

## Model BFV-300 Butterfly Valve Wafer Style

### General Description

The TYCO Model BFV-300 Wafer Style Butterfly Valves are indicating type valves designed for use in fire protection systems where a visual indication is required as to whether the valve is open or closed. They are used, for example, as system, sectional and pump water control valves, and are suitable for installation between ANSI Class 125/150 flanges as well as PN10/16 flanges without the need for flange gaskets.

For applications requiring supervision of the open position of the valve, the Gear Operators for the Model BFV-300 Butterfly Valves are provided with two sets of factory installed internal switches each having SPDT contacts (Ref. Figure 3). The supervisory switches transfer their electrical contacts when there is movement from the normally open disc position during the first two revolutions of the handwheel.

#### **NOTICE**

*The TYCO Model BFV-300 Wafer Style Butterfly Valves described herein must be installed and maintained in compliance with this document, as well as with the applicable standards of the National Fire Protection Association, in addition to the standards of any other authorities having jurisdiction. Failure to do so may impair the performance of these devices.*

*The owner is responsible for maintaining their fire protection system and devices in proper operating condition. Contact the installing contractor or product manufacturer with any questions.*

### Technical Data

**Sizes: ANSI Inches (DN)**  
2-1/2 (DN65), 3 (DN80), 4 (DN100),  
5 (DN125), 6 (DN150), 8 (DN200),  
10 (DN250)

**Approvals**  
UL Listed  
FM Approved  
CE Certified

All laboratory listings and approvals are for indoor and outdoor use.

**Maximum Working Pressure**  
300 psi (20,7 bar)

**Maximum Working Temperature**  
212°F (100°C) in accordance with UL 1091

#### **Materials of Construction**

**Body** Ductile Iron ASTM A536

**Body Coating** Nylon: RILSAN Fine  
Powders (PA11) Black

**Disc** Ductile Iron ASTM A536

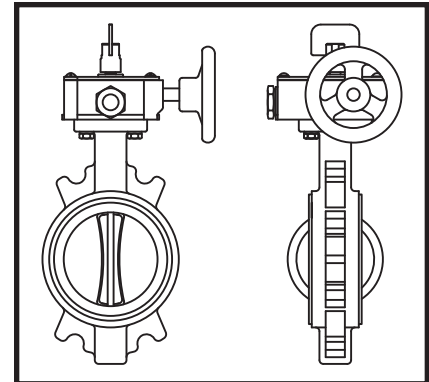
**Disc Seal** EPDM Encapsulated

**Upper & Lower Stem** AISI 410

#### **Actuator**

2-1/2–6 Inch (DN65–DN150):  
IP 65, bronze traveling nut gearbox with  
internal dual switch in ductile iron housing

8, 10 Inch (DN200, DN250):  
IP 65, segmented gearbox with internal  
dual switch in ductile iron housing



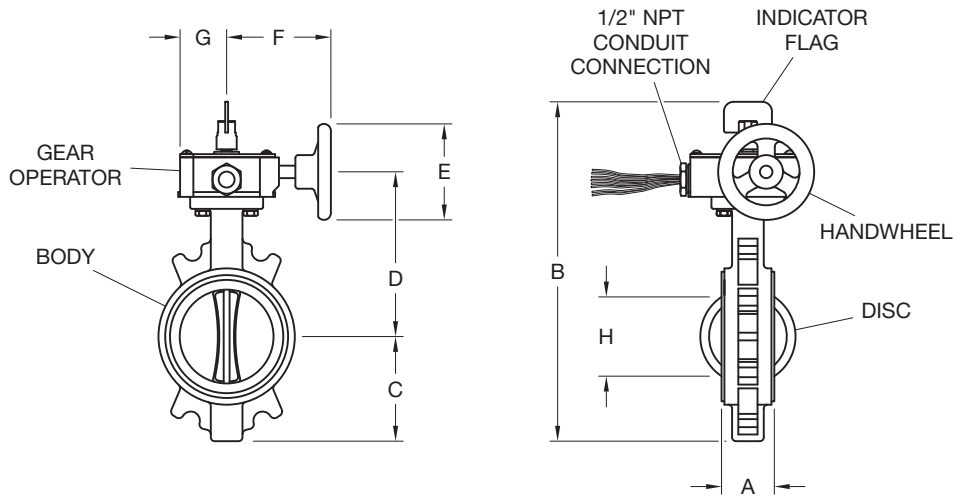
#### **100% Silicone Free**

BFV-300 Butterfly Valves are produced and assembled not using silicone lubricants in any form (such as: grease or aerosol spray) and are suitable for paint or oxygen applications.

