



Bray[®]

BUTTERFLY VALVES

SERIES 35N / 36N
Resilient Seated, Full Flanged
22" - 96" (550mm - 2400mm)

LARGE DIAMETER VALVES WITH INTERNAL DISC/STEM CONNECTIONS

FEATURES

BODY (A) One piece full flanged style. All bodies are drilled to be compatible with ANSI 125/150, PN 10 or other international flange standards. The valves may be bolted to allow downstream flange removal or cross-bolted for maximum resistance to line stresses.

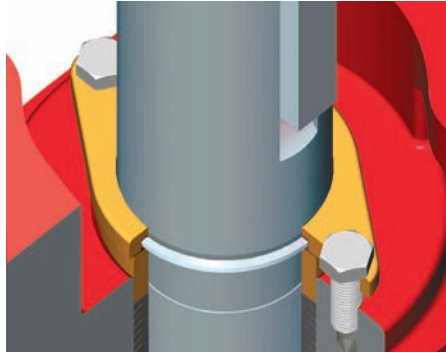
DISC (B) Bray's high strength discs are first cast, then the sealing edges are spherically machined. These edges are then either hand polished or Nylon 11 coated. This process provides 360° concentric seating bi-directional bubble-tight shut off, minimum torque and longer seat life. The symmetrical disc profile increases C_V values, reduces turbulence and increases pressure recovery. 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 & Groove* seat design which fully isolates 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. A strategically located molded-in O-ring eliminates the requirement of flange gaskets. Bray's seat 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.

BLOW-OUT PROOF STEM (F) Series 35N/36N valves feature blow-out proof stem protection. A retaining ring, installed between the machined stem groove and gland retainer step, provides full retention of the stem in the unlikely event of internal stem failure.



ADJUSTABLE PACKING SYSTEM (G) Bray's design allows for field adjustment of stem packing without removing manual operators or power actuators. The packing system consists of a bronze gland retainer, gland ring, studs, nuts, and lock washers.

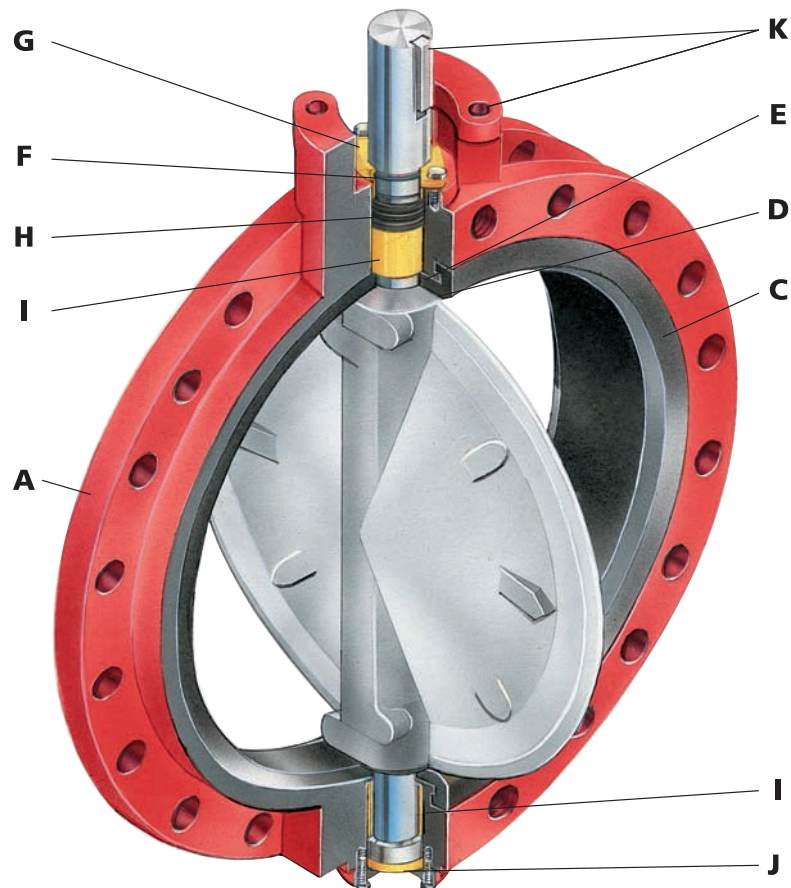
STEM PACKING (H) The advanced, self-adjusting V-Type stem packing offers bi-directional sealing which prevents external substances from entering the upper stem bore. This packing is also externally adjustable if needed. It functions well for vacuum applications and provides a third pressure seal in emergency situations.

