Model BFV-300/BFV-300C Butterfly Valve Grooved End

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

Scan the QR code or enter the URL in a web browser to access the most up-to-date electronic version of this document. Data rates may apply.

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General Description

The TYCO Models BFV-300 and BFV-300C Grooved End Butterfly Valves are indicating type valves designed for use in fire protection systems where a visual indication of open or closed valve condition is required. They are used, for example, as system, sectional and pump water control valves. They have grooved inlet and outlet connections that are suitable for use with grooved end pipe couplings listed or approved for fire protection systems.

For applications requiring supervision of the open or closed state of the valve, the gear operators for the Model BFV-300/BFV-300C 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/BFV-300C Grooved End 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 63.23.221
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



MODEL BFV-300
OPEN SUPERVISORY SWITCHES



MODEL BFV-300C
CLOSED SUPERVISORY SWITCHES

Nominal Valve Size Inches (DN)	Pipe OD Inches (mm)	Nominal Dimensions Inches (mm)									Weight Lbs. (kg)
		A	B	C	D	E	F	G	H	J	
2 (DN50)	2.37 (60,3)	3.8 (96,4)	10.63 (270)	2.85 (72,5)	4.90 (124,5)	4.92 (125)	4.28 (108,6)	1.99 (50,5)	0	0	10.8 (4,9)
2-1/2 (DN65)	2.88 (73,0)	3.8 (96,4)	11.72 (297,8)	3.35 (85)	5.5 (139,8)	4.92 (125)	4.28 (108,6)	1.99 (50,5)	0	0	13.0 (5,9)
— (DN65)	3 76,1	3.8 (96,4)	11.72 (297,8)	3.35 (85)	5.5 (139,8)	4.92 (125)	4.28 (108,6	1.99 (50,5)	0	0	13.0 (5,9)
3 (DN80)	3.5 (88,9)	3.8 (96,4)	12.22 (310,3)	3.58 (91)	5.76 (146,3)	4.92 (125)	4.28 (108,6)	1.99 (50,5)	0	0	13.9 (6,3)
4 (DN100)	4.5 (114,3)	4.54 (115,4)	13.92 (353,5)	4.29 (109)	6.75 (171,5)	4.92 (125)	4.28 (108,6)	1.99 (50,5)	0	0	17.64 (8,0)
— (DN125)	5.5 (139,7)	5.83 (148)	16 (406,6)	5.16 (131)	7.93 (201,5)	5.91 (150)	5.79 (147)	2.32 (58,9)	0	0	26.4 (11,9)
5 (DN125)	5.56 (141,3)	5.83 (148)	16 (406,6)	5.16 (131)	7.93 (201,5)	5.91 (150)	5.79 (147)	2.32 (58,9)	0	0	26.4 (11,9)
— DN150	6.5 165,1	5.83 (148)	17.07 (433,6)	5.71 (145)	8.44 (214,5)	5.91 (150)	5.79 (147)	2.32 (58,9)	0	0	30,42 (13,8)
6 (DN150)	6.63 (168,3)	5.83 (148)	17.07 (433,6)	5.71 (145)	8.44 (214,5)	5.91 (150)	5.79 (147)	2.32 (58,9)	0	0	30,42 (13,8)
8 (DN200)	8.63 (219,1)	5.24 (133)	19.67 (499,5)	6.69 (170)	9.29 (236)	8.86 (225)	8.19 (208)	2.76 (70)	5.66 (143,7)	1.24 (31,4)	47.18 (21,4)
10 (DN250)	10.75 (273)	6.26 (159)	22.46 (570,5)	7.68 (195)	11.1 (282)	11.14 (283)	8.19 (208)	2.91 (74)	7.21 (183,1)	1.65 (41,8)	73.41 (33,3)
12 (DN300)	12.75 (323,9)	6.5 (165)	25.39 (645)	9.5 (241,5)	12.2 (310)	11.14 (283)	8.19 (208)	2.91 (74)	9.96 (252,9)	2.7 (68,5)	89.29 (40,5)

