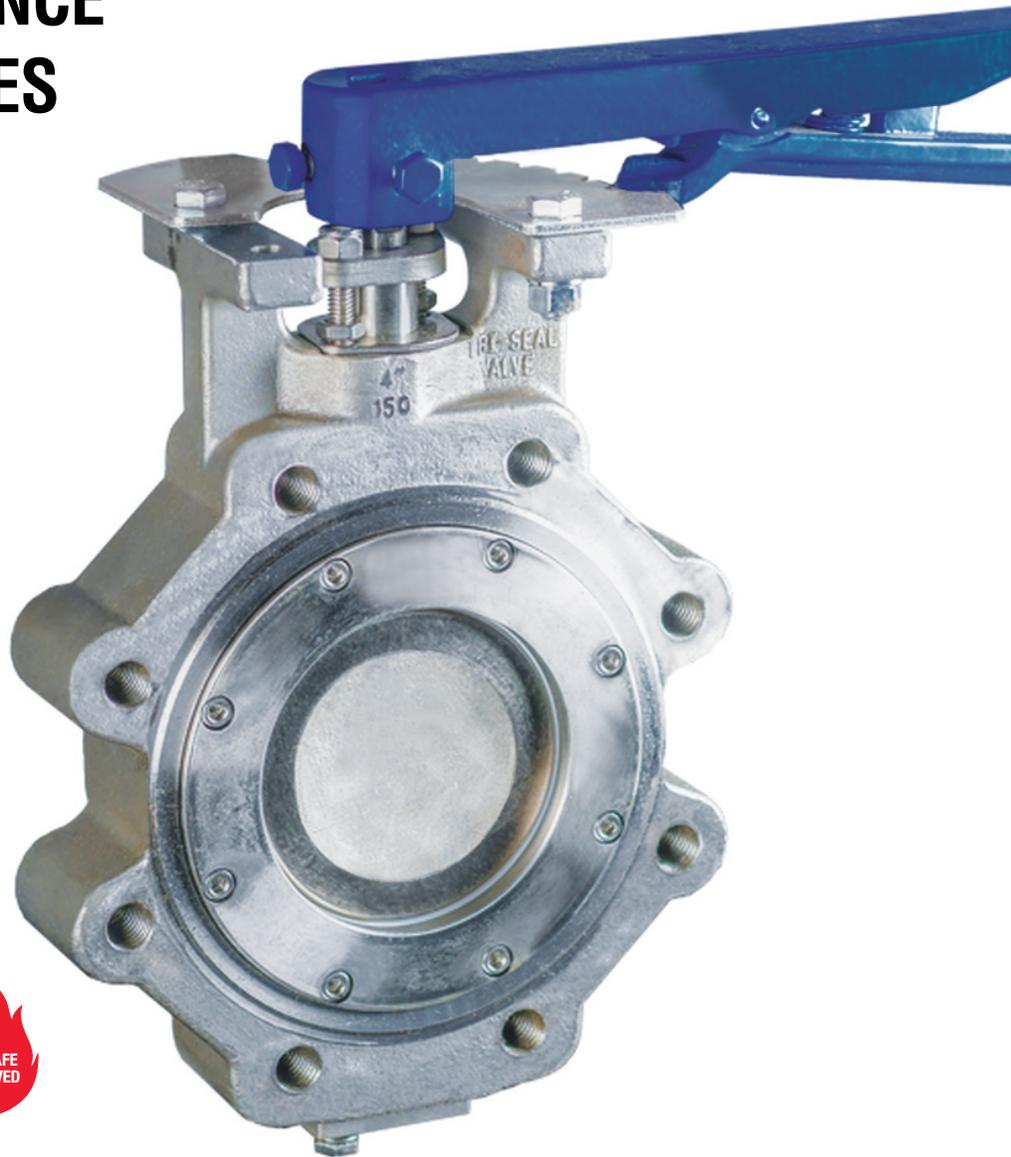


TRI-SEAL VALVES

FIRE-FLEX HIGH PERFORMANCE BUTTERFLY VALVES

ANSI Class 150 and 300

For fire-safe control of flammable fluids in high-risk applications, this valve maintains closure before, during and after a fire, meeting requirements of API 607.

