

Bray®

BUTTERFLY VALVES

LARGE DIAMETER / RESILIENT SEATED

SERIES 32 / 33 Wafer

22" - 36" (550mm - 900mm)

SERIES 35 / 36 Full Flanged

22" - 72" (550mm - 1800mm)

FEATURES

22"-72" (500mm-1800mm)

Bray Controls proudly offers this line of heavy duty, large diameter, resilient seated butterfly valves. The Series 32/33 valves are wafer versions with the Series 32 valve rated for 75 psi and the Series 33 designed for a higher rating of 150 psi. The Series 35/36 are full-flanged versions rated at 75 and 150 psi respectively. This valve series has many of the design features and benefits of the smaller Bray valves, such as high C_v ratings, minimum parts exposed

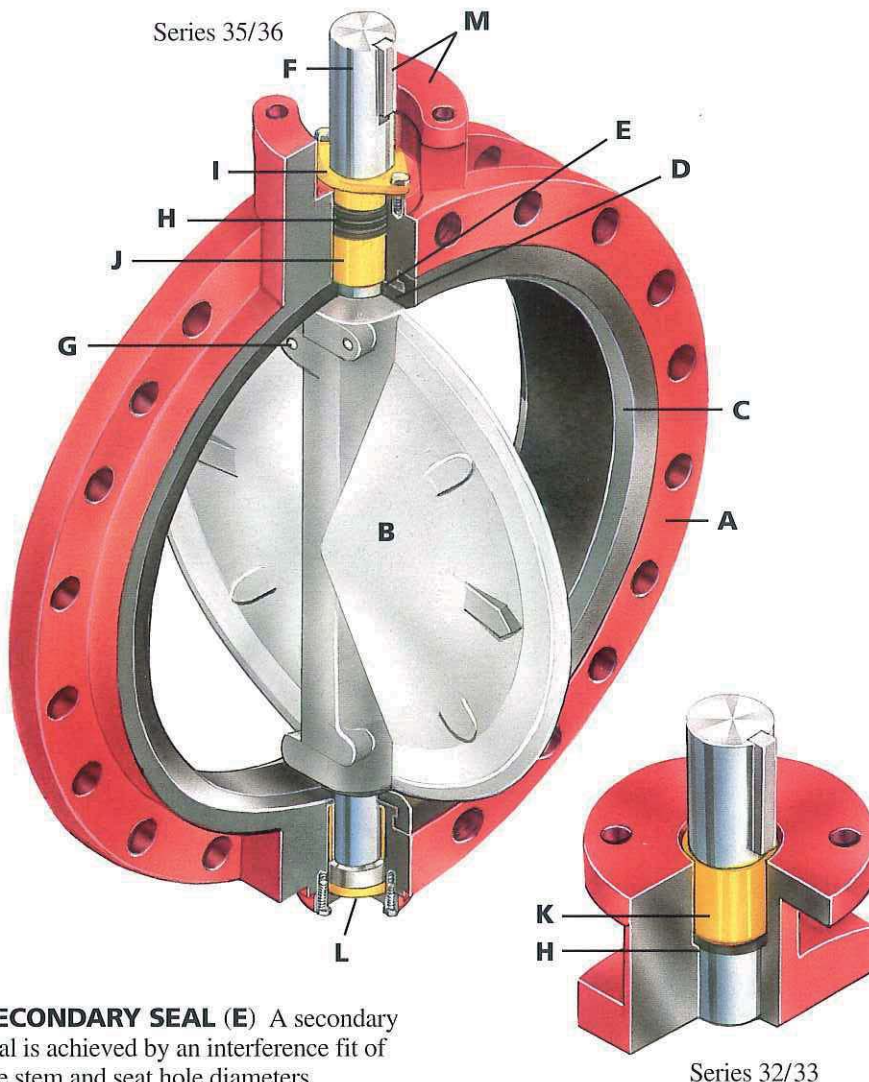
to the line media, greater reliability and a proven record of long service life. Engineering innovation and exceptional quality are the focus of Bray's unique design features.