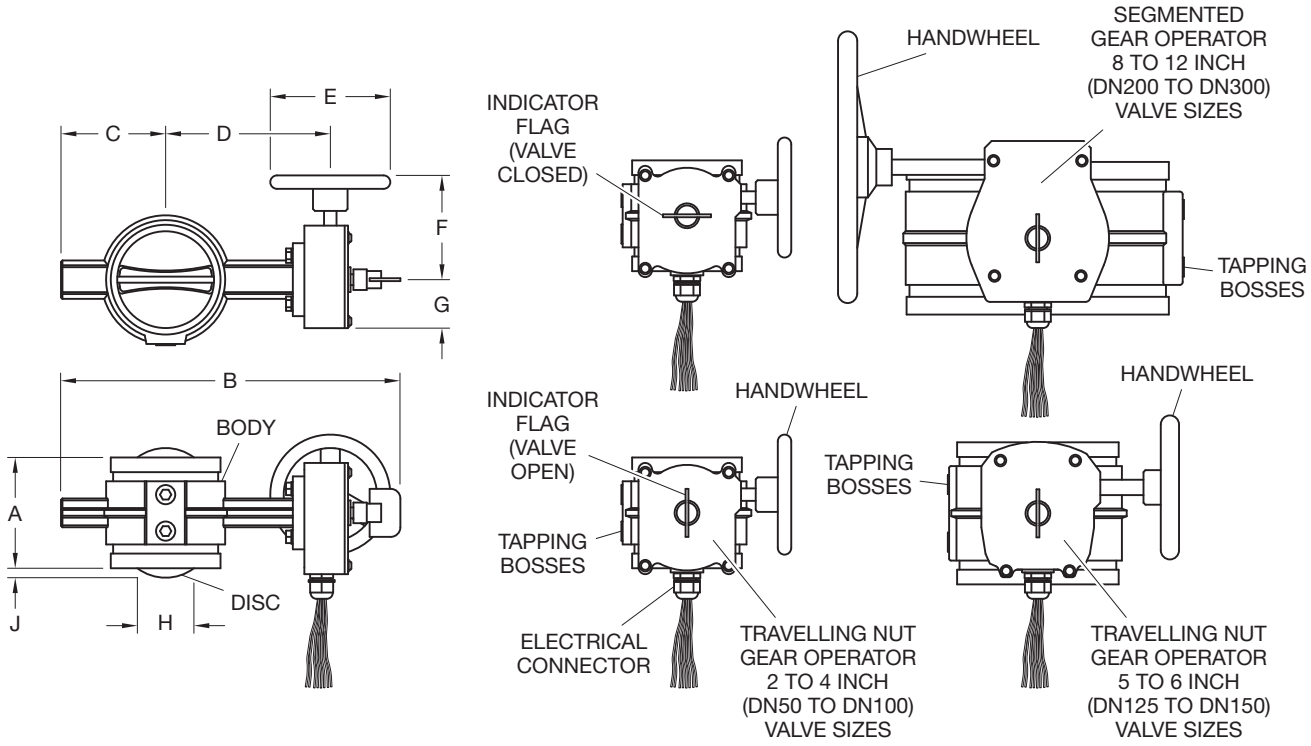