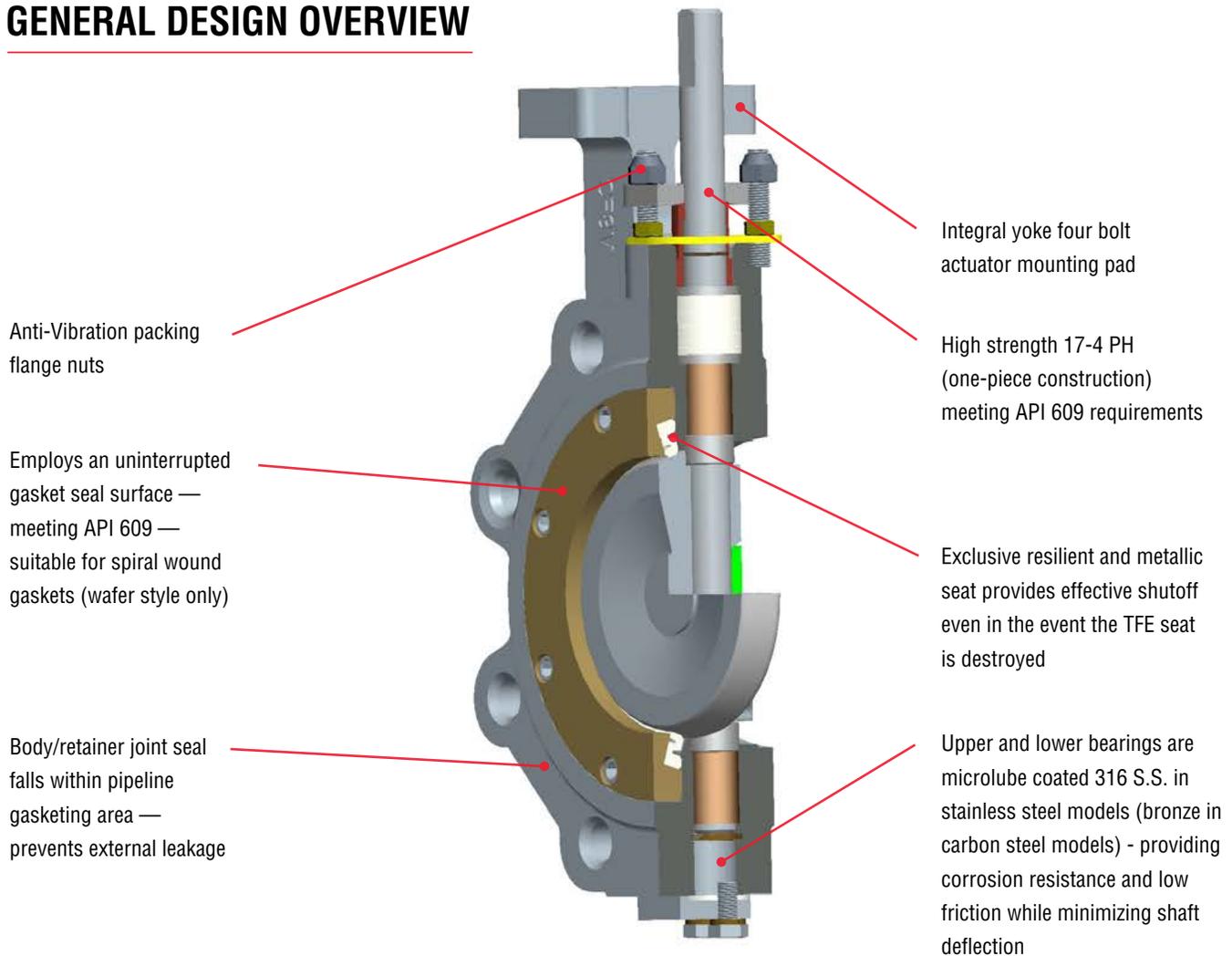




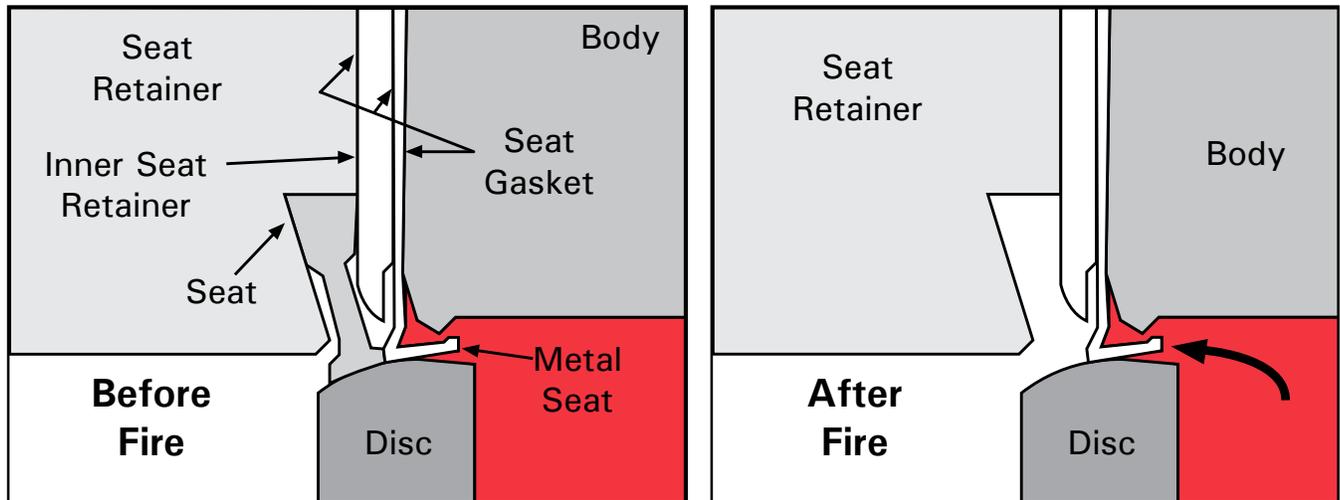
FIRE-FLEX HIGH PERFORMANCE BUTTERFLY VALVES

SIZES	SPECIFICATIONS		CERTIFIED (OPTIONAL)
ANSI Class 150 2 1/2" - 24"	ASME B16.20	API 607 4th Ed.	NACE MR0175 Coast Guard Approved
ANSI Class 300 3" - 6"	ASME B16.34	API 609 5th Ed.	
	ASME B16.5	MSS SP-6	
	ASME B31.1	MSS SP-25	

