

DRAFT 8-7-09



Bray®

BUTTERFLY VALVES

RESILIENT SEATED

SERIES 3A Double Flanged
2" - 20" (50mm-500mm)

SERIES 3A

Bray Controls is proud to offer a high quality line of flanged butterfly valves to meet the requirements of today's market. Combining years of field application experience, research and development, Bray has designed many unique features in the Series 3A not previously available. The results are longer service life, greater reliability, ease of parts replacement and interchangeability of components.

DISC AND STEM CONNECTION

Features a high-strength through stem design. The close tolerance, double "D" connection that drives the valve disc is an exclusive feature of the Bray valve. It eliminates stem retention components such as disc screws and taper pins from being exposed to the line media, which commonly result in leak paths, corrosion, and vibration failures. Disc screws or taper pins, due to wear and corrosion, often require difficult machining for disassembly. Disassembly of the Bray stem is simply a matter of pulling the stem out of the disc. Without fasteners obstructing the line flow, the Series 3A Cv values are higher than many other valves, turbulence is reduced, and pressure recovery is increased.

DISC

Casting is spherically machined and hand polished to provide a bubble-tight shut off, minimum torque, and longer seat life.

Nylon 11 Coating - A thermoplastic produced from a vegetable base, this coating is inert to fungus growth and molds. Nylon 11 is USDA Approved, as well as certified to ANSI/NSF 61 for water service.

Corrosion Resistance – superior resistance to a broad range of chemical environments. Salt spray tested in excess of 2,000 hours and seawater immersion tested for over 10 years without corrosion to metal substrates.

Nylon 11 features a very low coefficient of friction and excellent resistance to impact and ultra-violet radiation.

STEM RETAINING ASSEMBLY

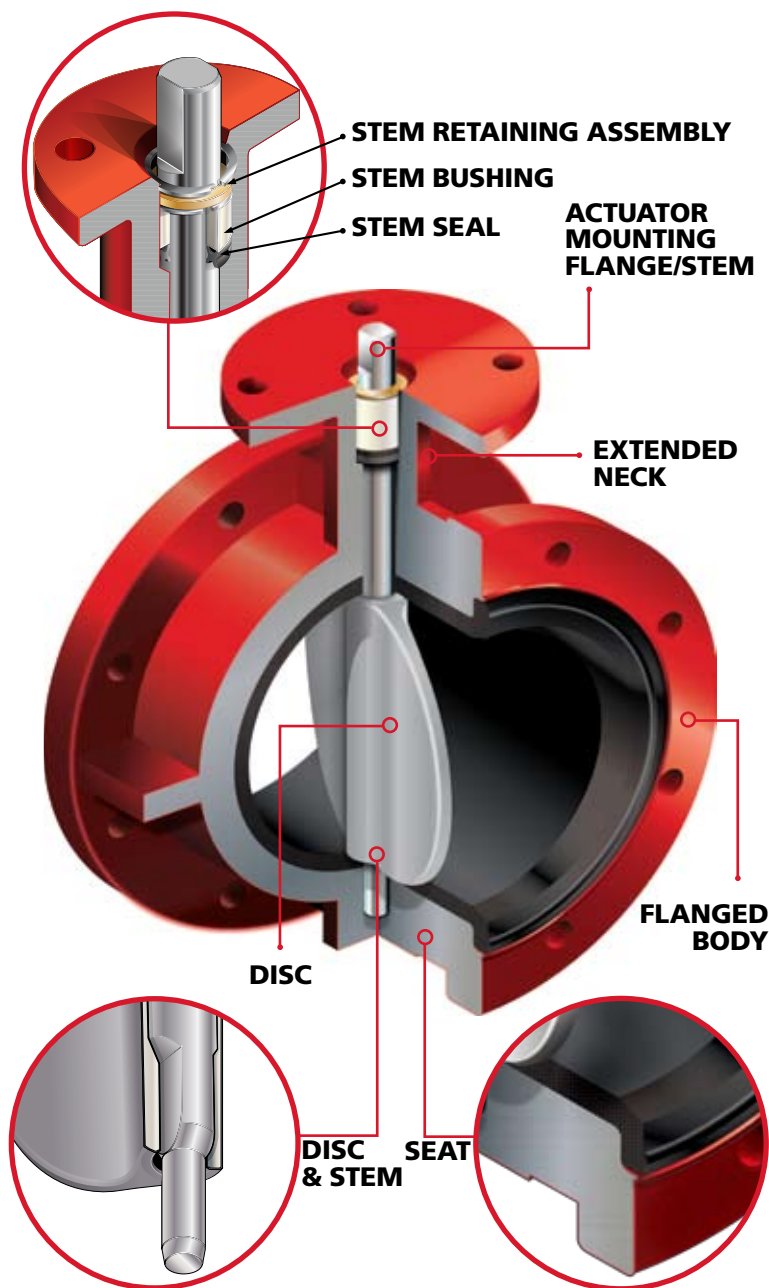
The stem is retained in the body by means of a unique Stainless Steel "Spirolox®" retaining ring, a thrust washer and two C-rings, manufactured from brass as standard, stainless steel upon request. The retaining ring may be easily removed with a standard hand tool. The stem retaining assembly prevents unintentional removal of the stem during field service.