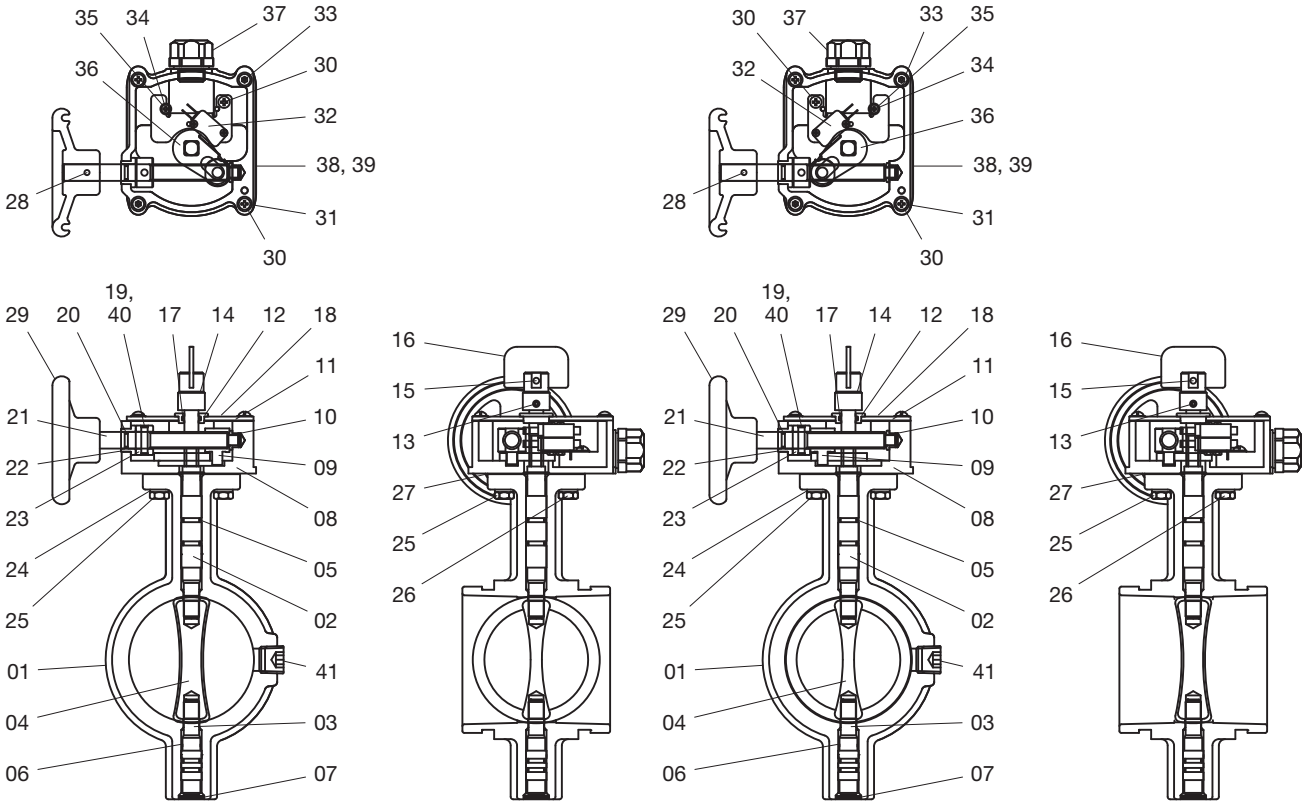