BODY (A) One piece wafer or full flanged style. All bodies are drilled to be compatible with ANSI 125/150 or other international flange standards. The Series 35/36 may be bolted to allow downstream flange removal or cross-bolted for maximum resistance to line stresses.

DISC (B) The high strength casting is spherically machined, hand polished to provide 360° concentric seating bi-directional bubble-tight shut off, minimum torque and longer seat life. The symmetrical disc profile enhances valve performance – the C_v values are higher, turbulence is reduced and pressure recovery is increased. The disc O.D. clearance is designed to work with all standard piping.

SEAT (C) One of the valve's key elements is Bray's unique *tongue and groove* seat design which fully isolates the body from line media. The Bray resilient seat offers lower torque than many valves on the market today, and is excellent for most vacuum services. The *tongue and groove* seat to body retention method is the most advanced design in the industry, making field replacement simple and fast. The strategically located molded-in O-ring completely eliminates the requirement of flange gaskets. The seat isolates the valve body and stem from line media and has been specifically designed to seal with slip-on or weld-neck flanges.

PRIMARY SEAL (D) 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.



SECONDARY SEAL (E) A secondary seal is achieved by an interference fit of the stem and seat hole diameters.

STEM (F) Bray's one piece through stem design is completely isolated from the flowing media and achieves high torsional strength. The stem ends are standardized for direct mounting and interchangeability with Bray actuators.

TAPER PINS (G) Tangential taper pins of 17-4 PH stainless steel are driven and mechanically locked for maximum torsional capacity and resistance to vibration. O-rings are installed with the driven-in taper pins to insure bubble-tight shutoff under pressure or vacuum conditions.

STEM PACKING (H) This advanced V-Type packing design in the Series 35/36 is self-adjusting with bi-directional sealing which prevents external substances from entering the upper stem bore. This packing is externally adjustable and functions well for vacuum applications as well as a third pressure seal in emergency situations. The stem packing in the Series 32/33 is a V-cup self-adjusting design.

ADJUSTABLE PACKING GLAND (I) A bronze gland allows for field adjustment of stem packing without removing manual operators or power actuators. (Series 35/36 only)

STEM BEARING (J) To minimize bearing friction and operating torque, heavy wall bronze sleeve bearings are utilized. (Series 35/36 only)

STEM BUSHING (K) Heavy wall bronze bushing absorbs actuator side thrusts. (Series 32/33 only)

VERTICAL THRUST BEARING (L) A bronze vertical thrust bearing eliminates disc displacement due to the weight of the stem and disc.

ACTUATOR MOUNTING FLANGE AND STEM CONNECTION (M) Due to a modular concept of design, all Bray manual gear operators and pneumatic or electric actuators mount directly to Bray valves.

RECOMMENDED SPECIFICATIONS FOR BRAY SERIES 32/33, 35/36 SHALL BE:

- Wafer or double flanged bodies.
- Tongue-and-groove seat design with primary hub seal and a molded O-ring suitable for weld-neck and slip-on flanges.
- No field adjustments necessary to maintain optimum field performance.
- 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 seals for pressure or vacuum on wafer valves.
- On flanged valves, equipped with packing glands and upper/lower bronze bearings. The packing gland to be adjustable without removing manual operator or actuator.
- Bi-directional and tested to 110% of full pressure rating.
- Disc stem connected by 17-4 PH tangential taper pins driven, O-ring sealed, and mechanically locked.