GENERAL DESIGN OVERVIEW



FIRE-SAFE BI-DIRECTIONAL BUBBLE TIGHT SEALING



The Fire-Flex features an exclusive resilient and metallic seating arrangement, under normal operating temperatures, that assures bubble tight shutoff effected by the pressure-activated resilient seat. In the event of a fire, the 304 stainless steel metal seat provides sealing conforming to API 607 4th edition requirements without relying on springs, system pressure, or the complete destruction of the resilient seat. The flexible graphite packing and gaskets prevent external leakage, avoiding the possibility of intensifying the fire.

SPECIAL SERVICES REQUIREMENTS

Live Load Packing

Fire-Flex valves are available with inconel discs springs to maintain constant load on the graphite stem packing. Use option S1 or consult the How To Order Guide.

Steam Service

Fire-Flex valves are available for many steam service applications. Ratings listed are for on/off service and depending on shaft material may be de-rated.

Oxygen Service

Fire-Flex valves are specially prepared for various oxygen service applications. Special preparation is observed preparing valves during assembly, test and packaging to maintain cleanliness.

NACE Service

Fire-Flex valves are available to comply with the NACE MR0175 standard. These Oil & Gas applications can be offered in 150# & 300# ANSI class.



COMPONENTS AND FEATURES OVERVIEW



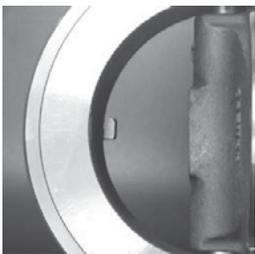
DISC TO SHAFT ATTACHMENT

The shaft is secured to the disc by utilizing a modified Woodruff key design, up through 8", that is tack welded to prevent loosening. Sizes 10" and above use cryogenically shrink fitted stainless steel pins that are prefitted at assembly and expand in ambient temperature for absolute positive retention.



Seat Retainer

The seat retainer in wafer style valves utilize a locking method that precludes the use of set screws, thus providing an uninterrupted gasket (pipeline) surface area, meeting API 609 requirements. The retainer/body joint falls within the gasketing area preventing any external leakage in the event of seat failure.



Integrally Cast Travel Stop

The internal travel stop is designed to provide proper disc positioning and to prevent seat damage due to the disc rotating beyond the closed position.



Double Offset Shaft

The double offset shaft design reduces seat wear and enhances sealing by providing a camming action that lifts the disc off the seat. This minimizes seat contact in both directions, resulting in lower operating torques, longer seat life, and prevents the possibility of seat deformation from excessive pressure on the seat.



One Piece Shaft

The heavy duty one-piece shaft (in sizes 2½" - 16") constructed of high strength 17-4 PH or 316 Stainless Steel, is internally retained by a snap ring located above the packing area (non-wetted area). This provides safe tamper-proof retention that does not interfere with packing adjustments, eliminating the need for removal of the shaft when replacing packing (meets API 609 standards).



MATERIALS OF CONSTRUCTION

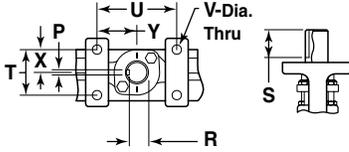
Materials		Carbon Steel	Stainless Steel
Part	Name	1150 / 1151 / 1300 / 1301	2150 / 2151 / 2300 / 2301
1	Outer Gland Ring	300 Series Stainless Steel	
2	Shaft Ret. Plate	300 Series Stainless Steel	
3	Shaft Ret. Ring	300 Series Stainless Steel	
4	Packing	Flexible Graphite	
5	Inner Gland Ring	316 Stainless Steel	
6	Bearing	Bronze or Microlube Coated Stainless Steel	
7	Thrust Washer	316 Stainless Steel	
8	Key/Pin	316 / 17-4 Stainless Steel	
9	Shaft/Disc Assembly	17.4 Shaft / CF8M Disc Plated	
10	Body	ASTM A216 Grade WCB	ASTM A351 Grade CF8M
12	Seat Retainer	ASTM A515 or 516 GR 70	ASTM A240 GR 316 SS
12A	Inner Seat Retainer	ASTM A515 or 516 GR 70	ASTM A240 GR 316 SS
13	Seat	PTFE/RPTFE	
13A	Backup Seat	304 Stainless Steel Plated w/Grafoil Gaskets	
14	Retaining Spring	Inconel X750	
16	Stud	18-8 Stainless Steel	
17	Self Locking Nut	18-8 Stainless Steel	
18	Gland Retainer	300 Series Stainless Steel	
19	Jam Nut	18-8 Stainless Steel	
20	End Cap	316 Stainless Steel	
21	Hex Head Cap Screw	18-8 Stainless Steel	
22	Split Lockwasher	18-8 Stainless Steel	
23	Name Plate	300 Series Stainless Steel	
24	Sockethead Cap Screw	18-8 Stainless Steel	
27	End Cap Seal	Grafoil	

Note: Listed are standard materials of construction. Optional Materials may be substituted. Please consult the How to Order guide for various trims.

