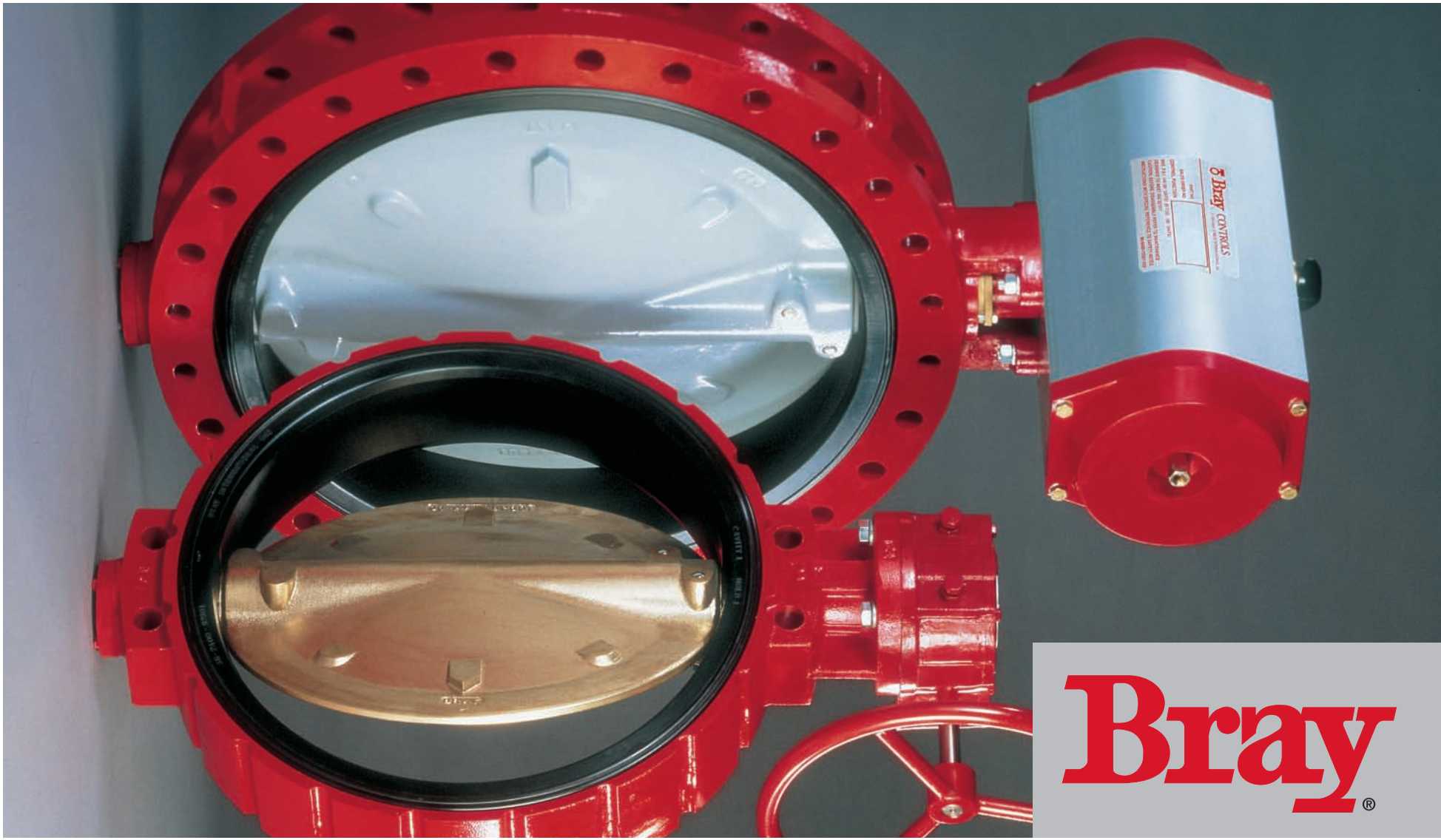


The High Performance Company

Bray®

BUTTERFLY VALVES

LARGE DIAMETER / RESILIENT SEATED

SERIES 32 / 33 Wafer
22"- 36" (550mm -900mm)
SERIES 35 / 36 Full Flanged
22"- 96" (550mm -2400mm)