MATERIALS SELECTION

22"-72" (550mm-1800mm)

BODY:

- Cast Iron ASTM A126 Class B
- Ductile Iron ASTM A536 Gr. 65-45-12
- Cast Steel ASTM A216 Gr. WCB
- 316 Stainless Steel ASTM A351 CF8M

DISC:

- Cast Iron ASTM A126 Class B
- Nylon 11 Coated, Cast Iron ASTM A126 Class B
- ENP Cast Iron ASTM A126 Class B
- Ductile Iron ASTM A536 Gr. 65-45-12
- Nylon 11 Coated, Ductile Iron ASTM A536
- Aluminum Bronze ASTM B148 Alloy C95400
- 316 Stainless Steel ASTM A351 CF8M
- Monel® ASTM A494 Grade M-35-1
- Hastelloy® C-276 ASTM B575 Alloy N10276

SEAT: • EPDM • Buna-N • FKM*

STEM:

- Carbon Steel, Coated
- 304 Stainless Steel ASTM A276 Type 304
- Monel® ASTM B164 Alloy UNS04400
- Hastelloy® C-276 ASTM B575 Alloy N10276

TAPER PINS:

17-4 PH Stainless Steel ASTM A564 Type 630 Cond. H900

PACKING: Buna-N

BEARINGS: Luberized Bronze (Series 35/36)

BUSHING: Luberized Bronze (Series 32/33)

THRUST BEARING: Bronze

Additional materials are available, please consult your Bray representative.

C_v VALUES-VALVE SIZING COEFFICIENT BRAY SERIES 32/33, 35/36

Valve Size		Disc Position (degrees)								
ins	mm	90°	80°	70°	60°	50°	40°	30°	20°	10°
22	550	27,168	22,028	14,562	9,036	5,640	3,510	2,070	916	103
24	600	33,154	27,186	18,235	11,040	6,962	4,244	2,387	1,028	259
26	650	36,220	29,700	19,921	12,496	7,824	4,890	2,752	1,141	289
28	700	41,619	34,683	22,578	13,838	8,636	5,399	3,133	1,324	295
30	750	52,443	43,003	28,844	18,090	11,328	7,080	3,986	1,652	420
32	800	60,658	48,558	32,591	20,410	12,743	7,983	4,636	2,026	550
34	850	68,374	55,438	36,648	22,741	14,194	8,834	5,210	2,304	533
36	900	77,089	59,667	40,086	25,053	15,572	9,790	5,936	2,775	740
40	1000	90,175	73,990	50,406	30,636	19,307	11,862	6,925	2,971	757
42	1050	102,989	83,421	54,584	35,016	21,010	12,997	7,879	3,502	783
44	1100	112,960	87,430	58,740	36,712	22,818	14,346	8,698	4,066	904
46	1150	122,560	99,372	65,692	40,763	25,443	15,835	9,339	4,130	956
48	1200	132,888	108,968	70,431	43,853	27,242	17,010	10,365	4,651	1,023
54	1400	168,700	138,334	89,411	55,671	34,583	21,594	13,158	5,904	1,299
60	1500	190,000	154,000	102,000	63,200	39,400	24,500	14,500	6,400	1,480
66	1650	211,000	171,000	113,000	70,200	43,800	27,300	16,100	7,110	1,650
72	1800	244,000	198,000	131,000	81,200	50,700	31,500	18,600	8,220	1,900

PRESSURE RATINGS

For bi-directional bubble-tight shut off, disc in closed position:

Series 32 : 22"-36" 75 psig

Series 33 : 22"-36" 150 psig

Series 35 : 22"-72" 75 psig

Series 36 : 22"-72" 150 psig

All valves are factory tested to 110% of their specified pressure rating.