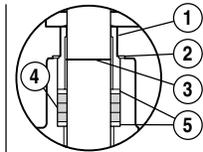
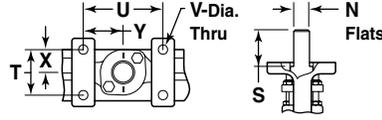


DIMENSIONS (INCHES) - ANSI CLASS 150

Keyed Stem
10"-24" Cl. 150
8"-12" Cl. 300

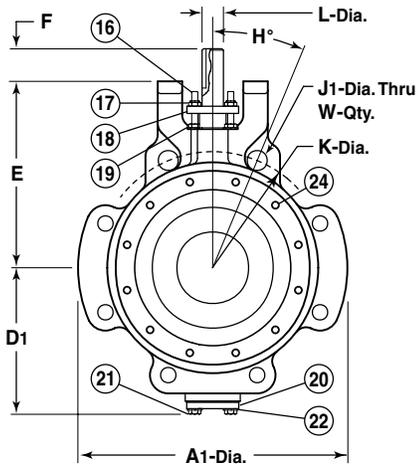


Flatted Stem
2 1/2"-8" Cl. 150
3"-6" Cl. 300

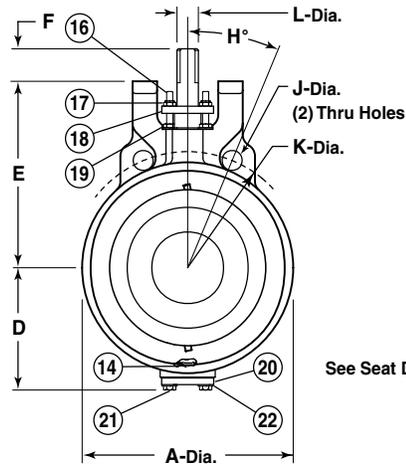


Stem Detail

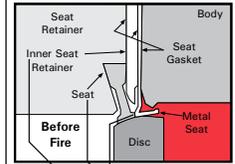
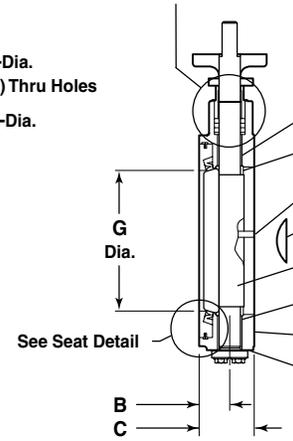
Lug Style



Wafer Style



See Stem Detail



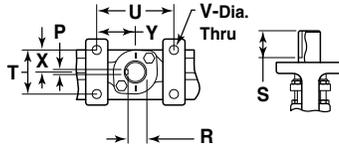
Size	Dimension (in.) - ANSI Class 150																							
	A	A1	B	C	D	D1	E	F	G	H	J	J1	K	L	N	P	R	S	T	U	V	W	X	Y
2.5	4.69	6.75	1.06	1.88	3.00	3.00	4.75	1.00	2.19	45.00	.69	5/8-11	5.50	.56	.38			1.078	1.50	3.25	.344	4	.75	1.63
3	5.19	7.25	1.06	1.88	3.25	3.31	5.13	1.00	2.81	45.00	.69	5/8-11	6.00	.56	.38			1.078	1.50	3.25	.344	4	.75	1.63
4	6.50	8.88	1.06	2.13	3.94	4.94	6.25	1.00	3.88	22.50	.69	5/8-11	7.50	.63	.50			1.078	2.00	3.50	.406	8	1.00	1.75
5	7.56	10.00	1.25	2.25	4.56	5.44	7.06	1.00	4.75	22.50	.81	3/4-10	8.50	.88	.63			1.078	2.00	3.50	.406	8	1.00	1.75
6	8.63	11.00	1.25	2.25	5	5.88	7.63	1.00	5.75	22.50	.81	3/4-10	9.50	.88	.63			1.078	2.00	3.50	.406	8	1.00	1.75
8	10.81	13.50	1.44	2.50	6.19	7.00	9.63	1.75	7.63	22.50	.81	3/4-10	11.75	1.13	.88			1.828	2.56	4.00	.563	8	1.28	2.00
10	12.88	16.00	1.63	2.81	7.25	8.44	10.22	2.94	9.69	15.00	.94	7/8-9	14.25	1.13		.25	.984	2.25	3.25	4.75	.563	12	1.63	2.38
12	15.25	19.00	1.75	3.19	8.75	10.00	11.94	3.00	11.69	15.00	.94	7/8-9	17.00	1.25		.38	1.033	2.25	3.50	5.00	.688	12	1.75	2.50
14	16.75	21.00	1.88	3.63	9.88	10.88	13.19	3.00	12.81	15.00	1.06	1-8	18.75	1.38		.38	1.156	2.25	4.75	5.63	.688	12	2.38	2.81
16	19.88	23.50	2.19	4.00	11.28	12.59	14.34	4.56	14.78	11.25	1.13	1-8	21.25	1.50		.38	1.28	3.63	5.13	7.00	.688	16	2.56	3.50
18	21.00	25.00	2.47	4.50	13.38	13.38	16.44	4.81	16.75	11.25	1 1/8-8	1 1/8-8	22.75	1.75		.50	1.47	4.00	5.50	8.00	.813	16	2.75	4.00
20	23.00	27.50	2.47	5.00	14.81	14.81	18.00	4.81	18.72	9	1 1/8-8	1 1/8-8	25.00	1.75		.50	1.47	4.00	5.50	8.00	.813	20	2.75	4.00
24	27.75	32.00	3.03	6.06	16.63	16.63	20.25	4.44	22.63	9	1 1/8-8	1 1/4-8	29.50	2.75		.75	2.38	4.00	9.00	11.00	.813	20	4.50	5.50

