prevents external contamination of stem area and provides backup for the primary shaft seal formed by the disc/seat interface.
- **BODY** - Watts Butterfly Valves are available in Full Lug (BF-03) and Wafer (BF-04) type designed for use between ANSI 125 and 150 flanges. Face-to-face dimensions comply with API 609 and MSS-SP-67. All valves are designed to accommodate 2" of insulation. The standard material is ASTM 536 Ductile Iron which is coated with an FDA approved epoxy.
- **DISC** - Disc edge is machined and polished 360° to assure leak-tight shutoff while minimizing operating torque. Positive, disc-to-shaft connection is provided by stainless steel precision taper pins that are vibration proof.
- **SEAT** - Phenolic backed, non-collapsible, resilient seat is mechanically secured to provide dead-end service to the full 200psi (13.8 bars) pressure rating. Seat face eliminates the need for flange gaskets. Full 360° sealing isolates the body components from the media and provides the primary shaft seal. The EPDM seat is NSF-61 approved.

Watts product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact Watts Technical Service. Watts reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Watts products previously or subsequently sold.



Series BF-03-NSF  
Full Lug



Certified to  
NSF/ANSI Std 61/8.



Series BF-04-NSF  
Wafer



Certified to  
NSF/ANSI Std 61/8.

### Actuators

The integrally cast, heavy duty four bolt ISO mounting pad, coupled with lower operating torque requirements, provides easy and cost effective automation with a variety of pneumatic and electric actuators.

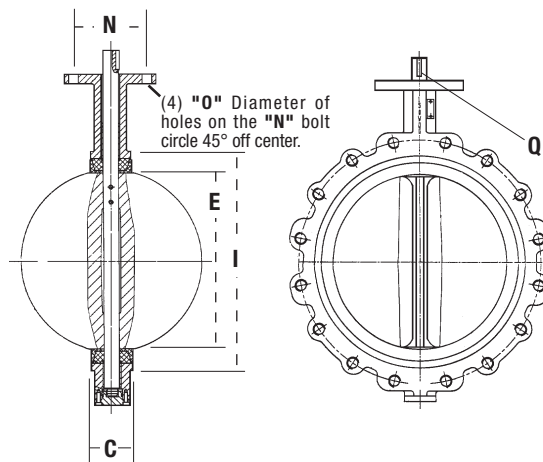
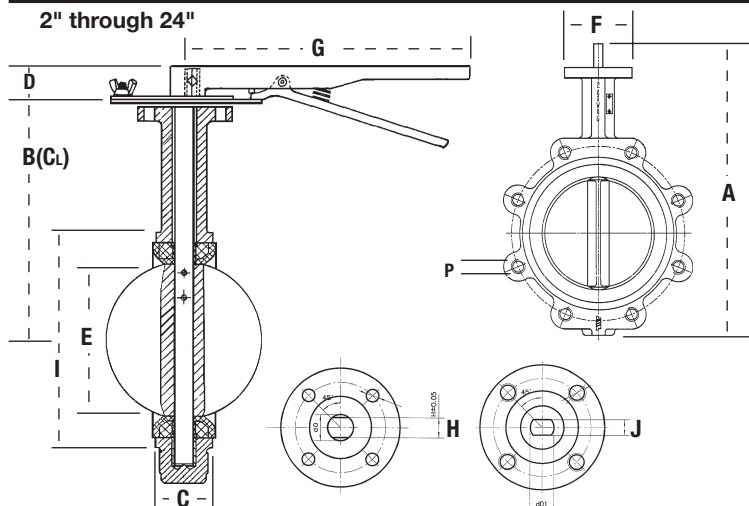
Duralon® is a Registered Trademark of Rexnord Corporation.

Teflon® is a Registered Trademark of E.I. DuPont de Nemours, Co., Inc.

**WATTS®**

## Dimensions – Weights

2" through 24"