COMPONENTS

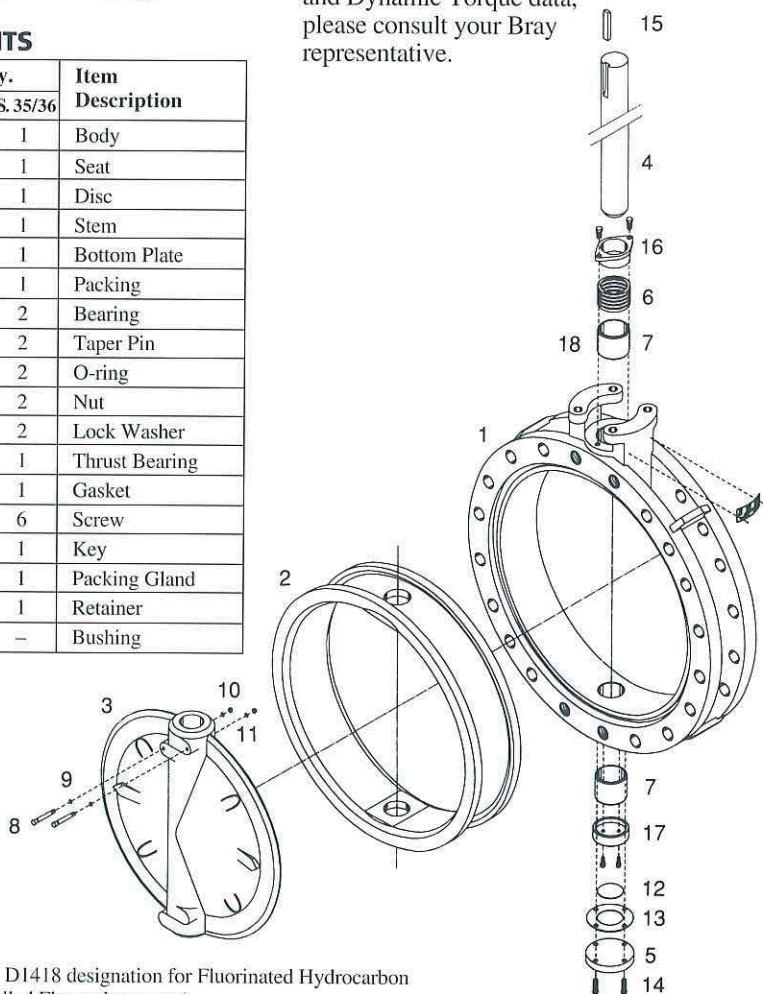
Item No.	Qty.		Item Description
	S. 32/33	S. 35/36	
1	1	1	Body
2	1	1	Seat
3	1	1	Disc
4	1	1	Stem
5	1	1	Bottom Plate
6	1	1	Packing
7	-	2	Bearing
8	2	2	Taper Pin
9	2	2	O-ring
10	2	2	Nut
11	2	2	Lock Washer
12	1	1	Thrust Bearing
13	1	1	Gasket
14	4	6	Screw
15	1	1	Key
16	-	1	Packing Gland
17	1	1	Retainer
18	1	-	Bushing

TEMPERATURE RANGE OF SEATS

Type	Max	Min
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)

For other seat types consult factory.

NOTE: For Seating/Unseating and Dynamic Torque data, please consult your Bray representative.



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

Hastelloy® is a registered trademark of Haynes International, Inc.

Monel® is a registered trademark of The International Nickel Company, Inc.

SERIES 32/33 Wafer*

Valve Size		A	B	C	D	E	F	Mounting Flange Drig.			G	SERIES 32				SERIES 33				L	Weight (lb.)
ins	mm							PCD	NO. HOLES	HOLE DIA.		H	J	KEY SIZE	K	H	J	KEY SIZE	K		
22	550	25.50	6.06	21.25	24.06	20.12	8.27	6.50	4	.81	2.50	2.50	4.00	.62x.62	20.51	2.50	4.00	.62x.62	20.56	16.50	400
24	600	27.94	5.94	23.25	25.75	19.50	8.27	6.50	4	.81	2.50	2.50	4.00	.62x.62	22.64	2.50	4.00	.62x.62	22.69	17.56	420
26	650	29.50	6.50	24.46	27.83	21.83	11.81	10.00	8	.71	2.50	2.50	4.00	.62x.62	23.67	2.50	4.00	.62x.62	23.71	18.83	540
28	700	31.11	6.50	26.45	29.76	22.82	11.81	10.00	8	.71	2.50	2.50	4.00	.62x.62	25.74	2.50	4.00	.62x.62	25.78	19.78	580
30	750	34.19	6.56	29.29	32.00	23.00	8.27	6.50	4	.81	3.00	2.50	4.00	.62x.62	28.67	3.00	4.00	.75x.75	28.73	20.81	660
32	800	35.55	7.48	30.39	33.70	26.37	11.81	10.00	8	.71	3.00	2.50	4.00	.62x.62	29.57	3.00	4.00	.75x.75	29.61	21.88	785
34†	850	38.75	7.88	33.00	35.75	26.93	13.78	11.73	8	.81	3.50	3.00	4.00	.75x.75	32.18	3.50	5.25	.88x.62	32.22	23.60	905
36	900	40.69	7.88	35.30	38.25	27.75	10.75	8.50	4	1.25	3.50	3.00	4.00	.75x.75	34.54	3.50	5.25	.88x.62	34.60	24.94	1025

