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Model BFV-300 Butterfly Valve Wafer Style

IMPORTANT
Refer to Technical Data Sheet TFP2300 for warnings pertaining to regulatory and health information.

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docs.jci.com/tycofire/tfp1516

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 of open valve condition is required. 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 state of the valve, the gear operators for the Model BFV-300 Butterfly Valves feature two sets of factory installed internal switches each having single-pole double-throw (SPDT) contacts as shown in Figure 3. The supervisory switches transfer their electrical contacts when there is movement from the open or closed disc position during the first two revolutions of the handwheel.

Note: *If the butterfly valve is required in a foam system, verify the valve is compatible by referring to the foam concentrate manufacturer technical literature for information about foam compatibility, and acceptable system equipment materials of construction.*

NOTICE

The 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

Approvals

UL and ULC Listed
FM Approved
CE Certified
VdS Approved
EAC Approved
CNPP Certified 63.22.221
Listed by California State Fire Marshall

Note: *For specific information about approvals, see Tables A, B, and C.*

Note: *All laboratory listings and approvals are for indoor and outdoor use.*

Sizes

2 in. to 12 in. (DN50 to DN300)

UL/ULC/FM Maximum Working Pressure

2 in.–8 in. (DN50–DN200) . . . . 300 psi (20,7 bar)
10 in.–12 in. (DN250–DN300) . . 175 psi (12,1 bar)

VdS Maximum Working Pressure

2 in.–8 in. (DN50–DN200) . . . . 300 psi (20,7 bar)
10 in. (DN250) . . . . . 232 psi (16,0 bar)
12 in. (DN300) . . . . . 175 psi (12,1 bar)

Maximum Working Temperature

212°F (100°C) in accordance with UL 1091

Materials of Construction

Body . . . . . Ductile Iron
Body Coating . . . . . RILSAN PA11 Black
Disc . . . . . Ductile Iron
Disc Seal . . . . . .EPDM Encapsulated
Upper & Lower Stem. . . . . Stainless Steel
Handwheel . . . . . Ductile Iron

Actuator, 2 in.–6 in. (DN50–DN150):
- IP65, bronze traveling nut gearbox, ductile iron housing

Actuator, 8 in.–12 in. (DN200–DN300):
- IP65, brass segmented gearbox, ductile iron housing

Silicone Free Model Availability

Silicone free models are available. Contact TYCO sales for information.

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 Size Inches (DN)	Nominal Dimensions Inches (mm)								Weight Lbs. (kg)
	A	B	C	D	E	F	G	H	
2 (DN50)	1.50 (38)	10.63 (270)	2.85 (72,5)	4.90 (124,5)	4.92 (125)	4.28 (108,6)	1.99 (50,5)	1.34 (34)	13.45 (6,1)
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)
— (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)
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)	2.91 (74)	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)
12 (DN300)	3.03 (77)	25.16 (639)	9.5 (241,5)	12.2 (310)	11.14 (283)	8.19 (208)	2.91 (74)	11.53 (292,8)	86.42 (39,2)