| Size   | A      |      | B      |     | C      |     | D     |    | E      |     | F      |     | G      |     | H     |    | I       |     | J     |    |
|--------|--------|------|--------|-----|--------|-----|-------|----|--------|-----|--------|-----|--------|-----|-------|----|---------|-----|-------|----|
|        | in.    | mm   | in.    | mm  | in.    | mm  | in.   | mm | in.    | mm  | in.    | mm  | in.    | mm  | in.   | mm | in.     | mm  | in.   | mm |
| 2"     | 10 3/4 | 273  | 6 7/8  | 161 | 1 1/8  | 42  | 1 1/4 | 32 | 2 1/8  | 54  | 3 1/16 | 77  | 10 1/2 | 267 | 1/2   | 13 | 3 3/4   | 95  | 3/8   | 9  |
| 2 1/2" | 11 1/8 | 295  | 6 7/8  | 175 | 1 3/4  | 45  | 1 1/4 | 32 | 2 1/8  | 65  | 3 1/16 | 77  | 10 1/2 | 267 | 1/2   | 13 | 4 1/4   | 108 | 3/8   | 9  |
| 3"     | 12 1/8 | 308  | 7 1/8  | 181 | 1 3/4  | 45  | 1 1/4 | 32 | 3 3/8  | 79  | 3 1/16 | 77  | 10 1/2 | 267 | 1/2   | 13 | 4 3/4   | 120 | 3/8   | 9  |
| 4"     | 13 3/8 | 346  | 7 7/8  | 200 | 2      | 52  | 1 1/4 | 32 | 4 1/8  | 105 | 3 3/8  | 92  | 10 1/2 | 267 | 3/4   | 16 | 6 1/8   | 154 | 3/8   | 11 |
| 5"     | 14 3/8 | 372  | 8 3/8  | 213 | 2 1/8  | 54  | 1 1/4 | 32 | 4 7/8  | 124 | 3 3/8  | 92  | 10 1/2 | 267 | 3/4   | 19 | 7 1/8   | 181 | 1/2   | 13 |
| 6"     | 15 3/8 | 397  | 8 7/8  | 226 | 2 1/8  | 55  | 1 1/4 | 32 | 6 1/8  | 156 | 3 3/8  | 92  | 10 1/2 | 267 | 3/4   | 19 | 8 7/8   | 208 | 1/2   | 13 |
| 8"     | 18 3/8 | 479  | 10 1/4 | 260 | 2 3/8  | 60  | 1 3/4 | 45 | 8      | 200 | 4 1/2  | 115 | 14     | 356 | 7/8   | 22 | 10 1/4  | 260 | 5/8   | 16 |
| 10"    | 21 1/4 | 540  | 11 1/2 | 292 | 2 3/8  | 66  | 1 3/4 | 45 | 9 7/8  | 251 | 4 1/2  | 115 | 14     | 356 | 1 1/8 | 29 | 12 3/4  | 320 | 3/4   | 21 |
| 12"    | 24 3/8 | 626  | 13 3/4 | 337 | 3      | 76  | 1 3/4 | 45 | 11 7/8 | 301 | 5 1/2  | 140 | 14     | 356 | 1 1/4 | 35 | 14 3/4  | 375 | 1 1/4 | 35 |
| 14"    | 26 3/4 | 679  | 14 1/2 | 368 | 3      | 76  | 1 3/4 | 45 | 13 3/8 | 333 | 5 1/2  | 140 | —      | —   | 1 1/4 | 35 | 15 1/8  | 405 | 1 1/4 | 35 |
| 16"    | 30     | 762  | 15 3/4 | 400 | 3 3/8  | 87  | 2     | 50 | 15 3/8 | 391 | 7 3/4  | 197 | —      | —   | 1 1/4 | 37 | 18 1/2  | 470 | 1 1/4 | 37 |
| 18"    | 31 3/8 | 803  | 16 3/8 | 422 | 4 3/16 | 106 | 2     | 50 | 17 3/8 | 442 | 7 3/4  | 197 | —      | —   | 1 1/2 | 42 | 20 1/16 | 525 | 1 1/2 | 42 |
| 20"    | 35 3/8 | 905  | 18 3/8 | 480 | 5 1/4  | 133 | 2 1/2 | 64 | 19 3/8 | 493 | 7 3/4  | 197 | —      | —   | 1 1/2 | 46 | 22 1/4  | 565 | 1 1/2 | 46 |
| 24"    | 43     | 1092 | 22 3/8 | 562 | 6      | 152 | 2 3/4 | 70 | 23 3/8 | 594 | 10 3/8 | 276 | —      | —   | 2     | 56 | 27 3/8  | 693 | 2     | 56 |

