SOLUTIONS FOR THE
MARINE INDUSTRY

Bray®

BRAY.COM

THE HIGH PERFORMANCE COMPANY

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Bray valves are engineered for maritime naval applications, commercial shipping and offshore production applications.

Valves for marine applications are engineered to withstand the harsh environments of corrosive saltwater and high mineralization found in freshwater lakes and rivers. Bray High Performance Butterfly Valves have been assessed by the US Navy, ABS, Bureau Veritas, Den Norske Veritas, Lloyd's Registrar, CCS, USCG, and other authorities to various marine and shipbuilding standards including US Navy MIL-V-24624. The Bray McCannaLok double offset butterfly valve and Tri Lok triple offset butterfly valve are compliant with ASME B16.34 and API 609 Category B design codes and have been fire test certified to API 607. These designs are available for ASME B31.3 piping systems and are often applied in critical offshore production facilities and seawater services.

- Valves for Seawater
- Valves for Freshwater
- Desalination Valves
- Ship Ballast Valves
- Heavy Fuel Oil Valves
- Marine Boiler Valves
- Exhaust Gas Cleaning Systems (EGCS)
- MIL-V-24624
- Nickel Aluminum Bronze
- Monel & Nickel Alloy Valves
- Stainless Steel Valves
- Titanium Valves
- Cryogenic Valves

SERIES 30/31 RESILIENT SEATED BUTTERFLY VALVES

The Bray Series 30/31 features a high strength one piece stem design utilizing an efficient internal disc to stem connection. This resilient seated butterfly valve provides a primary and secondary seal between the disc and seat as well as the stem and seat which ensures the total encapsulation of the line media and zero external leakage

SPECIFICATIONS

Size Range	NPS 2 to 20 | DN 50 to 500
Body Style	Wafer | Lug
Temperature Range	-20°F to 400°F | -29°C to 204°C
Shutoff Rating	Bidirectional Bubble-Tight
Body Materials	Cast Iron | Ductile Iron | Carbon Steel Aluminum
Disc Materials	Nylon 11 Coated Ductile Iron Aluminum Bronze | Hastelloy® Halar® Coated Ductile Iron | Monel®
Stem Materials	Stainless Steel | Monel® K500
Seat Materials	EPDM | BUNA-N | FKM | Polyurethane HT-EPDM

PRESSURE RATINGS

Bidirectional Bubble Tight Shutoff– Standard Disc* Downstream flanges and disc in closed position		
Series 30/31 Standard Disc*	NPS 2 to 12	175psi | 12 bar
	NPS 14 to 20	150psi | 10.3 bar
Dead End Service– Lug Body, Standard Disc* No downstream flanges and disc in closed position		
Series 31	NPS 2 to 12	75psi | 5.2 bar
	NPS 14 to 20	50psi | 3.4 bar
Body: 250psi | 17.2 bar		

*For low pressure (50 psi) applications, Bray offers a standard reduced disc diameter to decrease seating torques and extend seat life, thus increasing the valve's performance and reducing actuator costs.

VELOCITY LIMITS FOR ON/OFF SERVICES

Fluids: 30ft/s | 9m/s	**Gases:** 175ft/s | 54m/s

CERTIFICATIONS & APPROVALS

Certifications	CE: PED PE(S)R ANSI/NSF 61 372 SIL
Approvals	ABS Type ATEX 2014/34/EU Bureau Veritas Type CRN DNV FDA 21 CFR 177.1550

DESIGN STANDARDS

Valve Design	MSS-SP-67
	API 609 Cat A
Top Flange	ISO 5211
Flange Drilling	ASME B16.1 Class 125
	ASME B16.5 Class 150
	EN 1092 PN 10, 16
Face-to-Face	MSS SP-67
	API 609 Cat A
	EN 558
Seat Tightness Test	MSS SP-61
	API 598
	EN 12266-1

SERIES 30/31 PART NUMBERING SYSTEM (ASME)

Select one code from each category to build a complete valve order number - **3X-XXXX-XXXXX-XXX**

SEIES
3X

Code	Body Style
30	Wafer
31	Lug

SIZE
XXXX

Code	NPS	DN
0200	2	50
0250	2 ½	65
0300	3	80
0400	4	100
0500	5	125
0600	6	150
0800	8	200
1000	10	250
1200	12	300

BASE NUMBER
110XX

Code	Description
11010	NPS 2-12 rated to 175 psi (12 bar)
BFA10	11010 with Handle Full rated pressure
BFA12	11010 with Handle for Series 31H rated 250 psi
BFC10	11010 with Gear Full rated pressure
BFC12	11010 with Gear for Series 31H rated 250 psi

TRIM
XXX

Code	Item	Material
35V	Body	Cast Iron, A126 Class B
	Disc	Nylon Coated Ductile Iron, A536 Gr. 65-45-12
	Stem	416 Stainless Steel, A582
	Seat	EPDM
36N	Body	Ductile Iron, A395 Red Polyester
	Disc	316 Stainless Steel, A351
	Stem	316 Stainless Steel, A351
	Seat	BUNA-N
31Z	Body	Ductile Iron, A395
	Disc	Aluminum Bronze
	Stem	316 Stainless Steel, A351
	Seat	BUNA-N
33H	Body	Ductile Iron, A395
	Disc	Aluminum Bronze
	Stem	416 Stainless Steel, A582
	Seat	EPDM
384	Body	Ductile Iron A536 Gr 65-45-12
	Disc	Aluminum Bronze
	Stem	416 Stainless Steel, A582
	Seat	BUNA-N
392	Body	Ductile Iron A536 Gr 65-45-12
	Disc	316 Stainless Steel, A351
	Stem	416 Stainless Steel, A582
	Seat	BUNA-N
38B	Body	Ductile Iron A536 Gr 65-45-12
	Disc	316 Stainless Steel, A351
	Stem	416 Stainless Steel, A582
	Seat	FKM AAB

EXAMPLE

31-1200-11010-36N

31 Lug body
1200 12 inch (DN 300)
11010 175 psi (12 bar) rated valve
36N Trim

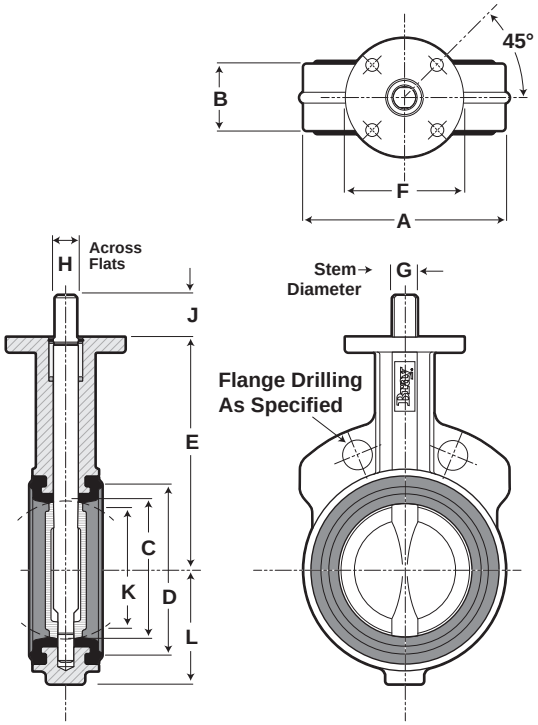
NOTES:

1. For a complete list of standard materials and descriptions, refer to MATERIALS OF CONSTRUCTION. Other materials are available, please contact Bray for additional information.

