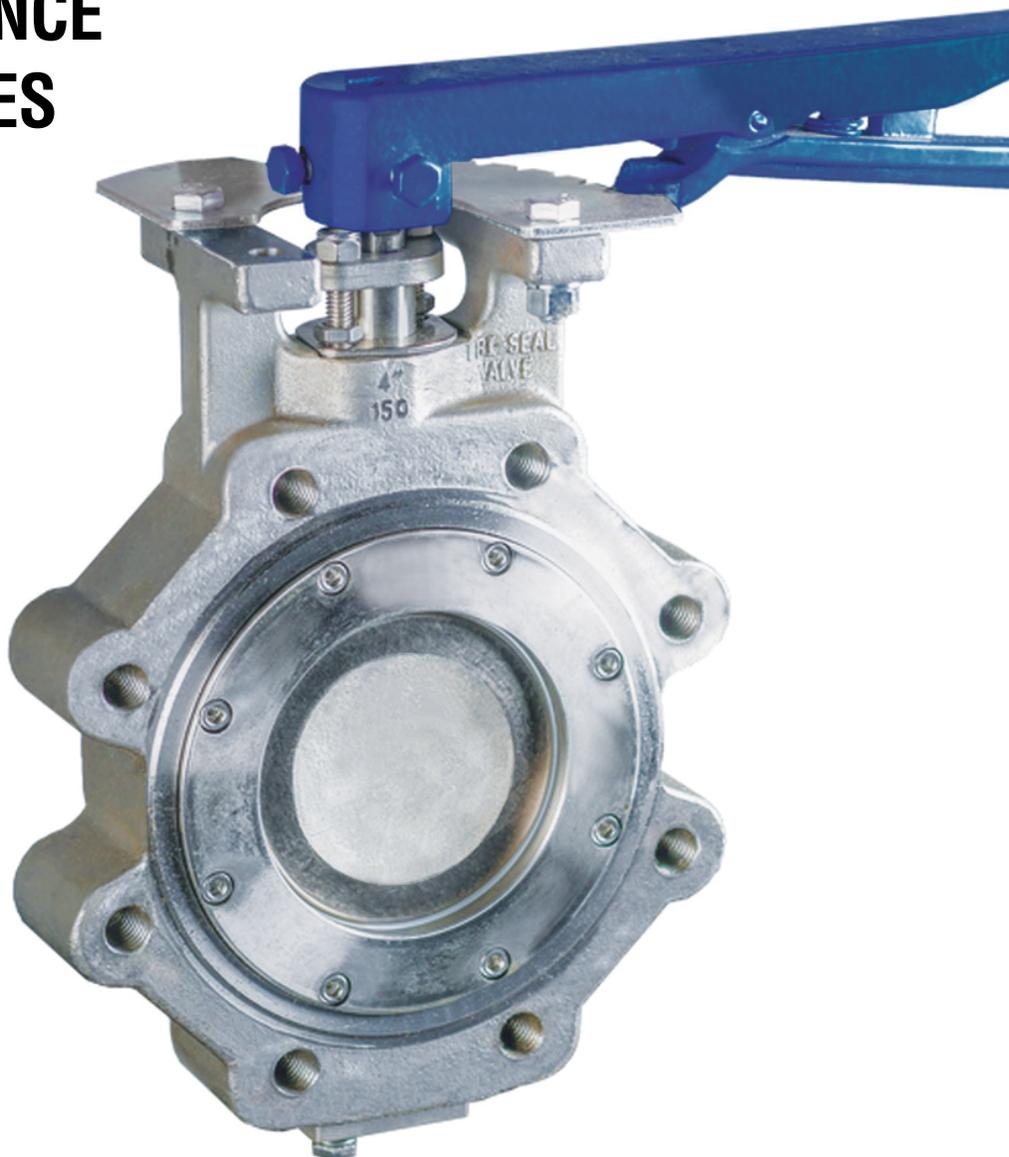


TRI-SEAL VALVES

QUARTER-FLEX HIGH PERFORMANCE BUTTERFLY VALVES

ANSI Class 150 and 300



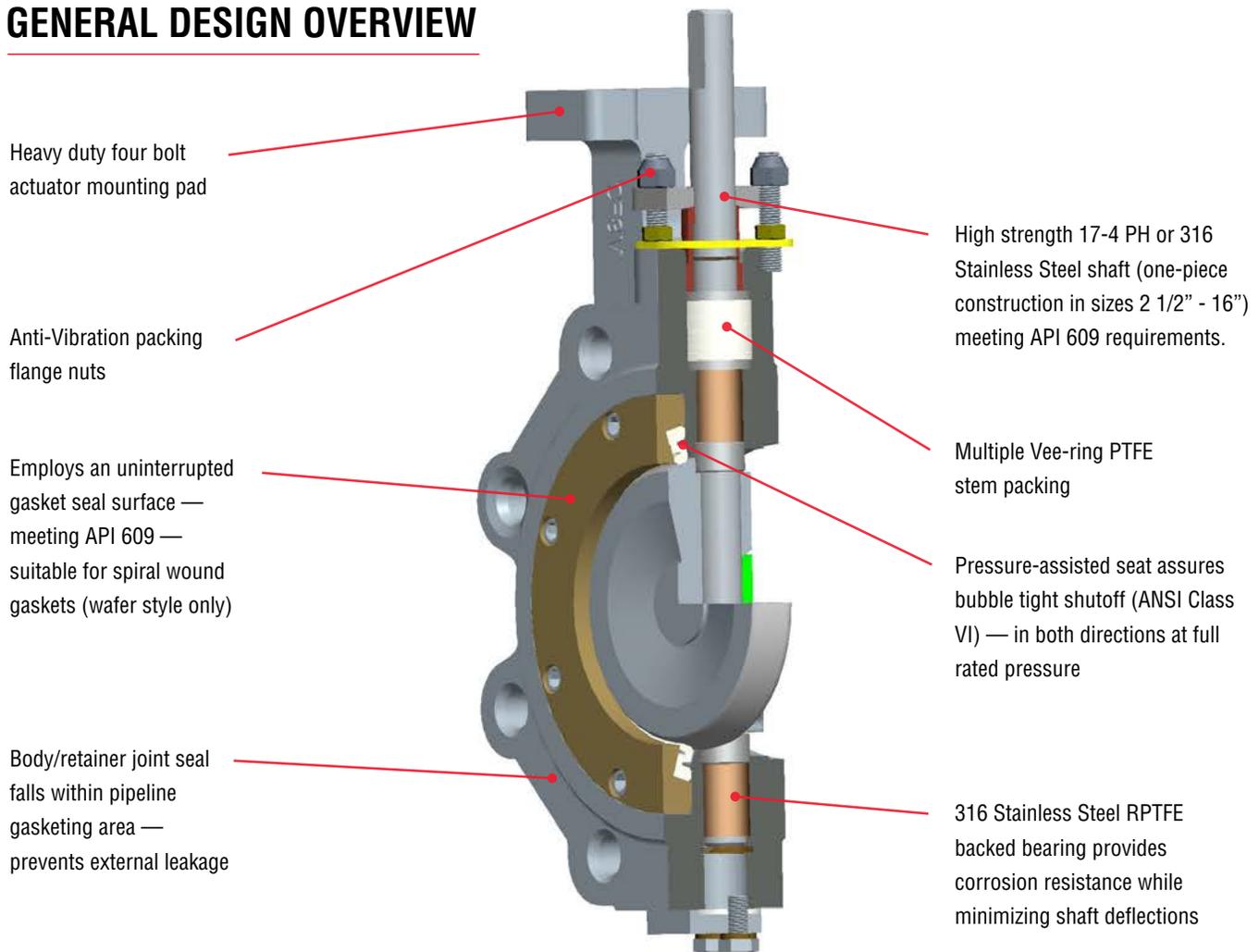


QUARTER-FLEX HIGH PERFORMANCE BUTTERFLY VALVES

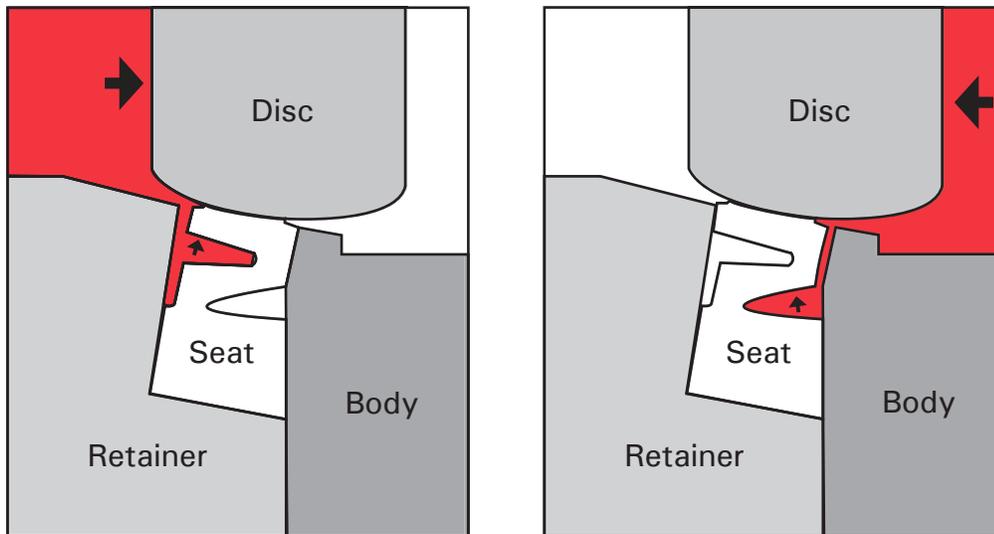
The Tri-Seal Quarter-Flex High Performance Butterfly Valve is manufactured in the United States using 100% domestic castings and materials. Material Test Certifications are available for all valves upon request at time of order.

SIZES	SPECIFICATIONS		CERTIFIED (OPTIONAL)
ANSI Class 150 2 1/2" - 36"	ASME B16.20	API 607 4th Ed.	NACE MR0175
ANSI Class 300 3" - 12" Wafer or Lug patterns	ASME B16.34	API 609 5th Ed.	Coast Guard Approved
	ASME B16.5	MSS SP-6	
	ASME B31.1	MSS SP-25	

GENERAL DESIGN OVERVIEW



BI-DIRECTIONAL BUBBLE TIGHT SEALING



Patented Pressure Assisted Seat Design