#### **Control Valve Seat Leakage Class IEC 60534-4**

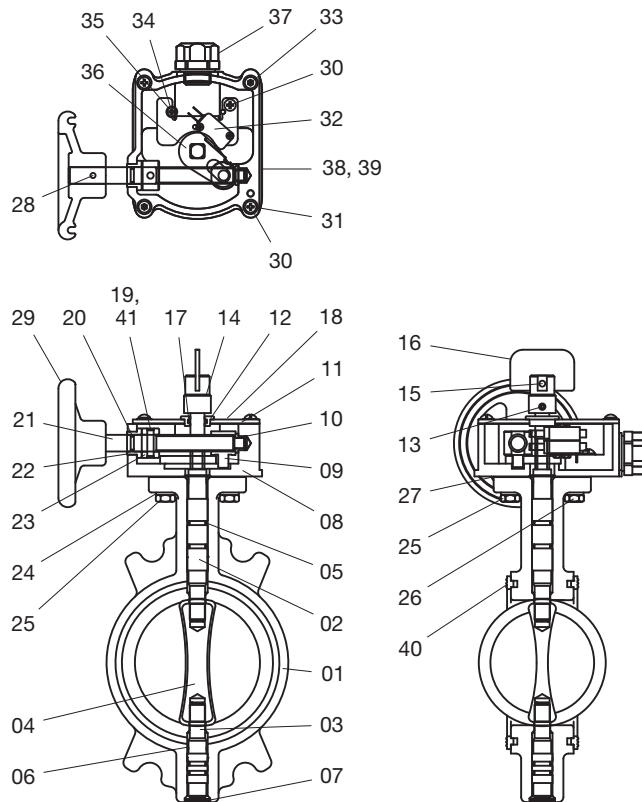
CLASS VI (Type C) Control Valve Seat  
Leakage according to ANSI/FCI 70-2-2006  
(ASME B16.104)

| Nominal Valve Sizes Inches (DN) | Nominal Dimensions Inches (mm) |               |            |              |             |              |             |              | Weight Lbs. (kg) |
|---------------------------------|--------------------------------|---------------|------------|--------------|-------------|--------------|-------------|--------------|------------------|
|                                 | A                              | B             | C          | D            | E           | F            | G           | H            |                  |
| 2-1/2 (DN65)                    | 1.81 (46)                      | 11.67 (296,5) | 3.35 (85)  | 5.45 (138,5) | 4.92 (125)  | 4.28 (108,6) | 1.99 (50,5) | 1.65 (41,9)  | 13.4 (6,1)       |
| 3 (DN80)                        | 1.81 (46)                      | 12.27 (311,7) | 3.58 (91)  | 5.81 (147,7) | 4.92 (125)  | 4.28 (108,6) | 1.99 (50,5) | 2.34 (59,5)  | 14.1 (6,4)       |
| — (80)                          | 1.81 (46)                      | 12.27 (311,7) | 3.58 (91)  | 5.81 (147,7) | 4.92 (125)  | 4.28 (108,6) | 1.99 (50,5) | 2.34 (59,5)  | 14.1 (6,4)       |
| 4 (DN100)                       | 2.16 (55)                      | 13.92 (353,5) | 4.29 (109) | 6.75 (171,5) | 4.92 (125)  | 4.28 (108,6) | 1.99 (50,5) | 3.25 (82,6)  | 15 (6,8)         |
| 5 (DN125)                       | 2.4 (61)                       | 16 (406,6)    | 5.16 (131) | 7.93 (201,5) | 5.91 (150)  | 5.79 (147)   | 2.32 (58,9) | 4 (101,6)    | 26.2 (11,9)      |
| 6 (DN150)                       | 2.4 (61)                       | 17.07 (433,6) | 5.71 (145) | 8.44 (214,5) | 5.91 (150)  | 5.79 (147)   | 2.32 (58,9) | 5.22 (132,6) | 24.5 (11,1)      |
| 8 (DN200)                       | 2.48 (63)                      | 19.63 (498,5) | 6.69 (170) | 9.29 (236)   | 8.86 (225)  | 8.19 (208)   | 2.76 (70)   | 7.3 (185,4)  | 44.1 (20)        |
| — (DN200)                       | 2.48 (63)                      | 19.63 (498,5) | 6.69 (170) | 9.29 (236)   | 8.86 (225)  | 8.19 (208)   | 2.76 (70)   | 7.3 (185,4)  | 44.1 (20)        |
| 10 (DN250)                      | 3.03 (77)                      | 23.01 (584,5) | 8.27 (210) | 11.1 (282)   | 11.14 (283) | 8.19 (208)   | 2.91 (74)   | 9.05 (230)   | 63.9 (29)        |