STEM BUSHING

Non-corrosive, heavy duty acetal bushing absorbs actuator side thrusts.

STEM SEAL

Double "U" cup seal design is self-adjusting and gives positive sealing in both directions. Prevents external substances from entering the stem bore.



NECK

Extended neck length allows for 2" of piping insulation and is easily accessible for mounting actuators.

"Spirolox®" designation is a registered trademark of Kaydon Ring and Seal, Inc.

PRIMARY AND SECONDARY SEALS

The primary seal is achieved by preloaded contact of spherically machined hand polished disc hubs with unique molded seat flat surfaces. This sealing method isolates the flowing media from the stem and body material at all angles of valve disc seating. A secondary seal is achieved by an interference fit of the stem and seat hole diameters.

BRAY UNIQUE SEAT DESIGN

Unique seat design, aerospace-bonded to the body, is designed to seal with slip-on or weld-neck flanges. Seat totally encases the valve interior to isolate the line media from the body.

ACTUATOR MOUNTING FLANGE AND STEM CONNECTION

Universally designed to ISO 5211 for direct mounting of Bray power actuators and manual operators. The stem ends and top mounting flange are standardized for interchangeability with Bray actuators. Stem to actuator connections are double 'd' for sizes 2"-12" and keyed for sizes 14" - 20".

BODY

One-piece Flanged body. All bodies can be drilled to be compatible with ANSI 125/150, PN10 or other international flange standards. The Series 3A may be bolted to allow downstream flange removal or cross-bolted for maximum resistance to line stresses.

DESIGN FEATURES

Bray's Series 3A valve is a Double Flanged design which can be used for dead-end service. All Bray valves are tested to 110% of full pressure rating before shipment.

A major design advantage of Bray valve product lines is international compatibility. The same valve is compatible with most world flange standards—ANSI Class 125/150, BS 10 Tables D and E, BS 4504 NP 10/16, DIN ND 10/16, AS 2129 and JIS10. In addition the valves are designed to comply

with ISO 5752 - Table 2 (short pattern) face-to-face and ISO 5211 actuator mounting flanges. Therefore, one valve design can be used in many different world markets.

Due to a modular concept of design, all Bray handles, manual gear operators and pneumatic and electric actuators mount directly to Bray valves. No brackets or adapters are required.

Bray interchangeability and compatibility offers the best in uniformity of product line and low-cost performance in the industry today.

Nylon 11 coating optionally available for valve bodies and discs where environmental protection is required.

POLYESTER BODY COATING

Bray's standard product offers valve bodies with a polyester coating, providing excellent corrosion and wear resistance to the valve's surface. The Bray polyester coating is a hard, gloss red finish.

Chemical Resistance –resists a broad range of chemicals including: dilute aqueous acids and alkalis, petroleum solvents, alcohols, greases and oils. Offers outstanding resistance to humidity and water.