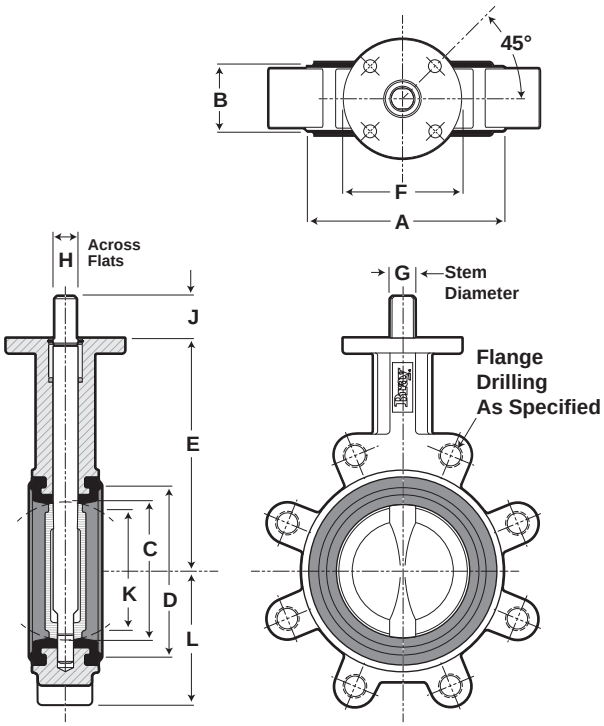
FKM is the ASTM D1418 designation for fluorinated hydrocarbon eastomers (also called Fluoroelastomers) such as Viton® (Dupont) and Fluorel® (3M).

BARE STEM WEIGHTS AND DIMENSIONS

SERIES 30 WAFER



SERIES 31 LUG

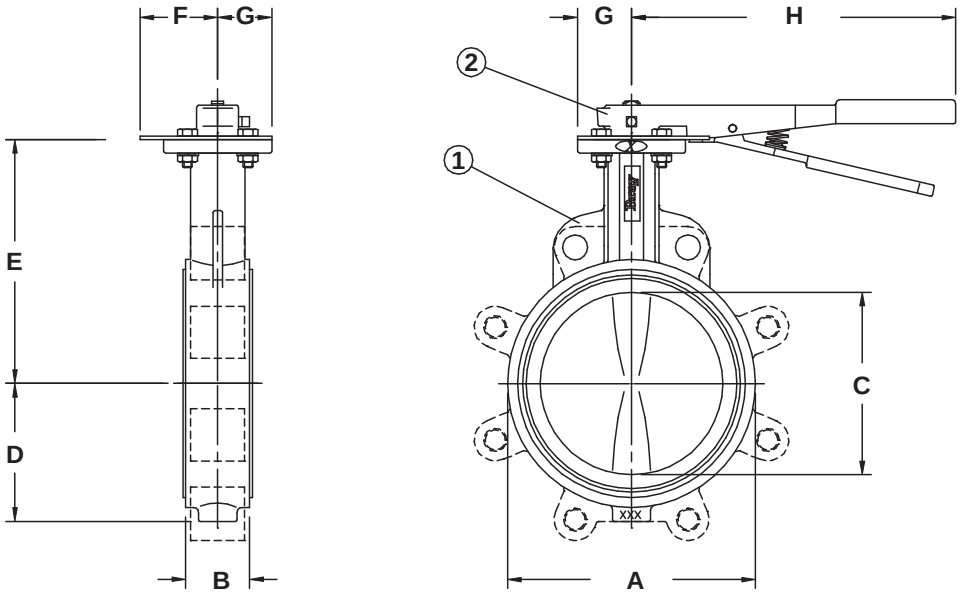


IMPERIAL DIMENSIONS: Inches																			Lug Bolting Data		
							Top Plate Drilling							L			Weight (lbs.)				
Valve Size	A	B	C	D	E	F	BC	No of Holes	Hole Dia.	G	H	J	K	Wafer	Lug	Adapter Code	Wafer	Lug	Bolt Circle	No of Holes	Threads ISO Coarse
2	3.69	1.62	2.00	2.85	5.50	3.54	2.76	4	.39	.55	39	1.25	1.32	2.22	2.30	A	5.5	7.0	4.75	4	5/8-11
2.5	4.19	1.75	2.50	3.36	6.00	3.54	2.76	4	.39	.55	.39	1.25	1.91	2.47	2.57	A	7.0	8.0	5.50	4	5/8-11
3	4.88	1.75	3.00	4.15	6.25	3.54	2.76	4	.39	.55	.39	1.25	2.55	2.81	2.81	A	7.5	9.0	6.00	4	5/8-11
4	6.06	2.00	4.00	5.16	7.00	3.54	2.76	4	.39	.63	.43	1.25	3.57	3.41	4.09	B	11.5	15.0	7.50	8	5/8-11
5	7.06	2.12	5.00	6.16	7.50	3.54	2.76	4	.39	.75	.51	1.25	4.63	4.03	4.61	C	14.0	20.0	8.50	8	3/4-10
6	8.12	2.12	5.75	7.02	8.00	3.54	2.76	4	.39	.75	.51	1.25	5.45	4.53	5.06	C	17.0	23.0	9.50	8	3/4-10
8	10.50	2.50	7.75	9.47	9.50	5.91	4.92	4	.57	.87	.63	1.25	7.45	5.75	6.05	D	34.0	42.0	11.75	8	3/4-10
10	12.75	2.50	9.75	11.47	10.72	5.91	4.92	4	.57	1.18	.87	2.00	9.53	7.12	7.69	E	49.0	66.0	14.25	12	7/8-9
12	14.88	3.00	11.75	13.47	12.25	5.91	4.92	4	.57	1.18	.87	2.00	11.47	8.12	9.02	E	67.0	88.0	17.00	12	7/8-9

Note: K dimension is disc chordal dimension at valve face.

METRIC DIMENSIONS: Millimeters																			Lug Bolting Data		
							Top Plate Drilling							L			Weight (Kg)				
Valve Size	A	B	C	D	E	F	BC	No of Holes	Hole Dia.	G	H	J	K	Wafer	Lug	Adapter Code	Wafer	Lug	Bolt Circle	No of Holes	Threads ISO Coarse
50	94	41.2	51	72	140	90	70	4	10	14	10	32	34	56	58	A	2.5	3	121	4	5/8-11
65	106	44.5	64	85	152	90	70	4	10	14	10	32	49	63	65	A	3	3.5	140	4	5/8-11
80	124	44.5	76	102	159	90	70	4	10	14	10	32	65	71	71	A	3.5	4	152	4	5/8-11
100	154	50.8	102	131	178	90	70	4	10	16	11	32	91	87	104	B	5	7	191	8	5/8-11
125	181	54.0	127	156	190	90	70	4	10	19	13	32	118	102	117	C	6	9	216	8	3/4-10
150	206	54.0	146	178	203	90	70	4	10	19	13	32	138	115	129	C	8	10	241	8	3/4-10
200	267	63.5	197	240	241	150	125	4	14	22	16	32	189	146	154	D	15	19	298	8	3/4-10
250	324	63.5	248	291	273	150	125	4	14	30	22	51	242	181	195	E	22	30	362	12	7/8-9
300	378	76.2	298	342	311	150	125	4	14	30	22	51	291	206	229	E	30	40	432	12	7/8-9

Note: K dimension is disc chordal dimension at valve face.



Valve Size (in)	Handle Size	A	B	C	D		E
					Series 30	Series 31	
2	0200	3.69	1.62	2.00	2.22	2.30	5.50
2.5	0200	4.19	1.75	2.50	2.47	2.57	6.00
3	0200	4.88	1.75	3.00	2.81	2.81	6.25
4	0400	6.06	2.00	4.00	3.41	4.09	7.00
5	0500	7.06	2.12	5.00	4.03	4.61	7.50
6	0500	8.12	2.12	5.75	4.53	5.06	8.00
8	0800	10.50	2.50	7.75	5.75	6.05	9.50
10	1000	12.75	2.50	9.75	7.12	7.69	10.75
12	1000	14.99	3.00	11.75	8.12	9.02	12.25

Handle Size	F	G	H
0200	2.55	1.77	10.62
0400	2.55	1.77	10.62
0500	2.55	1.77	10.62
0800	3.70	2.95	11.75
1000	3.70	2.95	11.75

SERIES 30/31 TORQUE VALUES

	Valve Size (in)	Valve Differential Pressure (PSIG)				
		0 psi	50 psi	100 psi	150 psi	175 psi
Class B General Service	**2**	120	125	130	135	140
	2.5	185	195	205	215	220
	3	245	260	275	290	297
	4	375	400	425	450	462
	5	560	615	670	725	755
	6	695	783	871	953	1,003
	8	1,300	1,475	1,650	1,825	1,915
	10	1,960	2,240	2,520	2,800	2,940
	12	2,970	3,420	3,870	4,320	4,545

The Series 20/21 resilient seated butterfly valve surpasses the high standards required in food and beverage valve applications. Bray's Series 20 valve features a wafer body design with flange locating holes, and the Series 21 is lug version provides dead-end service capability.