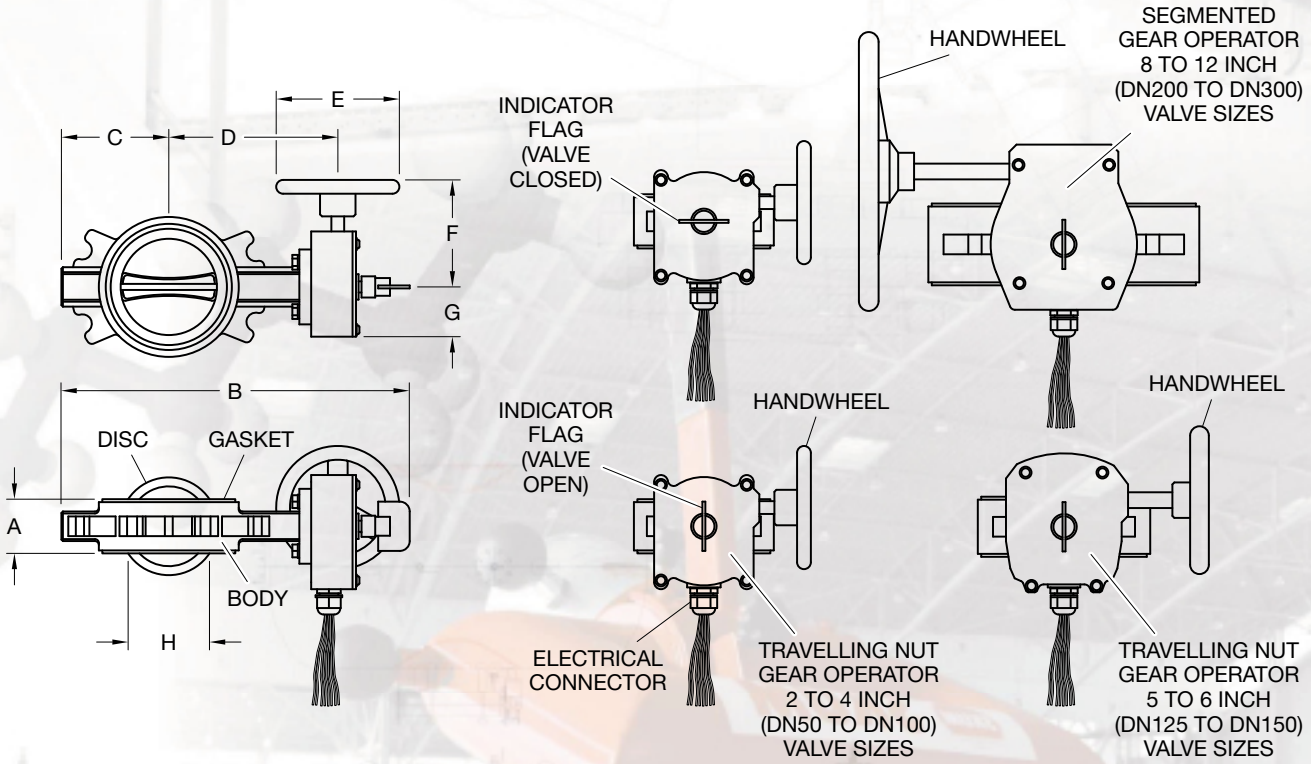


FIGURE 1
MODEL BFV-300 WAFER STYLE BUTTERFLY VALVE
NOMINAL DIMENSIONS

No.	Part	Material	Qty.
01	Body	ASTM A-536	1
02	Upper Stem	AISI 410	1
03	Lower Stem	AISI 410	1
04	Disc	EPDM	1
05	O-Ring (P12)	EPDM	4
06	Oiless B/R (MB1410)	—	4
07	End Cap 2-1/2–4 Inch	EPDM	1
08	Gear Box	ASTM A-536	1
09	Traveling Nut 2–6 Inch	Bronze	1
	Segment Gear 8 – 12 Inch	C3604BD	1
10	Bushing (2)	FD-0205-45	1
11	Cover	ASTM A-619	1
12	Bushing	Fe	1
13	Headless Wrench Bolt M5 x 7L	ASTM A-307	1

No.	Part	Material	Qty.
14	Stem Housing	Fe	1
15	Spring Pin	ASTM A-228	1
16	Indicator	ASTM A-619	1
17	O-Ring	NBR	1
18	Cover Gasket	Paper	1
19	Spring Pin Ø5x1Tx25	ASTM A-228	1
20	O-Ring (P10)	EPDM	1
21	Worm Shaft	AISI 410	1
22	Bushing (1)	FD-0205-45	1
23	Collar	FD-0205-45	1
24	Spring Washer	ASTM A-167	4
25	Hex Bolt M8 x 20L	ASTM A-167	2
26	Hex Bolt M8 x 25L	ASTM A-167	2
27	Gasket	Paper	1

No.	Part	Material	Qty.
28	Spring Pin Ø4x0.8tx35	ASTM A-228	1
29	Handwheel	ASTM A-536	1
30	Bolt (Round)	ASTM A-167	3
31	Plate Washer	ASTM A-167	4
32	Switch Assembly	—	1
33	T/R Bolt	ASTM A-307	2
34	Tapping Screw ST3.5 x 7.5	S10C	1
35	Tooth Washer 4#	S10C	1
36	Lever	ASTM A-619	1
37	Connector	—	1
38	Sticker	—	1
39	Sticker	—	1
40	Gasket	EPDM	2
41	Spring Pin Ø3x0.6Tx25	ASTM A-228	1