Note: All measurements are in inches

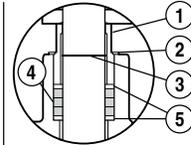
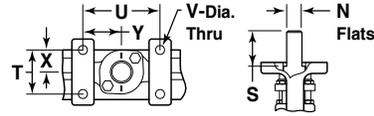


DIMENSIONS - ANSI CLASS 300

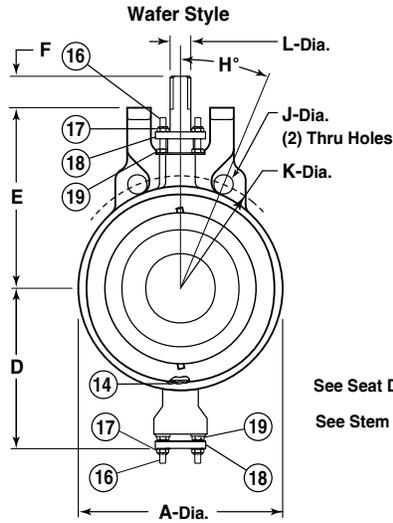
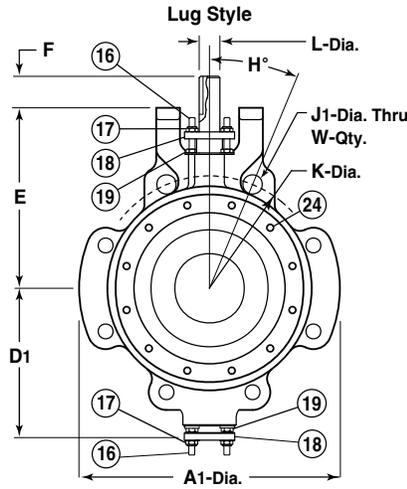
Keyed Stem
10"-24" Cl. 150
8"-12" Cl. 300



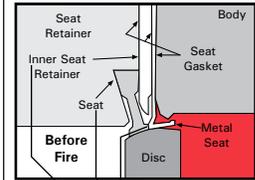
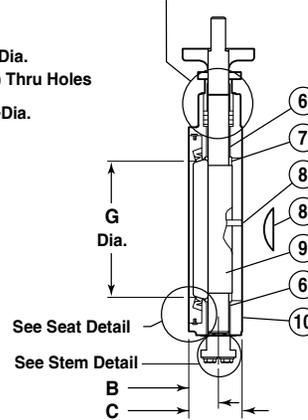
Flatted Stem
2 1/2"-8" Cl. 150
3"-6" Cl. 300



Upper and Lower Stem Detail



See Stem Detail



12 12A 13 13A

Size (in)	Dimensions (in.) - ANSI Class 300																							
	A	A1	B	C	D	D1	E	F	G	H	J	J1	K	L	N	P	R	S	T	U	V	W	X	Y
3	5.19	8.25	1.06	1.88	5.75	5.75	5.81	1	2.81	22.50	.81	3/4-10	6.63	.56	.38			1.078	1.50	3.25	.344	8	.75	1.63
4	6.50	9.38	1.06	2.13	6.69	6.69	6.75	1	3.88	22.50	.81	3/4-10	7.88	.63	.50			1.078	2	3.50	.406	8	1	1.75
6	8.63	12	1.25	2.31	7.88	7.88	8.25	1	5.75	15	.81	3/4-10	10.63	.88	.63			1.078	2	3.50	.406	12	1	1.75