FIGURE 1
MODEL BFV-300/BFV-300C GROOVED END BUTTERFLY VALVE
NOMINAL DIMENSIONS

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
14	Stem Housing	Fe	1

No.	Part	Material	Qty.
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 Ø5 x 1T x 25	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
28	Spring Pin Ø4 x 0.8t x 35	ASTM A-228	1
29	Handwheel	ASTM A-536	1

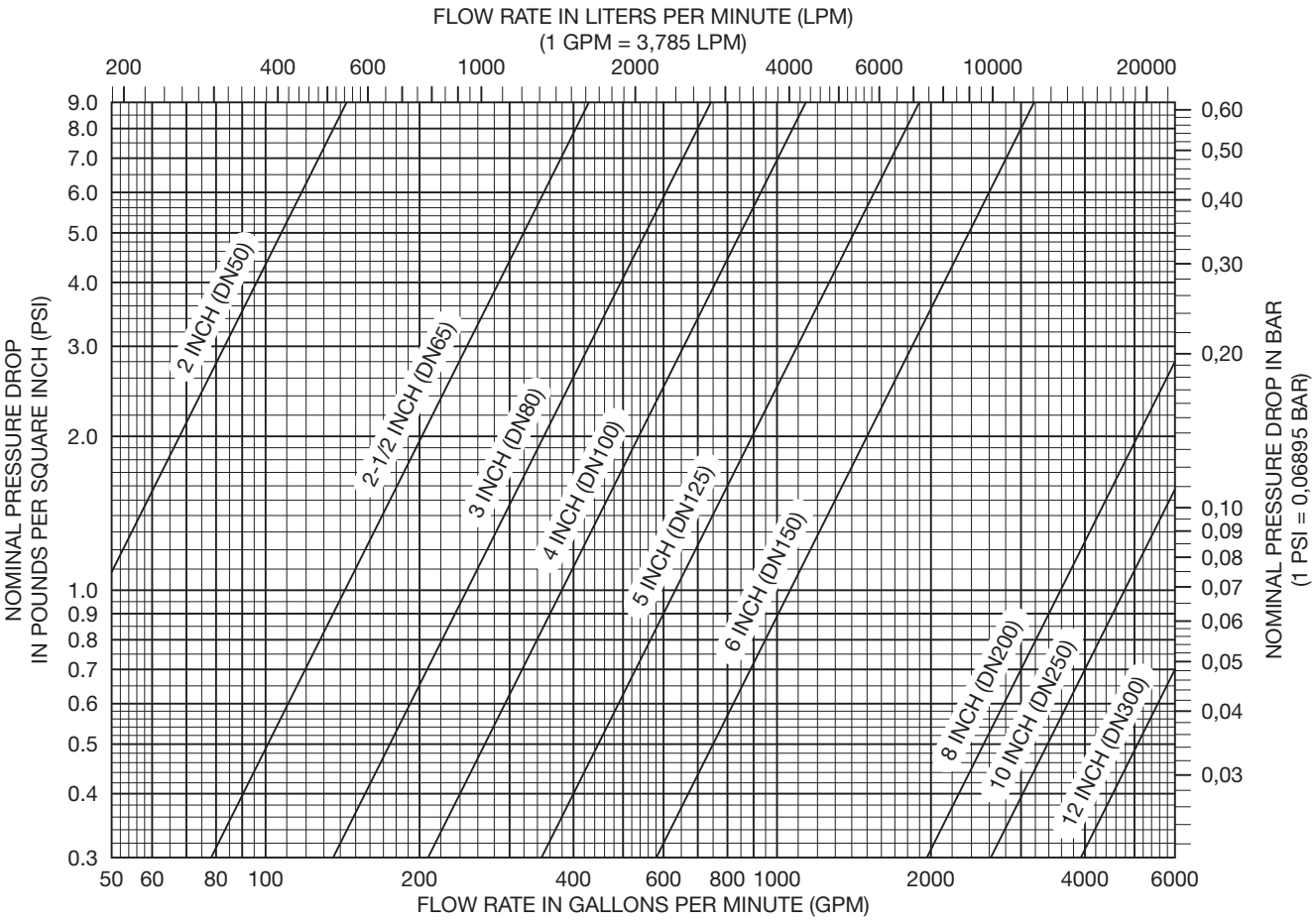
No.	Part	Material	Qty.
30	Bolt (Round)	ASTM A-167	3
31	Plate Washer	ASTM A-167	4
32	Switch Assembly	—	1
33	T/R Bolt	ASTM A-307	2
34	Tapping Screw ST3.5 x 7.5	S10C	1
35	Tooth Washer 4#	S10C	1
36	Lever	ASTM A-619	1
37	Connector	—	1
38	Sticker	—	1
39	Sticker	—	1
40	Spring Pin Ø3 x 0.6T x 25	ASTM A-228	1
41	Headless Plug 3/8 NPT 2–3 Inch	ASTM A-307	2
	Headless Plug 1/2 NPT 4–12 Inch		