*Dimensions for the Series 33 valve are the same except for a larger Key Size, H, J and K dimension.

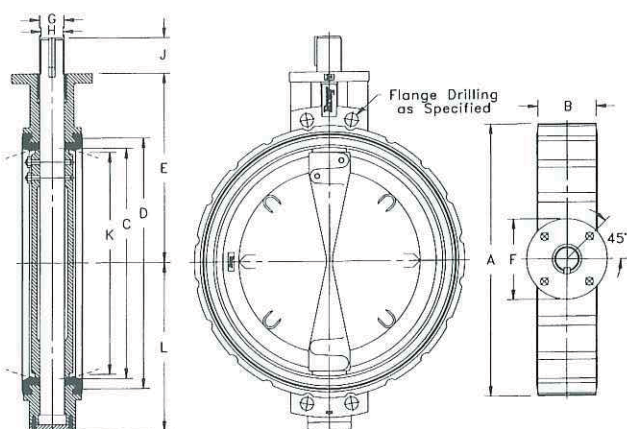
SERIES 35/36 Double Flanged*

Valve Size		A	B	C	D	E	F	Mounting Flange Drig.			G	SERIES 35				SERIES 36				L	Weight (lb.)
ins	mm							PCD	NO. HOLES	HOLE DIA.		H	J	KEY SIZE	K	H	J	KEY SIZE	K		
22	550	29.50	6.06	21.25	24.06	20.12	8.27	6.50	4	.81	2.50	2.50	4.00	.62x.62	20.51	2.50	4.00	.62x.62	20.56	16.50	475
24	600	33.00	5.94	23.25	25.75	19.50	8.27	6.50	4	.81	2.50	2.50	4.00	.62x.62	22.64	2.50	4.00	.62x.62	22.69	17.56	500
26	650	35.25	6.50	24.46	27.83	21.83	11.81	10.00	8	.71	2.50	2.50	4.00	.62x.62	23.67	2.50	4.00	.62x.62	23.71	18.83	675
28	700	37.80	6.50	26.45	29.76	22.82	11.81	10.00	8	.71	2.50	2.50	4.00	.62x.62	25.74	2.50	4.00	.62x.62	25.78	19.78	735
30	750	38.75	6.56	29.29	32.00	23.00	8.27	6.50	4	.81	3.00	2.50	4.00	.62x.62	28.67	3.00	4.00	.75x.75	28.73	20.81	855
32	800	41.75	7.48	30.39	33.70	26.37	11.81	10.00	8	.71	3.00	2.50	4.00	.62x.62	29.57	3.00	4.00	.75x.75	29.61	21.88	1010
34	850	44.69	7.88	33.00	35.75	26.93	13.78	11.73	8	.83	3.50	3.00	4.00	.75x.75	32.18	3.50	5.25	.88x.62	32.22	23.60	1165
36	900	46.00	7.88	35.30	38.25	27.75	9.50	8.50	4	1.25	3.50	3.00	4.00	.75x.75	34.54	3.50	5.25	.88x.62	34.60	24.94	1320
40	1000	50.75	8.50	38.37	41.58	30.78	13.78	11.73	8	.81	4.00	3.50	5.25	.88x.62	37.45	4.00	5.25	1.0x.75	37.49	26.56	2140
42	1050	53.00	9.88	41.25	44.25	32.00	9.50	8.50	4	1.25	4.00	3.50	5.25	.88x.62	40.20	4.00	5.25	1.0x.75	40.25	27.81	2550
44	1100	55.25	9.88	43.25	46.25	33.12	13.78	11.73	8	.81	4.00	3.50	5.25	.88x.62	42.20	4.00	5.25	1.0x.75	42.25	29.06	2800