FEATURES

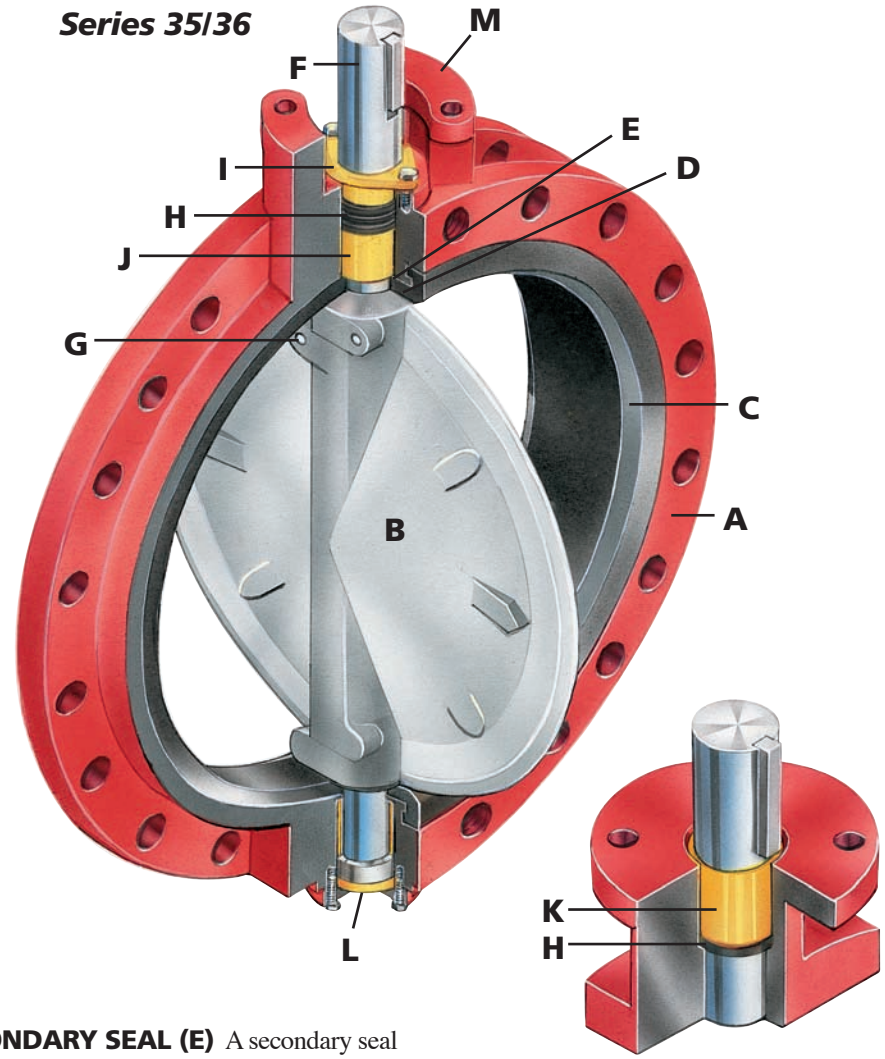
22"-96"(500mm-2400mm) Bray Controls proudly offers this line of heavy duty, large diameter, resilient seated butterfly valves. The Series 32/33 valves are wafer versions with the Series 32 valve rated for 75 psi and the Series 33 designed for a higher rating of 150 psi. The Series 35/36 are full-flanged 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 can be drilled to be compatible with ANSI 125/150, PN10 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 replaceable 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 replaceable tongue and groove seat to body retention method is the most advanced design in the industry. 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.

SPECIFICATIONS

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

- Seat totally encapsulates the body isolating it from the line media.
- Tongue-and-groove seat design with primary hub seal and molded O-ring suitable for weld-neck and slip-on flanges, with no flange gaskets required.
- Spherically machined, hand polished disc edge and hub for minimum torque and maximum sealing capability.
- On flanged valves, equipped with packing glands and upper/lower bronze bearings. The packing gland can be adjusted without removing the manual operator or actuator.
- Equipped with non-corrosive bushing and self-adjusting stem seals for pressure or vacuum on wafer valves.
- Wafer or double flanged bodies.
- Disc stem connected by 17-4 PH tangential taper pins driven, O-ring sealed, and mechanically locked. Valves are bi-directional and every valve is tested to 110% of full differential pressure rating. (ΔP).