BFV-300 Normally Open Valve Supervisory Switch Arrangement

BFV-300C Normally Closed Valve Supervisory Switch Arrangement

FIGURE 2
MODEL BFV-300/BFV-300C GROOVED END BUTTERFLY VALVE ASSEMBLY



GRAPH A
MODEL BFV-300/BFV-300C GROOVED END BUTTERFLY VALVE
NOMINAL PRESSURE DROP VERSUS FLOW

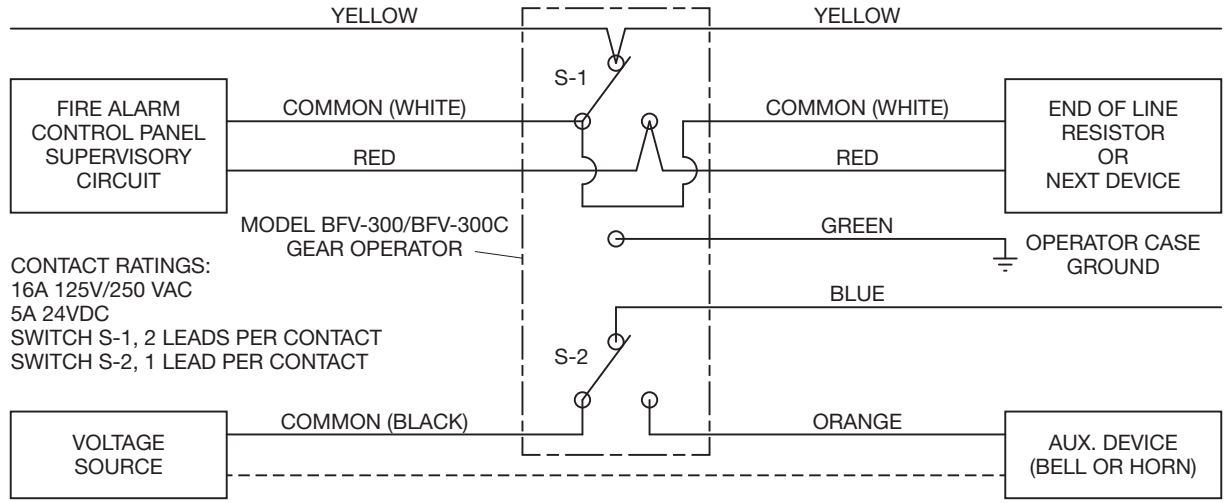


FIGURE 3
MODEL BFV-300 BUTTERFLY VALVE OPEN POSITION — SUPERVISORY SWITCH OPEN POSITION
MODEL BFV-300C BUTTERFLY VALVE CLOSED POSITION — SUPERVISORY SWITCH CLOSED POSITION
INTERNAL SWITCH WIRING DIAGRAM

Nominal Valve Size Inches (DN)	Pipe O.D. Inches (mm)	Max. PSI (bar)	Part Number		Agency Listing/Approval								
			BFV-300 Supv. Switch OPEN	BFV-300C Supv. Switch CLOSED	CE	UL	ULC	FM	VdS	CA Fire Marshall	CNPP Certified	PAVUS	EAC Approved
2 (DN50)	2.38 (60,3)	300 (20,7)	59300G020WS	59300G020WSC	✓	✓	✓		✓			✓	✓
2-1/2 (DN65)	2.88 (73,0)	300 (20,7)	59300G025WS	59300G025WSC	✓	✓	✓	✓	✓	✓		✓	✓
— DN65	3 76,1	300 (20,7)	59300G026WS	59300G026WSC	✓	✓	✓	✓	✓			✓	✓
3 (DN80)	3,5 (88,9)	300 (20,7)	59300G030WS	59300G030WSC	✓	✓	✓	✓	✓	✓		✓	✓
4 (DN100)	4.5 (114,3)	300 (20,7)	59300G040WS	59300G040WSC	✓	✓	✓	✓	✓	✓		✓	✓
— DN125	5.5 (139,7)	300 (20,7)	59300G056WS	59300G056WSC	✓	✓	✓	✓	✓			✓	✓
5 (DN125)	5.56 (141,3)	300 (20,7)	59300G050WS	59300G050WSC	✓	✓	✓	✓	✓	✓		✓	✓
— DN150	6.5 (165,1)	300 (20,7)	59300G066WS	59300G066WSC	✓	✓	✓	✓	✓			✓	✓
6 (DN150)	6.63 (168,3)	300 (20,7)	59300G060WS	59300G060WSC	✓	✓	✓	✓	✓	✓		✓	✓
8 (DN200)	8.63 (219,1)	300 (20,7)	59300G080WS	59300G080WSC	✓	✓	✓	✓	✓	✓		✓	✓
10 (DN250)	10.75 (273)	175 (12,1)	59300G100WS	59300G100WSC	✓	✓	✓	✓	✓	✓		✓	✓
12 (DN300)	12.75 323,9	175 (12,1)	59300G120WS	59300G120WSC	✓	✓	✓		✓			✓	✓