The Quarter-Flex incorporates an exclusive patented seat design which assures bi-directional bubble tight sealing. Providing effective low pressure sealing capability, the sealing function is further enhanced as system pressure increases. The line pressure exerts an upward force on the seat which forces the seat against the valve disc, “accordion” style. Increased line pressure causes tighter sealing, which assures continuous bubble tight closure. When the direction of the flow is reversed the seat functions in the same manner, once again achieving tight shutoff.

SPECIAL SERVICES REQUIREMENTS

Live Load Packing

Quarter-Flex valves are available with inconel discs springs to maintain constant load on the multiple PTFE vee-ring stem packing. Use option S1 or consult the How to Order Guide.

Steam Service

Quarter-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

Quarter-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

Quarter-Flex valves are available to comply with the NACE MR-0175 standard. These Oil & Gas applications can be offered in 150# & 300# ANSI class.

Special Materials

Quarter-Flex valves can be manufactured using special materials such as Alloy 20, Hastelloy and Monel. Contact MPI for projects with special material requirements for pricing and lead time.



COMPONENTS AND FEATURES OVERVIEW



Solid Seating Material

Quarter-Flex valves utilize solid polymeric material, not O-ring encapsulated. This solid seating assures service media compatibility even if seat is scratched or damaged.



Integrally Cast Travel Stop

The internal travel stop is designed to provide proper disc positioning and 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. This offset design results in full 360° sealing contact, ensuring no leakage occurs when in the fully closed position.