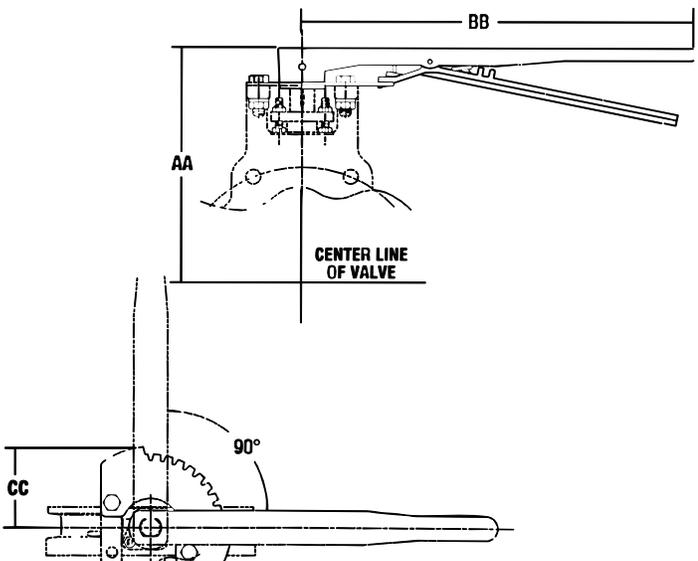
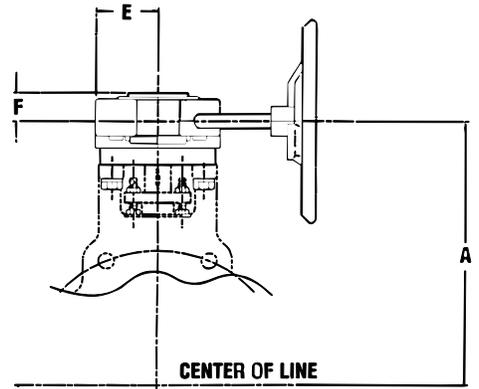
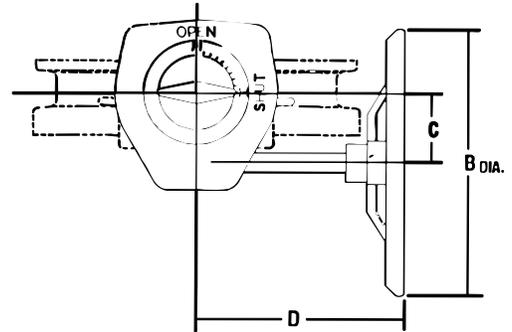
Size (in)	Dimension (mm.) - ANSI Class 300																							
	A	A1	B	C	D	D1	E	F	G	H	J	J1	K	L	N	P	R	S	T	U	V	W	X	Y
3	131.8	209.6	26.9	47.8	146.1	146.1	147.6	25.4	71.4	571.5	20.6	3/4-10	168.4	14.2	9.7			27.4	38.1	82.6	8.7	8	19.1	41.1
4	165.1	238.3	26.9	54.1	169.9	169.9	171.5	25.4	98.6	571.5	20.6	3/4-10	200.2	16.0	12.7			27.4	50.8	88.9	10.3	8	25.4	44.5
6	219.2	304.8	31.8	58.7	200.2	200.2	209.6	25.4	146.1	381.0	20.6	3/4-10	270.0	22.4	16.0			27.4	50.8	88.9	10.3	12	25.4	44.5

Size (in)	Weight in LBS (Bare Stem)													
	2 1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"	
1150/2150	10	12	16	25	30	50	80	150	215	325	375	450	700	
1151-2151	15	17	23	37	42	70	115	210	300	450	525	625	950	
1300/2300		19	23		37	60	92	176						
1301/2301		23	30		50	80	125	240						



HANDLES AND MANUAL GEAR OPERATORS

Class 150 - Class 300 (3-6")							
Model	Size	A	B	C	D	E	F
GO-QF-C3	2 1/2"	6 5/8	6	1 27/32	6 1/8	2 13/32	1 1/4
GO-QF-C3	3"	7	6	1 27/32	6 1/8	2 13/32	1 1/4
GO-QF-C4	4"	8 1/8	9	1 27/32	6 7/16	2 13/32	1 1/4
GO-QF-C6	5"	9	9	1 27/32	6 7/16	2 13/32	1 1/4
GO-QF-C6	6"	9 1/2	9	1 27/32	6 7/16	2 13/32	1 1/4
GO-QF-C8	8"	11 1/2	8	2 3/8	7 1/2	2 11/16	1 1/4
GO-QF-C10	10"	12 3/32	8	3	8 7/8	3 11/32	1 13/32
GO-QF-C12	12"	14 1/8	12	4 3/8	8 1/2	4 1/2	1 1/4
GO-QF-C14	14"	15 1/2	12	5 3/8	10 9/16	5 13/32	1 7/8
GO-QF-C16	16"	16 7/16	18	5 7/8	15 3/32	5 5/8	2 1/8
GO-QF-C18	18"	18 5/8	12	5 7/8	15 3/32	5 5/8	2 1/8
GO-QF-C20	20"	20 1/2	12	6	15 3/8	6	2 1/4
GO-QF-C24	24"	22 3/4	12	6	15 3/8	6	1 1/4



Notes: Maximum differential pressure for soft seat valves with lever handles		
2 1/2"-4"	150 Class	285 PSIG
5"	150 Class	200 PSIG
6"	150 Class	150 PSIG
8"	150 Class	150 PSIG
3", 4"	300 Class	300 PSIG
6"	300 Class	150 PSIG

Valve Size	150 # AA	300# AA	BB	CC
2 1/2"	5 3/4"	N/A	12"	3 9/16"
3"	6 1/8"	6 7/8"	12"	3 9/16"
4"	7 1/4"	7 3/4"	12"	3 9/16"
6"	8 5/8"	9 1/4"	12"	3 9/16"
8"	11 3/8"	N/A	18"	4 3/16"