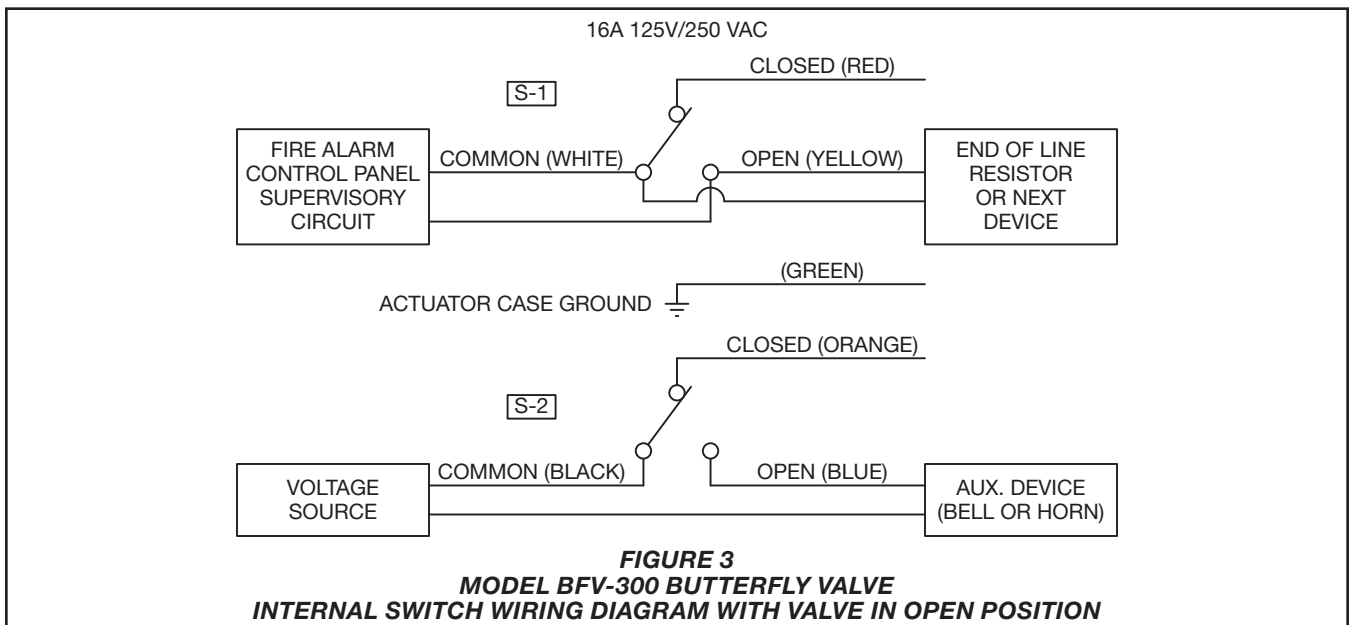