TABLE A
MODEL BFV-300/BFV-300C GROOVED END BUTTERFLY VALVE
WITH INTERNAL SUPERVISORY SWITCHES
PART NUMBER SELECTION AND AGENCY LISTINGS/APPROVALS

Nominal Valve Size Inches (DN)	Pipe O.D. Inches (mm)	Max. PSI (bar)	Part Number		Agency Listing/Approval		
			BFV-300 Supv. Switch OPEN	BFV-300C Supv. Switch CLOSED	CE	VdS	CNPP Certified
2 (DN50)	2.38 (60,3)	300 (20,7)	59300G020AWS	59300G020AWSC	✓	✓	✓
2-1/2 (DN65)	2.88 (73,0)	300 (20,7)	59300G025AWS	59300G025AWSC	✓	✓	✓
— DN65	3 76,1	300 (20,7)	59300G026AWS	59300G026AWSC	✓	✓	✓
3 (DN80)	3,5 (88,9)	300 (20,7)	59300G030AWS	59300G030AWSC	✓	✓	✓
4 (DN100)	4.5 (114,3)	300 (20,7)	59300G040AWS	59300G040AWSC	✓	✓	✓
— DN125	5.5 (139,7)	300 (20,7)	59300G056AWS	59300G056AWSC	✓	✓	✓
5 (DN125)	5.56 (141,3)	300 (20,7)	59300G050AWS	59300G050AWSC	✓	✓	✓
— DN150	6.5 (165,1)	300 (20,7)	59300G066AWS	59300G066AWSC	✓	✓	✓
6 (DN150)	6.63 (168,3)	300 (20,7)	59300G060AWS	59300G060AWSC	✓	✓	✓
8 (DN200)	8.63 (219,1)	300 (20,7)	59300G080AWS	59300G080AWSC	✓	✓	✓
10 (DN250)	10.75 (273)	175 (12,1)	59300G100AWS	59300G100AWSC	✓	✓	✓
12 (DN300)	12.75 323,9	175 (12,1)	59300G120AWS	59300G120AWSC	✓	✓	✓

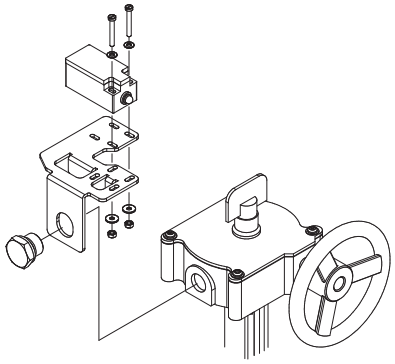
TABLE B
MODEL BFV-300/BFV-300C GROOVED END BUTTERFLY VALVE
WITH LARGE 100 X 100 MM FLAG AND INTERNAL SUPERVISORY SWITCHES
PART NUMBER SELECTION AND AGENCY LISTINGS/APPROVALS

