

**CRANE**

®



## Resilient Seated Butterfly Valves

**CRANE**

Energy Flow Solutions



Crane has been a market leader in quarter-turn valves for more than 40 years, and we have earned a reputation as a supplier of superior valves at competitive prices. Our goal is to exceed industry requirements and customer expectations.

We are committed to offering products that meet a wide range of applications and requirements. We continually improve our product line by introducing new products and enhancing existing designs, providing our customers with the best products on the market.

Our complete line of resilient seated butterfly valves provides you with the reliability you need, backed by the guarantee that comes with using valves designed and produced in company-owned manufacturing facilities.

## Crane Resilient Seated Butterfly Valves Product Features

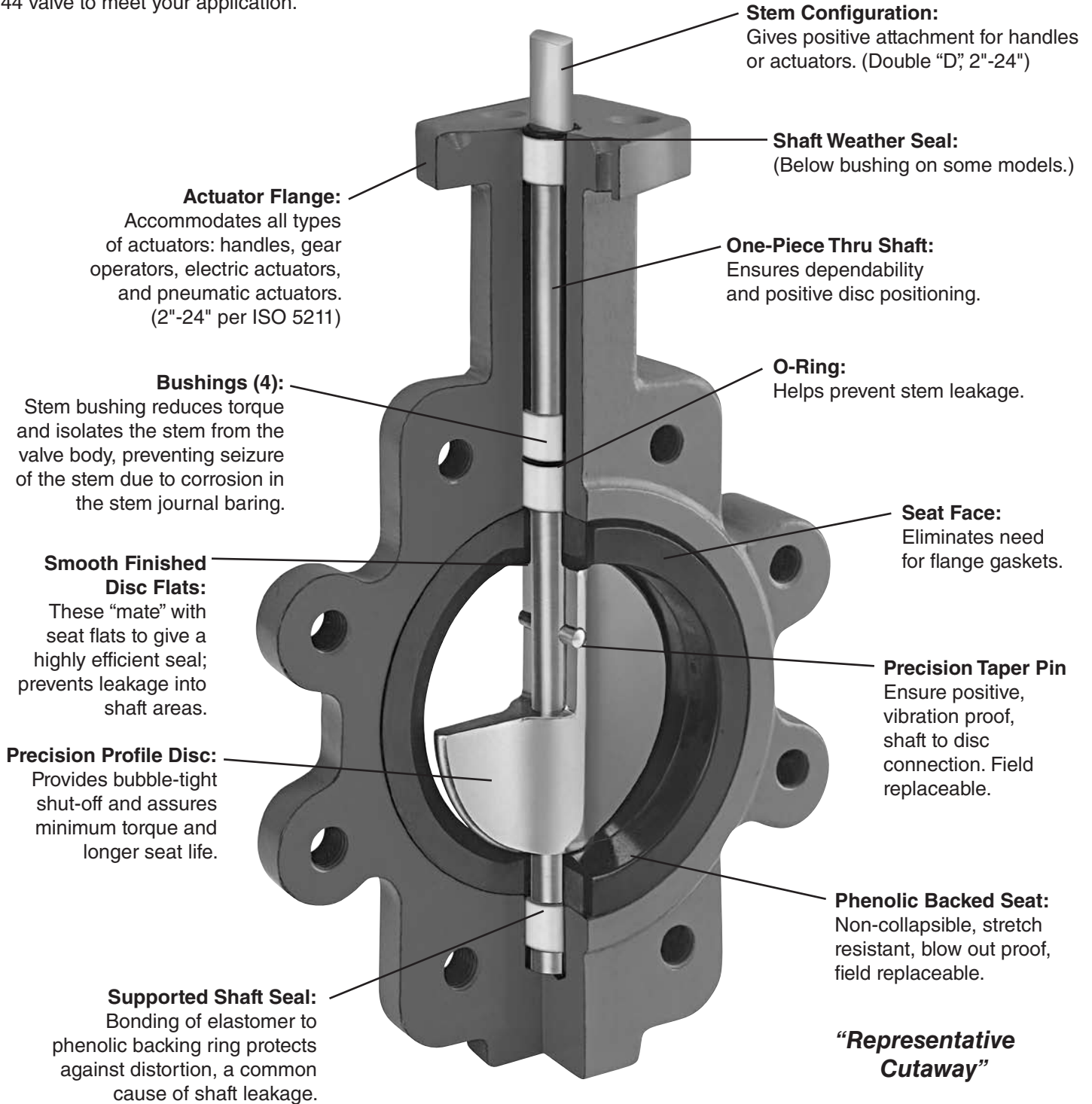
- Qualified for both gaseous and liquid service
- Positive shut-off bi-directionally
- Phenolic backed cartridge seat
- PTFE bushing standard
- Locking handle standard (2"-12")
- End of line service on lug style standard
- Ease of automation
- Field repairable (2"-24")
- Complete size range: 2 through 48 inches

## Typical Applications

- HVAC
- Chemical/  
Petrochemical  
Processing
- Food and  
Beverage
- Power and Utilities
- Pulp and Paper

NOTE: In keeping with our policy of continuing improvement, we reserve the right to institute changes in design, material, dimensions, or specifications without notice and without incurring any obligation to make such changes and modifications on product previously or subsequently sold.

Quality is designed into the Series 42, (wafer) and 44 (lug) butterfly valves, utilizing the phenolic-backed cartridge seat pioneered by Crane. These valves feature precision-machined parts insuring years of dependable operation. With many body/trim combinations, there is a Series 42 or 44 valve to meet your application.



- Available in sizes 2" to 48".
- Available in Wafer (42) or Lug (44) style body (2" to 30").
- Double flange style body for 28" to 48" valves.
- Wafer body features four alignment holes.
- Pressure ratings for tight shut-off at temperatures up to the maximum limit of the seat material:
  - 2" to 12" — 200 psi, 125 psi for PTFE seat.
  - 14" to 48" — 150 psi.
- Ideal for on-off or throttling services.
- Available with handles (2" to 12"), manual gear operators (2" to 48"), and electric or pneumatic actuators (2" to 48").
- Refer to Crane automation bulletin for details of pneumatic and electric actuators.
- Designed to comply with MSS SP-67.
- Compatible with ASME B16.1 and ASME B16.5 flanges.
- Valves 2" to 20" meet the intent and have passed the AWWA C-504-87 Section 5 proof of design tests.
- Type approval certification from ABS for marine applications (2" to 48").
- Bi-directional dead-end capability to 200 psi (2" to 12") and 150 psi (14" to 24") is standard on lug valves.
- Operators mounted perpendicular to pipe.
- For bolting information, consult the Crane Butterfly Installation and Maintenance Manual.
- Vacuum Service Rating: zero leakage at 24" of mercury.
- Commercial cleaning available for non-silicone and Oxygen level 2.
- PED Certification available for sizes 2" to 24".

### Valve Seating Torques (In-Lbs.) 2" to 30"

Valve Size	Standard Disc Differential Pressure			
	50 PSI ΔP Bushing	100 PSI ΔP Bushing	150 PSI ΔP Bushing	200 PSI ΔP Bushing
	PTFE	PTFE	PTFE	PTFE
2"	100	106	111	117
2 1/2"	150	163	176	189
3"	207	220	232	244
4"	290	323	357	390
5"	423	481	540	598
6"	599	691	783	875
8"	1,060	1,183	1,307	1,430
10"	1,671	1,872	2,074	2,275
12"	2,568	2,795	3,023	3,250
14"	2,640	3,070	3,500	-
16"	4,260	4,880	5,500	-
18"	6,287	7,243	8,200	-
20"	8,360	9,180	10,000	-
24"	15,427	16,813	18,200	-
30"	27,313	29,407	31,500	-

### Valve Seating Torques (In-Lbs.) 28" to 48" Double Flanged

Valve Size	Standard Disc Differential Pressure		
	50 PSI Wet / Dry	100 PSI Wet / Dry	150 PSI Wet / Dry
28"	23,718	26,639	28,957
30"	28,320	30,860	33,338
32"	32,418	35,073	38,126
36"	40,622	43,480	46,524
40"	68,924	74,048	78,995
42"	69,747	74,632	79,862
48"	96,598	103,837	111,112

All torques shown in these charts were derived from test data using water at 60°F. For torques using dry gases, multiply these numbers by 2.0. For torques involving other media, please consult the factory.

There is no safety factor included in the numbers shown on these charts. For actuator sizing, Crane recommends that these values be multiplied by 1.5 for single valve applications, or 2.0 for 3-way ("tee") applications.

For PTFE seats multiply the numbers shown by 2.0.

Under certain conditions, hydrodynamic torque can meet or exceed seating and unseating torques. When designing valve systems, hydrodynamic torque must be considered to help assure correct selection for the application.

## Seat Temperature Ratings

Material	Temperature Ratings °F
Buna-N	+10 to 180
Abrasive Resistant Buna-N	+10 to 180
Neoprene	+20 to 200
EPDM (2" - 16")	-30 to 275
EPDM (18" & Above)	-30 to 225
Hypalon	0 to 275
Viton	+10 to 275
High Temp. Viton	+10 to 400
PTFE over Buna-N (125 psi, 2" - 12")	+40 to 250

Although elastomers have an effective operating temperature range, when used in valves, these ranges may have to be modified. The temperature ranges shown in the table have been adjusted accordingly.

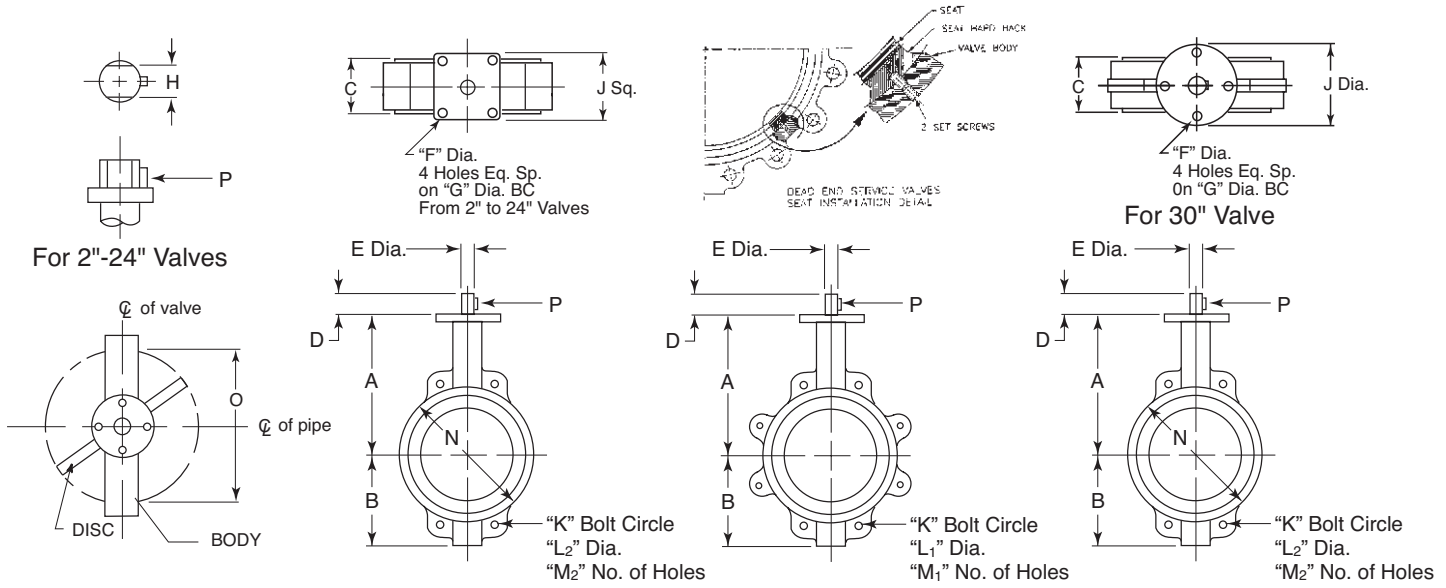
**For Low Temperature:** While the seat materials selected for use in Crane butterfly valves are capable of withstanding lower temperatures without damage, the durometer of the elastomer is changed. This "hardening" of the seat may increase the operating torque beyond the structural limits of the stem and/or the disc to stem configuration.

**For High Temperature:** When using High Temperature Viton, the operating pressure of the valve is reduced above 275°F.

**Field Replacement:** Replacing seats in sizes 12" - 20" is difficult and requires factory service. Sizes 24" and above cannot be field replaced.