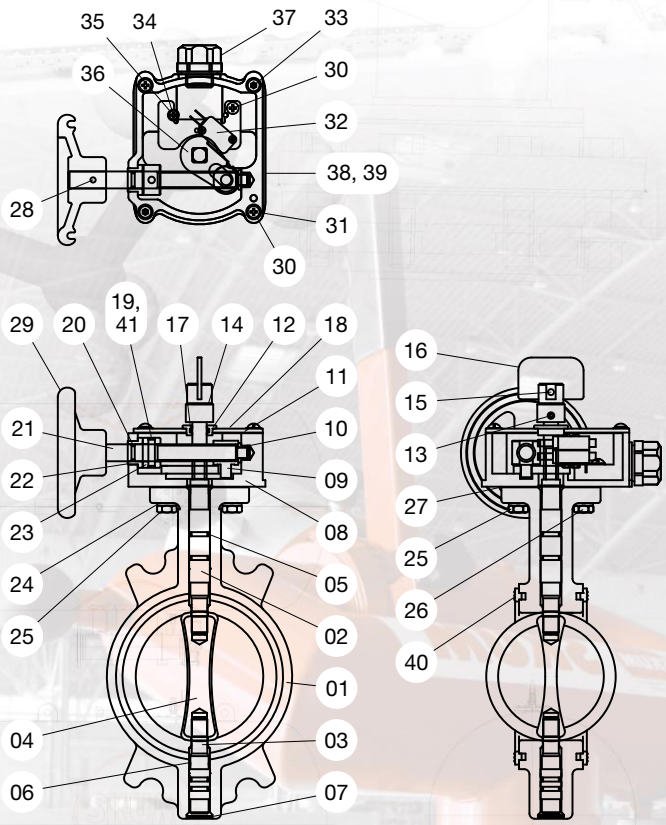
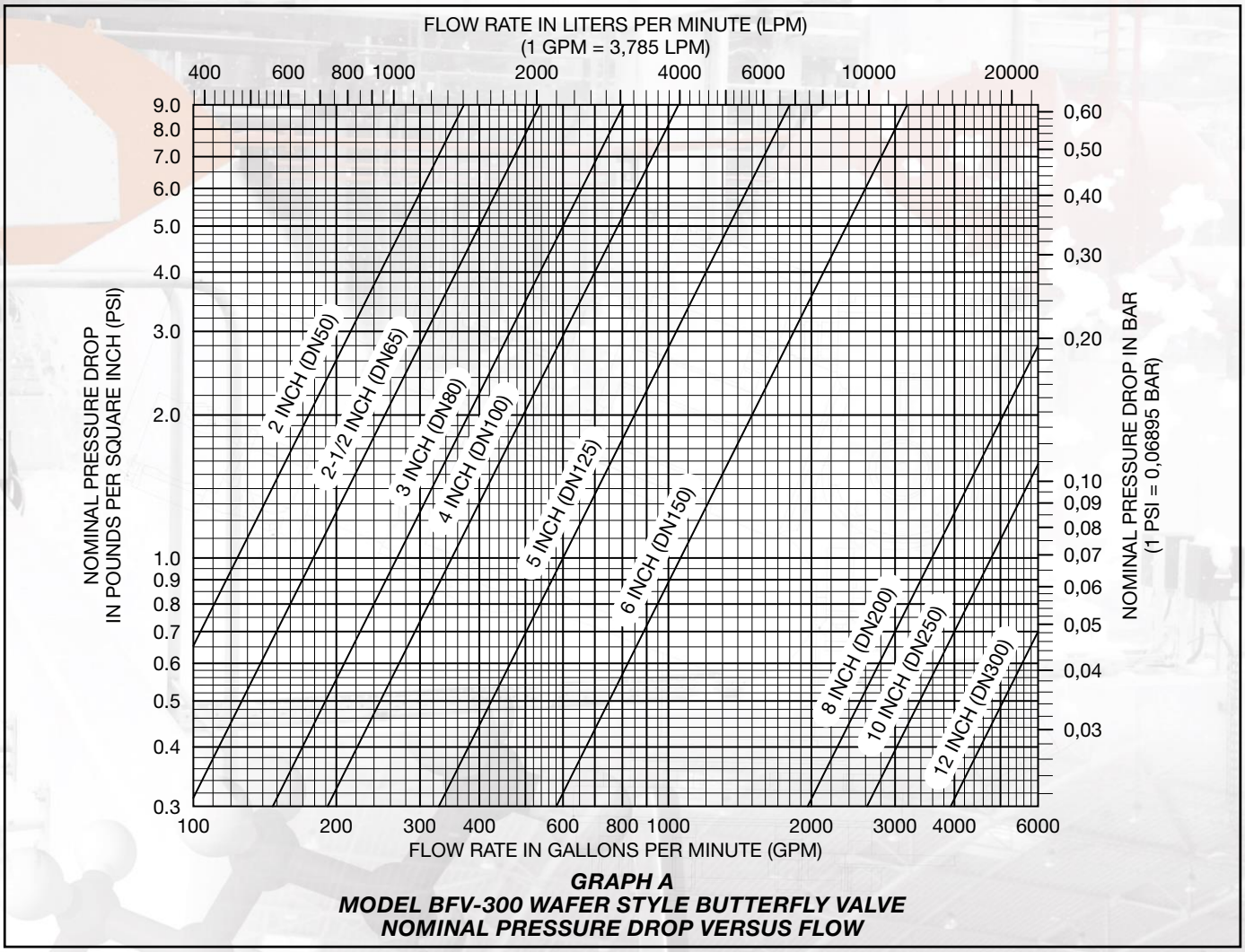