SPECIFICATIONS

Size Range	NPS 1 to 20 | DN 25 to 500
Body Style	Wafer | Lug
Temperature Range	-20°F to 400°F | -29°C to 204°C
Shutoff Rating	Bidirectional Bubble-Tight
Body Materials	Cast Iron | Ductile Iron | Stainless Steel Aluminum
Disc Materials	Stainless Steel | EPDM Molded over SS BUNA-N Molded over SS | Monel®
Stem Materials	Stainless Steel | EPDM Molded over SS BUNA-N Molded over SS
Seat Materials	EPDM | BUNA-N | PTFE Lined EPDM FKM | Polyurethane

PRESSURE RATINGS

Bidirectional Bubble Tight Shutoff* Downstream flanges and disc in closed position		
Resilient Seated	NPS 2 to 12	175psi | 12 bar
	NPS 14 to 20	150psi | 10.3 bar
PTFE Seated	NPS 2 to 12	150psi | 10.3 bar
	NPS 2 to 12	100psi | 7 bar
Dead End Service– Lug Body No downstream flanges and disc in closed position		
All Valves	NPS 2 to 12	75psi | 5.2 bar
	NPS 14 to 20	50psi | 3.4 bar
Body: 150psi | 10.3 bar		

VELOCITY LIMITS FOR ON/OFF SERVICES

Fluids: 30ft/s | 9m/s	**Gases:** 175ft/s | 54m/s

CERTIFICATIONS & APPROVALS

Certifications	CE: PED PE(S)R ANSI/NSF 61 372 SIL
Approvals	ABS Type ATEX 2014/34/EU Bureau Veritas Type CRN DNV

DESIGN STANDARDS

Valve Design	MSS-SP-67
	API 609 Cat A
Top Flange	ISO 5211
Flange Drilling	ASME B16.1 Class 125
	ASME B16.5 Class 150
	EN 1092 PN 10, 16
Face-to-Face	MSS SP-67
	API 609 Cat A
	EN 558
Seat Tightness Test	MSS SP-61
	API 598
	EN 12266-1

SERIES 20/21 PART NUMBERING SYSTEM (ASME)

Select one code from each category to build a complete valve order number - **2X-XXXX-110XX-XXX**

SERIES
2X

Code	Body Style
20	Wafer
21	Lug

SIZE
XXXX

Code	NPS	DN
0200	2	50
0250	2 ½	65
0300	3	80
0400	4	100
0500	5	125
0600	6	150
0800	8	200
1000	10	250
1200	12	300

BASE NUMBER
110XX

Code	Description
11010	NPS 2-12 rated to 150 psi (10.3 bar)

TRIM
XXX

Code	Item	Material
025	Body	316 Stainless Steel, A351
	Disc	316 Stainless Steel, A351
	Stem	316 Stainless Steel, A351
	Seat	BUNA-N
026	Body	316 Stainless Steel, A351
	Disc	316 Stainless Steel, A351
	Stem	316 Stainless Steel, A351
	Seat	Teflon/EPDM

EXAMPLE

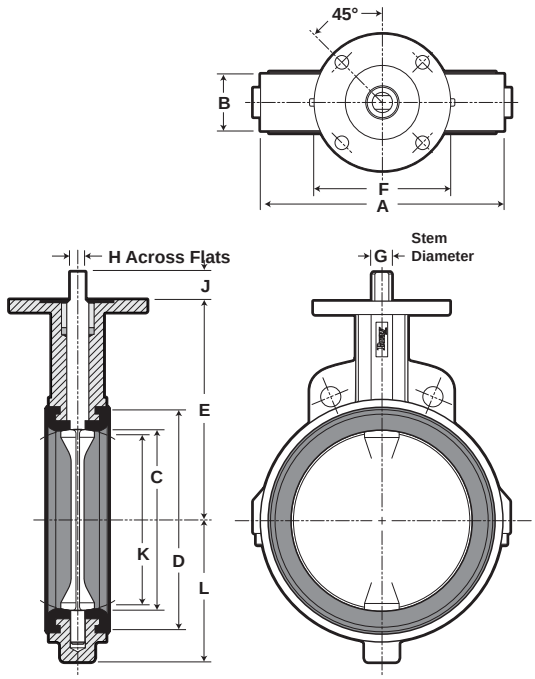
21-0800-11010-025

21 Lug body
0800 8 inch (DN 200)
11010 150 psi (10.3 bar) rated valve
025 Trim

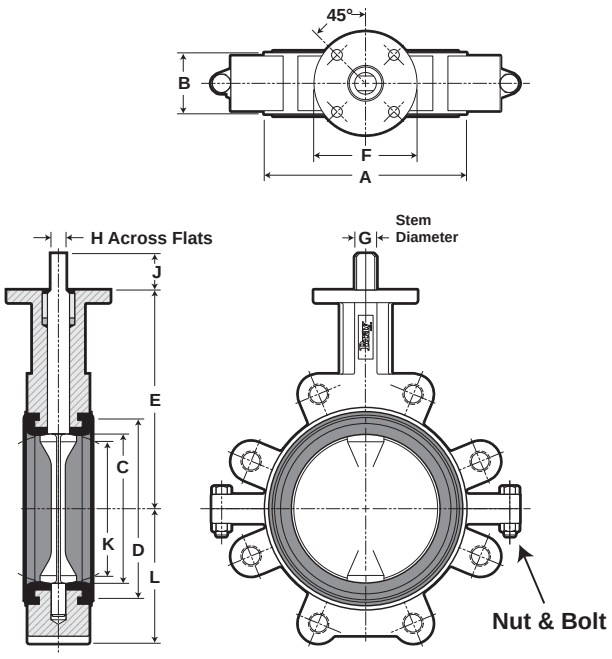
NOTES:

1. For a complete list of standard materials and descriptions, refer to MATERIALS OF CONSTRUCTION. Other materials are available, please contact Bray for additional information.
2. Standard disc/stems are investment cast 316SS surface finish (2″ thru 6″).
3. All stainless bodied valves supplied with stem bearings through 6″ only.

SERIES 20 WAFER



SERIES 21 LUG



IMPERIAL DIMENSIONS: Inches

Valve Size	A	B	C	D	E	F	Top Plate Drilling BC	Top Plate Drilling No of Holes	Top Plate Drilling Hole Dia.	G	H	J	K	L Wafer	L Lug	Adapter Code	Weight (lbs.) Wafer	Weight (lbs.) Lug	Lug Bolting Data Bolt Circle	Lug Bolting Data No of Holes	Lug Bolting Data Threads ISO Coarse
1	2.36	1.18	1.25	1.73	3.54	2.56	1.97	4	.28	.39	.32	1.00	.44	1.65	1.65	AA	2.0	3.0	3.12	4	1/2-13
1.25	3.16	1.26	1.84	2.53	4.12	2.56	1.97	4	.28	.39	.32	1.00	1.35	2.15	2.15	AA	3.0	4.5	3.88	4	1/2-13
2	3.69	1.62	2.00	2.84	5.50	3.54	2.76	4	.39	.55	.39	1.25	1.32	2.22	2.30	A	5.5	7.0	4.75	4	5/8-11
2.5	4.19	1.75	2.50	3.34	6.00	3.54	2.76	4	.39	.55	.39	1.25	1.91	2.47	2.57	A	6.5	9.0	5.50	4	5/8-11
3	4.88	1.75	3.00	4.03	6.25	3.54	2.76	4	.39	.55	.39	1.25	2.55	2.81	2.81	A	7.0	9.5	6.00	4	5/8-11
4	6.06	2.00	4.00	5.16	7.00	3.54	2.76	4	.39	.63	.43	1.25	3.57	3.56	4.09	B	11.0	16.0	7.50	8	5/8-11
5	7.12	2.12	5.00	6.16	7.50	3.54	2.76	4	.39	.75	.51	1.25	4.63	4.28	4.61	C	14.0	22.0	8.50	8	3/4-10
6	8.12	2.12	5.75	7.02	8.00	3.54	2.76	4	.39	.75	.51	1.25	5.45	4.78	5.08	C	17.0	25.0	9.50	8	3/4-10
8	10.50	2.50	7.75	9.47	9.50	5.91	4.92	4	.57	.87	.63	1.25	7.45	6.03	6.12	D	32.0	45.0	11.75	8	3/4-10
10	12.75	2.50	9.75	11.47	10.75	5.91	4.92	4	.57	1.18	.87	2.00	9.53	7.41	7.69	E	47.0	66.0	14.25	12	7/8-9
12	14.88	3.00	11.75	13.47	12.25	5.91	4.92	4	.57	1.18	.87	2.00	11.47	8.41	9.02	E	68.0	102.0	17.00	12	7/8-9