## C<sub>v</sub> Values – Valve Sizing Coefficients (US-GPM @ 1ΔP) 2" to 48"

Size	10°	20°	30°	40°	50°	60°	70°	80°	90°
2"	0.06	3	7	15	27	44	70	105	115
2 1/2"	0.10	6	12	25	45	75	119	178	196
3"	0.20	9	18	39	70	116	183	275	302
4"	0.30	17	36	78	139	230	364	546	600
5"	0.50	29	61	133	237	392	620	930	1022
6"	0.80	45	95	205	366	605	958	1437	1579
8"	2	89	188	408	727	1202	1903	2854	3136
10"	3	151	320	694	1237	2047	3240	4859	5340
12"	4	234	495	1072	1911	3162	5005	7507	8250
14"	6	338	715	1549	2761	4568	7230	10844	11917
16"	8	464	983	2130	3797	6282	9942	14913	16388
18"	11	615	1302	2822	5028	8320	13168	19752	21705
20"	14	791	1647	3628	6465	10698	16931	25396	27908
24"	22	1222	2587	5605	9989	16528	26157	39236	43116
28"	36	1813	3639	6636	10000	14949	22769	34898	49500
30"	37	2080	4406	9546	17010	28147	44545	66818	73426
32"	45	2387	4791	8736	13788	20613	31395	48117	38250
36"	260	3050	6730	12740	20220	32500	52500	79600	87500
40"	84	4183	8395	15307	24159	36166	55084	84425	119750
42"	350	4095	9040	17108	27150	43640	70500	106890	117500
48"	455	5365	11840	22400	30600	51200	92300	140000	154000



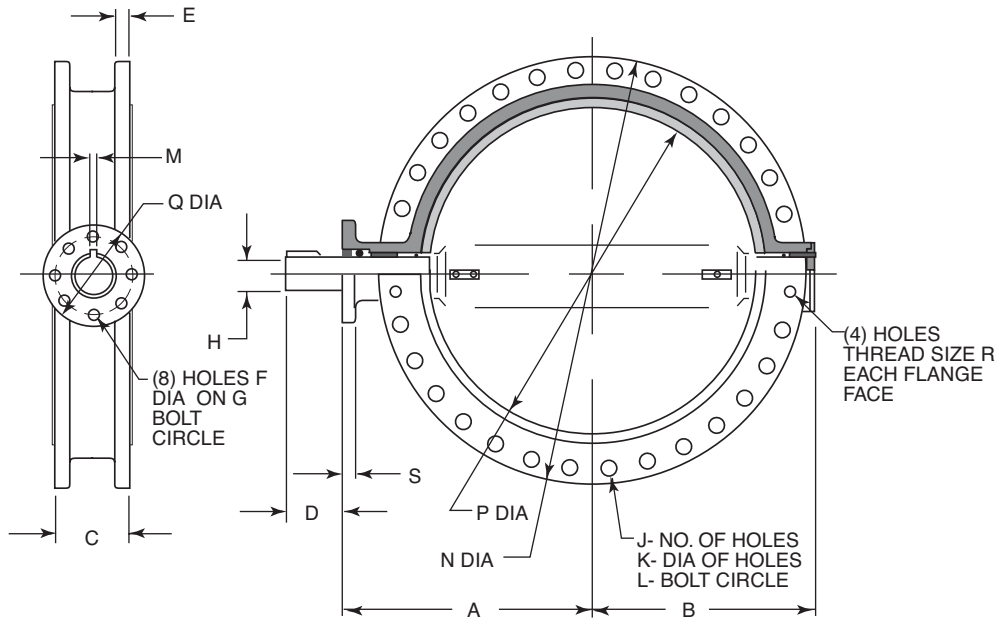
### Dimensions 2" - 30" Wafer & Lug

For installation and maintenance instructions, please refer to the IOM manual available at [www.cranevalveit.com](http://www.cranevalveit.com)

Inches / mm	A	B	C	D	E	F	G	H	J	K	L <sub>1</sub>	L <sub>2</sub>	M <sub>1</sub>	M <sub>2</sub>	N	O	P
2"	6 3/8	3 1/4	1 3/4	1 1/4	1/2	3/8	2.76	0.39	2 3/4	4 3/4	5/8-11	1 1/16	4	4	4	1.26	Wooduff #3
50	161.93	82.55	44.45	31.75	12.70	9.53	70	10	69.85	120.65	17.46	101.60	4	4	101.60	32.0	Wooduff #3
2 1/2"	6 7/8	3 3/4	1 7/8	1 1/4	1/2	3/8	2.76	0.39	2 3/4	5 1/2	5/8-11	1 1/16	4	4	4 3/4	1.83	Wooduff #3
65	174.63	95.25	47.63	31.75	12.70	9.53	70	10	69.85	139.70	17.46	120.65	4	4	120.65	46.5	Wooduff #3
3"	7 1/8	4	1 7/8	1 1/4	1/2	3/8	2.76	0.39	2 3/4	6	5/8-11	1 1/16	4	4	5 1/8	2.54	Wooduff #3
80	180.98	101.60	47.63	31.75	12.70	9.53	70	10	69.85	152.40	17.46	130.18	4	4	130.18	64.5	Wooduff #3
4"	7 7/8	4 7/8	2 1/8	1 1/4	5/8	2 1/8	2.76	0.47	2 3/4	7 1/2	5/8-11	1 1/16	8	4	6 3/4	3.54	Wooduff #9
100	200.03	123.83	53.98	31.75	15.88	9.53	70	12	69.85	190.50	17.46	171.45	8	4	171.45	89.9	Wooduff #9
5"	8 3/8	5 3/8	2 1/4	1 1/4	3/4	3/8	2.76	0.55	2 3/4	8 1/2	3/4-10	1 1/16	8	4	7 3/4	4.36	Wooduff #9
125	212.73	136.53	57.15	31.75	19.05	9.53	70	14	69.85	215.90	20.64	196.85	8	4	196.85	110.7	Wooduff #9
6"	8 7/8	5 7/8	2 1/4	1 1/4	3/4	3/8	2.76	0.55	2 3/4	9 1/2	3/4-10	1 1/16	8	4	8 3/8	5.72	Wooduff #9
150	225.43	149.23	57.15	31.75	19.05	9.53	70	14	69.85	241.30	20.64	219.08	8	4	219.08	145.3	Wooduff #9
8"	10 1/8	7 3/4	2 1/2	1 3/4	7/8	7/16	4.02	0.67	3 3/4	11 3/4	3/4-10	1 1/16	8	4	10 9/16	7.6	Wooduff #9
200	260.35	196.86	63.50	44.45	22.23	11.11	102	17	95.33	298.45	20.64	268.29	8	4	268.29	193.0	Wooduff #9
10"	11 1/2	8 1/4	2 3/4	1 3/4	1 1/8	7/16	4.02	0.87	3 3/4	14 1/2	1/2-9	1 1/16	12	4	13 1/8	9.5	Wooduff #15
250	292.10	209.55	69.85	44.45	28.58	11.11	102	22	95.33	361.95	23.81	331.79	12	4	331.79	241.3	Wooduff #15
12"	13 1/4	9 3/4	3 1/8	1 3/4	1 1/4	7/16	4.02	0.95	3 3/4	17	1/2-9	1 1/16	12	4	16 1/8	11.45	Wooduff #15
300	336.55	247.65	79.38	44.45	31.75	11.11	102	24	95.33	431.80	23.81	409.58	12	4	409.58	290.8	Wooduff #15
14"	14 1/2	11	3 1/8	1 3/4	1 1/4	7/16	4.02	0.95	3 3/4	18 3/4	1-8	1 1/16	16	4	17 1/8	12.78	Wooduff #15
350	368.30	279.40	79.38	44.45	31.75	11.11	102	24	95.33	476.25	26.99	434.98	16	4	434.98	324.6	Wooduff #15
16"	15 3/4	12	3 1/2	2	1 5/8	7/8	6.50	1.06	6 1/2	21 1/4	1-8	1 1/16	16	4	20	14.97	5/16" Sq. x 1 1/4"
400	400.05	304.80	88.90	50.80	33.34	22.23	165	27	165.10	539.75	26.99	508.00	16	4	508.00	380.2	5/16" Sq. x 1 1/4"
18"	16 3/8	15	4 1/4	2	1 7/8	7/8	6.50	1.06	6 1/2	22 3/4	1 1/8-7	1 1/2	16	4	21 3/8	16.83	3/8" Sq. x 1 1/2"
450	422.28	381.00	107.95	50.80	38.10	22.23	165	27	165.10	577.85	31.75	542.93	16	4	542.93	427.5	3/8" Sq. x 1 1/2"
20"	18 7/8	14 5/8	5 1/4	2 3/4	1 5/8	7/8	6.50	1.26	6 1/2	25	1 1/8-7	1 1/2	20	4	23 7/16	18.67	3/8" Sq. x 1 3/4"
500	479.43	371.48	133.35	63.50	41.28	22.23	165	32	165.10	635.00	31.75	592.14	20	4	592.14	474.2	3/8" Sq. x 1 3/4"
24"	22 1/8	18	6 1/8	2 3/4	2	7/8	6.50	1.42	6 1/2	29 1/4	1 1/4-7	1 1/2	20	4	27 7/8	22.62	1/2" Sq. x 2 1/4"
600	561.98	457.20	155.58	69.85	50.80	22.23	165	36	165.10	749.30	31.75	708.03	28	4	708.03	574.5	1/2" Sq. x 2 1/4"
30"	25 1/2	24 1/4	6 3/4	3 1/4	2 1/2	7/8	8 1/2	N/A	11 1/4	36	1 1/4-7	1 1/4	28	4	34 7/8	28.6	5/8" Sq. x 2 5/8"
750	647.70	615.95	171.45	82.55	63.50	22.23	215.90		285.75	914.40	31.75	873.13	28	4	873.13	726.4	5/8" Sq. x 2 5/8"

L<sub>1</sub> and M<sub>1</sub> refer to Lug style valves, L<sub>2</sub> and M<sub>2</sub> refer to Wafer Style. "C" dimension is listed with elastomer in the relaxed condition. Approximately 1/8" total compression is required for proper sealing with pipe flanges. Valves are designed for installation between ASME B16.1 Class 125 (Iron) and B16.5 Class 150 (Steel) flanges. Gaskets are not needed, and should not be used since the seat face seals against the mating flange. If the valve is to be installed in between any other flanges, consult your Crane butterfly agent or the factory for additional information. Crane recommends that a blind flange be used on end of line applications.

"O" dimension is the valve clearance dimension.



## \*Dimensions 36" - 48" Double Flanged

For installation and maintenance instructions, please refer to the IOM manual available at [www.cranevalveit.com](http://www.cranevalveit.com)

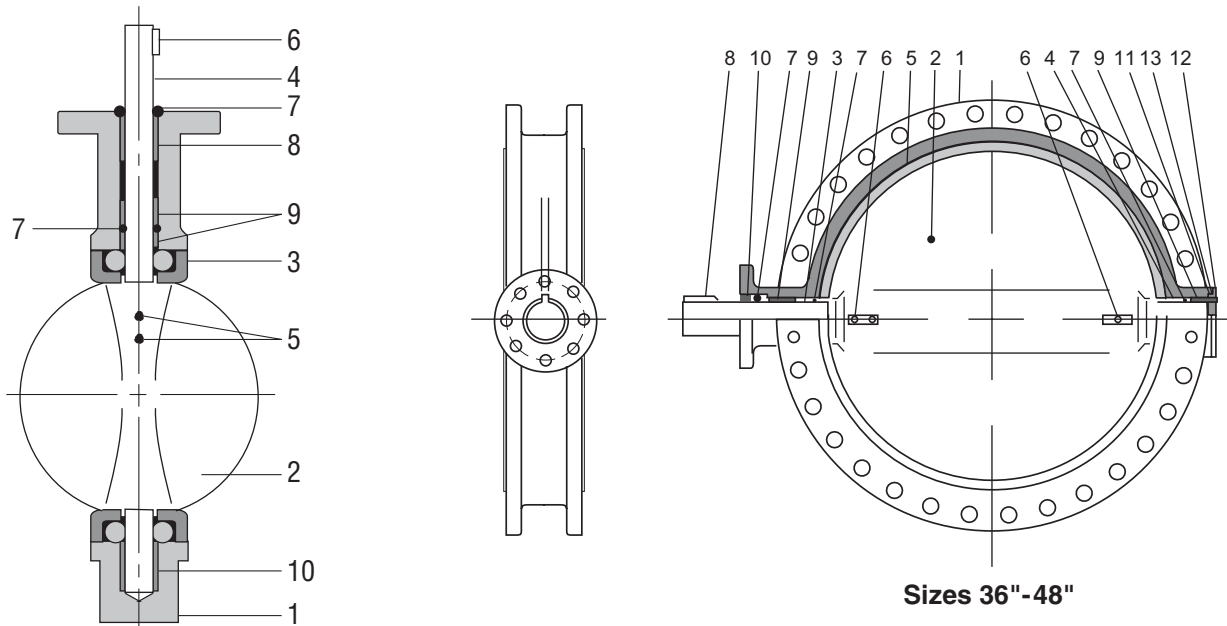
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S
36 in	28.8	25.8	8.1	4.6	2.4	0.7	10	3	28	1.6	42.75	0.8 Sq.	47	34.0	11.8	1.5 - 6	1.3
mm	720	656	203	118	60.3	18	254	75	28	41.3	1085.8	20 Sq.	1169	864.7	300	-	33
42 in	34.3	30.6	10	5.9	2.6	0.7	10	3.3	32	1.6	49.5	0.9 Sq.	53	40.5	11.8	1.5 - 6	1.4
mm	858	777.2	251	150	66	18	254	85	32	41.3	1257.3	22 Sq.	1346	1030	300	-	35
48 in	37.6	34	10.9	5.9	2.8	0.9	11.7	4.1	40	1.6	56	1.1 Sq.	59.5	45.7	13.8	1.5 - 6	1.5
mm	941	864	276.4	150	70	22	298	105	40	41.3	1422.4	28 Sq.	1511	1160	350	-	38

\* Please note that dimensions apply to standard product only.