FIGURE 2
MODEL BFV-300 WAFER STYLE BUTTERFLY VALVE ASSEMBLY



GRAPH A
MODEL BFV-300 WAFER STYLE BUTTERFLY VALVE
NOMINAL PRESSURE DROP VERSUS FLOW

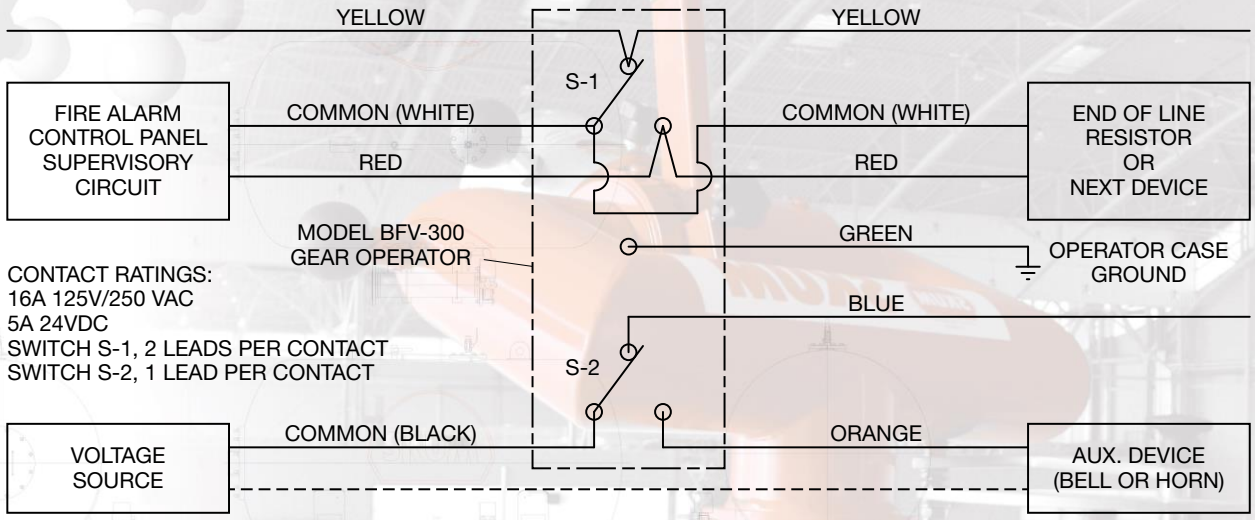


FIGURE 3
MODEL BFV-300 BUTTERFLY VALVE OPEN POSITION – SUPERVISORY SWITCH OPEN POSITION
INTERNAL SWITCH WIRING DIAGRAM

Nominal Valve Size Inches (DN)	Max. PSI (bar)	Flange Face	Part Number		Agency Listing/Approval								
			BFV-300 with Internal Switch	BFV-300 without Internal Switch	CE	UL	ULC	FM	VdS	CA Fire Marshall	CNPP Certified	PAVUS	EAC Approved
2 (DN50)	300 (20,7)	ANSI 16.5, BS PN16	59300W020WS	59300W020NS	✓	✓	✓		✓			✓	✓
2-1/2 (DN65)	300 (20,7)	ANSI 16.5, BS 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 F	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 F	59300W060WS	59300W060NS	✓	✓	✓	✓	✓	✓		✓	✓
8 (DN200)	300 (20,7)	ANSI 16.5, BS PN10	59300W080WS	59300W080NS	✓	✓	✓	✓	✓	✓		✓	✓
— DN200	300 (20,7)	BS PN16	59300W086WS	59300W086NS	✓	✓	✓	✓	✓			✓	✓
10 (DN250)	175 (12,1)	ANSI 16.5, BS PN10/16	59300W100WS	59300W100NS	✓	✓	✓	✓	✓	✓		✓	✓
12 (DN300)	175 (12,1)	ANSI 16.5, BS PN10/16	59300W120WS	59300W120NS	✓	✓	✓		✓			✓	✓