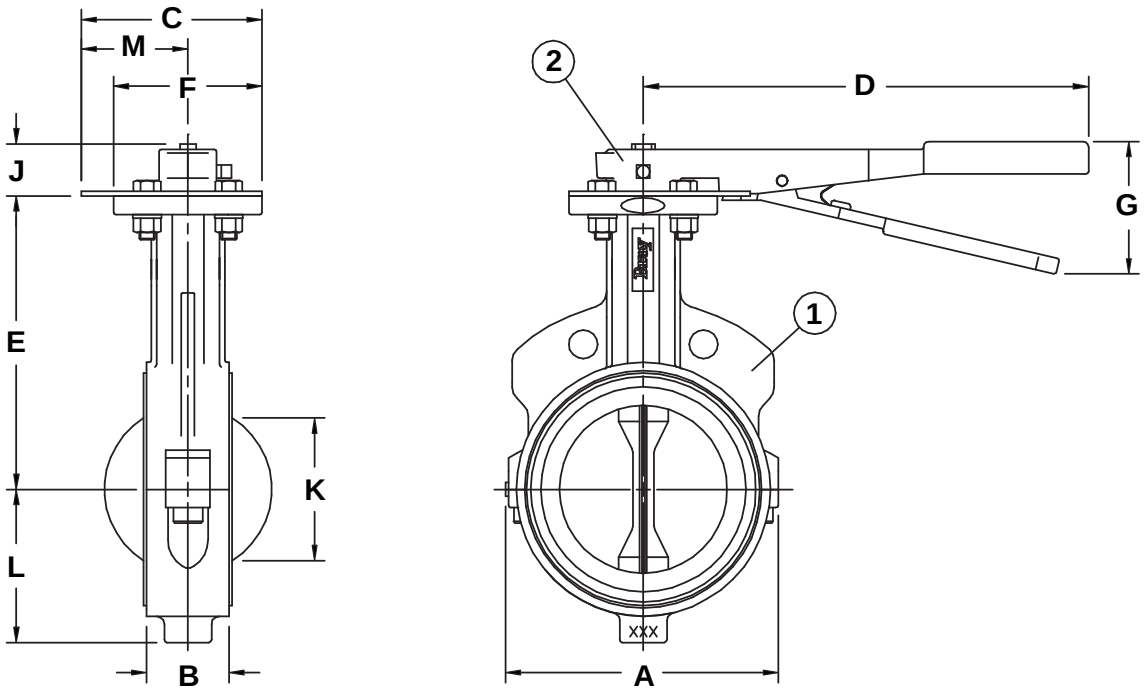
Note: K dimension is disc chordal dimension at valve face.

METRIC DIMENSIONS: Millimeters

Valve Size	A	B	C	D	E	F	Top Plate Drilling BC	Top Plate Drilling No of Holes	Top Plate Drilling Hole Dia.	G	H	J	K	L Wafer	L Lug	Adapter Code	Weight (Kg) Wafer	Weight (Kg) Lug	Lug Bolting Data Bolt Circle	Lug Bolting Data No of Holes	Lug Bolting Data Threads ISO Coarse
25	60	30	32	44	90	65	50	4	7	10	8	25	11	42	42	AA	0.9	1.4	85	4	1/2-13
40	80	33	47	64	105	65	50	4	7	10	8	25	35	55	55	AA	1.3	2.0	110	4	1/2-13
50	94	43	51	72	140	90	70	4	10	14	10	32	31	56	56	A	2.5	3.2	125	4	5/8-11
65	106	46	64	85	152	90	70	4	10	14	10	32	47	63	63	A	2.9	4.1	145	4	5/8-11
80	124	46	76	102	159	90	70	4	10	14	10	32	63	71	71	A	3.2	4.3	160	8	5/8-11
100	154	52	102	131	178	90	70	4	10	16	11	32	90	90	90	B	5	7.2	180	8	5/8-11
125	181	56	127	156	190	90	70	4	10	19	13	32	116	109	109	C	6.4	10	210	8	3/4-10
150	206	56	146	178	203	90	70	4	10	19	13	32	137	121	121	C	7.7	11.3	240	8	3/4-10
200	267	60	197	240	241	150	125	4	14	22	16	32	190	153	153	D	14.5	20.4	295	8	3/4-10
250	324	68	248	291	273	150	125	4	14	30	22	51	240	188	188	E	21.3	30	355	12	7/8-9
300	378	78	298	342	311	150	125	4	14	30	22	51	290	214	214	E	30.8	46.3	410	12	7/8-9

Note: K dimension is disc chordal dimension at valve face.

HANDLE/GEAR OP WEIGHTS AND DIMENSIONS



Valve Size (in)	A	B	C	D	E	F	G	J	K	L	M
1	2.60	1.18	2.56	7.74	3.54	2.56	2.37	1.00	.44	1.65	1.28
1.5	3.33	1.26	2.56	7.74	4.12	2.56	2.37	1.00	1.35	2.15	1.28
2	4.25	1.62	4.32	10.62	5.50	3.54	3.16	1.25	1.32	2.22	2.55
2.5	4.81	1.75	4.32	10.62	6.00	3.54	3.16	1.25	1.91	2.47	2.55
3	5.38	1.75	4.32	10.62	6.25	3.54	3.16	1.25	2.55	2.81	2.55
4	6.56	2.00	4.32	10.62	7.00	3.54	3.16	1.25	3.57	3.56	2.55
5	7.38	2.12	4.32	10.62	7.50	3.54	3.16	1.25	4.63	4.28	2.55
6	8.88	2.12	4.32	10.62	8.00	3.54	3.16	1.25	5.45	4.78	2.55
8	11.25	2.50	6.66	11.75	9.50	5.91	3.16	1.25	7.45	6.03	3.70
10	13.56	2.50	6.66	11.75	10.75	5.91	3.16	2.00	9.53	7.41	3.70
12	15.56	3.00	6.66	11.75	12.25	5.91	3.16	2.00	11.47	8.41	3.70

Note: K dimension is also chordal dimension at valve face.

	Valve Size (in)	Valve Differential Pressure (PSIG)			
		0 psi	50 psi	100 psi	150 psi
Class B General Service	**2**	120	125	130	135
	2.5	185	195	205	215
	3	245	260	275	290
	4	375	400	425	450
	5	560	615	670	725
	6	695	783	871	953
	8	1,300	1,475	1,650	1,825
	10	1,960	2,240	2,520	2,800
	12	2,970	3,420	3,870	4,320

SERIES 40/41 HIGH PERFORMANCE BUTTERFLY VALVES

Featuring Bray's patented, award-winning design, this double offset high performance butterfly valve is precision engineered to deliver quality, value, and reliability in high temperature, high pressure, high cycle, and critical service applications.