MATERIALS SELECTION* 22"-96" (550mm-2400mm)

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:
- Nylon 11 Coated, Ductile Iron ASTM A536
- 316 Stainless Steel ASTM A351 CF8M
- 304 Stainless Steel ASTM A351 CF8M
- Aluminum Bronze ASTM B148 Alloy C95800
- Monel® ASTM A494 Grade M-35-1
- Hastelloy® - Consult factory for Alloy
- Duplex Stainless Steel, such as ASTM A995 Grade 5A
- Super Austenitic Stainless Steel ASTM A351 Gr. CK3MCuN (254 SMO™)

SEAT:
- EPDM • Buna-N (NBR) • FKM**

STEM:
- 416 Stainless Steel ASTM A582 Type 416
- 304 Stainless Steel ASTM A276 Type 304
- 316 Stainless Steel ASTM A276 Type 316
- 17-4 PH per ASTM A564 Type 630
- Monel® ASTM B164 Alloy UNS 04400
- Duplex Stainless Steel, such as ASTM A479 S31651
- Super Austenitic Stainless Steel ASTM A276 UNS N08367 (AL-6XN®)

PACKING: Buna-N (NBR)

BEARINGS:
Luberized Bronze (Series 35/36)

BUSHING:
Luberized Bronze (Series 32/33)

THRUST BEARING:
Bronze

* Additional materials are available, please consult your Bray representative.

Hastelloy® is a registered trademark of Haynes International, Inc.
Monel® is a registered trademark of The International Nickel Company, Inc.
**FKM is the ASTM D1418 designation for Fluorinated Hydrocarbon Elastomers (also called Fluoroelastomers).
AL-6XN® is a registered of ATI Properties, Inc.
254 SMO™ is a registered trademark of Avesta AB.

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

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
48	1200	132,888	108,968	70,431	43,853	27,242	17,010	10,365	4,651	1,023
52	1300	**Consult Factory**								
54	1350	168,700	138,334	89,411	55,671	34,583	21,594	13,158	5,904	1,299
56	1400	**Consult Factory**								
60	1500	190,000	154,000	102,000	63,200	39,400	24,500	14,500	6,400	1,480
64	1600	**Consult Factory**								
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
78	2000	294,000	238,000	158,000	97,800	61,000	38,000	22,400	9,910	2,290
84	2100	338,000	274,000	181,000	112,400	70,200	43,700	25,800	11,390	2,290
90	2200	**Consult Factory**								
96	2400	**Consult Factory**								

C_V is defined as the number of U.S.G.P.M. of water that will flow through a given restriction or valve opening with a pressure drop of one (1) p.s.i. at room temperature. Recommended control angles are between 25°–70° open.

Temperature Range of Seats		
Type	Max	Min
EPDM	+250°F(121°C)	-40°F(-40°C)
Buna-N(NBR)	+212°F(100°C)	0°F(-18°C)
FKM*	+400°F(204°C)	0°F(-18°C)

For other seat types consult factory

VELOCITY LIMITS FOR ON-OFF SERVICE:
Fluids: 15 ft/sec (5m/s)
Gases: 80 ft/sec (24m/s)

DIFFERENTIAL PRESSURE RATINGS	
For Bi-directional Bubble-tight Shut Off (Downstream Flanges Disc in Closed Position):	
Series 32 and 35 :	75 psi (5.2 Bar)
Series 33 and 36 :	150 psi (10.3 Bar)
Dead-End Service (No Downstream Flanges, Disc in Closed Position)	
Series 35:	30 psi (2.1 Bar)
Series 36 :	50 psi (3.4 Bar)

All valves are factory tested to 110% of their specified differential pressure (ΔP) rating before shipping and meet the body shell testing requirements of MSS SP 67.