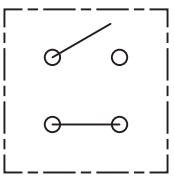
Nominal Valve Size Inches (DN)	Pipe O.D. Inches (mm)	Max. PSI (bar)	Part Number	Agency Listing/Approval								
				CE	UL	ULC	FM	VdS	CA Fire Marshall	CNPP Certified	PAVUS	EAC Approved
2 (DN50)	2.38 (60,3)	300 (20,7)	59300G020NS	✓	✓	✓		✓			✓	✓
2-1/2 (DN65)	2.88 (73,0)	300 (20,7)	59300G025NS	✓	✓	✓	✓	✓	✓		✓	✓
— DN65	3 76,1	300 (20,7)	59300G026NS	✓	✓	✓	✓	✓			✓	✓
3 (DN80)	3,5 (88,9)	300 (20,7)	59300G030NS	✓	✓	✓	✓	✓	✓		✓	✓
4 (DN100)	4.5 (114,3)	300 (20,7)	59300G040NS	✓	✓	✓	✓	✓	✓		✓	✓
— DN125	5.5 (139,7)	300 (20,7)	59300G056NS	✓	✓	✓	✓	✓			✓	✓
5 (DN125)	5.56 (141,3)	300 (20,7)	59300G050NS	✓	✓	✓	✓	✓	✓		✓	✓
— DN150	6.5 (165,1)	300 (20,7)	59300G066NS	✓	✓	✓	✓	✓			✓	✓
6 (DN150)	6.63 (168,3)	300 (20,7)	59300G060NS	✓	✓	✓	✓	✓	✓		✓	✓
8 (DN200)	8.63 (219,1)	300 (20,7)	59300G080NS	✓	✓	✓	✓	✓	✓		✓	✓
10 (DN250)	10.75 (273)	175 (12,1)	59300G100NS	✓	✓	✓	✓	✓	✓		✓	✓
12 (DN300)	12.75 323,9	175 (12,1)	59300G120NS	✓	✓	✓		✓			✓	✓

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

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
(BFV-300 red painted; BFV-300C black painted)

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.

Tapping Bosses

Two factory-plugged NPT threaded tapping bosses in the valve body are located on the up- and downstream sides of the disc for connection to valve trim. Tapping boss sizes:

2 in.–3 in. (DN50–DN80) . . . . . .3/8 NPT
4 in.–12 in. (DN100–DN300) . . . . . .1/2 NPT

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)	Part Number	
	BFV-300, Red Painted	BFV-300C, Black Painted
2–4 (DN50–DN100)	59300SPHWHEEL10	59300SPHWHEEL10B
5–6 (DN125–DN150)	59300SPHWHEEL20	59300SPHWHEEL20B
8 (DN200)	59300SPHWHEEL30	59300SPHWHEEL30B
10–12 (DN250–DN300)	59300SPHWHEEL40	59300SPHWHEEL40B

TABLE E
BFV-300/BFV-300C GROOVED END 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 F
BFV-300/BFV-300C GROOVED END BUTTERFLY VALVE REPLACEMENT INDICATOR FLAG PART NUMBER SELECTION

Installation

The Model BFV-300/BFV-300C Grooved End Butterfly Valves may be installed with flow in either direction and can be positioned either horizontally or vertically.

The grooved end pipe couplings used with the Model BFV-300/BFV-300C must be listed or approved for fire protection service and installed in accordance with the manufacturers instructions.

The Model BFV-300/BFV-300C Butterfly Valve may be installed with any schedule of pressure class of pipe or tubing that is listed or approved for fire protection.

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

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 such as 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.

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 Grooved End Butterfly Valve, Internal Open Supervisory Switches, P/N (specify per Table A)

Model BFV-300C with Internal Closed Supervisory Switches
Specify: (specify size) Model BFV-300C Grooved End Butterfly Valve, Internal Closed Supervisory Switches, P/N (specify per Table A)

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

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

Model BFV-300 without Internal Supervisory Switches
Specify: (specify size) Model BFV-300 Grooved End Butterfly Valve, P/N (specify per Table C)

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 D for switch models and part numbers.

Specify: (specify size) Model BFV-300 Grooved End 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. See Table E for part numbers.

Model BFV-300, Red Painted
Specify: Handwheel, (specify size) Model BFV-300 Grooved End Butterfly Valve, P/N (specify)

Model BFV-300C, Black Painted
Specify: Handwheel, (specify size) Model BFV-300C Grooved End Butterfly Valve, P/N (specify)

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

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