Weatherability—outdoor tested resistant to ultra-violet radiation.

Abrasion Resistance – excellent resistance to abrasion.

Impact Resistance—withstands impact without chipping or cracking.



PRESSURE RATINGS*					
For bi-directional bubble-tight shut off, disc in closed position:			For Dead-end Service Applications (with no downstream flanges)		
Size Range	Std. Disc	Red. Disc	Size Range	Std. Disc	Red. Disc
2"-12" (50-300 mm)	175 psig (12.1 bar)	50 PSI (3.5 bar)	2"-12" (50-300 mm)	175 psig (12.1 bar)	50 PSI (3.5 bar)
14"-20" (350-500 mm)	150 psig (10.3 bar)	50 PSI (3.5 bar)	14"-20" (350-500 mm)	150 psig (10.3 bar)	50 PSI (3.5 bar)

*Pressure Ratings are based on standard disc diameters. For low pressure application, Bray offers a standard reduced disc diameter to decrease seating torques and to extend seat life, thus increasing the valve's performance and reducing actuator costs for the customer.

VELOCITY LIMITS FOR ON-OFF SERVICE

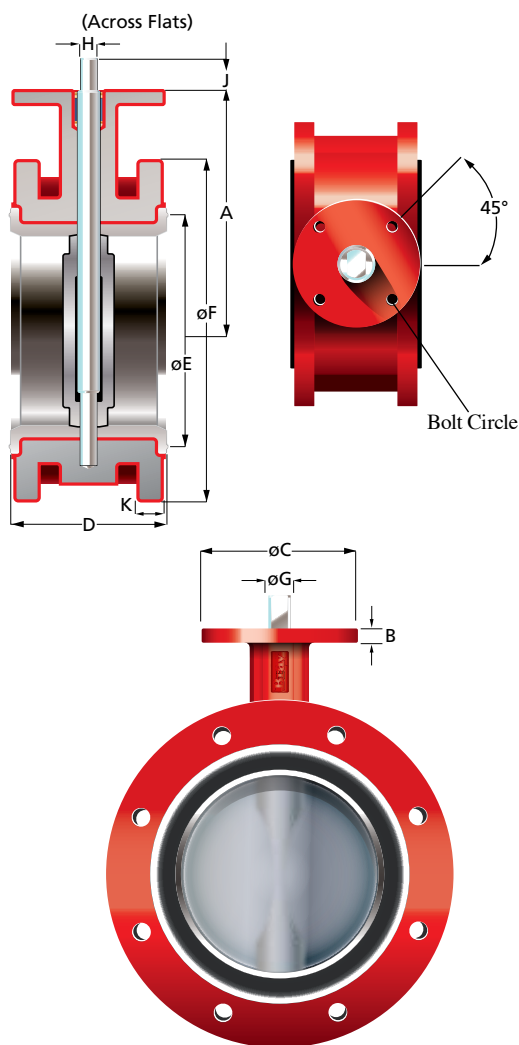
Fluids – 30 ft/sec (9m/s)

Gases – 175 ft/sec (54m/s)

SELECTION DATA

FLANGE REQUIREMENTS

Bray valves are designed for installation between ANSI Class 125/150 lb. weld-neck or slip-on flanges, BS 10 Tables D & E, BS 4504 NP 10/16, DIN ND 10/16, AS 2129 and JIS 10, either flat faced or raised faced. While weld-neck flanges are recommended, Bray has specifically designed its valve seat to work with slip-on flanges, thus eliminating common failures of other butterfly valve designs. When using raised face flanges be sure to properly align valve and flange. Type C stub-end flanges are not recommended.