## Weights 2" - 48" - lbs (kg)

	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"	36"	42"	48"
Wafer	6 (2.7)	7 (3.2)	10 (4.5)	13 (5.9)	18 (8.2)	20 (9.1)	32 (14.5)	42 (19.1)	70 (31.7)	95 (43.1)	117 (53.1)	165 (74.8)	275 (124.7)	440 (199.6)	1660 (754)	2145 (975)	3023 (1374)
Lug	7 (3.2)	8 (3.6)	14 (6.4)	26 (11.8)	28 (12.7)	31 (14.1)	49 (22.2)	72 (32.7)	105 (47.6)	155 (70.3)	195 (88.5)	230 (104.3)	396 (179.6)	610 (276.7)	-	-	-
Flanged	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1949 (886)	2495 (1134)	3711 (1687)

NOTE: TECHNICAL DATA SUBJECT TO CHANGE WITHOUT NOTICE.



Sizes 2"-30"

\*Quantity of 3 pins required for sizes 30" and above

Sizes 36"-48"

**Bill of Materials 2" - 30"**

Item	Description	Materials	Optional Materials
1	Body	Cast Iron	Ductile Iron
2	Disc	Ductile Iron <sup>†</sup>	Aluminum Bronze, 316 SS, Monel
3	Seat	Buna-N or EPDM	Neoprene, Hypalon, Viton, PTFE, FDA, Abrasion Resistant
4	Shaft	416 Stainless Steel	316 Stainless Steel, Monel
5	Taper Pin	300 Series Stainless	Monel
6	Key	Carbon Steel	No Option Available
7	O-Ring	Buna-N	No Option Available
8	Bushing	PTFE	Luberized Bronze
9	Bushing	PTFE	Luberized Bronze
10	Bushing	PTFE	Luberized Bronze

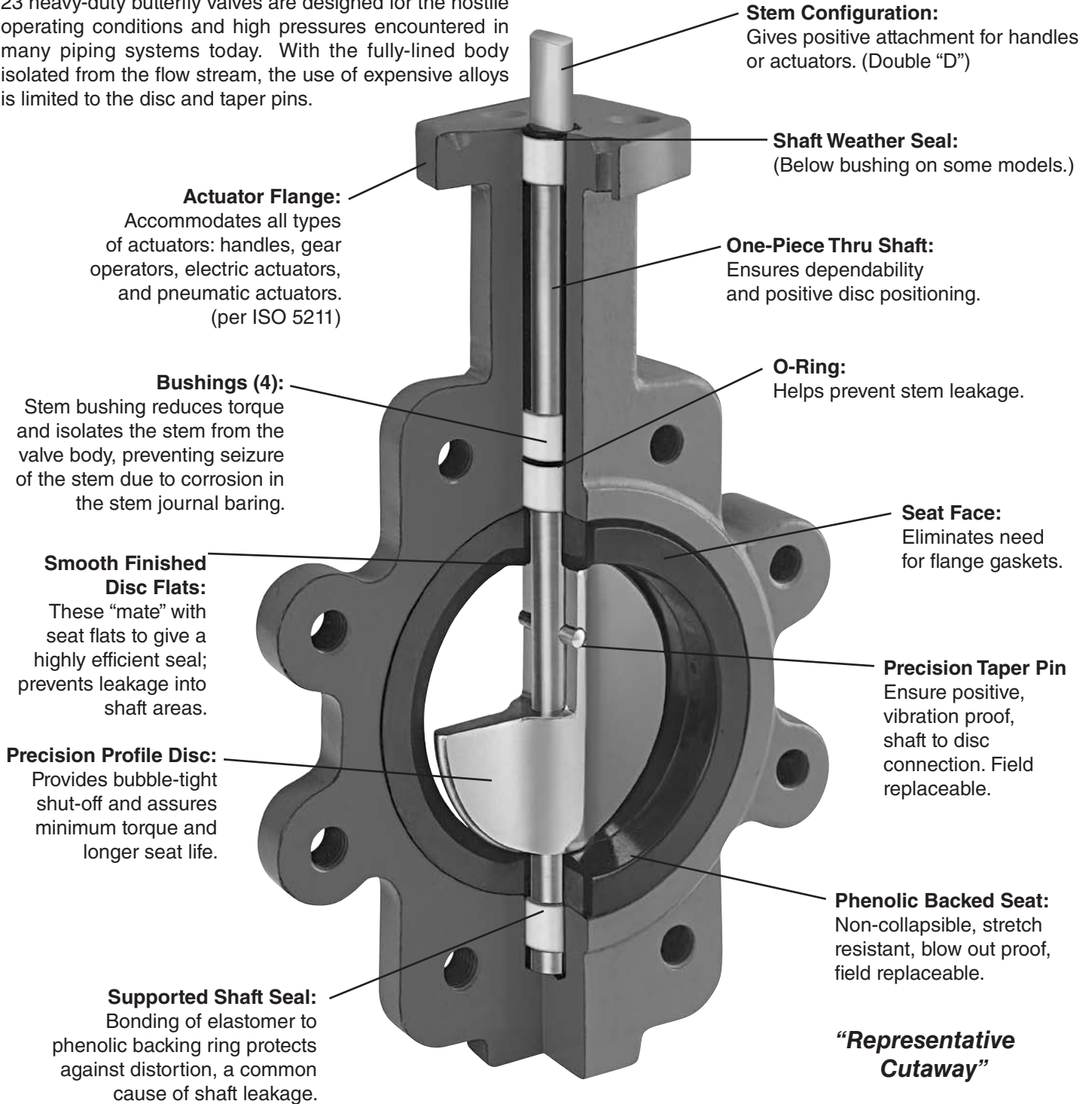
<sup>†</sup>ENP plated for 2"-12" valves

**Bill of Materials 36" - 48"**

Item	Description	Materials	Optional Materials
1	Body	Ductile Iron	No Option Available
2	Disc	Ductile Iron	Aluminum Bronze, 316 Stainless Steel
3	Upper Shaft	416 Stainless Steel	316 Stainless Steel (standard with 316 SS disc)
4	Lower Shaft	416 Stainless Steel	316 Stainless Steel (standard with 316 SS disc)
5	Seat	Buna-N or EPDM	Hypalon, Viton
6	Taper Pin	300 Series Stainless	No Option Available
7	O-Ring	Buna-N	No Option Available
8	Key	Carbon Steel	No Option Available
9	Bushing	TFE	Luberized Bronze
10	Bushing	TFE	Luberized Bronze
11	Thrust Washer	TFE	Luberized Bronze
12	End Plate	Ductile	No Option Available
13	O-Ring	Buna-N	No Option Available



Crane Series 21 (wafer) and 23 (lug) valves utilize the same proven design features as our Series 42 and 44 valves but are rated to 285 psi. These design features include a phenolic-backed cartridge seat, precision profile disc, one-piece shaft, and four shaft support bearings. Series 21 and 23 heavy-duty butterfly valves are designed for the hostile operating conditions and high pressures encountered in many piping systems today. With the fully-lined body isolated from the flow stream, the use of expensive alloys is limited to the disc and taper pins.



- Available in sizes 2" to 24".
- Pressure Rating: 285 psi at 100°F. Pressure/Temperature rating above 100°F corresponds to ASME B16.5 Class 150 for steel flanges.
- Available in Wafer (21) or Lug (23) style body.
- Wafer body features four alignment holes.
- Available in ASME Class 300 Lug Body bolt pattern 2" to 12" (Series 21/23 only).
- Ideal for on-off or throttling services.
- Available with handles (2" to 6"), manual gear operators, electric actuators and pneumatic actuators (2" to 24").
- Refer to Crane automation bulletin for details of pneumatic and electric actuators.

- Compatible with ASME B16.1 Class 125 (Iron) and ASME B16.5 Class 150 (Steel) flanges or optional Class 300 (Steel) Lug only.
- Bi-directional dead-end capability to 200 psi (2" to 12") and 150 psi (14" to 24") is an available option.
- Valves 14" and larger are rated at a maximum 150 psi when a companion flange is not used in dead end service.
- For bolting information, consult the Crane Butterfly Installation and Maintenance Manual.
- Vacuum Service Rating: zero leakage at 24" of mercury.
- Commercial cleaning available for non-silicone and O<sub>2</sub>.
- Type approval certification from ABS for Marine applications (2" to 24").
- PED Certification available for sizes 2" to 24".

### Valve Seating Torques (In-Lbs.)

Valve Size	Standard Disc Differential Pressure				
	50 PSI	100 PSI	150 PSI	200 PSI	285 PSI
2"	136	142	148	154	164
2 1/2"	152	160	168	176	189
3"	224	229	234	239	247
4"	380	392	404	416	436
5"	451	477	503	529	572
6"	875	946	1016	1087	1206
8"	1476	1559	1642	1726	1867
10"	2451	2613	2775	2937	3213
12"	3900	4111	4323	4534	4893
14"	5189	5467	5744	6022	6494
16"	10,985	11,569	12,154	12,738	13,732
18"	13,946	14,688	15,431	16,173	17,434
20"	14,695	15,478	16,260	17,043	18,373
24"	29,738	31,321	32,903	34,486	37,176

All torques shown on the chart were derived from test data using water at 60°F. For torques using dry gases, multiply these numbers by 2.0. For torques involving other media, please consult the factory.

There is no safety factor included in the numbers shown on this chart. For actuator sizing, Crane recommends that these values be multiplied by 1.5 for single valve applications, or 2.0 for 3-way ("tee") applications.

For PTFE seats multiply the numbers shown on this chart by 2.0.

Under certain conditions, hydrodynamic torque can meet or exceed seating and unseating torques. When designing valve systems, hydrodynamic torque must be considered to help assure correct selection for the application.

### Seat Temperature Ratings

Material	Temperature Rating °F
Buna-N	+10 to 180
EPDM (2"-16")	-30 to 275
EPDM (18"-24")	-30 to 225
Abrasive Resistant Buna-N	+10 to 180
Neoprene	+20 to 200
Hypalon	0 to 275
Viton	+10 to 275
High Temperature Viton	+10 to 400

Although elastomers have an effective operating temperature range, when used in valves, these ranges may have to be modified. The temperature ranges shown in the table have been adjusted accordingly.

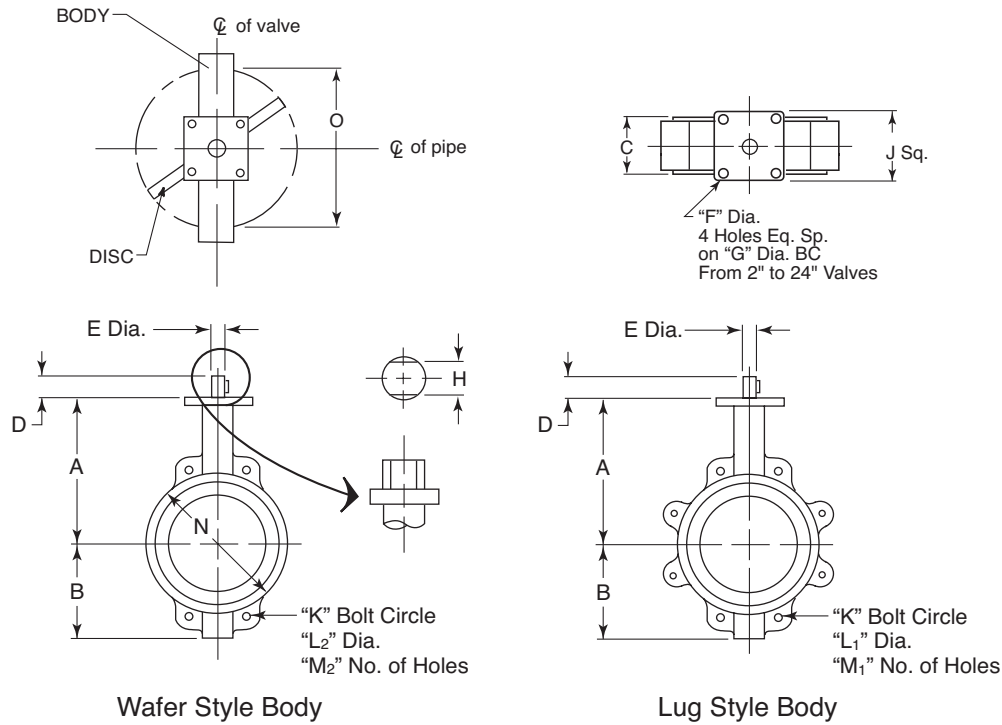
**For Low Temperature:** While the seat materials selected for use in Crane butterfly valves are capable of withstanding lower temperatures without damage, the durometer of the elastomer is changed. This "hardening" of the seat may increase the operating torque beyond the structural limits of the stem and/or the disc to stem configuration.