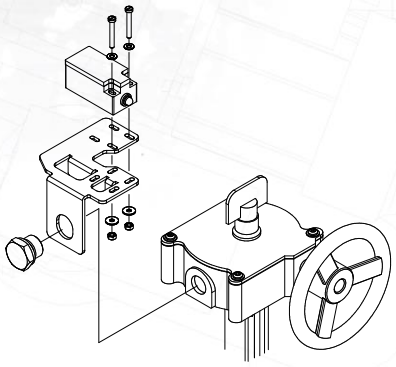
TABLE A
MODEL BFV-300 WAFER STYLE BUTTERFLY VALVE
WITH OR WITHOUT INTERNAL SUPERVISORY SWITCHES
PART NUMBER SELECTION AND AGENCY LISTINGS/APPROVALS

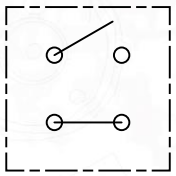
Nominal Valve Size Inches (DN)	Max. PSI (bar)	Flange Face	Part Number		Agency Listing/Approval		
			BFV-300 Supv. Switch OPEN	BFV-300C Supv. Switch CLOSED	CE	VdS	CNPP Certified
2 (DN50)	300 (20,7)	ANSI 16.5, BS PN16	59300W020AWS	59300W020AWSC	✓	✓	✓
2-1/2 (DN65)	300 (20,7)	ANSI 16.5, BS PN16	59300W025AWS	59300W025AWSC	✓	✓	✓
3 (DN80)	300 (20,7)	ANSI 16.5	59300W030AWS	59300W030AWSC	✓	✓	✓
— DN80	300 (20,7)	BS PN16	59300W036AWS	59300W036AWSC	✓	✓	✓
4 (DN100)	300 (20,7)	ANSI 16.5, BS PN16, AS 2129 Table F	59300W040AWS	59300W040AWSC	✓	✓	✓
5 (DN125)	300 (20,7)	ANSI 16.5, BS PN16	59300W050AWS	59300W050AWSC	✓	✓	✓
6 (DN150)	300 (20,7)	ANSI 16.5, BS PN16, AS 2129 Table F	59300W060AWS	59300W060AWSC	✓	✓	✓
8 (DN200)	300 (20,7)	ANSI 16.5, BS PN10	59300W080AWS	59300W080AWSC	✓	✓	✓
— DN200	300 (20,7)	BS PN16	59300W086AWS	59300W086AWSC	✓	✓	✓
10 (DN250)	175 (12,1)	ANSI 16.5, BS PN10/16	59300W100AWS	59300W100AWSC	✓	✓	✓
12 (DN300)	175 (12,1)	ANSI 16.5, BS PN10/16	59300W120AWS	59300W120AWSC	✓	✓	✓

TABLE B
MODEL BFV-300 WAFER STYLE BUTTERFLY VALVE
WITH LARGE 100 X 100 MM FLAG AND INTERNAL OPEN AND CLOSED SUPERVISORY SWITCHES
PART NUMBER SELECTION AND AGENCY LISTINGS/APPROVALS

Nominal Valve Size Inches (DN)	Gear Operator Type	Part Number			
		Mounting Bracket with Mounting Bolts	Bernstein i88-IP65 Regular Switch	Bernstein i88-IP65 LED Switch 24V	Bernstein GC-SU1Z Ex IP-66/67 ATEX (Ex II2G Ex dIIC T6 Gb) Switch
2–4 (DN50–DN100)	Travelling Nut	59300SPBRACKET10	59300SPSW	59300SPSWLED	59300SPSWATEX
5–6 (DN125–DN200)		59300SPBRACKET20			
8 (DN200)	Segmented Gear	59300SPBRACKET25			
10–12 (DN250–DN300)		59300SPBRACKET30			

Notes:
1. Install a single switch in either bracket mounting position to monitor Open or Closed valve condition





Bernstein Switch Wiring Diagram

TABLE C
MODEL BFV-300 WAFER STYLE BUTTERFLY VALVE WITHOUT INTERNAL SUPERVISORY SWITCHES ACCESSORY EXTERNAL SUPERVISORY SWITCHES AND MOUNTING BRACKETS PART NUMBER SELECTION