Cv VALUES-VALVE SIZING COEFFICIENT										
Valve Size		Disc Position(degrees)								
ins	mm	90°	80°	70°	60°	50°	40°	30°	20°	10°
2	50	144	114	84	61	43	27	16	7	1
2 1/2	65	282	223	163	107	67	43	24	11	1.5
3	80	461	364	267	154	96	61	35	15	2
4	100	841	701	496	274	171	109	62	27	3
5	125	1376	1146	775	428	268	170	98	43	5
6	150	1850	1542	1025	567	354	225	129	56	6
8	200	3316	2842	1862	1081	680	421	241	102	12
10	250	5430	4525	2948	1710	1076	667	382	162	19
12	300	8077	6731	4393	2563	1594	1005	555	235	27
14	350	10538	8874	5939	3384	2149	1320	756	299	34
16	400	13966	11761	7867	4483	2847	1749	1001	397	45
18	450	17214	14496	10065	5736	3643	2237	1281	507	58
20	500	22339	18812	12535	7144	4536	2786	1595	632	72

Cv is defined as the volume of water in U.S.G.P.M. that will flow through a given restriction or valve opening with a pressure drop of one (1) p.s.i. at room temperature.

DIMENSIONS SERIES 3A - Inches (mm)

Valve Size		A	B	C	D*	E	F	Mounting Flange Drig.			G	H	J	K
Ins	mm							Bolt Circle	No. Holes	Hole Dia.				
2	50	(140)	0.43 (11)	3.54 (90)	(108)	(72)	(165)	2.76 (30)	4.00	0.37 (9.5)	0.55 (14)	0.39 (10)	1.26 (32)	(20)
2 1/2	65	(152)	0.43 (11)	3.54 (90)	(112)	(85)	(185)	2.76 (70)	4.00	0.37 (9.5)	0.55 (14)	0.39 (10)	1.26 (32)	(20)
3	80	6.26 (159)	0.43 (11)	3.54 (90)	4.49 (114)	4.13 (105)	7.87 (200)	2.76 (70)	4.00	0.37 (9.5)	0.55 (14)	0.39 (10)	1.26 (32)	0.87 (22)
4	100	7.01 (178)	0.43 (11)	3.54 (90)	5.00 (127)	5.16 (131)	8.66 (220)	2.76 (70)	4.00	0.37 (9.5)	0.63 (16)	0.43 (11)	1.26 (32)	0.94 (24)
5	125	7.48 (190)	0.43 (11)	3.54 (90)	5.51 (140)	6.14 (156)	9.84 (250)	2.76 (70)	4.00	0.37 (9.5)	0.75 (19)	0.51 (13)	1.26 (32)	1.02 (26)
6	150	7.99 (203)	0.43 (11)	3.54 (90)	5.51 (140)	7.01 (178)	11.22 (285)	2.76 (70)	4.00	0.37 (9.5)	0.75 (19)	0.51 (13)	1.26 (32)	1.02 (26)
8	200	9.49 (241)	0.55 (14)	5.91 (150)	5.98 (152)	9.49 (241)	13.39 (340)	4.92 (125)	4.00	0.55 (14)	0.87 (22)	0.63 (16)	1.26 (32)	1.18 (30)
10	250	10.75 (273)	0.55 (14)	5.91 (150)	6.50 (165)	11.46 (291)	15.94 (405)	4.92 (125)	4.00	0.55 (14)	1.18 (30)	0.87 (22)	1.97 (50)	1.26 (32)
12	300	12.24 (311)	0.55 (14)	5.91 (150)	7.01 (178)	13.46 (342)	18.11 (460)	4.92 (125)	4.00	0.55 (14)	1.18 (30)	0.87 (22)	1.97 (50)	1.26 (32)

Valve Size		A	B	C	D	E	F	Mounting Flange Drig.			G	Key Size	J	K
Ins	mm							Bolt Circle	No. Holes	Hole Dia.				
14	350	13.62 (346)	0.63 (16)	5.91 (150)	7.48 (190)	15.28 (388)	20.47 (520)	4.92 (125)	4.00	0.55 (14)	1.38 (35)	10X10	2.01 (51)	1.42 (36)
16	400	14.76 (375)	0.63 (16)	5.91 (150)	8.50 (216)	17.40 (442)	22.83 (580)	4.92 (125)	4.00	0.55 (14)	1.38 (35)	10X10	2.01 (51)	1.50 (38)
18	450	15.98 (406)	0.63 (16)	8.27 (210)	8.74 (222)	19.49 (495)	25.20 (640)	6.50 (165)	4.00	0.83 (21)	1.97 (50)	12X10	2.52 (64)	1.65 (42)
20	500	17.24 (438)	0.75 (19)	8.27 (210)	9.02 (229)	21.57 (548)	28.15 (715)	6.50 (165)	4.00	0.83 (21)	1.97 (50)	12X10	2.52 (64)	1.65 (42)