One Piece Shaft

The heavy duty one-piece shaft (in sizes 2 1/2" -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 of removal of the shaft when replacing packing (meets API 609 standards). Additionally, RPTFE-lined, 316 Stainless Steel bearings maximize corrosion resistance and minimize shaft deflection.



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. Furthermore, the retainer protects the seat from premature failure due to erosion, and since no special tools are required in the removal of the seat retainer, maintenance is quick and easy.



MATERIALS OF CONSTRUCTION

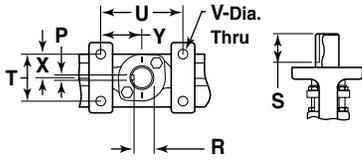
Materials		Carbon Steel	Stainless Steel
Part	Name	1150 / 1151 / 1300 / 1301	2150 / 2151 / 2300 / 2301
1	Outer Gland Ring	300 Series Stainless Steel	
2	Shaft Ret. Plate	300 Series Stainless Steel	
3	Shaft Ret. Ring	300 Series Stainless Steel	
4	Packing	PTFE/Graphite	
5	Inner Gland Ring	316 Stainless Steel	
6	Bearing	High Temp Composite backed RPTFE or 316 Stainless Steel RPTFE backed	
7	Thrust Washer	316 Stainless Steel	
8	Key/Pin	Key 316 or 17-4 Stainless Steel / PIN 316 Stainless Steel	
9	Shaft/Disc Assembly	2 1/2" - 10" (316 Stainless Steel Shaft / CF8M Disc) 12" - 36" (17.4 Shaft / CF8M Disc)	
10	Body	ASTM A216 Grade WCB	ASTM A351 Grade CF8M
12	Seat Retainer	ASTM A515 or 516 GR 70	ASTM A240 GR 316 SS
13	Seat	PTFE/RPTFE/UHMW	
14	Retaining Spring	Inconel X750	
16	Stud	18-8 Stainless Steel	
17	Self Locking Nut	18-8 Nyloc 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	Teflon®/ Viton®/Grafoil	

Note: Listed are standard materials of construction. Optional Materials may be substituted. Please consult the How to Order guide for various trims. Teflon® & Viton® are registered trademarks of DuPont Dow Elastomers.

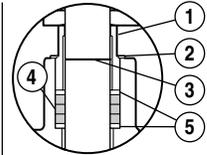
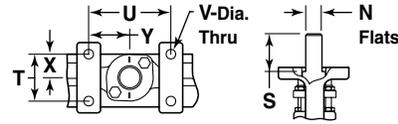


DIMENSIONS (INCHES) - ANSI CLASS 150

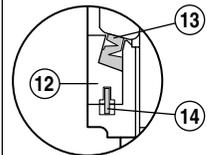
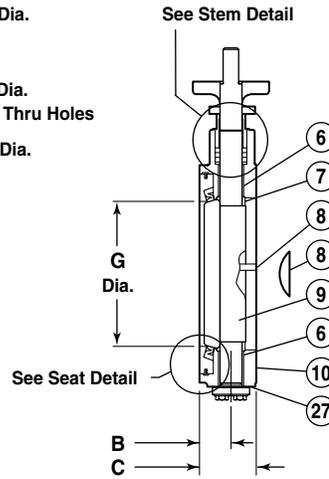
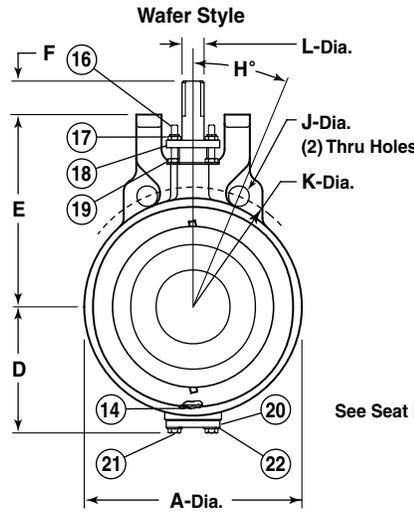
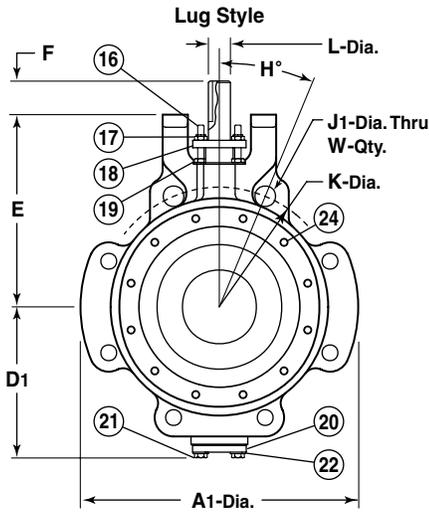
Keyed Stem
10"-24" Cl. 150
8"-12" Cl. 300