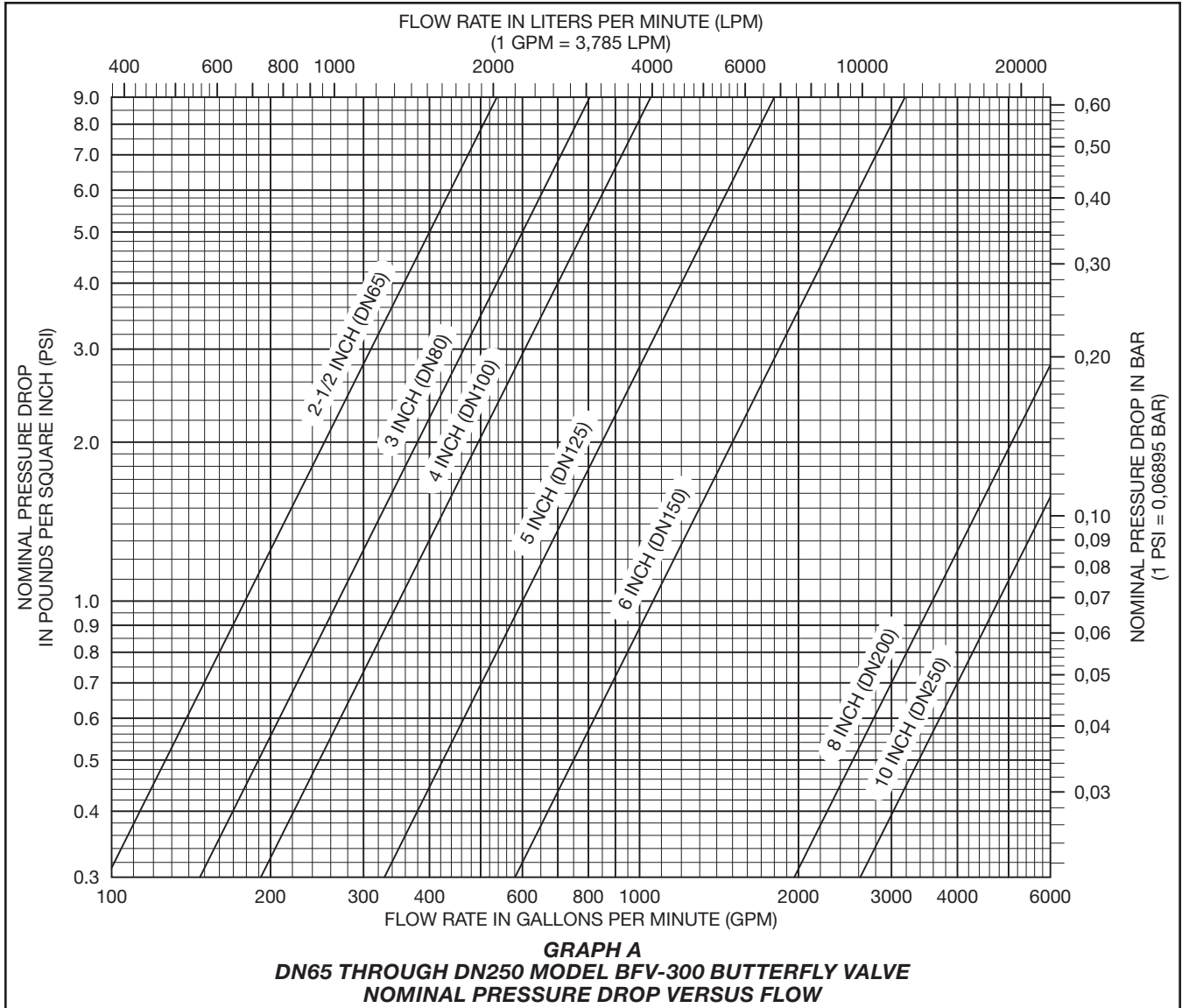