TECHNICAL DATA

Valve Operating and Rating Information

Pressure Rating at 100°F

Class 150: 285 PSIG (A216 Gr. WCB)
275 PSIG (A351 Gr. CF8M)

Class 300: 740 PSIG (A216 Gr. WCB)
720 PSIG (A351 Gr. CF8M)

Maximum Temperature for Seats and Seals at 0 PSIG

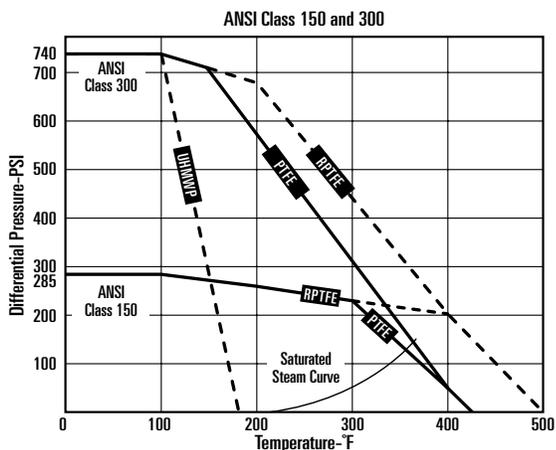
PTFE 425°F
Reinforce PTFE 450°F
UHMWPE 180°F

Minimum Operating Temperature

-35°F

Technical Charts and Data

Pressure Temperature Chart

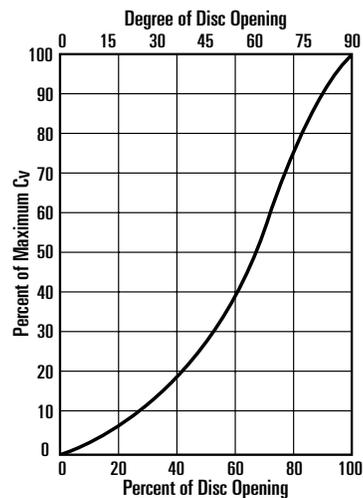


NOTE: Maximum continuous operating temperature. Consult factory for application above those shown.

Flow Coefficients (Cv)

Valve Size (in.)	CV Flow Coefficient	
	Class 150	Class 300
2 ½	90	
3	205	205
4	403	403
5	640	
6	1075	1075
8	2243	1950
10	3885	3100
12	5925	4400
14	7307	
16	10,050	
18	13,075	
20	18,050	
24	26,863	

Flow Characteristics Curve

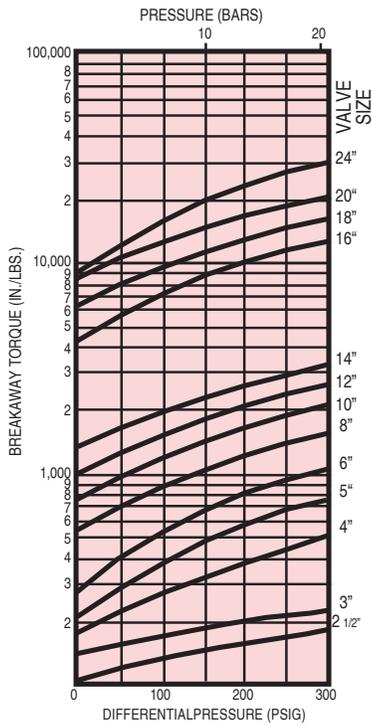


NOTE: Flow coefficients (Cv) based on ambient water temperature



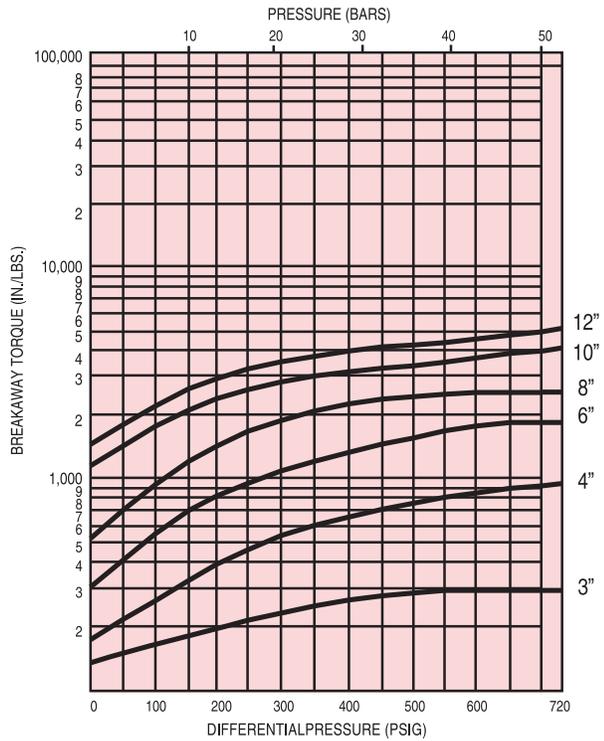
TECHNICAL DATA

Torque - ANSI Class 150



NOTE: Torques based on clean service only. Certain highly viscous or abrasive services could increase these values.