STEM BEARINGS (I) To absorb actuator side thrusts and minimize bearing friction / operating torque, upper and lower heavy wall bronze sleeve bearings are utilized.

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

ACTUATOR MOUNTING FLANGE AND STEM CONNECTION (K) Due to a modular concept of design, all Bray manual gear operators and pneumatic or electric actuators mount directly to Bray valves. No brackets or adapters are required.

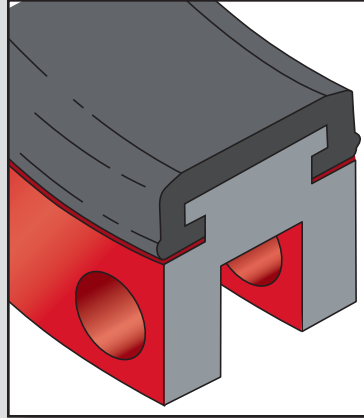
Series 35N/36N



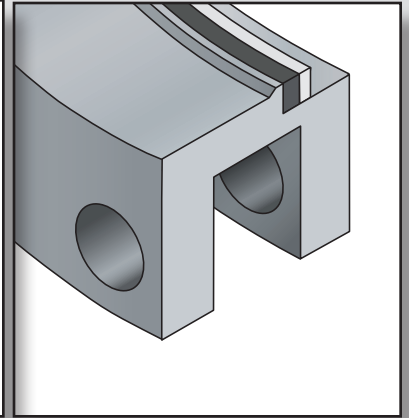
CE Available with the CE marking, signifying compliance with the (PED) Pressure Equipment Directive.



BRAY TONGUE & GROOVE SEATS



Bray's Seat isolates the line media from contacting the body and stem, thus increasing service life & lowering costs.



Competitor Strip Seats expose the body, stem and disc stem hole to the line media, thus causing premature failure due to corrosion. Material costs are significantly increased for highly corrosive applications. (See SB-1050)

APPLICATIONS Designed specifically for highly abrasive and corrosive service, Bray's Series 35N/36N large diameter, resilient seated butterfly valves meet the process requirements with chloride content from low to very high parts per million at a maximum rating of 150 psi.

SEAWATER Bray valves have a proven record of successful installation in desalination plants, seawater utility lines for power plants and other industrial facilities and offshore projects. In addition to high alloy materials, Bray offers **Nylon 11 Coated Ductile Iron** discs, an economical & superior material for seawater and many other applications.

MINING Featuring safety, performance and economy, the S35N/36N is the ideal butterfly valve for corrosive and abrasive mining processes. The Series 35N/36N provides safety, performance, economy and an internal disc-to-stem connection.

SANITARY SERVICE These valves are available with materials that meet FDA/NSF requirements.

FGD With years of field knowledge and experience manufacturing materials such as **Duplex, Super Duplex and Super-Austenitic Stainless Steels** and other high alloys, Bray offers the most economical solution without sacrificing system performance. (please also refer to the Series 35F brochure)

INTERNAL DISC-TO-STEM CONNECTIONS

Bray offers two disc-to-stem connections, the Splined and the Double Keyed. These internal connections eliminate exposure of stem retention components to line media. Typical external disc-to-stem connections use disc screws or taper pins. Such exposed connections commonly result in leak paths, erosion, corrosion and vibration failures. Additionally, these external fasteners often require difficult machining for disassembly. Disassembly of Bray's internal connection is performed by simply pulling the stem out of the disc.