SPECIFICATIONS

Size Range	NPS 2 to 66 | DN 50 to 1500	
Body Style	Wafer | Lug | Double Flanged	
Temperature Range	-320°F to 900°F | -196°C to 482°C	
Shutoff Rating	Resilient: Zero leakage Metal Seat: FCI 70-2 Class IV	
Pressure Rating	ASME Class 150 | 300 | 600 PN 10 thru 100	
Body Materials	Cast Iron | Stainless Steel Nickel Aluminum Bronze	
Disc Materials	Stainless Steel | Nickel Aluminum Bronze Monel®	
Stem Materials	Stainless Steel | Monel® K500	
Seat Materials	Resilient	RPTFE or PTFE with Resilient Energizer
	Fire Safe	RPTFE+Inconel® with Resilient Energizer
	Polar®	Engineered Thermoplastic
	Metal	Inconel®
	Low Temp.	TFM with Resilient Energizer

CERTIFICATIONS & APPROVALS

Certifications	CE: PED PE(S)R ANSI/NSF 61 372 SIL
Fire Test	API 607 ISO 10497
Fugitive Emissions	API 641 ISO 15848-1 TA-Luft VDI 2440
Approvals	ABS Type ATEX 2014/34/EU Bureau Veritas Type China Classification Society (CCS) Type CRN DNV EC1935 TR CU (GOST)

DESIGN STANDARDS

Valve Design	ASME B16.34 | ASME VIII
	MSS SP 68
	API 609 Cat B
	EN 593 | EN 12516
Top Flange	ISO 5211
Flange Drilling	ASME B16.5
	ASME B16.47
	EN 1092-1
Face-to-Face	ASME B16.10
	API 609 Cat B
	EN 558
	ISO 5752
Seat Tightness Test	API 598
	MSS SP-61
	EN 12266
	ISO 5208

Select one code from each category to build a complete valve order number - **4X-XXXX-XXXXX-XXX**

SERIES
4X

Code	Body Style
40	Wafer
41	Lug

SIZE
XXXX

Code	NPS	DN
0200	2	50
0250	2 ½	65
0300	3	80
0400	4	100
0500	5	125
0600	6	150
0800	8	200
1000	10	250
1200	12	300

BASE NUMBER
XXXXX

Code	Description
11001	Full ASME Class Pressure Rated
BFA10	11001 with Handle
BFC10	11001 with Gear Operator

EXAMPLE

41-1200-11001-466

41	Lug body
1200	12 inch (DN 300)
11001	Full ASME Class Pressure Rated McCannaLok Valve
466	Trim

TRIM
XXX

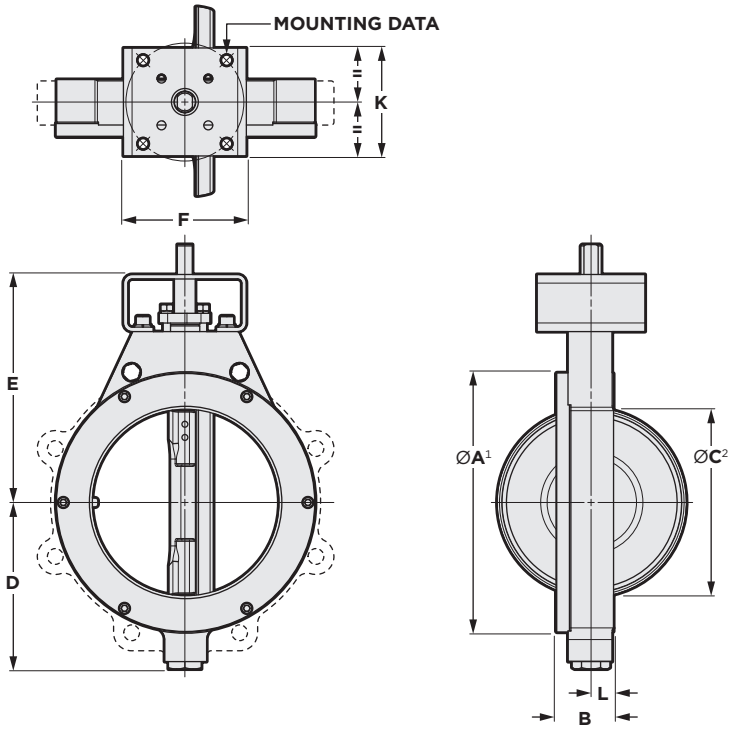
Code	Item	Material
466 Carbon Steel	Body	Carbon Steel, WCB
	Disc	Stainless Steel, CF8M
	Stem	17-4 PH Stainless Steel
	Stem Seal	PTFE rings plus 1 Carbon Fiber Ring
	Seat Assembly	RPTFE with Silicone Rubber Energizer
066 Stainless Steel	Body	Stainless Steel, CF8M
	Disc	Stainless Steel, CF8M
	Stem	17-4 PH Stainless Steel
	Stem Seal	PTFE rings plus 1 Carbon Fiber Ring
	Seat Assembly	RPTFE with Silicone Rubber Energizer
468 Carbon Steel Fire Safe	Body	Carbon Steel, WCB
	Disc	Stainless Steel, CF8M+ENP2
	Stem	17-4 PH Stainless Steel
	Stem Seal	Flexible Graphite Rings
	Seat Assembly	RPTFE with Silicone Rubber Energizer
	Metal Seat	Inconel® 718
068 Stainless Steel Fire Safe	Body	Stainless Steel, CF8M
	Disc	Stainless Steel, CF8M+ENP2
	Stem	17-4 PH Stainless Steel
	Stem Seal	Flexible Graphite Rings
	Seat Assembly	RPTFE with Silicone Rubber Energizer
	Metal Seat	Inconel® 718
00U Stainless Steel	Body	Stainless Steel, CF8M
	Disc	Stainless Steel, CF8M
	Stem	17-4 PH Stainless Steel
	Stem Seal	PTFE rings plus 1 Carbon Fiber Ring
	Seat Assembly	RPTFE with Silicone Rubber Energizer
00W Stainless Steel Fire Safe	Body	Stainless Steel, CF8M
	Disc	Stainless Steel, CF8M+ENP2
	Stem	17-4 PH Stainless Steel
	Stem Seal	Flexible Graphite Rings
	Seat Assembly	RPTFE with Silicone Rubber Energizer
	Metal Seat	Inconel® 718

NOTES:

1. For a complete list of standard materials and descriptions, refer to MATERIALS OF CONSTRUCTION. Other materials are available, please contact Bray for additional information.
2. ENP - Electroless Nickel Plating

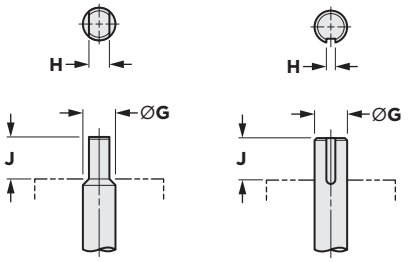
BARE STEM WEIGHTS AND DIMENSIONS

SERIES 40 WAFER/41 LUG



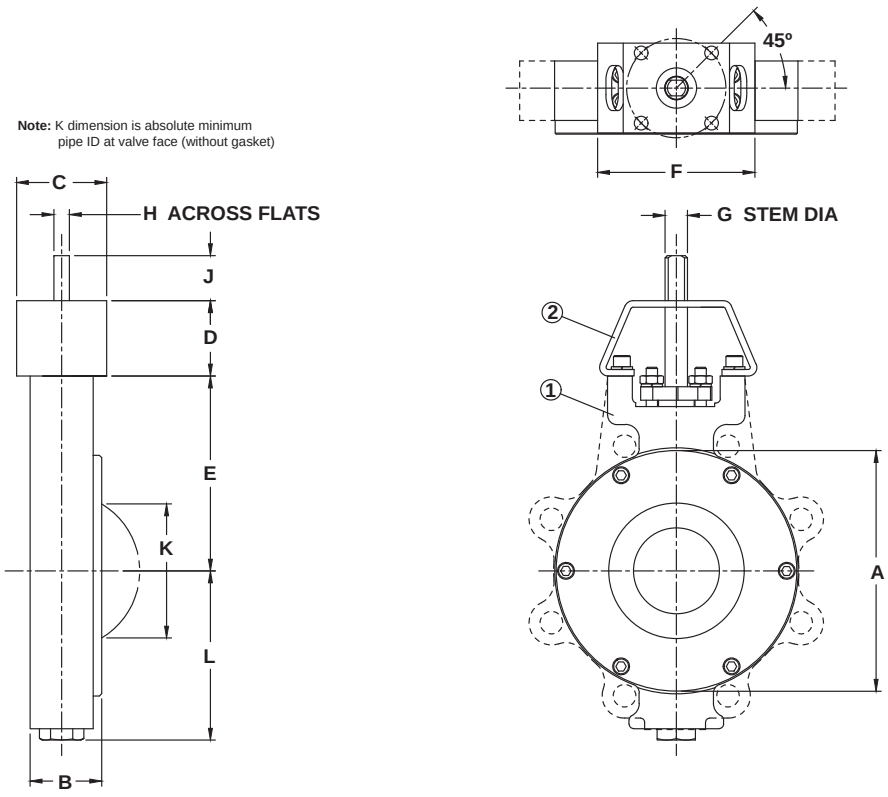
NOTES
> Additional flange drilling options available.
> Weights are for cast steel bodies, except when noted.
1 Dimension A is diameter of raised face flange.
2 Dimension C is absolute minimum pipe ID at valve face (without gasket).
3 Flame cut body weights. Flame cut steel and stainless steel bodies vary. Consult Bray factory.