| Size   | Top Plate Drilling |     |     |    | Tapped Lug Data |           |        |                      | Key Way        |         | Weight (lbs.)† |       |
|--------|--------------------|-----|-----|----|-----------------|-----------|--------|----------------------|----------------|---------|----------------|-------|
|        | in.                | mm  | in. | mm | Bolt Circle     | No. Holes | Bolt P | in.                  | mm             | Q       | BF-03          | BF-04 |
| 2"     | 2 1/4              | 50  | 1/4 | 7  | 4 3/4           | 121       | 4      | 5/8"-11UNC x 1 1/4"  | —              | —       | 8              | 6     |
| 2 1/2" | 2 1/4              | 50  | 1/4 | 7  | 5 1/2           | 140       | 4      | 5/8"-11UNC x 1 3/8"  | —              | —       | 10             | 7     |
| 3"     | 2 1/4              | 50  | 1/4 | 7  | 6               | 150       | 4      | 5/8"-11UNC x 1 3/8"  | —              | —       | 10             | 7     |
| 4"     | 2 3/4              | 70  | 3/8 | 10 | 7 1/2           | 191       | 8      | 5/8"-11UNC x 1 1/2"  | —              | —       | 17             | 12    |
| 5"     | 2 3/4              | 70  | 3/8 | 10 | 8 1/2           | 216       | 8      | 3/4"-10UNC x 2"      | —              | —       | 25             | 16    |
| 6"     | 2 3/4              | 70  | 3/8 | 10 | 9 1/2           | 241       | 8      | 3/4"-10UNC x 2"      | —              | —       | 27             | 20    |
| 8"     | 3 1/2              | 102 | 3/8 | 12 | 11 3/4          | 298       | 8      | 3/4"-10UNC x 2 1/8"  | —              | —       | 40             | 29    |
| 10"    | 3 1/2              | 102 | 3/8 | 12 | 14 1/4          | 362       | 12     | 7/8"-9UNC x 2 1/4"   | —              | —       | 63             | 48    |
| 12"    | 4 1/4              | 102 | 3/8 | 12 | 17              | 432       | 12     | 7/8"-9UNC x 2 1/4"   | 1/4 x 1        | 6 x 25  | 107            | 78    |
| 14"    | 4 1/4              | 102 | 3/8 | 12 | 18 3/4          | 476       | 12     | 1"-8UNC x 2 1/4"     | 1/4 x 1        | 6 x 25  | 156            | 99    |
| 16"    | 6 1/4              | 140 | 7/8 | 18 | 21 1/4          | 540       | 16     | 1"-8UNC x 3 3/8"     | 5/16 x 1 13/16 | 8 x 46  | 203            | 140   |
| 18"    | 6 1/4              | 140 | 7/8 | 18 | 22 3/4          | 578       | 16     | 1 1/8"-7UNC x 4"     | 3/8 x 1 1/16   | 10 x 40 | 269            | 188   |
| 20"    | 6 1/4              | 165 | 7/8 | 23 | 25              | 635       | 20     | 1 1/4"-7UNC x 5"     | 3/8 x 1 1/16   | 10 x 40 | 392            | 248   |
| 24"    | 8 1/2              | 165 | 7/8 | 23 | 29 1/2          | 750       | 20     | 1 1/4"-7UNC x 5 3/4" | 1/2 x 2 3/8    | 13 x 60 | 593            | 450   |

| SEATING TORQUE<br>Buna-N, EPDM (in./lbs.) |                              | Cv RATING<br>(Full Open) |           |
|-------------------------------------------|------------------------------|--------------------------|-----------|
| Size                                      | Normal Conditions<br>WET/DRY | Size                     | Cv Rating |
| 2"                                        | 134/214                      | 2"                       | 135       |
| 2 1/2"                                    | 190/289                      | 2 1/2"                   | 220       |
| 3"                                        | 250/387                      | 3"                       | 302       |
| 4"                                        | 390/644                      | 4"                       | 600       |
| 5"                                        | 600/959                      | 5"                       | 1,022     |
| 6"                                        | 907/1,542                    | 6"                       | 1,579     |
| 8"                                        | 1,697/2,919                  | 8"                       | 3,136     |
| 10"                                       | 2,500/4,857                  | 10"                      | 5,340     |
| 12"                                       | 3,300/7,071                  | 12"                      | 8,250     |
| 14"                                       | 3,500/7,305                  | 14"                      | 11,917    |
| 16"                                       | 5,500/10,027                 | 16"                      | 16,388    |
| 18"                                       | 8,200/13,437                 | 18"                      | 21,705    |
| 20"                                       | 10,000/17,925                | 20"                      | 27,908    |
| 24"                                       | 18,680/28,020                | 24"                      | 43,116    |

## How to Order Watts Series BF-NSF

14 - BF- 03 - 231 - 1G - NSF

Size: 2" thru 24"  
Series: 03: Full Lug, 04: Wafer  
Body: 1: Cast Iron, 2: Ductile Iron  
Disc: 3: 316 Stainless Steel\*, 2: Aluminum Bronze\*  
Shaft: 1: 416SS, 316SS on Stainless Steel disc models\*  
Seat: 1: EPDM  
Operator: 0: No handle - 8" thru 24", G: Gear Operator - 2" thru 24", 5: Standard handle (10-position only) - 2" thru 6"  
NSF = Series

## Materials

Body - FDA Epoxy Coated ASTM-536 Ductile Iron  
ASTM A-126 Class B Cast Iron  
Bushing - Duralon(3): Teflon® - Dacron inner liner  
bonded to fiberglass - epoxy resin  
outer shell  
Stem O-rings - Buna-N  
Disc - ASTM A-351 316 Stainless Steel  
ASTM A-148 Aluminum Bronze  
Shaft - 416 Stainless Steel  
\*316 Stainless Steel on 316SS Disc Models  
Seat - EPDM: -15°F to +266°F (-26°C to +130°C)

NOTE: Do not use EPDM when hydrocarbons are present.



USA: 815 Chestnut St., No. Andover, MA 01845-6098; www.watts.com

Canada: 5435 North Service Rd., Burlington, ONT. L7L 5H7; www.wattscanada.ca

Water Safety & Flow Control Products

ES-BF-03-NSF/BF-04-NSF 0629

© Watts Regulator Company, 2006