46†	1150	57.25	10.88	45.25	48.62	34.88	13.78	11.73	8	.81	5.00	4.00	5.25	1.0x.75	44.08	—	—	—	—	30.00	3075
46†	1150	57.25	10.88	45.25	48.62	34.88	16.34	14.02	8	1.30	5.00	—	—	—	—	5.00	6.00	1.25x.88	44.12	30.00	3075
48	1200	59.50	10.88	47.25	50.62	36.00	10.75	8.50	4	1.25	5.00	4.00	5.25	1.0x.75	46.13	5.00	6.00	1.25x.88	46.18	31.06	3200
54	1400	69.00	15.36	54.12	57.50	40.62	13.78	11.73	8	.81	6.00	5.00	5.25	1.25x.88	51.88	—	—	—	—	37.19	6000
54	1400	69.00	15.36	54.12	57.50	40.62	16.34	14.02	8	1.30	6.00	—	—	—	—	6.00	6.50	1.5x1.0	51.88	37.19	6000
60	1500	73.00	15.00	59.25	63.88	42.62	16.34	14.02	8	1.30	7.00	6.00	6.50	1.5x1.0	57.51	—	—	—	—	40.88	7000
60	1500	73.00	15.00	59.25	63.88	42.62	18.70	15.98	8	1.56	7.00	—	—	—	—	7.00	6.50	1.75x1.5	57.56	40.88	7000
66	1650	80.00	18.00	65.14	69.89	48.62	16.34	14.02	8	1.30	7.00	6.00	6.50	1.5x1.0	62.91	—	—	—	—	44.56	8000
66	1650	80.00	18.00	65.14	69.89	48.62	18.70	15.98	8	1.56	7.00	—	—	—	—	7.00	6.50	1.75x1.5	62.98	44.56	8000
72	1800	86.50	18.00	69.24	73.75	52.25	18.70	15.98	8	1.56	8.50	7.50	8.00	1.75x1.5	67.03	—	—	—	—	47.44	11250
72	1800	86.50	18.00	69.24	73.75	52.25	22.05	19.02	12	1.56	8.50	—	—	—	—	8.50	10.00	2.0x1.5	67.08	47.44	11250

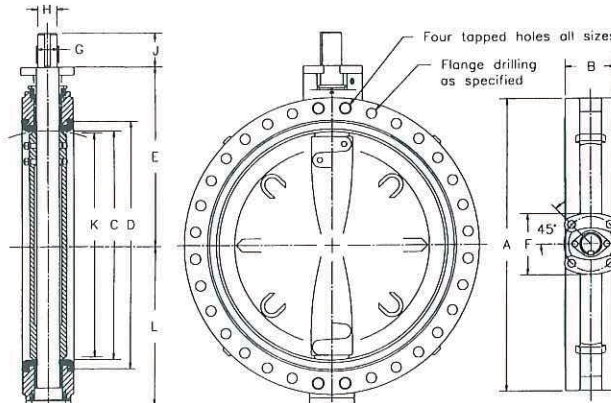
*Dimensions for the Series 36 valve are the same except for a larger Key Size, H, J and K dimension. Dimensions for 46" and 54"-72" Series 35 and Series 36 valves differ and are listed separately.

† Dimensions are for reference only. Consult factory for exact dimensions. Bray reserves the right to change product dimensions without notice.

SERIES 32/33



SERIES 35/36



Bray® CONTROLS

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