STEM DETAILS



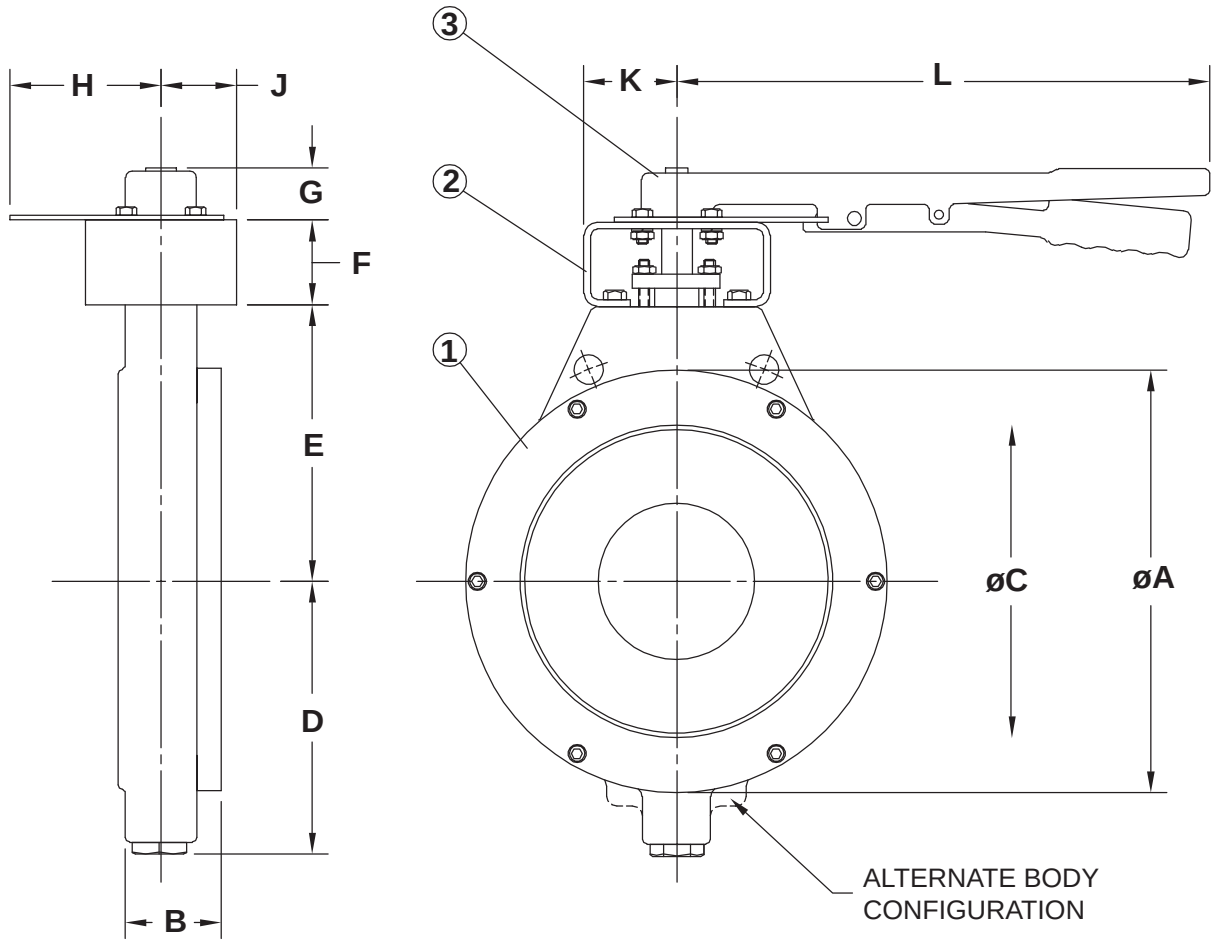
DIMENSIONS (inches)

												Mounting Data			WEIGHT (lbs)	
NPS	ØA[1]	B	ØC[2]	D	E	F	ØG	H	J	K	L	Bolt Circle	Hole Qty	Hole Dia	Wafer	Lub
2	4.00	1.75	1.94	3.63	6.00	4.36	0.55	0.39	1.25	2.50	0.73	2.76	4	0.38	9	11
2.5	4.75	1.88	2.32	3.82	6.38	4.36	0.63	0.43	1.25	2.50	0.77	2.76	4	0.38	11	13
3	5.25	1.88	2.90	4.10	6.63	4.36	0.63	0.43	1.25	2.50	0.77	2.76	4	0.38	13	15
4	6.72	2.03	3.83	4.72	7.50	4.36	0.63	0.43	1.25	2.50	0.75	2.76	4	0.38	20	23
5	7.62	2.23	4.81	5.07	7.50	5.12	0.75	0.51	1.25	4.50	0.94	4.92	4	0.53	27	32
6	8.62	2.23	5.88	5.57	8.00	5.12	0.75	0.51	1.25	4.50	0.94	4.92	4	0.53	32	36
8	10.81	2.40	7.94	6.94	9.50	5.12	0.88	0.63	1.25	4.50	0.94	4.92	4	0.53	48	54
10	13.06	2.75	10.02	8.56	10.75	6.12	1.18	0.87	2.00	4.50	1.07	4.92	4	0.53	79	93
12	15.42	3.08	11.87	10.18	12.25	6.12	1.18	0.87	2.00	4.50	1.13	4.92	4	0.53	118	134
14	17.24	3.73	13.00	11.95	14.50	7.75	1.38	.39 x .39	2.00	6.50	1.42	4.92	4	0.53	211	221
16	19.50	4.11	14.75	13.10	17.75	10.38	1.97	.47 x .39	2.50	6.50	1.66	6.50	4	0.81	314	337
18	21.38	4.61	16.62	14.37	20.00	10.38	1.97	.47 x .39	2.50	6.50	1.86	6.50	4	0.81	404	429
20	23.62	5.03	18.50	15.55	22.75	10.38	2.50	.63 x .63	4.00	6.50	2.06	6.50	4	0.81	533	568
24	27.96	6.00	22.62	18.38	25.00	15.38	3.00	.75 x .75	4.00	11.75	2.44	10.00	8	0.67	810	849
26	29.50	6.50	24.00	19.23	25.00	15.38	3.00	.75 x .75	4.00	11.75	2.84	10.00	8	0.67	1053[3]	1208[3]
28	32.41	6.50	26.62	20.55	26.75	15.38	3.00	.75 x .75	4.00	11.75	2.81	10.00	8	0.67	1119	1228
30	34.41	7.50	28.25	21.38	28.75	19.50	3.50	.88 x .63	5.25	13.50	3.10	11.73	8	0.81	1466	1577
32	37.62	7.50	30.25	22.36	30.00	19.50	3.50	.88 x .63	5.25	13.50	3.22	11.73	8	0.81	1650[3]	1825[3]
34	39.62	7.75	31.50	23.86	30.00	19.50	3.50	.88 x .63	5.25	13.50	3.35	11.73	8	0.81	1890[3]	2340[3]
36	39.87	8.26	34.00	25.27	33.00	19.50	3.50	.88 x .63	5.25	13.50	3.63	11.73	8	0.81	1983	2294
40	44.20	9.51	37.50	27.25	37.00	19.50	4.50	1.0 x .75	5.25	13.50	4.38	11.73	8	0.81	2625[3]	3515[3]
42	46.20	9.51	39.50	29.37	38.00	19.50	4.50	1.0 x .75	5.25	13.50	4.38	11.73	8	0.81	3216[3]	3813
48	52.25	10.00	46.00	33.12	42.13	24.00	5.00	1.25 x .88	6.00	16.00	4.50	14.02	8	1.25	4582[3]	5119[3]
54	58.88	10.75	52.45	35.68	45.50	24.00	6.00	1.5 x 1.0	6.50	16.00	4.75	14.02	8	1.25	5172[3]	6618[3]
60	64.63	12.50	58.50	38.94	50.75	26.00	7.00	1.75 x 1.5	7.50	18.70	5.50	15.98	8	1.50	7168[3]	7793
66	72.75	12.00	64.75	42.69	50.31	23.00	4.50	1.0 x .75	5.25	16.00	5.93	14.02	8	1.25	—	6947