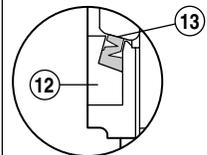
Flatted Stem
2 1/2"-8" Cl. 150
3"-6" Cl. 300



Stem Detail



Wafer Style Seat Detail



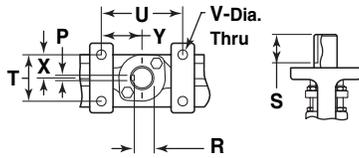
Lug Style Seat Detail

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	3	4.75	1	2.19	45	.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	2.81	45	.69	5/8-11	6	.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	3.88	22.50	.69	5/8-11	7.50	.63	.50			1.078	2	3.50	.406	8	1	1.75
5	7.56	10	1.25	2.25	4.56	5.44	7.06	1	4.75	22.50	.81	3/4-10	9	.88	.63			1.078	2	3.50	.406	8	1	1.75
6	8.63	11	1.25	2.25	5	5.88	7.63	1	5.75	22.50	.81	3/4-10	9.50	.88	.63			1.828	2	3.50	.406	8	1	1.75
8	10.81	13.50	1.44	2.50	6.19	7	9.63	1.75	7.63	22.50	.81	3/4-10	11.75	1.13	.88			1.828	2.56	4	.563	8	1.28	2
10	12.88	16	1.63	2.81	7.25	8.44	10.22	2.94	9.69	15	.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	1.75	3.19	8.75	10	11.94	3	11.69	15	.94	7/8-9	17	1.25		.38	1.033	2.25	3.50	5	.688	12	1.75	2.50
14	16.75	21	1.88	3.63	9.88	10.88	13.19	3	12.81	15	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	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	.688	16	2.56	3.50
18	21	25	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	5.50	8	.813	16	2.75	2
20	23	27.50	2.47	5	14.81	14.81	18	4.81	18.72	9	1 1/8-8	1 1/8-8	25	1.75		.50	1.47	4	5.50	8	.813	20	2.75	2
24	27.75	32	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	9.00	11	.813	20	4.50	5.50
30	34	38.75	4.25	8.50	29.88	29.88	33.13	10.31	28	6.25	1 1/4-8	1 1/4-8	36	2.992		.75	2.562	4.50	6.38	6.38	3/4-10	28	3	3
36	39.25	47.25	4.19	8.38	27.38	27.38	37	11	34	5.63	1 1/2-8	1 1/2-8	4.75	3.999		1	3.437	4.50	6.50	9.50	1-8	32	3.25	4.75

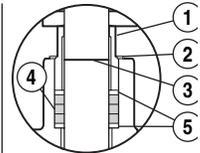
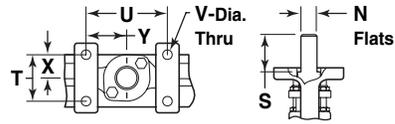