**FIGURE 1**  
**MODEL BFV-300 WAFER STYLE BUTTERFLY VALVE**  
**NOMINAL DIMENSIONS**

| No. | Part                            | Material   | Qty. | No. | Part                     | Material   | Qty. | No. | Part                         | Material   | Qty. |
|-----|---------------------------------|------------|------|-----|--------------------------|------------|------|-----|------------------------------|------------|------|
| 01  | Body                            | ASTM A-536 | 1    | 14  | Stem Housing             | Fe         | 1    | 28  | Spring Pin<br>Ø4x0.8t x25    | ASTM A-228 | 1    |
| 02  | Upper Stem                      | AISI 410   | 1    | 15  | Spring Pin               | ASTM A-228 | 1    | 29  | Handwheel                    | ASTM A-536 | 1    |
| 03  | Lower Stem                      | AISI 410   | 1    | 16  | Indicator                | ASTM A-619 | 1    | 30  | Bolt (Round)                 | ASTM A-167 | 3    |
| 04  | Disc                            | EPDM       | 1    | 17  | O-Ring                   | NBR        | 1    | 31  | Plate Washer                 | ASTM A-167 | 4    |
| 05  | O-Ring (P12)                    | EPDM       | 4    | 18  | Cover Gasket             | Paper      | 1    | 32  | Switch Assembly              | —          | 1    |
| 06  | Oiless B/R (MB1410)             | —          | 4    | 19  | Spring Pin<br>Ø5 x1T x25 | ASTM A-228 | 1    | 33  | T/R Bolt                     | ASTM A-307 | 2    |
| 07  | End Cap<br>2-1/2-4 Inch         | EPDM       | 1    | 20  | O-Ring (P10)             | EPDM       | 1    | 34  | Tapping Screw<br>ST3.5 x 7.5 | S10C       | 1    |
| 08  | Gear Box                        | ASTM A-536 | 1    | 21  | Worm Shaft               | AISI 410   | 1    | 35  | Tooth Washer 4#              | S10C       | 1    |
| 09  | Traveling Nut<br>2-1/2-6 Inch   | Bronze     | 1    | 22  | Bushing (1)              | FD-0205-45 | 1    | 36  | Lever                        | ASTM A-619 | 1    |
| 09  | Segment Gear<br>8, 10 Inch      | C3604BD    | 1    | 23  | Collar                   | FD-0205-45 | 1    | 37  | Connector                    | —          | 1    |
| 10  | Bushing (2)                     | FD-0205-45 | 1    | 24  | Spring Washer            | ASTM A-167 | 4    | 38  | Sticker                      | —          | 1    |
| 11  | Cover                           | ASTM A-619 | 1    | 25  | Hex Bolt<br>M8 x 20L     | ASTM A-167 | 2    | 39  | Sticker                      | —          | 1    |
| 12  | Bushing                         | Fe         | 1    | 26  | Hex Bolt<br>M8 x 25L     | ASTM A-167 | 2    | 40  | Gasket                       | EPDM       | 2    |
| 13  | Headless Wrench<br>Bolt M5 x 7L | ASTM A-307 | 1    | 27  | Gasket                   | Paper      | 1    | 41  | Spring Pin<br>Ø3x0.6T x25    | ASTM A-228 | 1    |