Bray's precision machining of the disc and the stem connection ensures hysteresis is eliminated, plus both connection designs produce maximum strength engagements.



The **SPLINED** disc-to-stem connection features matched precision machined male splines in the stem and female in the disc.

Valve Sizes: 22"–48"
(550mm–1200mm)



The **DOUBLE KEYED** disc-to-stem connection features double keyways machined into the disc matching double keys in the stem.

Valve Sizes: 52"–96"
(1300mm–2400mm)

SPECIFICATIONS

RECOMMENDED SPECIFICATIONS FOR BRAY SERIES 35N/36N:

- Internal disc-to-stem connection to eliminate external disc screws, taper pins or other mechanical fasteners, thus preventing disc-to-stem connection failures due to erosion and corrosion and any potential leak path through the disc.
- Seat totally encapsulates the body and stem 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.
- Blow-out proof stem retention.
- Spherically machined, hand polished disc edge and hub for minimum torque and maximum sealing capability.
- Equipped with an externally adjustable stem packing system that allows packing adjustment without removing operator or actuator.
- Upper/lower bronze stem bearings absorb actuator side thrusts and minimize friction and torque.
- Double flanged bodies.
- 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)

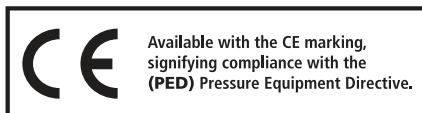
BEARINGS:

Luberized Bronze

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 trademark of ATI Properties, Inc.
254 SMO[™] is a registered trademark of Avesta AB.

C_v VALUES - VALVE SIZING COEFFICIENT BRAY SERIES 35N/36N										
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 35N :	75 psi (5.2 Bar)
Series 36N :	150 psi (10.3 Bar)
Dead-End Service (No Downstream Flanges, Disc in Closed Position)	
Series 35N:	30 psi (2.1 Bar)
Series 36N :	50 psi (3.4 Bar)

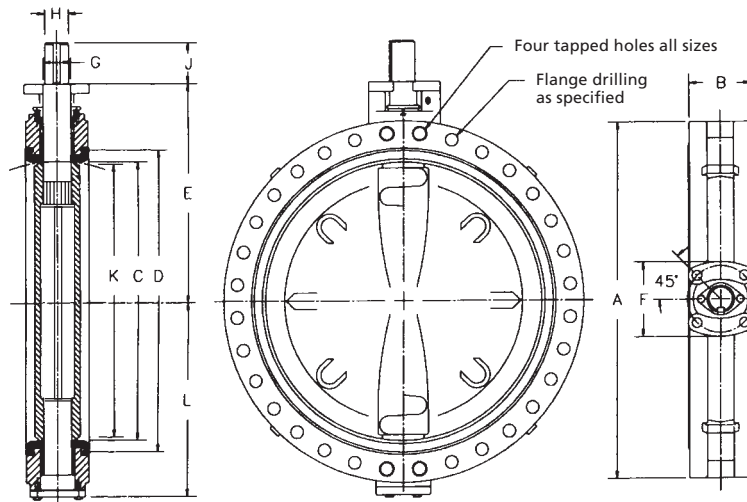
All valves are factory tested to 110% of their specified differential pressure (ΔP) rating before shipping and meet the body shell testing requirements of MSS SP 67.

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

DIMENSIONS

Valve Size		ANSI Class 125/150 Valves SERIES 35N/36N Double Flanged 22"-96" (550mm - 2400mm)																			Weight (lbs.)	
Ins	mm	A	B	C	D	E	F	Mounting Flange Drig.			SERIES 35N					SERIES 36N						L
								Bolt Circle	No. Holes	Hole Dia.	G	H	J	Key Size	K	H	J	Key Size	K			
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																				

Series 35N/36N valves are designed with upper and lower stems. Bray reserves the right to change product dimensions without notice



Bray CONTROLS

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