DIMENSIONS - ANSI CLASS 300

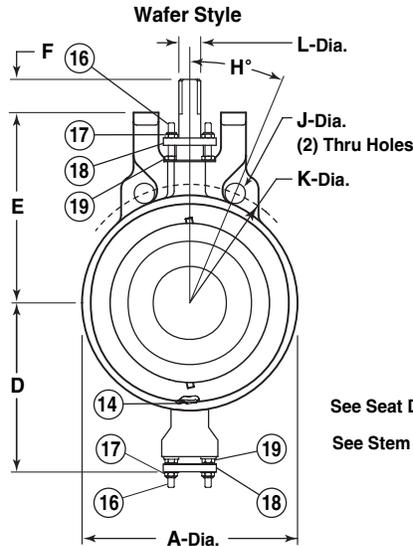
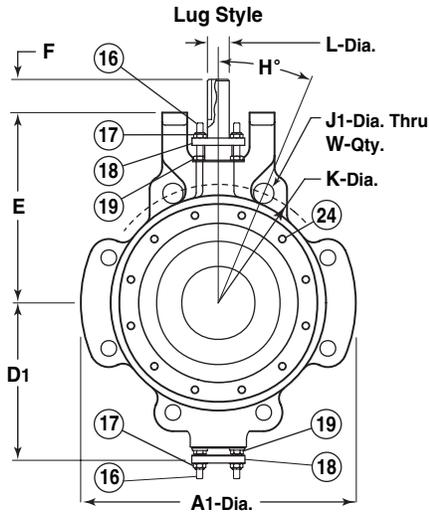
Keyed Stem
10"-24" Cl. 150
8"-12" Cl. 300



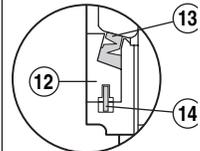
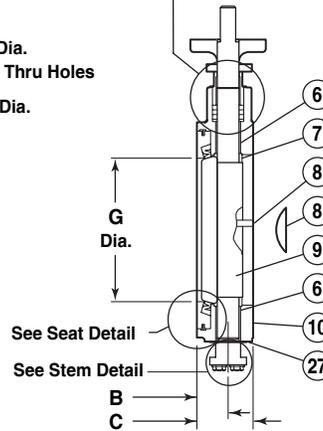
Flatted Stem
2 1/2"-8" Cl. 150
3"-6" Cl. 300



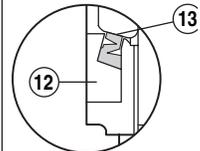
Upper and Lower Stem Detail



See Stem Detail



Wafer Style Seat Detail



Lug Style Seat Detail

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
8	10.63	15	1.61	2.88	9.50	9.50	10.25	2.31	7.50	15	.94	7/8-9	13	1.25		.38	1.03	2.38	3.25	4.75	.563	12	1.63	2.38
10	13.13	17.50	1.56	3.25	12.19	12.19	12.81	3	9.50	11.25	.106	1-8	15.25	1.38		.38	1.16	3	3.25	4.75	.563	16	1.63	2.38
12	15.50	20.50	2	3.63	15.31	15.31	15	3	11.30	11.25	1 1/8-8	1	17.75	1.75		.38	1.53	2.75	4.75	6.25	.688	16	2.38	3.13

Size (in)	Weight in LBS (Bare Stem)															
	2 1/2"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"	36"	
1150/2150	10	12	16	25	30	50	80	150	215	325	375	450	700	1300	2400	
1151-2151	15	17	23	37	42	70	115	210	300	450	525	625	950	1650	2650	
1300/2300		19	23		37	60	92	176								
1301/2301		23	30		50	80	125	240								