**For High Temperature:** When using High Temperature Viton, the operating pressure of the valve is reduced above 275°F.

**Field Replacement:** Replacing seats in sizes 12" - 20" is difficult and requires factory service. Sizes 24" and above cannot be field replaced.

### C<sub>v</sub> Values – Valve Sizing Coefficients (US-GPM @ 1ΔP)

Size	10°	20°	30°	40°	50°	60°	70°	80°	90°
2"	0.06	3	7	15	27	44	70	105	115
2 1/2"	0.10	6	12	25	45	75	119	178	196
3"	0.20	9	18	39	70	116	183	275	302
4"	0.30	17	36	78	139	230	364	546	600
5"	0.50	29	61	133	237	392	620	930	1022
6"	0.80	34	94	153	257	422	706	1154	1320
8"	2	56	154	251	422	693	1158	1892	2165
10"	3	87	238	385	654	1073	1794	2931	3353
12"	4	153	417	681	1145	1879	3142	5132	5827
14"	6	183	500	816	1372	2252	3765	6150	7037
16"	8	271	740	1208	2031	3333	5573	9104	10,416
18"	11	318	867	1417	2382	3909	6535	10,676	12,215
20"	14	415	1133	1851	3112	5107	8538	13,948	15,959
24"	22	543	1482	2421	4069	6678	11,165	18,240	20,869

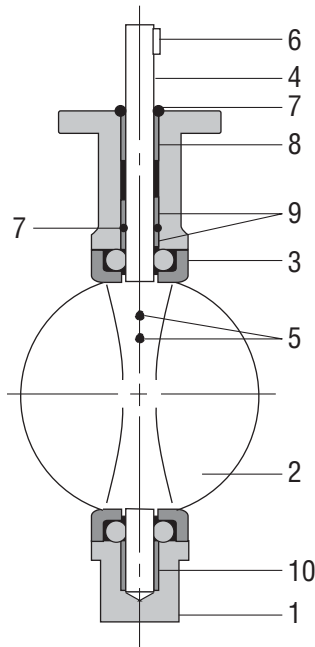


## Dimensions and Weights

For installation and maintenance instructions, please refer to the IOM manual available at [www.cranevalvelit.com](http://www.cranevalvelit.com)

Valve Size	A	B	C	D	E	F	G	H	J	K	300# K	L <sub>1</sub>	300# L <sub>1</sub>	L <sub>2</sub>	M <sub>1</sub>	300# M <sub>1</sub>	M <sub>2</sub>	N	WAFER	300# LUG	LUG	O
2" / 50	6 3/8 / 161.93	3 1/4 / 82.55	1 3/4 / 44.45	1 1/4 / 31.75	1/2 / 12.70	3/8 / 9.53	2.76 / 70	0.39 / 10	2 3/4 / 69.85	4 3/4 / 120.65	5 / 127.00	5/8-11	5/8-11	11/16 / 17.46	4	8	4	4	6 lbs. / 2.72 kg	9 lbs. / 4.08 kg	9 lbs. / 4.08 kg	1.26 / 32.0
2 1/2" / 65	6 7/8 / 174.63	3 3/4 / 95.25	1 7/8 / 47.63	1 1/4 / 31.75	1/2 / 12.70	3/8 / 9.53	2.76 / 70	0.39 / 10	2 3/4 / 69.85	5 1/2 / 139.70	5 7/8 / 149.23	5/8-11	3/4-10	11/16 / 17.46	4	8	4	4 3/4 / 120.65	7 lbs. / 3.18 kg	13 lbs. / 5.90 kg	13 lbs. / 5.90 kg	1.83 / 46.5
3" / 80	7 1/8 / 180.98	4 / 101.60	1 7/8 / 47.63	1 1/4 / 31.75	1/2 / 12.70	3/8 / 9.53	2.76 / 70	0.39 / 10	2 3/4 / 69.85	6 / 152.40	6 5/8 / 168.28	5/8-11	3/4-10	11/16 / 17.46	4	8	4	5 1/8 / 130.18	10 lbs. / 4.54 kg	14 lbs. / 6.35 kg	14 lbs. / 6.35 kg	2.54 / 64.5
4" / 100	7 7/8 / 200.03	4 1/8 / 123.83	2 1/8 / 53.98	1 1/4 / 31.75	5/8 / 15.88	3/8 / 9.53	2.76 / 70	0.47 / 12	2 3/4 / 69.85	7 1/2 / 190.50	7 7/8 / 200.03	5/8-11	3/4-10	11/16 / 17.46	8	8	4	6 3/4 / 171.45	13 lbs. / 5.90 kg	19 lbs. / 8.62 kg	24 lbs. / 10.89 kg	3.54 / 89.9
5" / 125	8 3/8 / 212.73	5 3/8 / 136.53	2 1/4 / 57.15	1 1/4 / 31.75	3/4 / 19.05	3/8 / 9.53	2.76 / 70	0.55 / 14	2 3/4 / 69.85	8 1/2 / 215.90	9 1/4 / 234.95	3/4-10	3/4-10	13/16 / 20.64	8	8	4	7 3/4 / 196.85	18 lbs. / 8.16 kg	22 lbs. / 9.98 kg	29 lbs. / 13.15 kg	4.36 / 110.7
6" / 150	8 7/8 / 225.43	5 7/8 / 149.23	2 1/4 / 57.15	1 1/4 / 31.75	3/4 / 19.05	3/8 / 9.53	2.76 / 70	0.55 / 17	2 3/4 / 69.85	9 1/2 / 241.30	10 5/8 / 269.88	3/4-10	3/4-10	13/16 / 20.64	8	12	4	8 5/8 / 219.08	21 lbs. / 9.53 kg	31 lbs. / 14.06 kg	38 lbs. / 17.24 kg	5.74 / 145.8
8" / 200	10 1/4 / 260.35	7 3/4 / 196.85	2 1/2 / 63.50	1 3/4 / 44.45	7/8 / 22.23	7/16 / 11.11	4.02 / 102	0.67 / 17	3 3/4 / 95.33	11 3/4 / 298.45	13 / 330.20	3/4-10	7/8-9	13/16 / 20.64	8	12	4	10 9/15 / 268.29	34 lbs. / 15.42 kg	49 lbs. / 22.23 kg	67 lbs. / 30.39 kg	7.63 / 193.8
10" / 250	11 1/2 / 292.10	8 1/4 / 209.55	2 3/4 / 69.85	1 3/4 / 44.45	1 1/8 / 28.58	7/16 / 11.11	4.02 / 102	0.87 / 22	3 3/4 / 95.33	14 1/4 / 361.95	15 1/4 / 387.35	7/8-9	1-8	15/16 / 23.81	12	16	4	13 1/18 / 331.79	45 lbs. / 20.41 kg	62 lbs. / 28.12 kg	100 lbs. / 45.36 kg	9.54 / 242.3
12" / 300	13 1/2 / 336.55	9 3/4 / 247.65	3 1/8 / 79.38	1 3/4 / 44.45	1 1/4 / 31.75	7/16 / 11.11	4.02 / 102	0.95 / 24	3 3/4 / 95.33	17 / 431.80	17 3/4 / 450.85	7/8-9	1 1/8-7	15/16 / 23.81	12	16	4	16 1/8 / 409.58	74 lbs. / 33.57 kg	105 lbs. / 47.63 kg	144 lbs. / 65.32 kg	11.5 / 292.1
14" / 350	14 1/2 / 368.30	11 / 279.40	3 1/8 / 79.38	1 3/4 / 44.45	1 1/4 / 31.75	7/16 / 11.11	4.02 / 102	0.95 / 24	3 3/4 / 95.33	18 3/4 / 476.25	-	1-8	-	1 1/16 / 26.99	12	-	4	17 1/8 / 434.98	109 lbs. / 49.44 kg	178 lbs. / 80.74 kg	-	12.81 / 325.4
16" / 400	15 3/4 / 400.05	12 / 304.80	3 1/2 / 88.90	2 / 50.80	1 5/16 / 33.34	7/8 / 22.23	6.50 / 165	1.06 / 27	6 1/2 / 165.10	21 1/4 / 539.75	-	1-8	-	1 1/16 / 26.99	16	-	4	20 / 508.00	135 lbs. / 61.24 kg	224 lbs. / 101.60 kg	-	15 / 381.0
18" / 450	16 5/8 / 422.28	15 / 381.00	4 1/4 / 107.95	2 / 50.80	1 5/8 / 41.28	7/8 / 22.23	6.50 / 165	1.26 / 32	6 1/2 / 165.10	22 3/4 / 577.85	-	1 1/8-7	-	1 3/16 / 30.16	16	-	4	21 3/8 / 542.93	190 lbs. / 86.18 kg	265 lbs. / 120.20 kg	-	16.87 / 428.5
20" / 500	18 7/8 / 479.43	15 / 381.00	5 1/4 / 133.35	2 1/2 / 63.50	1 5/8 / 41.28	7/8 / 22.23	6.50 / 165	1.26 / 32	6 1/2 / 165.10	25 / 635.00	-	1 1/8-7	-	63/64 / 25.00	20	-	4	23 5/18 / 592.14	316 lbs. / 143.34 kg	455 lbs. / 206.38 kg	-	18.69 / 474.7
24" / 600	22 1/8 / 561.98	18 / 457.20	6 1/8 / 155.58	2 3/4 / 69.85	3 / 76.20	7/8 / 22.23	6.50 / 165	2.36 / 60	6 1/2 / 165.10	29 1/2 / 749.30	-	1 1/8-7	-	1 1/64 / 28.18	20	-	4	27 7/8 / 708.03	506 lbs. / 229.52 kg	702 lbs. / 318.42 kg	-	22.57 / 573.3

NOTE: 20" Wafer: L<sub>2</sub> dia. Hole is Tapped w/1-1/8-7 on Each Side  
 24" Wafer: L<sub>2</sub> dia. Hole is Tapped w/1-1/4-7 on Each Side

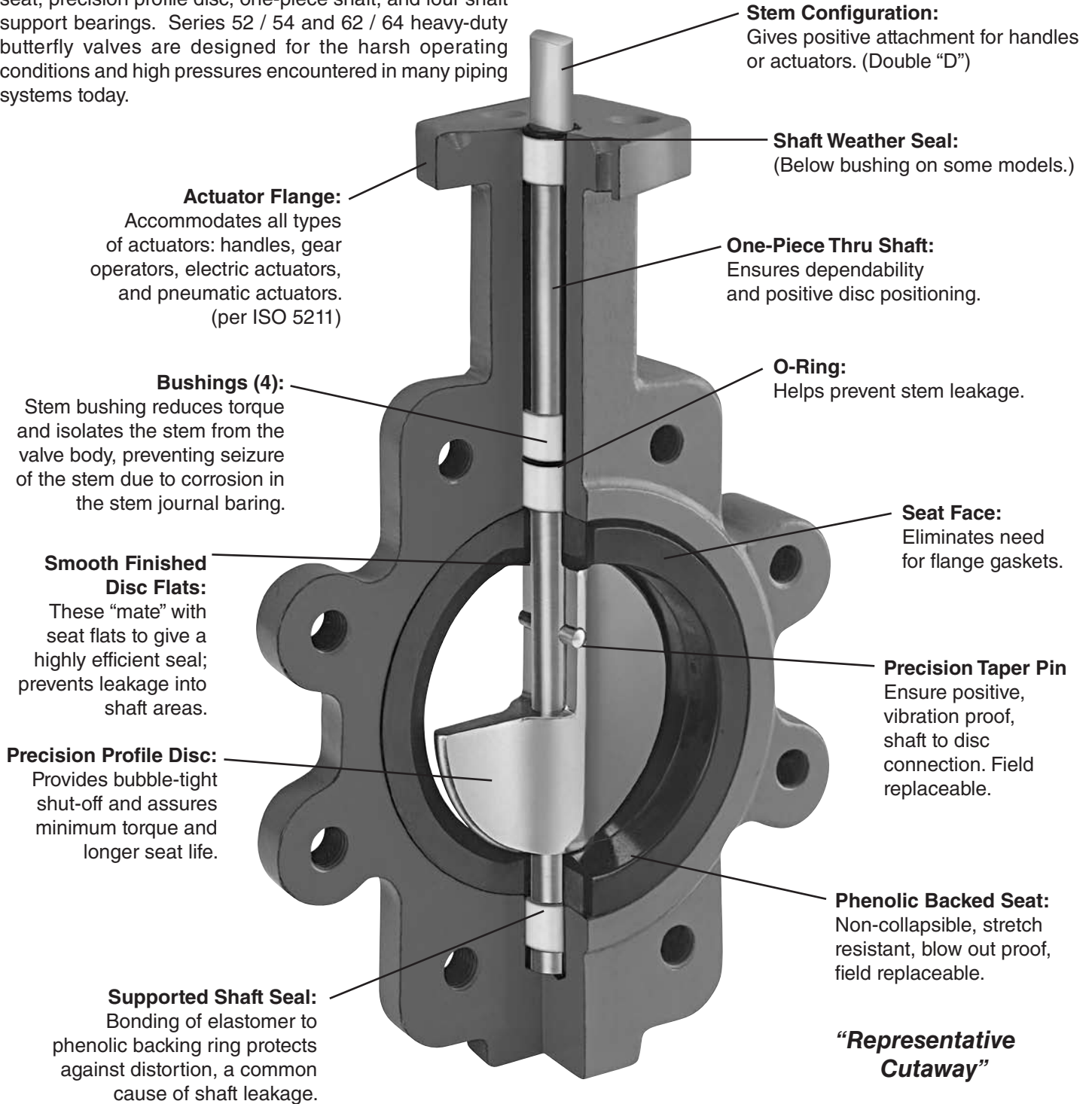


**Bill of Materials (21 / 23)**

Item	Description	Materials	Optional Materials
1	Body	Ductile Iron	No Options Available
2	Disc	Ductile Iron <sup>†</sup>	Aluminum Bronze, 316 Stainless Steel, Monel
3	Seat	Buna-N or EPDM	Neoprene, Hypalon, Abrasive Resistant Buna-N, Viton, High Temperature Viton
4	Shaft	416 Stainless Steel	2"-12": 17-4 PH, Monel
5	Taper Pin	300 Series Stainless	Monel
6	Key	Carbon Steel	No Option Available
7	O-Ring	Buna-N	No Option Available
8	Bushing	PTFE	No Option Available
9	Bushing	PTFE	No Option Available
10	Bushing	PTFE	No Option Available

<sup>†</sup>ENP plated for 2" - 12" valves

Crane Series 52 / 54 and 62 / 64 valves utilize the same proven design features as our Series 21 and 23 valves but are supplied with either a carbon steel (52 / 54) or 316 stainless steel (62 / 64) body. Both are rated to 285 psi. These design features include a phenolic-backed cartridge seat, precision profile disc, one-piece shaft, and four shaft support bearings. Series 52 / 54 and 62 / 64 heavy-duty butterfly valves are designed for the harsh operating conditions and high pressures encountered in many piping systems today.