**FIGURE 2**  
**MODEL BFV-300 WAFER STYLE BUTTERFLY VALVE**  
**ASSEMBLY DRAWING**



| Nominal Valve Size Inches (DN) | PSI (bar)  | Flange Face                         | Part Number                  |                                 | Agency Listing/Approval |    |      |    |     |      |       |       |        |
|--------------------------------|------------|-------------------------------------|------------------------------|---------------------------------|-------------------------|----|------|----|-----|------|-------|-------|--------|
|                                |            |                                     | BFV-300 With Internal Switch | BFV-300 Without Internal Switch | CE                      | UL | C-UL | FM | VdS | CCCf | APSAD | PAVUS | VNIPPO |
| 2-1/2 (DN65)                   | 300 (20,7) | ANSI 16.5, PN16                     | 59300W025WS                  | 59300W025NS                     | ✓                       | ✓  |      | ✓  |     |      |       |       |        |
| 3 (DN80)                       | 300 (20,7) | ANSI 16.5                           | 59300W030WS                  | 59300W030NS                     | ✓                       | ✓  |      | ✓  |     |      |       |       |        |
| DN80                           | 300 (20,7) | BS PN16                             | 59300W036WS                  | 59300W036NS                     | ✓                       | ✓  |      | ✓  |     |      |       |       |        |
| 4 (DN100)                      | 300 (20,7) | ANSI 16.5, BS PN16, AS 2129 Table E | 59300W040WS                  | 59300W040NS                     | ✓                       | ✓  |      | ✓  |     |      |       |       |        |
| 5 (DN125)                      | 300 (20,7) | ANSI 16.5, BS PN16                  | 59300W050WS                  | 59300W050NS                     | ✓                       |    |      | ✓  |     |      |       |       |        |
| 6 (DN150)                      | 300 (20,7) | ANSI 16.5, BS PN16, AS 2129 Table E | 59300W060WS                  | 59300W060NS                     | ✓                       | ✓  |      | ✓  |     |      |       |       |        |
| 8 (DN200)                      | 300 (20,7) | ANSI 16.5                           | 59300W080WS                  | 59300W080NS                     | ✓                       | ✓  |      | ✓  |     |      |       |       |        |
| DN200                          | 300 (20,7) | BS PN16                             | 59300W086WS                  | 59300W086NS                     | ✓                       | ✓  |      | ✓  |     |      |       |       |        |
| 10 (DN250)                     | 175 (12)   | ANSI 16.5, BS PN16                  | 59300W100WS                  | 59300W100NS                     | ✓                       | ✓  |      | ✓  |     |      |       |       |        |

**TABLE A**  
**MODEL BFV-300 WAFER STYLE BUTTERFLY VALVE**  
**WITH OR WITHOUT INTERNAL SUPERVISORY SWITCHES**  
**PART NUMBER SELECTION AND AGENCY LISTINGS/APPROVALS**

| Nominal Valve Size Inches (DN) | Part Number                       |                                   |  |
|--------------------------------|-----------------------------------|-----------------------------------|--|
|                                | Bernstein i88-IP65 Regular Switch | Bernstein i88-IP65 LED Switch-24V | Bernstein GC-SU1Z Ex IP-66/67 ATEX (II 2 Ex d IIC T6) Switch |
| 2-1/2-4 (DN65-DN100)           | 59300SPBRACKSW10                  | 59300SPBRACKSW10LED               | 59300SPBRACKSW10ATEX   |
| 5-6 (DN125-DN150)              | 59300SPBRACKSW20                  | 59300SPBRACKSW20LED               | 59300SPBRACKSW20ATEX   |
| 8, 10 (DN200, DN250)           | 59300SPBRACKSW30                  | 59300SPBRACKSW30LED               | 59300SPBRACKSW30ATEX   |

**TABLE B**  
**MODEL BFV-300 WAFER STYLE BUTTERFLY VALVE**  
**MOUNTING BRACKET ASSEMBLY WITH BERNSTEIN EXTERNAL SWITCH**  
**PART NUMBER SELECTION**

| Nominal Valve Size Inches (DN) | Part Number     |
|--------------------------------|-----------------|
| 2-1/2-4 (DN65-DN100)           | 59300SPHWHEEL10 |
| 5-6 (DN125-DN150)              | 59300SPHWHEEL20 |
| 8, 10 (DN200, DN250)           | 59300SPHWHEEL30 |

**TABLE C**  
**BFV-300 WAFER STYLE BUTTERFLY VALVE HANDWHEEL WITH PIN**  
**PART NUMBER SELECTION**

| Nominal Flange Size ANSI Inches (DN)                          | Recommended Minimum Torque Ft.-Lbs (Nm) |
|---|---|
| 2-1/2-4 (DN65-DN100)  | 20-30 (27,1-40,7)                       |
| 5-8 (DN125-DN200)   | 33-50 (44,7-67,8)                       |
| 10 (DN250)  | 53-75 (71,8-101,7)                      |
| <b>TABLE D<br/>RECOMMENDED MATING<br/>FLANGE BOLT TORQUES</b> |   |

## Installation

The TYCO Model BFV-300 Wafer Style Butterfly Valves may be installed with flow in either direction and can be positioned either horizontally or vertically. They are designed for installation between the faces of ANSI Class 125 and 150 flanges as well as PN10/16 flanges without the need for flange gaskets. The Series BFV-300 are self-sealing between mating flanges; therefore, they do not require the use of additional gaskets.