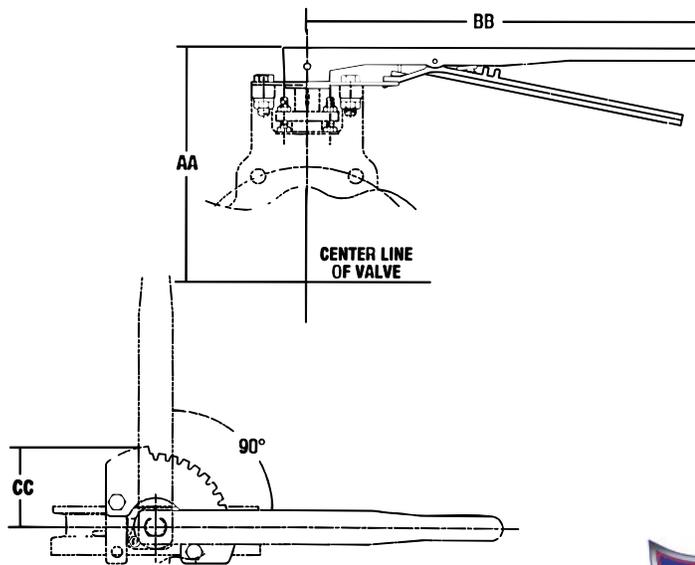
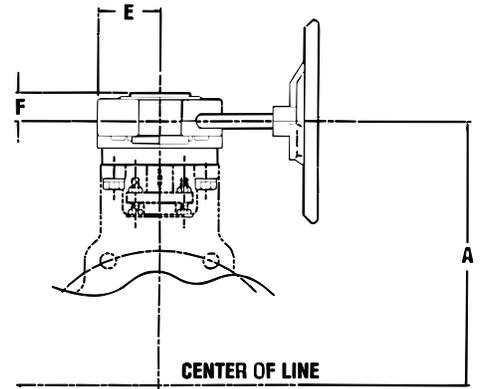
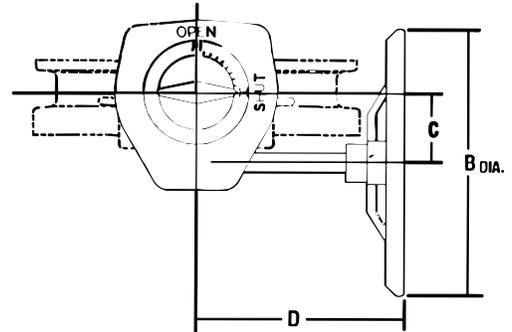
HANDLES AND MANUAL GEAR OPERATORS

Stated dimensions assume direct gear mount on valve mounting pad.

Note: some gears require mounting kits. Contact factory for additional information.

Class 150							
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
GO-QF-C30	30"	Consult Factory					
GO-QF-C36	36"						

Class 300							
Class 300 gears on 3" - 6" are the same as Class 150							
Model	Size	A	B	C	D	E	F
GO-QF-300-C8	8"	13 1/4	8	3 1/2	8	3 3/4	1 3/4
GO-QF-300-C10	10"	15 5/8	8	3 1/2	8	3 3/4	1 3/4
GO-QF-300-C12	12"	18 1/4	12	3 1/2	8	3 3/4	1 3/4



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

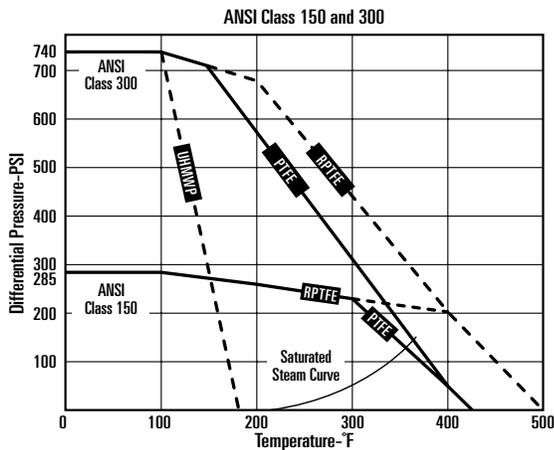
PTFE 425°F
Reinforce PTFE 450°F
UHMWPE 180°F

Minimum Operating Temperature

-35°F

Technical Charts and Data

Pressure Temperature Chart

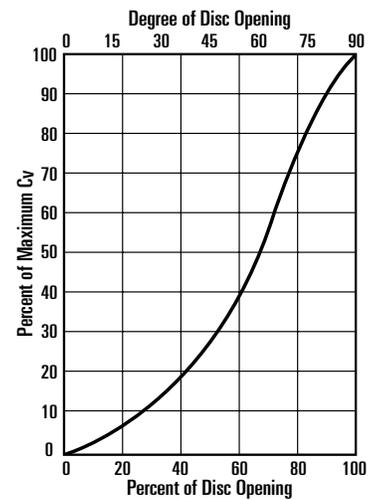


NOTE: Maximum continuous operating temperature. Consult factory for application above those shown.