- Available in sizes 2" to 24".
- Pressure Rating: 285 psi at 100°F. Pressure/Temperature rating above 100°F corresponds to ASME B16.5 Class 150 for steel flanges.
- Available in Wafer or Lug style body.
- Wafer body features four alignment holes.
- Ideal for on-off or throttling services.
- Available with handles (2" to 6"), manual gear operators, electric actuators and pneumatic actuators (2" to 24").
- Refer to Crane automation bulletin for details of pneumatic and electric actuators.
- Compatible with ASME B16.1 Class 125 (Iron) and ASME B16.5 Class 150 (Steel) flanges or optional Class 300 (Steel) Lug only.

- Bi-directional dead-end capability to 200 psi (2" to 12") and 150 psi (14" to 24") is an available option.
- Valves 14" and larger are rated at a maximum 150 psi when a companion flange is not used in dead end service.
- For bolting information, consult the Crane Butterfly Installation and Maintenance Manual.
- Vacuum Service Rating: zero leakage at 24" of mercury.
- Commercial cleaning available for non-silicone and O<sub>2</sub>.
- Type approval certification from ABS for Marine applications (2" to 24").
- PED Certification available for sizes 2" to 24".

### Valve Seating Torques (In-Lbs.)

Valve Size	Standard Disc Differential Pressure				
	50 PSI	100 PSI	150 PSI	200 PSI	285 PSI
2"	136	142	148	154	164
2 1/2"	152	160	168	176	189
3"	224	229	234	239	247
4"	380	392	404	416	436
5"	451	477	503	529	572
6"	875	946	1016	1087	1206
8"	1476	1559	1642	1726	1867
10"	2451	2613	2775	2937	3213
12"	3900	4111	4323	4534	4893
14"	5189	5467	5744	6022	6494
16"	10,985	11,569	12,154	12,738	13,732
18"	13,946	14,688	15,431	16,173	17,434
20"	14,695	15,478	16,260	17,043	18,373
24"	29,738	31,321	32,903	34,486	37,176

All torques shown on the chart were derived from test data using water at 60°F. For torques using dry gases, multiply these numbers by 2.0. For torques involving other media, please consult the factory.

There is no safety factor included in the numbers shown on this chart. For actuator sizing, Crane recommends that these values be multiplied by 1.5 for single valve applications, or 2.0 for 3-way ("tee") applications.

For PTFE seats multiply the numbers shown on this chart by 2.0.

Under certain conditions, hydrodynamic torque can meet or exceed seating and unseating torques. When designing valve systems, hydrodynamic torque must be considered to help assure correct selection for the application.

### Seat Temperature Ratings

Material	Temperature Rating °F
Buna-N	+10 to 180
EPDM (2"-16")	-30 to 275
EPDM (18"-24")	-30 to 225
Abrasive Resistant Buna-N	+10 to 180
Neoprene	+20 to 200
Hypalon	0 to 275
Viton	+10 to 275
High Temperature Viton	+10 to 400
PTFE (Series 52 / 54 & 62 / 64 only)	+40 to 250

Although elastomers have an effective operating temperature range, when used in valves, these ranges may have to be modified. The temperature ranges shown in the table have been adjusted accordingly.

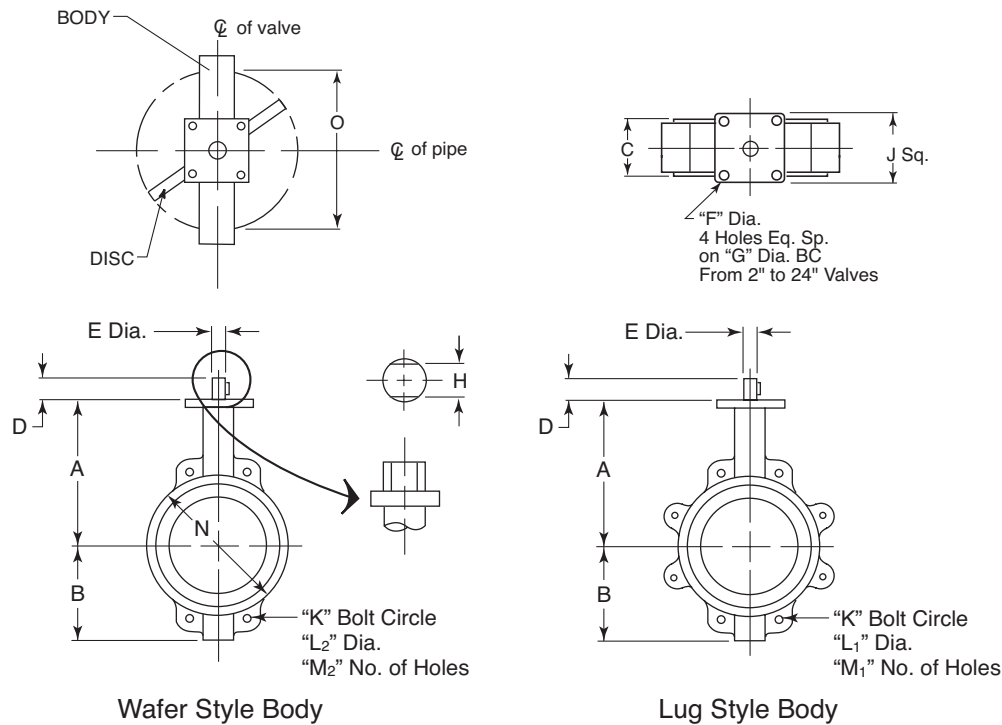
**For Low Temperature:** While the seat materials selected for use in Crane butterfly valves are capable of withstanding lower temperatures without damage, the durometer of the elastomer is changed. This "hardening" of the seat may increase the operating torque beyond the structural limits of the stem and/or the disc to stem configuration.

**For High Temperature:** When using High Temperature Viton, the operating pressure of the valve is reduced above 275°F.

**Field Replacement:** Replacing seats in sizes 12" - 20" is difficult and requires factory service. Sizes 24" and above cannot be field replaced.

### C<sub>v</sub> Values – Valve Sizing Coefficients (US-GPM @ 1ΔP)

Size	10°	20°	30°	40°	50°	60°	70°	80°	90°
2"	0.06	3	7	15	27	44	70	105	115
2 1/2"	0.10	6	12	25	45	75	119	178	196
3"	0.20	9	18	39	70	116	183	275	302
4"	0.30	17	36	78	139	230	364	546	600
5"	0.50	29	61	133	237	392	620	930	1022
6"	0.80	34	94	153	257	422	706	1154	1320
8"	2	56	154	251	422	693	1158	1892	2165
10"	3	87	238	385	654	1073	1794	2931	3353
12"	4	153	417	681	1145	1879	3142	5132	5827
14"	6	183	500	816	1372	2252	3765	6150	7037
16"	8	271	740	1208	2031	3333	5573	9104	10,416
18"	11	318	867	1417	2382	3909	6535	10,676	12,215
20"	14	415	1133	1851	3112	5107	8538	13,948	15,959
24"	22	543	1482	2421	4069	6678	11,165	18,240	20,869



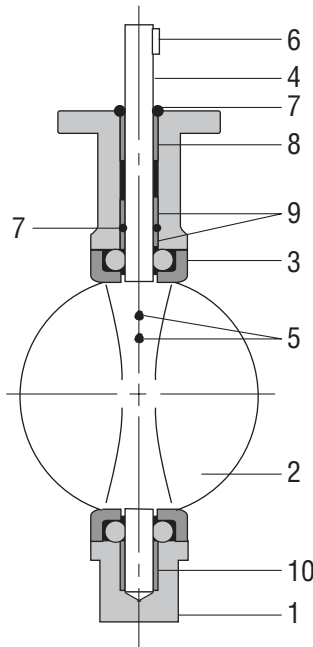
## Dimensions and Weights

For installation and maintenance instructions, please refer to the IOM manual available at [www.cranevalveit.com](http://www.cranevalveit.com)

Valve Size		A	B	C	D	E	F	G	H	J	K	L <sub>1</sub>	L <sub>2</sub>	M <sub>1</sub>	M <sub>2</sub>	N	WAFER	LUG	O
2"	in.	6 3/8	3 1/4	1 3/4	1 1/4	1/2	3/8	2.76	0.39	2 3/4	4 3/4	5/8-11	17/16	4	4	4	6 lbs.	9 lbs.	1.26
50	mm	161.93	82.55	44.45	31.75	12.70	9.53	70	10	69.85	120.65		17.46			101.60	2.72 kg	4.08 kg	32.0
2 1/2"	in.	6 7/8	3 3/4	1 7/8	1 1/4	1/2	3/8	2.76	0.39	2 3/4	5 1/2	5/8-11	17/16	4	4	4	7 lbs.	13 lbs.	1.83
65	mm	174.63	95.25	47.63	31.75	12.70	9.53	70	10	69.85	139.70		17.46			120.65	3.18 kg	5.90 kg	46.5
3"	in.	7 1/8	4	1 7/8	1 1/4	1/2	3/8	2.76	0.39	2 3/4	6	5/8-11	17/16	4	4	5 1/8	10 lbs.	14 lbs.	2.54
80	mm	180.98	101.60	47.63	31.75	12.70	9.53	70	10	69.85	152.40		17.46			130.18	4.54 kg	6.35 kg	64.5
4"	in.	7 7/8	4 7/8	2 1/4	1 1/4	5/8	3/8	2.76	0.47	2 3/4	7 1/2	5/8-11	17/16	8	4	6 3/8	13 lbs.	19 lbs.	3.54
100	mm	200.03	123.83	53.98	31.75	15.88	9.53	70	12	69.85	190.50		17.46			171.45	5.90 kg	8.62 kg	89.9
5"	in.	8 3/8	5 3/8	2 1/4	1 1/4	3/4	3/8	2.76	0.55	2 3/4	8 1/2	3/4-10	19/16	8	4	7 3/4	18 lbs.	22 lbs.	4.36
125	mm	212.73	136.53	57.15	31.75	19.05	9.53	70	14	69.85	215.90		20.64			196.85	8.16 kg	9.98 kg	110.7
6"	in.	8 7/8	5 7/8	2 1/4	1 1/4	3/4	3/8	2.76	0.55	2 3/4	9 1/2	3/4-10	19/16	8	4	8 3/8	21 lbs.	31 lbs.	5.74
150	mm	225.43	149.23	57.15	31.75	19.05	9.53	70	17	69.85	241.30		20.64			219.08	9.53 kg	14.06 kg	145.8
8"	in.	10 1/4	7 3/4	2 1/2	1 3/4	7/8	7/16	4.02	0.67	3 3/4	11 3/4	3/4-10	19/16	8	4	10 3/8	34 lbs.	49 lbs.	7.63
200	mm	260.35	196.85	63.50	44.45	22.23	11.11	102	17	95.33	298.45		20.64			268.29	15.42 kg	22.23 kg	193.8
10"	in.	11 1/2	8 1/4	2 3/4	1 3/4	1 1/8	7/16	4.02	0.87	3 3/4	14 1/4	7/8-9	19/16	12	4	13 3/8	45 lbs.	62 lbs.	9.54
250	mm	292.10	209.55	69.85	44.45	28.58	11.11	102	22	95.33	361.95		23.81			331.79	20.41 kg	28.12 kg	242.3
12"	in.	13 1/4	9 3/4	3 1/8	1 3/4	1 1/4	7/16	4.02	0.95	3 3/4	17	7/8-9	19/16	12	4	16 1/8	74 lbs.	105 lbs.	11.5
300	mm	336.55	247.65	79.38	44.45	31.75	11.11	102	24	95.33	431.80		23.81			409.58	33.57 kg	47.63 kg	292.1
14"	in.	14 1/2	11	3 1/8	1 3/4	1 1/4	7/16	4.02	0.95	3 3/4	18 3/4	1-8	19/16	12	4	17 1/8	109 lbs.	178 lbs.	12.81
350	mm	368.30	279.40	79.38	44.45	31.75	11.11	102	24	95.33	476.25		26.99			434.98	49.44 kg	80.74 kg	325.4
16"	in.	15 3/4	12	3 1/2	2	1 5/8	7/8	6.50	1.06	6 1/2	21 1/4	1-8	19/16	16	4	20	135 lbs.	224 lbs.	15
400	mm	400.05	304.80	88.90	50.80	33.34	22.23	165	27	165.10	539.75		26.99			508.00	61.24 kg	101.60 kg	381.0
18"	in.	16 5/8	15	4 1/4	2	1 5/8	7/8	6.50	1.26	6 1/2	22 3/4	1 5/8-7	19/16	16	4	21 3/8	190 lbs.	265 lbs.	16.87
450	mm	422.28	381.00	107.95	50.80	41.28	22.23	165	32	165.10	577.85		30.16			542.93	86.18 kg	120.20 kg	428.5
20"	in.	18 7/8	15	5 1/4	2 1/2	1 5/8	7/8	6.50	1.26	6 1/2	25	1 5/8-7	19/16	20	4	23 3/8	316 lbs.	455 lbs.	18.69
500	mm	479.43	381.00	133.35	63.50	41.28	22.23	165	32	165.10	635.00		25.00			592.14	143.34 kg	206.38 kg	474.7
24"	in.	22 1/8	18	6 1/8	2 3/4	3	7/8	6.50	2.36	6 1/2	29 1/2	1 5/8-7	19/16	20	4	27 1/8	506 lbs.	702 lbs.	22.57
600	mm	561.98	457.20	155.58	69.85	76.20	22.23	165	60	165.10	749.30		28.18			708.03	229.52 kg	318.42 kg	573.3