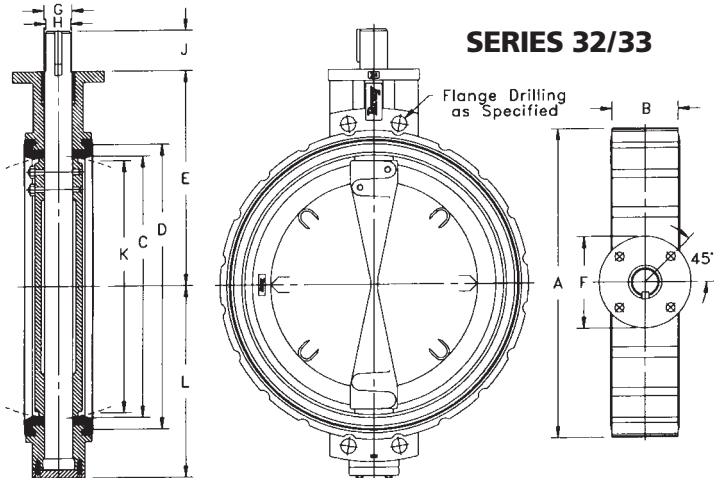
NOTE: For Seating/Unseating and Dynamic Torque data, please consult your Bray representative.

DIMENSIONS

DIMENSIONS ANSI Class 125/150 Valves SERIES 32/33 WAFER 22"-36"

Valve Size								Mounting Flange Drig.				SERIES 32				SERIES 33					Weight (lbs.)
Ins	mm	A	B	C	D	E	F	PCD	No. Holes	Hole Dia.	G	H	J	Key Size	K	H	J	Key Size	K	L	
22	550	25.50	6.06	21.27	24.12	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	16.56	400
24	600	27.94	5.94	23.28	25.75	19.50	8.27	6.50	4	.81	2.50	2.50	4.00	.62x.62	22.65	2.50	4.00	.62x.62	22.70	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	23.71	2.50	4.00	.62x.62	23.76	18.82	540
28	700	31.11	6.50	26.46	29.83	22.84	11.81	10.00	8	.71	2.50	2.50	4.00	.62x.62	25.74	2.50	4.00	.62x.62	25.78	19.83	580
30	750	34.13	6.56	29.29	32.14	23.00	11.81	10.00	8	.71	3.00	2.50	4.00	.62x.62	28.68	3.00	4.00	.75x.75	28.73	20.81	660
32	800	35.55	7.48	30.39	33.78	26.38	11.81	10.00	8	.71	3.00	2.50	4.00	.62x.62	29.59	3.00	4.00	.75x.75	29.65	21.94	785
34	850	38.75	7.88	33.00	35.82	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	23.66	905
36	900	40.69	7.88	35.30	38.25	27.75	13.78	11.73	8	.81	3.50	3.00	4.00	.75x.75	34.57	3.50	5.25	.88x.62	34.62	24.94	1025