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. For bolt diameter information, see Figure 2. 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 F. 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, see 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.*

Nominal Valve Size Inches (DN)	Part Number
2–4 (DN50–DN100)	59300SPHWHEEL10
5–6 (DN125–DN150)	59300SPHWHEEL20
8 (DN200)	59300SPHWHEEL30
10–12 (DN250–DN300)	59300SPHWHEEL40

TABLE D
BFV-300 WAFER STYLE BUTTERFLY VALVE
REPLACEMENT HANDWHEEL
PART NUMBER SELECTION

Nominal Valve Size Inches (DN)	Part Number
2–4 (DN50–DN100)	59300SPFLAG10
5–6 (DN125–DN150)	59300SPFLAG20
8–12 (DN200–DN300)	59300SPFLAG30

TABLE E
BFV-300 WAFER STYLE BUTTERFLY VALVE
INDICATOR FLAG
PART NUMBER SELECTION

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, for example, 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.

Nominal Flange Size ANSI Inches (DN)	Recommended Minimum Torque Ft.-Lbs (N·m)
2–4 (DN50–DN100)	20–30 (27,1–40,7)
5–8 (DN125–DN200)	33–50 (44,7–67,8)
10–12 (DN250–DN300)	53–75 (71,8–101,7)

TABLE F
RECOMMENDED MATING FLANGE BOLT TORQUES

Limited Warranty

For warranty terms and conditions, visit www.tyco-fire.com.

Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name and part number (P/N).

Butterfly Valves

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

Model BFV-300 without Supervisory Switches
Specify: (specify size) Model BFV-300 Wafer Style Butterfly Valve, P/N (specify per Table A)

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

Model BFV-300 with Internal Closed Supervisory Switches, CNPP Certified
Specify: (specify size) Model BFV-300 Wafer Style Butterfly Valve, Internal Open Supervisory Switches, CNPP Certified, P/N (specify per Table B)

Accessories

External Supervisory Switch and Mounting Bracket
Note: *Accessory external supervisory switches and mounting brackets are applicable only to valves without factory-installed internal supervisory switches.*

See Table C for switch models and part numbers.

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

Replacement Parts

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

Handwheel
Replacement handwheel includes pin.

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

Indicator Flag
Specify: Indicator Flag, (specify size) Model BFV-300, P/N (specify per Table E)

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TFP1516
Change History Appendix

ISSUE DATE	NOTES
12-22	Page 1, Approvals sub-section, added CNPP Certified, formerly shown as CNPP R1 Listed – APSAD APSAD accepted with CNPP Certified; Page 5, Tables A and B, changed CNPP column headings to CNPP Certified.
09-22	Page 1, added QR code and URL to allow convenient access to electronic version from printed document; Page 1, Approvals sub-section, Page 5, Table A, added EAC Approved; Page 8, changed corporate address and telephone number to 1467 Elmwood Avenue, Cranston, RI 02910 | Telephone +1-401-781-8220, formerly 1400 Pennbrook Parkway, Lansdale, PA 19446 | Telephone +1-215-362-0700.
01-21	Add reference to Tables A, B, and C in Approvals sub-section for more detail; Added replacement Indicator Flag information; Updated replacement Handwheel part numbers and valve size applicability.
07-20	Corrected spelling error in pressure scale of Graph A Friction Loss vs. Flow.
08-19	Clarified foam compatibility note in General Description section.
06-19	Added guidance on use of valve in foam fire sprinkler system, referring reader to foam concentrate manufacturer technical literature to determine compatibility.
08-18	Updated Tyco® branding and document format; Added Johnson Controls copyright; Added disclaimer stating specifications and information subject to change without notice; Added reference to Regulatory and Health Warning Technical Data Sheet TFP2300.
01-18	Added ULC Listed for all valves except CNPP-APSAD featuring 100 x 100 mm large flag.
04-17	Added note advising customers to contact Sales for availability of 100% silicone-free valves; Added gear operator details as applicable to valve size ranges; Added UL Listed for 2 in. and 12 in. (DN50 and DN300) sizes; Added CA Fire Marshall Listed for 10 in. (DN250) size; Removed UL, FM, CA Fire Marshall, PAVUS and Russian Fire approvals from CNPP-APSAD models.
06-16	Added 2 in. and 12 in. (DN50 and DN300) sizes; Expanded laboratory listings and approvals.
09-15	Updated Materials of Construction specifications.
08-15	New Technical Data Sheet TFP1516 describes Model BFV-300 Wafer Butterfly Valves.

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