NOTE: 20" Wafer: L<sub>2</sub> dia. Hole is Tapped w/1-1/8-7 on Each Side

24" Wafer: L<sub>2</sub> dia. Hole is Tapped w/1-1/4-7 on Each Side



**Bill of Materials (52 / 54 & 62 / 64)**

Item	Description	Materials	Optional Materials
1	Body	Carbon Steel A216 GR.WCB	316SS A351 GR.CF8M Carbon Steel A-216 GR.WCB Impact Tested*
2	Disc	316 Stainless	Aluminum Bronze, Monel
3	Seat	Buna-N or EPDM	Neoprene, Hypalon, Abrasion Resistant Buna-N, Viton, High Temperature Viton, PTFE
4	Shaft	316 Stainless Steel	17-4 PH, Monel
5	Taper Pin	300 Series Stainless	Monel
6	Key	Carbon Steel	No Option Available
7	O-Ring	Buna-N	No Option Available
8, 9, 10	Bushing	PTFE	No Option Available

\* Crane Series 52/54 Carbon Steel valves with CE marking are good to 0°F for non-impact tested bodies and -20°F for impact tested carbon steel bodies. Please consult factory for the correct ordering code.



Handles are available for on/off and throttling control of Crane resilient seated butterfly valves. These handles can be used for manual actuation of 2" to 12" valves at 200 psi and for 2" to 6" valves at 285 psi. For valves larger than 8", excessive operator effort and extreme handle reaction to internal valve forces are possible. In these cases, a gear operator is recommended for safe operation.

## Features

The rugged construction of Crane handles makes them ideally suited for manually actuating smaller valves. The latchplate permits the valve to be locked in any of the 10 positions on DIT handles or in any position on IOL handles.

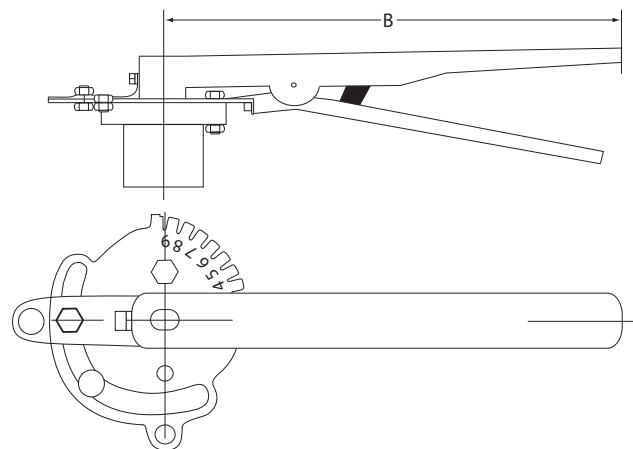
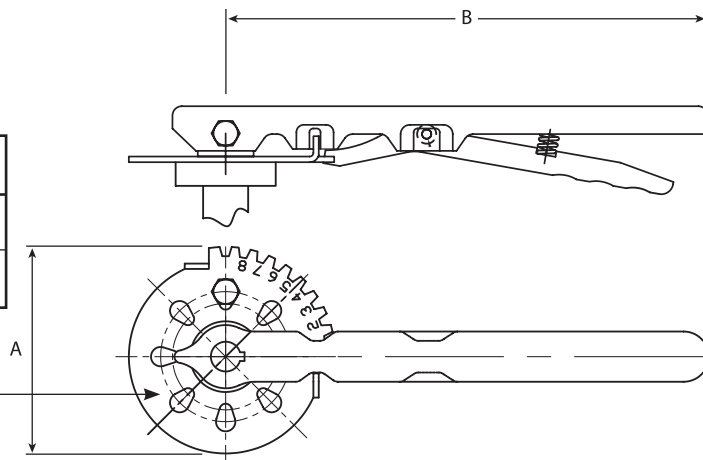
## Specifications

- DIT Mechanically locks the valve in any of the 10 positions from 0° to 90° in 10° increments
- DIT/IOL Can hold the valve in intermediate positions (32°, 68°, etc.) and can also be locked in 0° and 90° positions

## Dimensions and Weights

Valve Size		A	B	Weight	
				DIT	DIT/IOL
2-6	in.	2.25	10.5	1.8	2.0
50-150	mm	57.15	266.7	0.8	0.9
8-12	in.	3.34	14.0	4.0	-
200-300	mm	84.84	355.6	1.8	-

Plates are adaptable for ISO or standard mounting flange.



Gear operators can be used for on/off and throttling control of Crane resilient seated butterfly valves. All models are weatherproof and usable for above ground or buried service. For manual operation of valves, gear operators are required for valves 14" and larger and are recommended for valves 8" and larger.

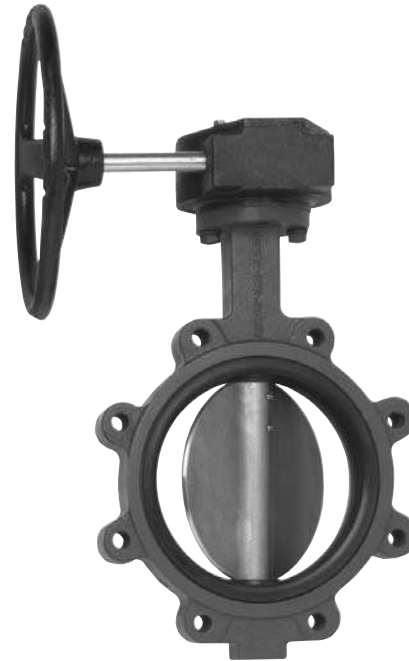
## Features

Gear operators from Crane are 90° manual actuators, and they come with a handwheel, chainwheel, or square nut input device. The durable housing completely encloses the worm gear (on the input shaft) and the segment gear (on the output). Adjustable stops are standard and factory set when installed at the factory. Fully adjustable memory stops are available as an option. A position indicator is standard on all models for above ground service. An optional version is available for buried service applications. Contact customer service for more information.

## Specifications

**Operation** Handwheel or chainwheel (12" standard, others available) or 2" square nut. Input shaft extension available.

**Mounting** Available with bolt patterns and bore/keyway for direct mount to all 2" through 30" Crane resilient seated butterfly valves. Gears are drilled for ISO pattern through 24". Contact factory for 30" and above.