* Flat Faced Flange Available - Contact factory for dimensional information

SPECIFICATIONS

RECOMMENDED SPECIFICATIONS FOR BRAY SERIES 3A SHALL BE:

- Polyester coated, cast iron, Flanged bodies.
- Face to face
- With flange locating holes that meet ANSI Class 125/150 (or BS 10 Tables D & E, BS 4504 NP 10/16, DIN ND 10/16, AS 2129 and JIS 10) drillings.
- Through-stem direct drive double "D" design requiring no disc screws or pins to connect stem to disc with no possible leak paths in disc/stem connection.
- Stem mechanically retained in body neck and no part of stem or body exposed to line media.
- Seat design with primary hub seal and a molded O-ring suitable for weld-neck and slip-on flanges. Seat totally encapsulates the body with no flange gaskets required.
- Spherically machined, hand polished disc edge and hub for minimum torque and maximum sealing capability.
- Equipped with non-corrosive bushing and self-adjusting stem seal.
- Bi-directional and tested to 110% of full rating.
- Bi-directional dead-end pressure rating:
2"-12" (50-300 mm) - 175 psi (12.2 bar)
14"-20" (350-500 mm) - 150 psi (10.3 bar)
- No field adjustment necessary to maintain optimum field performance.
- The valve shall be Bray Series 3A Double Flanged.
- Valves provided with CE marking



Available with the CE marking, signifying compliance with the Pressure Equipment Directive, (PED)

WEIGHTS

Valve Size		lbs. (Kg)
ins	mm	
2	50	
2 1/2	65	
3	80	29 (13.2)
4	100	42 (19.1)
5	125	53 (24.1)
6	150	62 (28.2)
8	200	100 (45.5)
10	250	172 (78.2)
12	300	230 (105)
14	350	344 (156)
16	400	551 (250)
18	450	706 (321)
20	500	970 (441)

MATERIALS SELECTION

2"-20" (50mm-500mm)

BODY:

- Cast Iron ASTM A126 Class B
- Ductile Iron ASTM A536
- Cast Steel ASTM A216 WCB

SEAT:

- Aerospace - Bonded EPDM
- Aerospace - Bonded BUNA-N (NBR)
- Aerospace - Bonded FKM*

STEM:

- 416 Stainless Steel ASTM A582 Type 416
- 304 Stainless Steel ASTM A276 Type 304
- 316 Stainless Steel ASTM A276 Type 316
- Monel

DISC:

- Aluminum Bronze ASTM B148-954
- Ductile Iron, Nylon 11 Coated, ASTM A536 Gr. 65-45-12
- 316 Stainless Steel ASTM A351 CF8M
- 304 Stainless Steel ASTM A351 CF8
- Hastelloy® - Consult Factory for Alloy

COMPONENTS

No.	Qty.	Description
1	1	Body
2	1	Seat
3	1	Disc
4	1	Stem
5	1	Stem Seal
6	1	Stem Bushing
7	2	Stem Retainer
8	1	Thrust Washer
9	1	Retaining Ring

TEMPERATURE RANGE OF SEATS

Type	Maximum	Minimum
EPDM	+250°F(121°C)	-40°F(-40°C)
Buna-N	+212°F(100°C)	0°F(-18°C)
FKM*	+400°F(204°C)	0°F(-18°C)



*FKM is the ASTM D1418 designation for Fluorinated Hydrocarbon Elastomers (also called Fluoroelastomers).
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Bray **CONTROLS**

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