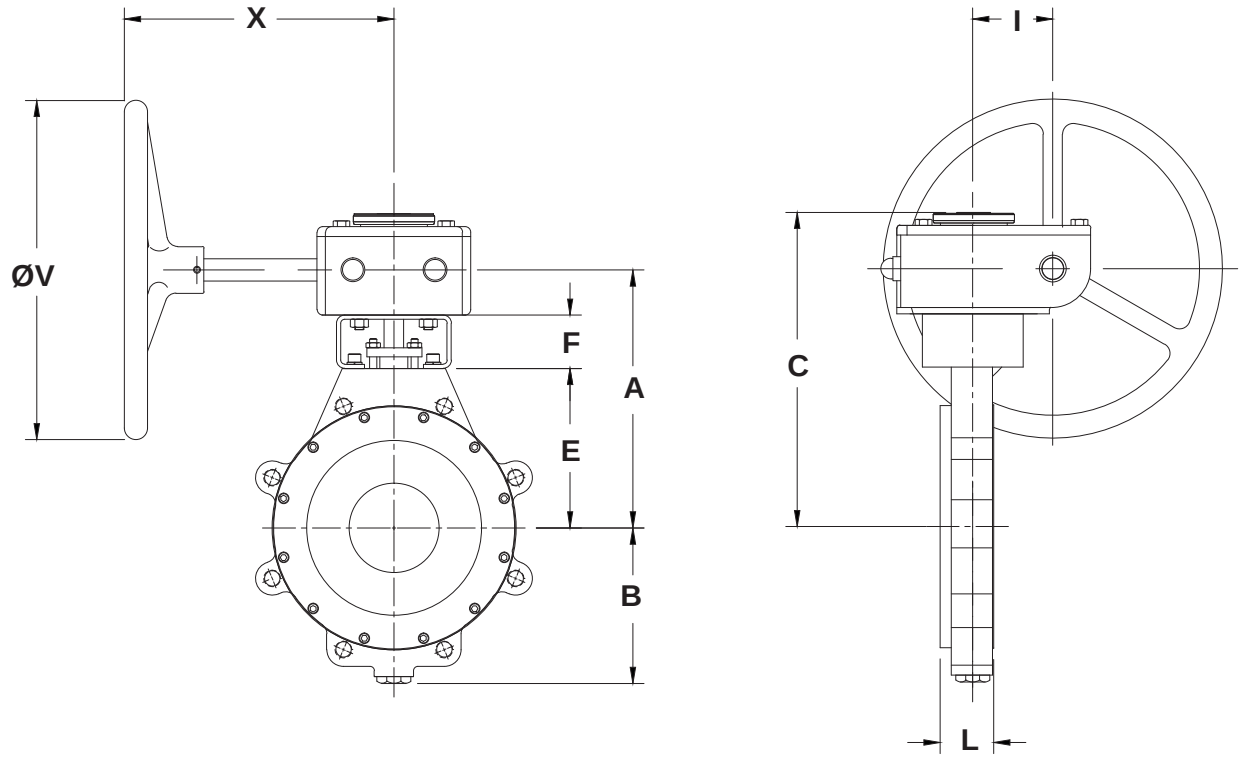


Valve Size (in)	A	B	C	D	E	F	Top Plate Drilling			G	H	J	K	L	Adapter Code
							BC	No. of Holes	Hole Dia.						
2	4.00	1.75	2.50	2.09	3.91	4.36	2.76	4	.38	.55	.39	1.25	1.94	3.63	B
2.5	4.75	1.88	2.50	2.09	4.29	4.36	2.76	4	.38	.63	.43	1.25	2.28	3.81	B
3	5.25	1.88	2.50	2.09	4.54	4.36	2.76	4	.38	.63	.43	1.25	2.86	4.09	B
4	6.72	2.03	2.50	2.09	5.41	4.36	2.73	4	.38	.63	.43	1.25	3.72	4.71	B

HANDLE/GEAR OP WEIGHTS AND DIMENSIONS



Valve Size (in)	A	B	C	D	E	F	G	H	J	K	L
2.5	4.75	1.88	2.28	3.81	4.29	2.09	1.25	2.95	1.25	2.18	10.00
3	5.25	1.88	2.86	4.09	4.54	2.09	1.25	2.95	1.25	2.18	10.00
4	6.72	2.03	3.72	4.71	5.41	2.09	1.25	2.95	1.25	2.18	10.00
5	7.62	2.23	4.83	5.07	5.12	2.38	1.25	4.25	2.25	2.56	15.00
6	8.62	2.23	5.88	5.57	5.62	2.38	1.25	4.25	2.25	2.56	15.00
8	10.81	2.40	7.80	6.94	7.12	2.38	1.25	4.25	2.25	2.56	15.00



Size (in)	Valve					Gear Operator					Flange Data			Weight (lb)	
	A	B	L	E	F	Gear Type	C	I	X	øV	BCD	# Holes	Thread Size	Valve	Total
3	8.01	4.09	1.88	4.54	2.09	Master Gear M10	9.27	2.04	5.31	10.00	6.00	4	5/8-11	18	28
4	8.35	4.71	2.03	4.88	2.09	Master Gear M10	9.61	2.04	5.31	10.00	7.50	8	5/8-11	27	37
6	9.28	5.57	2.23	5.62	2.38	Master Gear M10	10.64	2.04	5.31	10.00	9.50	8	3/4-10	42	52
8	10.88	6.94	2.40	7.12	2.38	Master Gear M10	12.14	2.04	5.31	12.00	11.75	8	3/4-10	64	74
10	12.40	8.56	2.75	8.47	2.28	Master Gear M12	13.94	2.63	6.62	12.00	14.25	12	7/8-9	110	130
12	13.90	10.18	3.08	9.97	2.28	Master Gear M12	15.44	2.63	6.62	18.00	17.00	12	7/8-9	156	176

Notes:

1. Face to Face Dimension: MSS-SP-68 / API 609 Category B, ISO 5752, EN558-2
2. Flange Drilling: ASME 16.5, ASME 16.47, ISO 7005, DIN 2501

TORQUE VALUES RESILIENT SEATED VALVES

ASME CLASS 150 — SERIES 40/41/4A

RESILIENT SEATED VALVE — TORQUE VALUES (lbf-in)

	Valve Differential Pressure (psi)							
	<150 psi		>150 to 200 psi		>200 to 250 psi		>250 to 285 psi	
NPS	Seat Retainer Upstream	Seat Retainer Downstream	Seat Retainer Upstream	Seat Retainer Downstream	Seat Retainer Upstream	Seat Retainer Downstream	Seat Retainer Upstream	Seat Retainer Downstream
2	155	180	170	220	195	260	200	280
2½	170	200	190	240	210	280	215	300
3	185	220	210	260	225	300	230	320
4	275	320	300	370	315	420	320	460
5	550	650	640	800	705	940	730	1,040
6	690	810	770	960	825	1,100	840	1,200
8	1,280	1,500	1,400	1,700	1,500	1,950	1,570	2,100
10	2,400	2,800	2,640	3,300	2,820	3,760	2,870	4,100
12	3,500	4,100	4,000	5,000	4,400	5,900	4,550	6,500
14	5,400	6,300	5,920	7,400	6,400	8,500	6,650	9,500
16	7,700	9,100	9,040	11,300	10,100	13,500	10,500	15,000
18	11,900	14,000	13,600	17,000	15,000	20,000	15,400	22,000
20	15,300	18,000	17,100	21,300	18,500	24,700	18,900	27,000
24	24,650	29,000	27,680	34,600	30,000	40,100	30,800	44,000
28	34,850	41,000	37,600	47,000	44,300	59,200	44,500	63,500
30	39,950	47,000	42,960	53,700	50,800	67,700	52,500	75,000
32	45,000	53,000	48,800	61,000	57,600	76,800	58,800	84,000
36	54,000	64,000	64,800	81,000	73,500	98,000	77,000	110,000
40	62,000	73,000	73,600	92,000	82,500	110,000	84,700	121,000
42	71,000	83,000	84,000	105,000	95,250	127,000	101,000	143,000
48	98,000	115,000	121,600	152,000	142,500	190,000	151,900	217,000
54	136,000	160,000	169,600	212,000	198,000	265,000	211,400	302,000
60	174,497	211,326	220,929	280,435	262,162	350,544	284,544	399,520