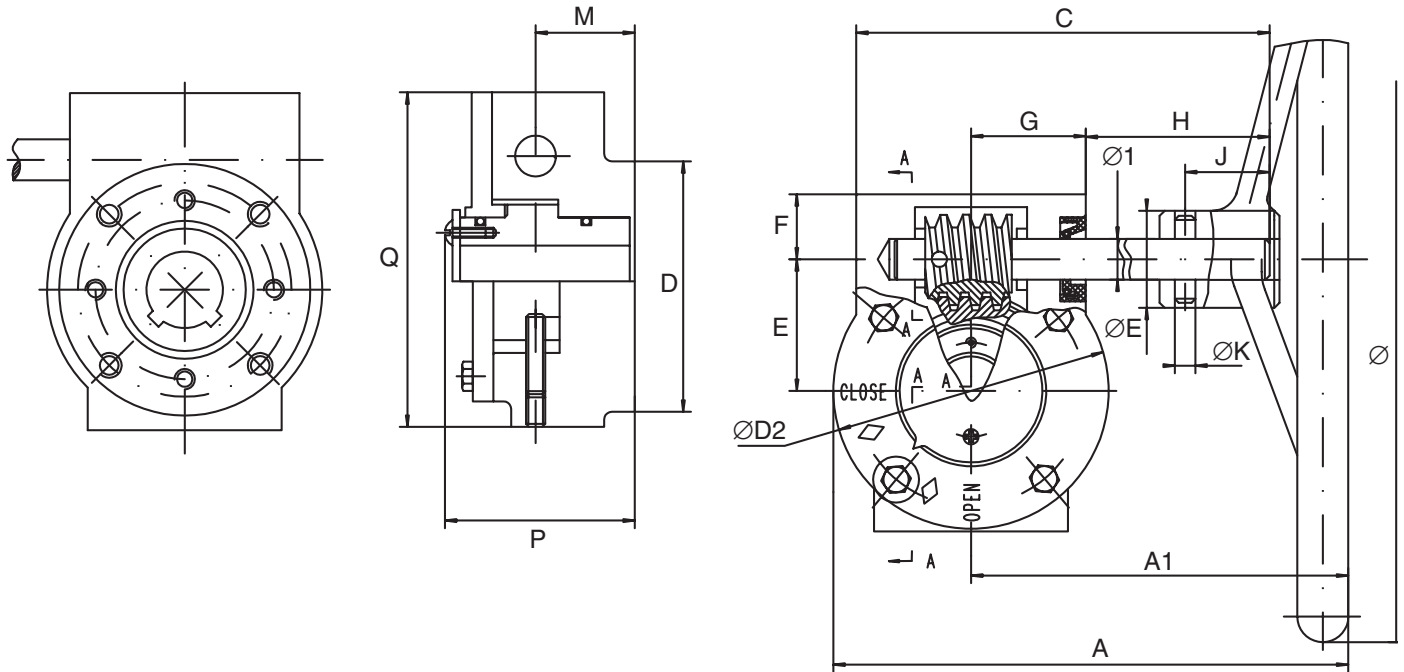


## Dimensions and Weights

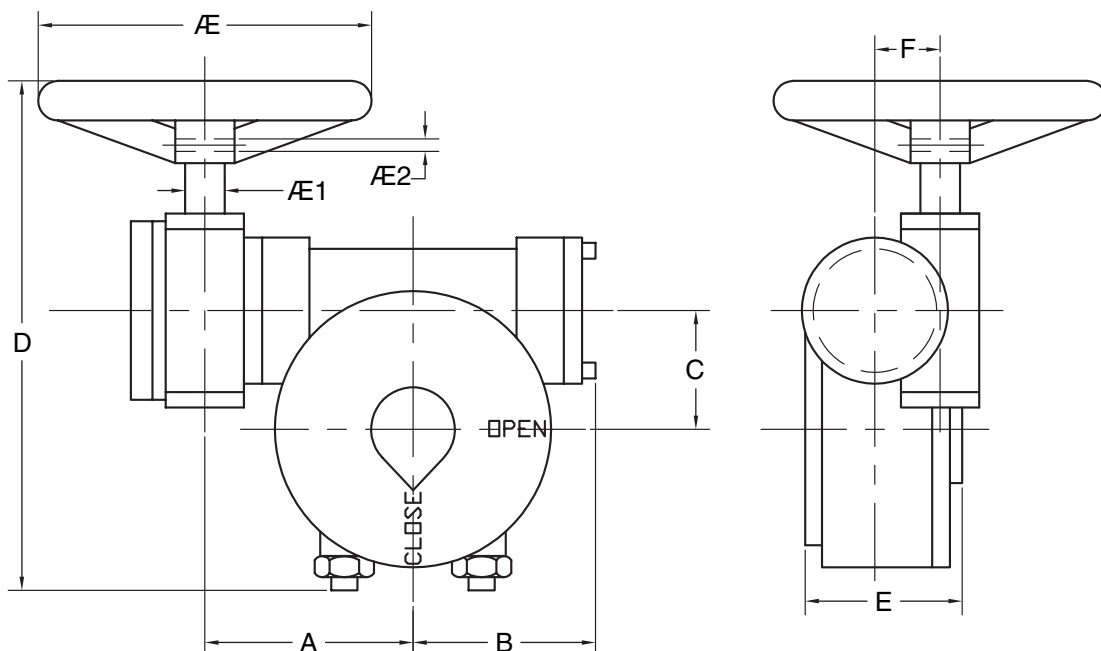
Valve Size		Oper.	A	A1	C	E	F	G	H	Ø1	J	ØK	M	D	P	Q	Ø	ØD2	Ø3	Wt. (Kg.)
2-6 50-150	in. mm	XJ30	12.56 314.00	9.52 238.00	10.72 268.00	2.52 63.00	14.80 37.00	2.36 59.00	6.00 150.00	0.76 19.00	1.36 34.00	0.24 6.00	1.66 41.50	3.68 92.00	3.36 84.00	7.06 176.50	12.00 300.00	6.08 152.00	1.52 38.00	27.1 (12.3)
8-14 200-350	in. mm	XJ50	12.28 307.00	9.04 226.00	10.60 265.00	3.12 78.00	1.54 38.50	2.74 68.50	5.12 128.00	0.76 19.00	1.36 34.00	0.24 6.00	1.53 38.20	5.60 140.00	3.36 84.00	7.90 197.50	12.00 300.00	6.48 162.00	1.52 38.00	31.7 (14.4)
16-18 400-450	in. mm	XJ80	16.28 407.00	11.08 277.00	13.76 344.00	4.80 120.00	1.60 40.00	4.08 102.00	5.60 140.00	1.00 25.00	1.36 34.00	0.32 8.00	2.28 57.00	7.88 197.00	5.00 125.00	11.60 290.00	18.00 450.00	10.40 260.00	2.00 50.00	77.4 (35.2)
Valve Size		Oper.	A	B	C	D	E	F	Ø	Ø1	Ø2	Wt. (Kg.)								
20 500	in. mm	XJ300	7.40 185.00	6.40 160.00	4.40 110.00	18.90 473.00	4.60 115.00	2.50 63.00	18.00 450.00	0.98 25.00	0.32 8.00	121.0 (55.0)								
24 600	in. mm	XJ300	7.40 185.00	6.40 160.00	5.00 125.00	20.00 500.00	4.80 120.00	2.50 63.00	18.00 450.00	0.98 25.00	0.32 8.00	132.0 (60.0)								
30 750	in. mm	DG 50 202	10.60 265.00	6.60 165.00	6.40 160.00	21.80 545.00	5.12 128.00	3.12 78.00	18.00 450.00	0.98 25.00	0.32 8.00	198.0 (90.0)								
36 900	in. mm	DG 160 466	11.12 278.00	8.04 201.00	7.84 196.00	21.44 611.00	10.32 258.00	5.04 126.00	17.40 435.00	0.98 25.00	0.32 8.00	424.6 (193.0)								
42 1050	in. mm	DG 160 466	16.72 418.00	10.20 255.00	9.60 240.00	25.56 611.00	12.40 310.00	5.04 126.00	17.40 435.00	0.98 25.00	0.32 8.00	792.0 (360.0)								
48 1200	in. mm	DG 160 466	16.72 418.00	10.20 255.00	9.60 240.00	25.56 639.00	12.40 310.00	5.04 126.00	17.40 435.00	0.98 25.00	0.32 8.00	792.0 (360.0)								

Some sizes require different operators, please consult factory.

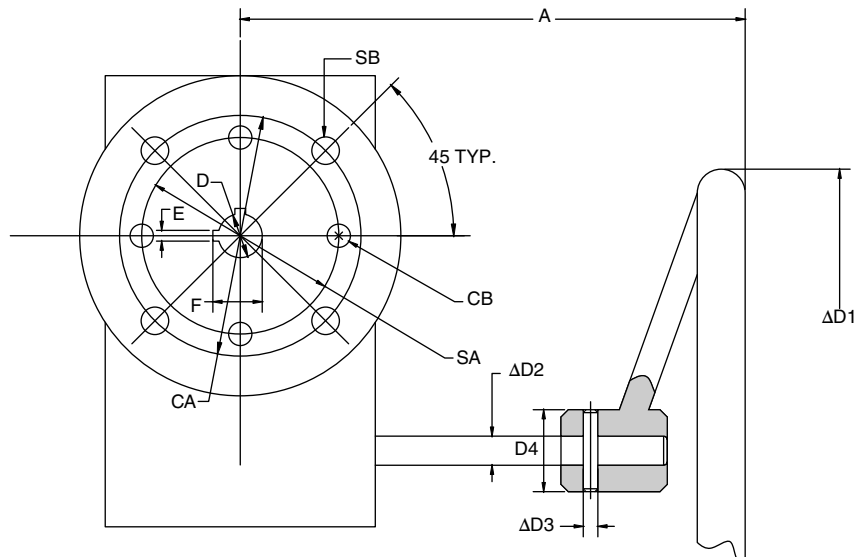
## XJ30-50-80



## XJ300-BA800-3D-60-3D-120



## Gear Operator Drilling Patterns



## Dimensions

Valve Size	Operator Model	CA	CB	SA	SB	D	D1	D2	D3	D4	A	E	F
2 in. 50 mm	XJ30	2.25 57.15	M6-1	2.76 70.00	M8-1.25	0.50 12.70	11.81 300.00	0.75 19.00	0.24 6.00	1.50 38.00	9.37 238.00	0.13 3.18	0.56 14.30
3 in. 75 mm	XJ30	2.25 57.15	M6-1	2.76 70.00	M8-1.25	0.50 12.70	11.81 300.00	0.75 19.00	0.24 6.00	1.50 38.00	9.37 238.00	0.13 3.18	0.56 14.30
4 in. 100 mm	XJ30	2.75 69.85	M8-1.25	2.76 70.00	M8-1.25	0.63 15.90	11.81 300.00	0.75 19.00	0.24 6.00	1.50 38.00	9.37 238.00	0.13 3.18	0.72 18.30
5 in. 125 mm	XJ30	2.75 69.85	M8-1.25	2.76 70.00	M8-1.25	0.75 19.05	11.81 300.00	0.75 19.00	0.24 6.00	1.50 38.00	9.37 238.00	0.13 3.18	0.84 21.40
6 in. 150 mm	XJ30	2.75 69.85	M8-1.25	2.76 70.00	M8-1.25	0.75 19.05	11.81 300.00	0.75 19.00	0.24 6.00	1.50 38.00	9.37 238.00	0.13 3.18	0.84 21.40
8 in. 200 mm	XJ50	3.50 88.90	M12-1.75	4.02 102.00	M10-1.5	0.87 22.20	11.81 300.00	0.75 19.00	0.24 6.00	1.50 38.00	8.89 226.00	0.19 4.76	0.97 24.50
10 in. 250 mm	XJ50	3.50 88.90	M12-1.75	4.02 102.00	M10-1.5	1.13 28.60	11.81 300.00	0.75 19.00	0.24 6.00	1.50 38.00	8.89 226.00	0.25 6.35	1.25 31.80
12 in. 300 mm	XJ50	4.25 107.95	M12-1.75	4.02 102.00	M10-1.5	1.25 31.80	11.81 300.00	0.75 19.00	0.24 6.00	1.50 38.00	8.89 226.00	0.25 6.35	1.39 35.00
14 in. 350 mm	XJ50	4.25 107.95	M12-1.75	4.02 102.00	M10-1.5	1.25 31.80	11.81 300.00	0.75 19.00	0.24 6.00	1.50 38.00	8.89 226.00	0.25 6.35	1.39 35.00
16 in. 400 mm	XJ80	6.25 158.75	M18-2.5	6.50 165.00	M20-2.5	1.31 33.30	18.00 450.00	0.98 25.00	0.32 8.00	1.99 50.00	10.90 277.00	0.31 7.90	1.49 37.30
18 in. 450 mm	XJ80 (42/44)	6.25 158.75	M18-2.5	6.50 165.00	M20-2.5	1.50 38.10	18.00 450.00	0.98 25.00	0.32 8.00	1.99 50.00	10.90 277.00	0.38 9.53	1.69 42.80
18 in. 450 mm	XJ300 (21/23)	6.25 158.75	M18-2.5	6.50 165.00	M20-2.5	1.63 41.30	18.00 450.00	0.98 25.00	0.32 8.00	1.99 50.00	12.64 321.00	0.38 9.53	1.81 46.00
20 in. 500 mm	XJ300	6.25 158.75	M18-2.5	6.50 165.00	M20-2.5	1.63 41.30	18.00 450.00	0.98 25.00	0.32 8.00	1.99 50.00	12.64 321.00	0.38 9.53	1.81 46.00
24 in. 600 mm	XJ300 (42/44)	8.50 215.90	M20-2.5	6.50 165.00	M20-2.5	2.00 50.80	18.00 450.00	0.98 25.00	0.32 8.00	1.99 50.00	13.19 335.00	0.50 12.70	2.24 56.80
24 in. 600 mm	XJ300 (21/23)	8.50 215.90	M20-2.5	6.50 165.00	M20-2.5	2.00 50.80	18.00 450.00	0.98 25.00	0.32 8.00	1.99 50.00	13.19 335.00	0.50 12.70	2.24 56.80



1. Body Style	Code
Wafer 200 CWP (2"-12")	
Epoxy Coated CI	42
Wafer 150 CWP (14"-30")	
Ductile Iron	42
Lug 200 CWP (2"-12")	
Epoxy Coated CI	44
Lug 150 CWP (14"-30")	
Ductile Iron	44
Double Flange 150 CWP (36"-48")	
Ductile Iron	44
Wafer 285 CWP (2"-12")	
Epoxy Coated DI	21
Wafer 285 CWP (14"-24")	
Ductile Iron	21
Lug 285 CWP (2"-12")	
Epoxy Coated DI	23
Lug 285 CWP (14"-24")	
Ductile Iron	23
Wafer 285 CWP (2"-24")	
Carbon Steel	52
Lug 285 CWP (2"-24")	
Carbon Steel	54
Wafer 285 CWP (2"-24")	
Stainless Steel	62
Lug 285 CWP (2"-24")	
Stainless Steel	64

2. Disc Material	Code
Ductile Iron	F
316 SS	S
Aluminum Bronze	B
Monel*	M

3. Stem Material	Code
416 SS	X
316 SS	S
Monel*	M

4. Sleeve Material	Code
Buna-N	B
Buna-N Abr. Res.*	B1
EPDM	Z
Black Neoprene*	FB
Low Temp Viton*	V
High Temp Viton*	V1
Hypalon*	H
Teflon/Buna* (125 PSIG)	TB

5. Operation Style / Body Material	Code
<u>No Operator</u>	
Bare Stem	3W
Bare Stem - Ductile Iron	3NW
<u>Lever Operator</u>	
Lever Operated	3
Lever Operated - Ductile Iron	3N
Infinite Position Lever	3L
Infinite Position Lever - Ductile Iron	3NL
<u>Gear Operator</u>	
Gear Operated	3G
Gear Operated - Ductile Iron	3NG
Gear Operated w/Memory Stop	3GL
Gear Operated w/Memory Stop-DI	3NGL

6. Special Features	Code
CE Marked - Non Impact Tested	P

7. Size	Code
2"	02
2½"	25
3"	03
to	
48"	48

NOTE: Not all combinations of materials are available. Please consult factory.

\*Optional Materials available upon request.