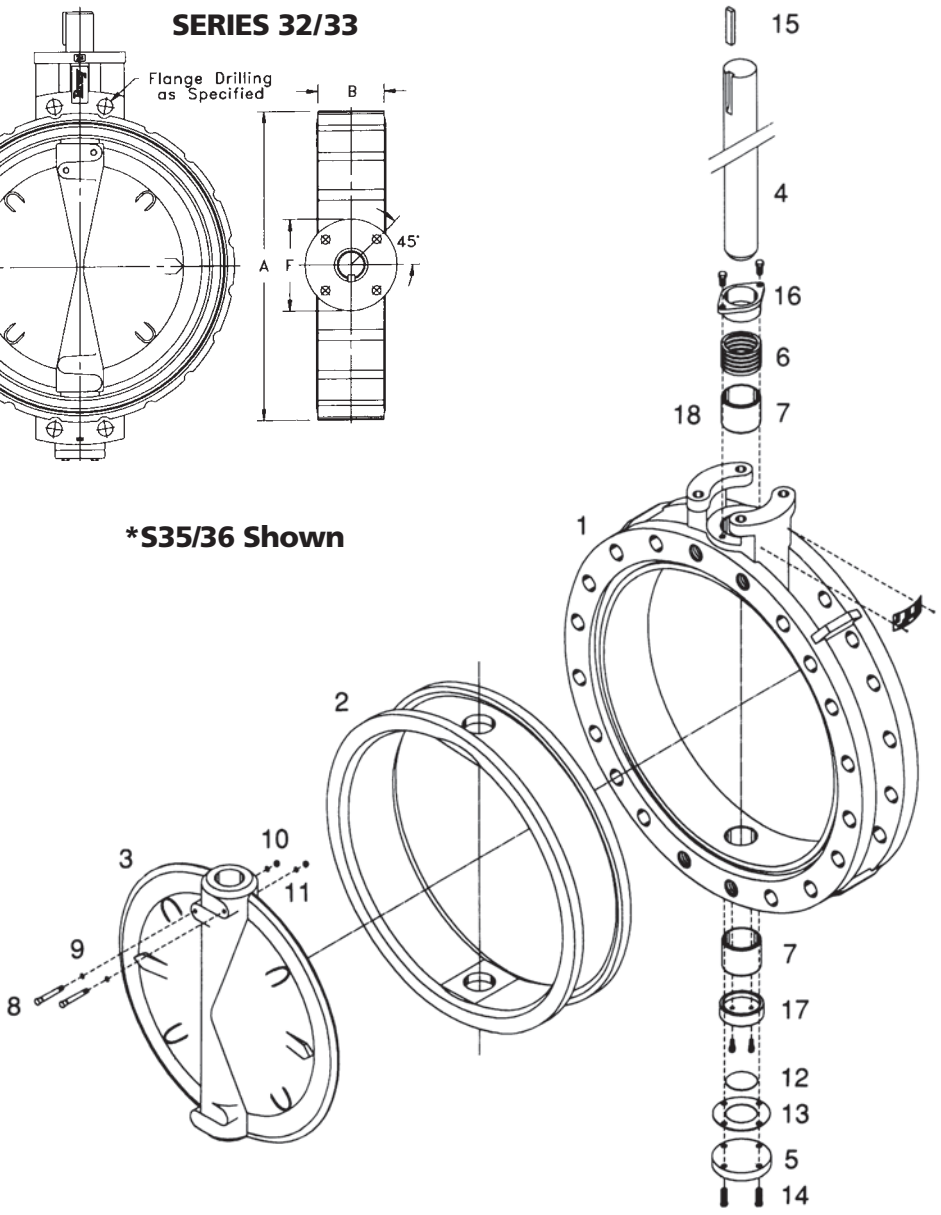
Bray reserves the right to change product dimensions without notice.



COMPONENTS *

Item No.	Qty. S. 32/33	Qty. S.35/36	Item Description
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

***S35/36 Shown**

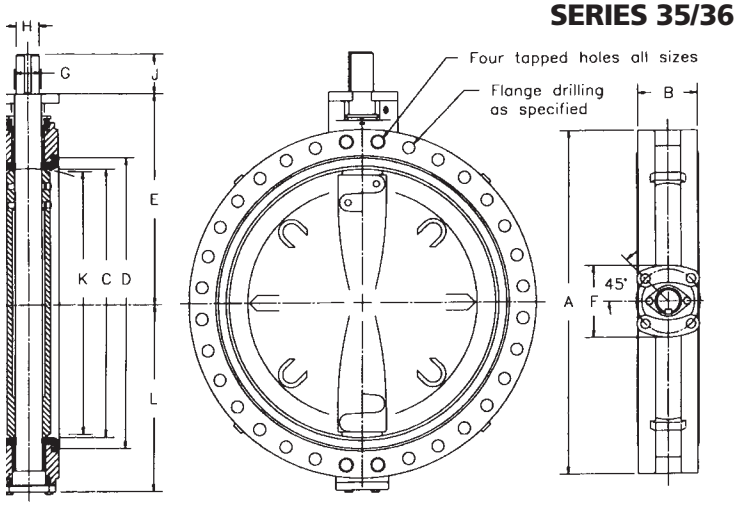


DIMENSIONS ANSI Class 125/150 Valves SERIES 35/36 Double Flanged 22"-96"