Torque - ANSI Class 300



NOTE: Torques based on clean service only. Certain highly viscous or abrasive services could increase these values.

Operating Torque

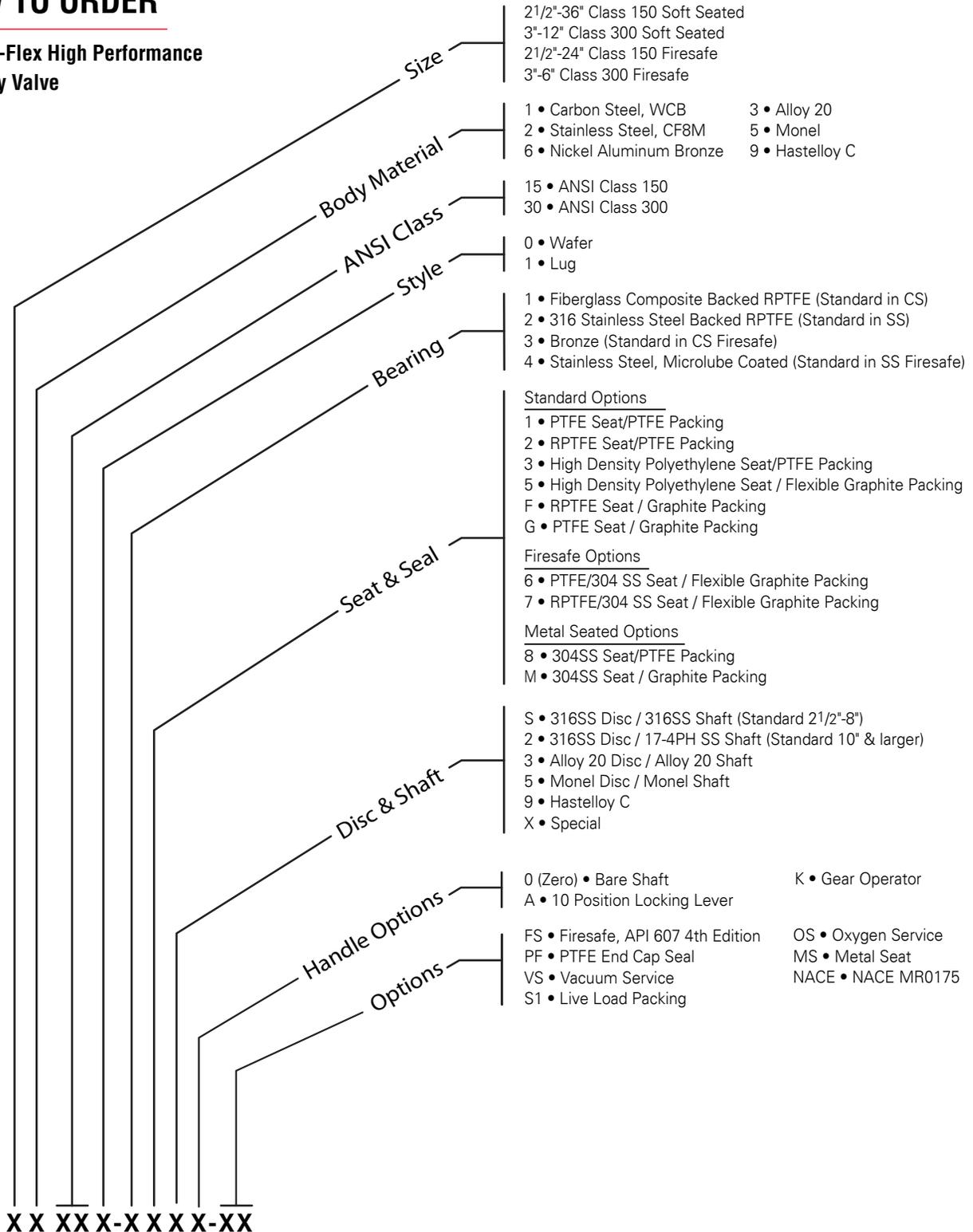
Firesafe Operating Torque (in-lbs.)									
PSIG	100		200		285		400	600	740
	150#	300#	150#	300#	150#	300#	300#	300#	300#
2 1/2	420		470		500				
3	500	500	610	610	720	720	750	775	825
4	900	900	1100	1100	1300	1300	1400	1500	1700
5									
6	1600	1600	2400	2400	3000	3000	3200	3400	3500
8	2300		2900		3500				
10	3700		4400		4600				
12	7000		9100		9900				
14	9000		12000		13000				
16	14000		18000		24000				
18	18000		29000		34000				
20	22000		36000		44000				
24	27000		48000		60000				

NOTE: All torques based on clean service without safety factor



HOW TO ORDER

Quarter-Flex High Performance Butterfly Valve



MPI – MCWANE PLANT & INDUSTRIAL

1201 Vanderbilt Road Birmingham, AL 35234 866.924.8674 www.mcwanepi.com sales@mcwanepi.com

Kennedy Valve | Tyler Union | McWane Ductile | Waterman | Tri-Seal Valve