The Model BFV-300 may be installed with any pressure class or schedule of pipe or tubing no greater than schedule 40 that is listed or approved for fire protection service and installed in accordance with the manufacturers instructions.

The wafer bodies have locating lugs to ensure proper centering of the valve body when flange bolts are installed. Refer to Figure 2 for bolt diameter. Bolts and studs must meet the minimum strength requirements of ASTM A307 (Grade B), and the nuts must meet the minimum strength requirements of ASTM A563 (Grade A).

Prior to installation, close the valve. Spread the flanges apart to allow the valve to slip easily between the flanges. Make sure the pipe flange faces are clean of any foreign material such as scale, metal shavings, or welding slag. Insert the valve between the flanges (without flange gaskets). Do not apply lubricant to the seat faces as this may damage the seat material. Be sure to center the valve and do not damage the liner. Relax the separation of the flanges, install, and hand-tighten all flange bolts. Slowly open the valve, checking for free movement of the disc. If valve opens freely, leave the valve in the open position, and using a cross-

draw sequence, tighten all flange bolts until the valve is metal-to-metal with both mating flanges. Recommended tightening torques are listed in Table D.

Be certain to keep flange faces as parallel as possible during and after tightening bolts or studs. After final tightening, again check the valve for full opening and closing.

As applicable, refer to Figure 3 for the internal switch wiring diagram.

Conduit and electrical connections are to be made in accordance with the authority having jurisdiction and/or the National Electrical Code. With reference to Figure 3, the supervisory switch is intended for connection to the supervisory circuit of a fire alarm control panel in accordance with NFPA 72. The auxiliary switch is intended for the unsupervised connection to auxiliary equipment in accordance with NFPA 70, National Electric Code.

**NOTE:** For outdoor applications with internal supervisory switches, it is recommended that wiring connections be made at a temperature above 15°F (-9°C), in order to insure sufficient flexibility of the wire lead insulation.

## Care and Maintenance

The TYCO Model BFV-300 Wafer Style Butterfly Valves must be maintained and serviced in accordance with this section.

Before closing a fire protection system control valve for maintenance or inspection work on either the valve or fire protection system which it controls, permission to shut down the affected fire protection systems must be obtained from the proper authorities and all personnel who may be affected by this decision must be notified.

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in accordance with the applicable standards of the National Fire Protection Association (e.g., NFPA 25), in addition to the standards of any authority having jurisdiction. Contact the installing contractor or product manufacturer with any questions. Any impairment must be immediately corrected.

It is recommended that automatic sprinkler systems be inspected, tested, and maintained by a qualified Inspection Service.

## Limited Warranty

For warranty terms and conditions, visit [www.tyco-fire.com](http://www.tyco-fire.com).

## Ordering Procedure

### Model BFV-300 Wafer Style Butterfly Valves

#### With Internal Normally Open Supervisory Switches

Specify: (specify size) Model BFV-300 Wafer Style Butterfly Valve, Internal Normally Open Supervisory Switches, P/N (specify per Table A)

#### Without Supervisory Switches

Specify: (specify size) Model BFV-300 Wafer Style Butterfly Valve, P/N (specify per Table A)

### Replacement Parts

Refer to Figure 2 to identify parts.

**NOTE:** Only items described in this section are offered as replacement parts.

#### Mounting Bracket Assembly with Bernstein External Switch

Specify: Mounting Bracket with Bernstein (specify model per Table B) External Switch, (specify size) Model BFV-300 Wafer Style Butterfly Valve, P/N (specify per Table B)

#### Handwheel with Pin

Specify: Handwheel with Pin, (specify size) Model BFV-300 Wafer Style Butterfly Valve, P/N (specify per Table C)