ASME CLASS 150 — SERIES 40/41/4A

FIRESAFE VALVE — TORQUE VALUES (lbf-in)

	Valve Differential Pressure (psi)							
	<150 psi		>150 to 200 psi		>200 to 250 psi		>250 to 285 psi	
NPS	Seat Retainer Upstream	Seat Retainer Downstream	Seat Retainer Upstream	Seat Retainer Downstream	Seat Retainer Upstream	Seat Retainer Downstream	Seat Retainer Upstream	Seat Retainer Downstream
2	672	695	680	737	688	769	696	794
2½	680	720	690	770	700	810	710	840
3	750	800	760	830	770	870	780	900
4	850	900	880	980	890	1,050	910	1,100
5	1,420	1,500	1,470	1,630	1,500	1,750	1,600	1,850
6	1,660	1,750	1,690	1,880	1,800	2,000	1,900	2,100
8	2,600	2,800	2,690	2,950	2,750	3,100	2,860	3,200
10	3,900	4,200	4,100	4,530	4,250	4,860	4,400	5,100
12	6,500	6,900	6,600	7,350	6,700	7,790	6,900	8,100
14	12,300	13,000	12,600	14,000	13,200	15,500	13,600	17,000
16	15,200	16,000	15,800	17,600	16,300	19,200	16,320	20,400
18	18,000	19,000	18,900	21,000	19,000	22,500	19,200	24,000
20	21,800	23,000	22,500	25,000	23,800	28,000	28,800	36,000
24	31,000	33,000	34,200	38,000	37,400	44,000	50,400	63,000
28	38,900	42,200	44,900	50,800	50,600	60,900	76,200	102,200
30	46,400	50,200	55,400	62,100	63,800	75,700	97,800	130,100
32	52,500	57,100	64,300	72,400	75,000	89,400	118,200	157,300
36	64,900	76,100	83,300	100,600	99,300	126,900	163,500	227,800
40	75,800	88,600	97,500	117,500	116,500	148,900	235,700	292,800
42	83,200	97,500	10,800	130,400	129,800	166,200	264,400	330,200
48	114,700	135,500	152,900	184,800	186,500	237,900	374,300	475,200

ACTUATORS

SERIES 90/92 PNEUMATIC ACTUATORS

Stainless Steel

Bray Series 90/92 actuators are rack and pinion, opposed-piston actuators available in two versions: double acting for rotation of 90°, 135° and 180°, and spring return for 90° rotation. The actuators were designed primarily for pneumatic operation up to a maximum pressure of 140 psig (10 Bar) and for temperature ranges of -4°F to 200°F (-20°C to 93°C). For higher and lower temperature applications, consult factory.

All double acting and spring return units are suitable for both on/off and throttling applications. Actuators which can be actuated with other media such as hydraulic oil or water are also available as an option.

SERIES 70 ELECTRIC ACTUATORS

The Series 70 features on/off or modulating control and offers many advantages over other actuators including:

- Output Torque 300 in-lb (34 Nm) to 18,000 in-lb (2,034 Nm)
- UL, CSA and CE certification of most units
- Wiring directly to the terminal strip without interference from other components
- Simple and unique manual override handwheel system
- Lowest profile and lightest weight actuator on the market
- Simple finger or screwdriver adjustment of travel limit cams without interference from other components
- Highly visible valve status display on most units (Heartbeat)

SERIES 98 SCOTCH YOKE PNEUMATIC ACTUATORS

Bray's Series 98 pneumatic actuator, part of our modular, fully configurable product line optimized for direct mounting on Bray valves for flexibility and efficiency at reduced cost.

Series 98 actuators were designed primarily for pneumatic operation to a maximum pressure of 150 psi (10.3 Bar) and for temperature ranges of -50°F (-46°C) to 300°F (+149°C).

- Compact design offers a high torque to weight ratio
- Modular Design offers easy configuration in the field
- Module alignment ensured by precision machined centering rings
- Torque Output ranging from 2,744 to 885,100 in-lb (310 to 100,000 Nm)
- Spring End Torque ranging from 2,744 to 445,261 in-lb (310 to 50,306 Nm)
- Standard premium epoxy/polyurethane coating

SERIES 76 ELECTRIC ACTUATORS

High performance without compromise. The Series 76 is a heavy-duty, quarter-turn electric actuator ideal for industrial valve automation. Available in various power voltage supplies and designed for on/off and modulating applications for a wide range of markets and industries.

The Bray Series 76 is a quarter-turn industrial electric actuator with manual override for use on any quarter-turn valve or damper requiring up to 79, 000 in-lbs (9,000 Nm) of torque. Operating speeds vary between 17 to 130 seconds depending on torque, voltage, and frequency.

BRAY SERIES 6A ELECTRO-PNEUMATIC POSITIONER

> Smart Digital Positioner for Precise Control of Valve in Various Applications
> Low Air Consumptions Thanks to Zero Bleed Design
> Compatible with Rotary or Linear Actuators for Single and Double Acting Applications
> Various Enclosure Options Available to Withstand Challenging Environmental Conditions
> Equipped with On-Board Diagnostics Checks to Support Preventative and Efficient Maintenance
> Local User Interface for Quick and Easy Positioner Configuration
> Modular Design Capable of Field Upgradeable Options
> Integral Volume Booster Available for Fast Operation of Large Valves
> Fail Safe, Fail in Place, Fail to Open Options Available
> Advanced Communications Via PROFIBUS PA, Foundation Fieldbus and HART

BRAY SERIES 6P PNEUMATIC POSITIONER

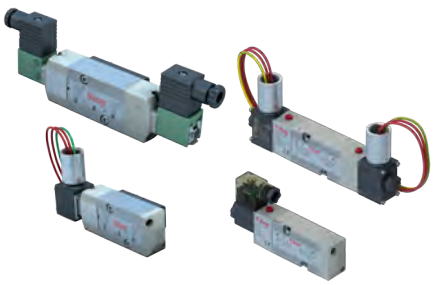
> Pneumatic to Pneumatic Positioner for Single and Double Acting Actuators
> Rugged Aluminum Die Cast Housing for Harsh Environments
> Minimal Setup Time for Zero and Span Adjustment
> Split Range Capabilities
> High Visibility Dome Position Indicator
> Optional 2 x SPDT Mechanical Switches

BRAY SERIES 5A, 5B AND 5C VALVE STATUS MONITORS

> Discrete Status Monitor for Quarter Turn Rotary Actuators
> All Models: NEMA 4, 4X and IP66 and IP67 Ingress Protection
> Model 5A/B Resin and 5C Aluminum:
NEMA 4, 4X and IP66, IP67 and IP68 Ingress Protection
> Intrinsically Safe Or Explosion-Proof Options for Hazardous Locations
> High Visibility Dome Position Indicator
> Up to 6 SPDT Switches or Non-Contacting Proximity Switches
> Switches Pre-Wired to Internal Terminal Block
> Available in Die-Cast Aluminum Housing Coated with 2-Layers of Polyester or Fiberglass Reinforced PBT Housing for Highly Corrosive Environments

BRAY SERIES 54 VALVE PROXIMITY SENSOR

> Dual Proximity Sensors for Valve Position
> IP66, IP67, IP69K Ingress Protection Available
> Available Solenoid Outputs
> 2 or 3 wire DC, AC/DC, intrinsically Safe, and AS-i interface
> Pin Connector or Conduit Versions Available



BRAY SERIES 63 SOLENOID VALVES

> Weatherproof NEMA 4, 4X and explosion proof housings available
> Flying leads or DIN connectors, single or dual coil
> 5/2 or 3/2 operation
> NAMUR mounted
> High Flow up to 1.4 Cv
> Intrinsically Safe Versions Available
> Available Voltages: 12, 24 VDC; 24, 110, 220 VAC

SINCE 1986, BRAY HAS PROVIDED FLOW CONTROL SOLUTIONS FOR A VARIETY OF INDUSTRIES AROUND THE WORLD.

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