Valve Size								Mounting Flange Drlg.				SERIES 35N				SERIES 36N					Weight (lbs.)
Ins	mm	A	B	C	D	E	F	PCD	No. Holes	Hole Dia.	G	H	J	Key Size	K	H	J	Key Size	K	L	
22	550	31.25	6.06	21.27	24.12	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	16.56	475
24	600	33.00	5.94	23.28	25.75	19.50	8.27	6.50	4	.81	2.50	2.50	4.00	.62x.62	22.65	2.50	4.00	.62x.62	22.70	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	23.71	2.50	4.00	.62x.62	23.76	18.82	675
28	700	37.80	6.50	26.46	29.83	22.84	11.81	10.00	8	.71	2.50	2.50	4.00	.62x.62	25.74	2.50	4.00	.62x.62	25.78	19.83	735
30	750	38.75	6.56	29.29	32.14	23.00	11.81	10.00	8	.71	3.00	2.50	4.00	.62x.62	28.68	3.00	4.00	.75x.75	28.73	20.81	855
32	800	41.75	7.48	30.39	33.78	26.38	11.81	10.00	8	.71	3.00	2.50	4.00	.62x.62	29.59	3.00	4.00	.75x.75	29.65	21.94	1010
34	850	44.69	7.88	33.00	35.82	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	23.66	1165
36	900	46.00	7.88	35.30	38.25	27.75	13.78	11.73	8	.81	3.50	3.00	4.00	.75x.75	34.57	3.50	5.25	.88x.62	34.62	24.94	1320
40	1000	50.75	8.50	38.27	41.66	30.79	13.78	11.73	8	.81	4.00	3.50	5.25	.88x.62	37.44	4.00	5.25	1.0x.75	37.49	26.56	2140
42	1050	53.00	9.88	41.25	44.62	32.00	13.78	11.73	8	.81	4.00	3.50	5.25	.88x.62	40.21	4.00	5.25	1.0x.75	40.25	27.81	2550
44	1100	55.25	9.88	43.25	46.72	33.12	13.78	11.73	8	.81	4.00	3.50	5.25	.88x.62	42.24	4.00	5.25	1.0x.75	42.29	29.06	2800
48	1200	59.50	10.88	47.25	50.62	36.00	16.34	14.02	8	1.28	5.00	4.00	5.25	1.0x.75	46.16	5.00	6.00	1.25x.88	46.21	31.06	3200
52	1300	Consult Factory																			
54	1350	69.00	15.00	54.00	57.50	40.62	13.78	11.73	8	.81	6.00	5.00	5.25	1.25x.88	52.02	—	—	—	—	37.25	6000
54	1350	69.00	15.00	54.00	57.50	40.62	16.34	14.02	8	1.28	6.00	—	—	—	—	6.00	6.50	1.5x1.0	52.06	37.25	6000
56	1400	Consult Factory																			
60	1500	73.00	15.00	58.39	63.07	44.31	16.34	14.02	8	1.38	7.00	6.00	6.50	1.5x1.0	56.67	—	—	—	—	39.12	7000
60	1500	73.00	15.00	58.39	63.07	44.31	18.70	15.98	8	1.56	7.00	—	—	—	—	7.00	7.50	1.75x1.5	56.72	39.12	7000
64	1600	Consult Factory																			
66	1650	80.00	18.00	65.12	70.04	48.75	16.34	14.02	8	1.38	7.00	6.00	6.50	1.5x1.0	62.84	—	—	—	—	43.80	8000
66	1650	80.00	18.00	65.12	70.04	48.75	18.70	15.98	8	1.56	7.00	—	—	—	—	7.00	7.50	1.75x1.5	62.88	43.80	8000
72	1800	86.50	18.00	69.22	73.90	52.25	22.05	15.98	8	1.56	8.50	7.50	8.00	1.75x1.5	67.06	—	—	—	—	46.92	11250
72	1800	86.50	18.00	69.22	73.90	52.25	22.05	19.02	12	1.56	8.50	—	—	—	—	8.50	10.00	2.0x1.5	67.10	46.92	11250
78	2000	93.00	18.00	76.37	81.29	55.00	27.00	19.02	12	1.31	8.50	7.50	8.00	1.75x1.5	74.49	—	—	—	—	51.28	12950
78	2000	93.00	18.00	76.37	81.29	55.00	27.00	19.02	12	1.56	8.50	—	—	—	—	8.50	8.50	2.0x1.5	74.54	51.28	12950
84	2100	99.76	18.00	82.62	87.54	58.88	27.00	23.74	20	1.31	9.50	8.50	8.50	2.0x1.5	80.91	—	—	—	—	55.66	14500
84	2100	99.76	18.00	82.62	87.54	58.88	27.00	23.74	20	1.56	9.50	—	—	—	—	9.50	10.00	2.5x1.75	80.96	55.66	14500
90	2200	Consult Factory																			
96	2400	Consult Factory																			

Bray reserves the right to change product dimensions without notice.

SERIES 35/36



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