## ELECTRIC – ON-OFF

### Standard Features:

Torque Range – 347 lb ins to 17,359 lb ins  
Housing – NEMA 4 & 4X  
Electric Motor – 120 VAC, 1 PHASE, 60 Hz  
Thermal Overload – Auto re-set  
Limit Switches – Adjustable cam operated  
Position Indicator – Mechanical Dial Type  
Space Heater – Located in the control compartment  
Terminal Strip – Pre-wired for motor & limit switches  
Manual Override – Directing acting  
Brake – “Lock-cut” gear arrangement  
Adjustable Mechanical Travel Stops  
Temperature Range – -13°F to 131°F  
Mounting – Direct mount to Crane valves  
Certification/Approvals – CSA-NRTL/C

### Optional Features:

AC Voltages – 220 VAC, 1 PHASE, 60 Hz  
AC Voltages – 24 VAC 44005 - 44400  
DC Voltages – 12/24 VDC 4005 - 44300  
Additional Limit Switches – 2 SPDT  
Torque Switches – Adjustable open and close  
Feedback Potentiometer – 500 ohm  
Feedback Transmitter – 4-20 mA  
De-clutchable Handwheel Override



## ELECTRIC – MODULATING

### Standard Features:

Process Control Signal – 4-20 mA, 0-10 VDC  
Torque Range – 347 lb ins to 17,359 lb ins  
Housing – NEMA 4 & 4X  
Electric Motor – 120 VAC, 1 PHASE, 60 Hz  
Thermal Overload – Auto re-set  
Resolution – 400 increments through 90 degrees  
Position Indicator – Mechanical Dial Type  
Space Heater – Located in the control compartment  
Terminal Strip – Pre-wired for motor & limit switches  
Manual Override – Directing acting  
Brake – “Lock-cut” gear arrangement  
Adjustable Mechanical Travel Stops  
Temperature Range – -13°F to 131°F  
Mounting – Direct mount to Crane valves  
Certification/Approvals – CSA-NRTL/C

### Optional Features:

AC Voltages – 220 VAC, 1 PHASE, 60 Hz  
AC Voltages – 24 VAC 44010M - 44200M  
Torque Switches – Adjustable open and close  
De-clutchable Handwheel Override

## PNEUMATIC – DOUBLE ACTING

### Standard Features:

Torque Range – 30 in-lbs to 107,531 in-lbs  
 Housing – Anodized aluminum  
 Mounting – DIN ISO 5211, direct mounting to Crane valves  
 Position Indicator – NAMUR standard  
 Operating Pressure – 40 to 120 PSIG  
 Temperature Range – -4°F (-20°C) to 176°F (80°C)  
 Size Range – 14 models to choose from  
 Adjustable Travel Stops – Both directions  
 Accessory Interfaces – VDI/VDE 3845 (NAMUR) standard

### Optional Features:

Temperature Range – 4°F to 250°F, -40°F to 175°F  
 Solenoid Valves – 3 or 4 way  
 Limit Switches – Adjustable cam operated  
 Positioners – Pneumatic or Electro-pneumatic  
 DC-1 Dribble Control – Two-stage shutoff  
 180° Actuation – 2 or 3 position  
 Manual Override – De-clutchable gear type  
 Speed Controls – Adjust cycle time  
 Special Applications – Offshore, nuclear, hygienic, and gas or oil operation

## PNEUMATIC – SPRING RETURN

### Standard Features:

Torque Range – 42 in-lbs to 77,211 in-lbs  
 Housing – Anodized aluminum  
 Mounting – DIN ISO 5211, direct mounting to Crane valves  
 Position Indicator – NAMUR standard  
 Operating Pressure – 40 to 120 PSIG  
 Temperature Range – -4°F (-20°C) to 176°F (80°C)  
 Size Range – 14 models to choose from  
 Adjustable Travel Stops – Both directions  
 Accessory Interfaces – VDI/VDE 3845 (NAMUR) standard

### Optional Features:

Temperature Range – 4°F to 250°F, -40°F to 175°F  
 Solenoid Valves – 3 or 4 way  
 Limit Switches – Adjustable cam operated  
 Positioners – Pneumatic or Electro-pneumatic  
 DC-1 Dribble Control – Two-stage shutoff  
 180° Actuation – 2 or 3 position  
 Manual Override – De-clutchable gear type  
 Speed Controls – Adjust cycle time  
 Special Applications – Offshore, nuclear, hygienic, and gas or oil operation



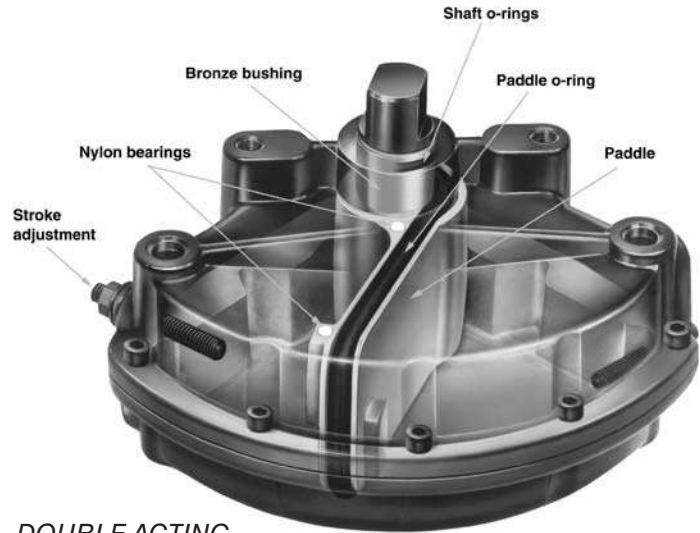
## VANE

### Standard Features:

- Double acting and fail safe versions available
- Housing – Die-cast aluminum
- Operating Pressure – 40 to 120 PSIG
- Temperature Range – 0°F to 225°F
- Powerful actuation in a compact and lightweight package
- Only one moving part
- Dual external travel stops allow rotation adjustment of up to  $\pm 10^\circ$  at each end of the stroke
- Fail safe models use a pneumatic accumulator to assure valve closure upon loss of supply pressure
- Stacking two vane actuators enables 180° movement (2 or 3 position)

### Optional Features:

- Limit switch
- Locking device
- Breather block
- Dribble control
- Sandwich de-clutchable manual gear override
- Solenoid valve
- Positioners
- PTFE interior coatings
- High or low temperature trim



*DOUBLE ACTING*



*FAIL SAFE*



The nomograph on the following page gives the relationships of valve size, flow, velocity, and pressure drop for various disc positions.

### Sample Calculation, Liquid (see dark blue line on chart)

**Given:**

Water (1.0 specific gravity) at 60°F is flowing through a 6-inch valve at a rate of 1000 gpm.

**Find:**

Line velocity (ft./sec.) and pressure drop when valve is in full-open (disc at 90°) position.

**Solution:**

From the 6-inch valve size at lower left of nomograph, go diagonally up to the intersecting horizontal line for 1000 gpm. From that point, proceed directly down to determine line velocity as 11 ft./sec.

For pressure drop, return to the 1000 gpm intersection and continue up vertically to “90° disc open” intersecting diagonal line. From this point, go horizontally to the left to determine pressure drop as 0.5 psi.

### Sample Calculation, Gas (see light blue line on chart)

**Given:**

Gas (0.8 lb/cu. ft. density) is flowing through an 8-inch valve at a rate of 1500 cu. ft./min.

**Find:**

Line velocity (ft./min.) and pressure drop when valve is in full-open (disc at 90°) position.

**Solution:**

From 8-inch valve size at lower left of nomograph, go diagonally up to the intersecting horizontal line for 1500 cu. ft./min. From that point, proceed directly down to the bottom line of the nomograph to determine line velocity as 4000 ft./min.

For pressure drop, return to the 1500 cu. ft./min. intersection and continue up vertically to “90° disc open” intersecting diagonal line. From this point, go horizontally to the left to determine pressure drop as 17 psi. Now, convert pressure drop to gas by dividing gas density by liquid density and multiplying by 17.

$$\frac{0.8}{62.34} \times 17.0 = 0.22 \text{ psi}$$

### General Notes

- Liquid flow data is based on pressure drop and flow rate with viscosity similar to water at 60° F using flow coefficient.
- Velocities for liquids with densities similar to water should be less than 16 ft./sec.
- Nomograph flow rate for gases is in cubic feet per minute (CFM) at flowing conditions. To convert flow rate from standard cubic feet per minute to CFM, use the following formula:

$$\text{CFM} = \frac{(\text{SCFM} \times 14.7) \times (460 + ^\circ\text{F})}{(\text{line pressure, psia}) \times 520}$$

- Gas density in lbs./cu. ft. equals:

$$\left( \frac{270 \times}{\text{line pressure, psia}} \right) \times \left( \frac{\text{specific gravity of gas (relative to air)}}{460 + ^\circ\text{F}} \right)$$

Size	Cv at Full-Open
2"	115
2 1/2"	196
3"	302
4"	600
5"	1022
6"	1579
8"	3136
10"	5340
12"	8250
14"	11917
16"	16388
18"	21705
20"	27908
24"	43116
30"	73426

### Definitions

**C<sub>v</sub>** = Flow coefficient for valves; expresses flow rate in gallons per minute of 60°F water with 1.0 psi pressure drop across valve.

$$C_v = Q \sqrt{\frac{P}{62.4 \Delta P}}$$

**K** = resistance coefficient.

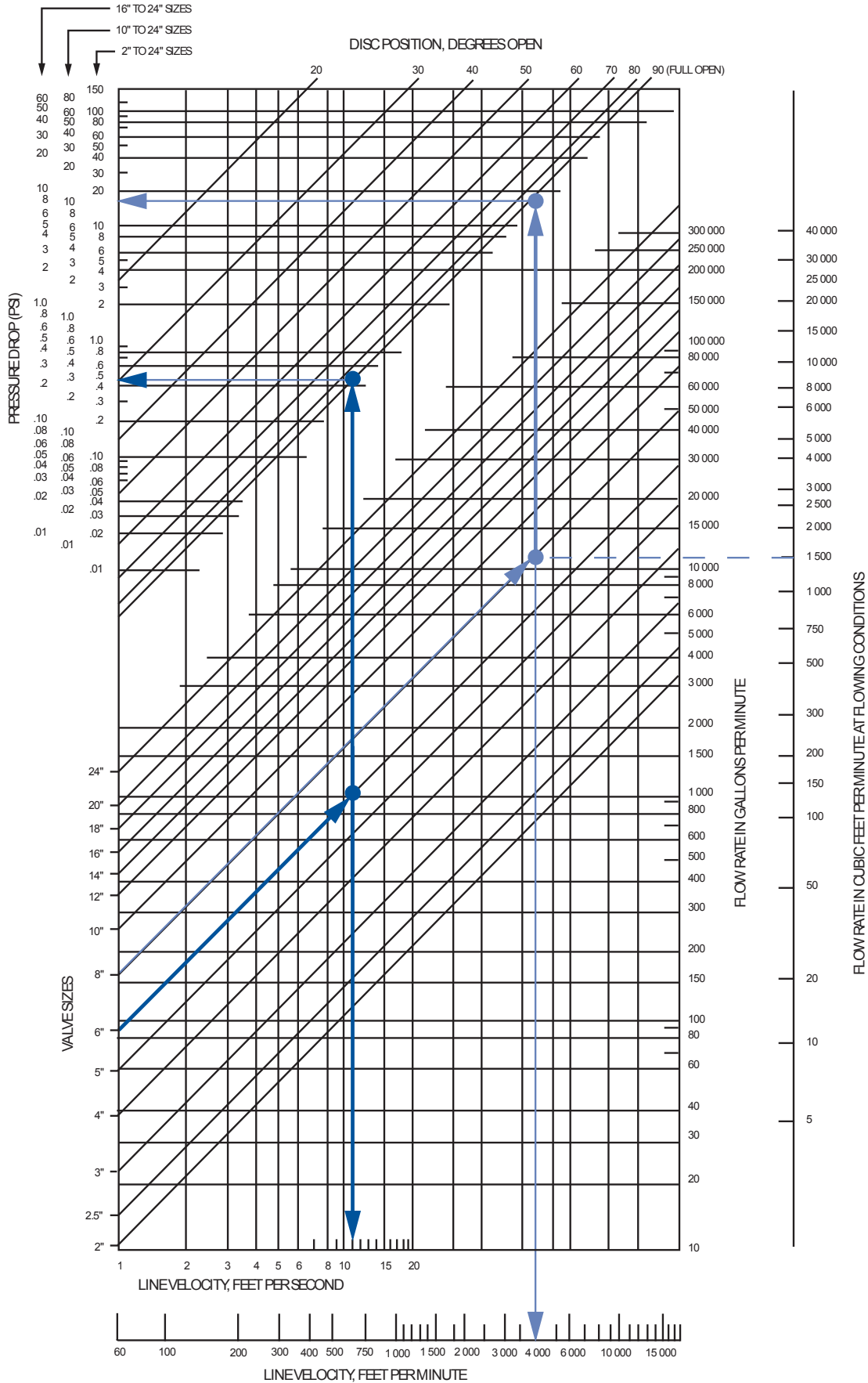
$$K = d \sqrt{\frac{29.9}{C_v}}$$

**P** = weight density of fluid, in pounds per cubic foot.

**d** = internal diameter of Schedule 40 pipe, in inches.

**Q** = rate of flow, in gallons per minute.

**ΔP** = differential pressure, in pounds per square inch gauge.



**CRANE**<sup>®</sup>

# Butterfly Valves

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www.cranesupply.com

[www.craneenergy.com](http://www.craneenergy.com)

## Crane Energy Flow Solutions

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Resilient Seated Butterfly and Check Valves  
Pneumatic and Electric Actuators

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Cast Steel, Bronze, and Iron Valves

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High Performance Butterfly Valves

### JENKINS<sup>®</sup>

Bronze, Iron, and Cast Steel Valves

### DUO-CHEK<sup>®</sup>

High Performance Wafer Check Valves

### ALOYCO<sup>®</sup>

Corrosion Resistant Gate, Globe and Check Valves

### UNI-CHEK<sup>®</sup>

Severe Service Check Valves

### NOZ-CHEK<sup>®</sup> & COMPAC-NOZ<sup>®</sup>

Severe Service, Nozzle-Type Check Valves

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Quarter Turn Severe Service Plug Valves

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Severe Service, Metal-Seated Plug Valves

**CRANE**<sup>®</sup>

Energy Flow Solutions

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