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	
30	Consult Factory	
36	Consult Factory	

Flow Characteristics Curve

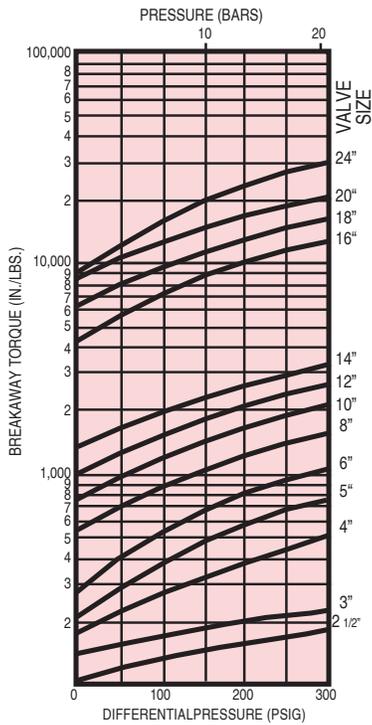


NOTE: Flow coefficients (Cv) based on ambient water temperature



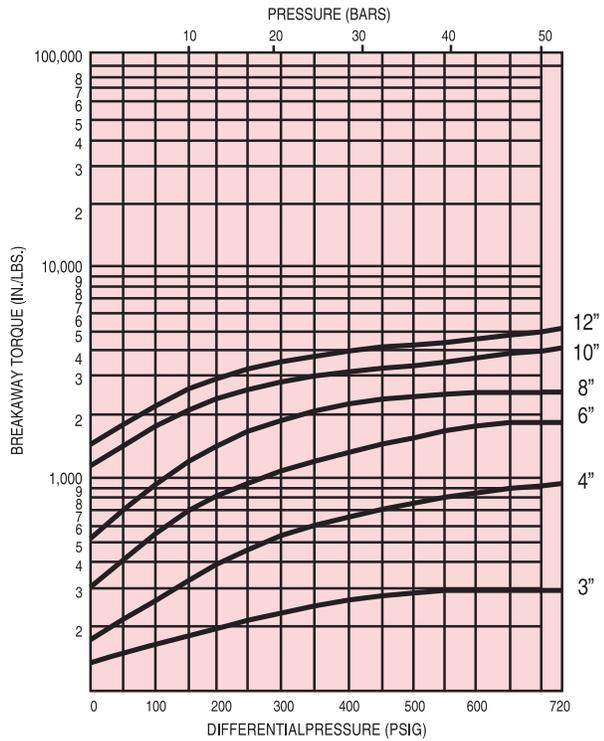
TECHNICAL DATA

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

Operating Torque (in-lbs.)									
PSIG	100		200		285		400	600	740
Size (in.)	150#	300#	150#	300#	150#	300#	300#	300#	300#
2 1/2	140		170		190				
3	160	180	200	210	230	240	280	300	300
4	280	290	400	410	530	560	650	800	1000
5	380		550		750				
6	540	600	820	900	1100	1150	1500	1800	1900
8	870	1000	1300	1600	1800	1950	2200	2600	2600
10	1350	1800	1700	2500	2200	2900	3200	3900	4200
12	1600	2300	2100	2900	2600	3700	4000	4900	5300
14	1900		2500		3100				
16	7300		11000		13000				
18	9500		13000		16000				
20	13000		17000		21000				
24	16000		24000		31000				
30	29000		39000		49000				
36	48000		69000		82000				

NOTE: All torques based on clean service without safety factor



FLANGE BOLT GUIDELINES

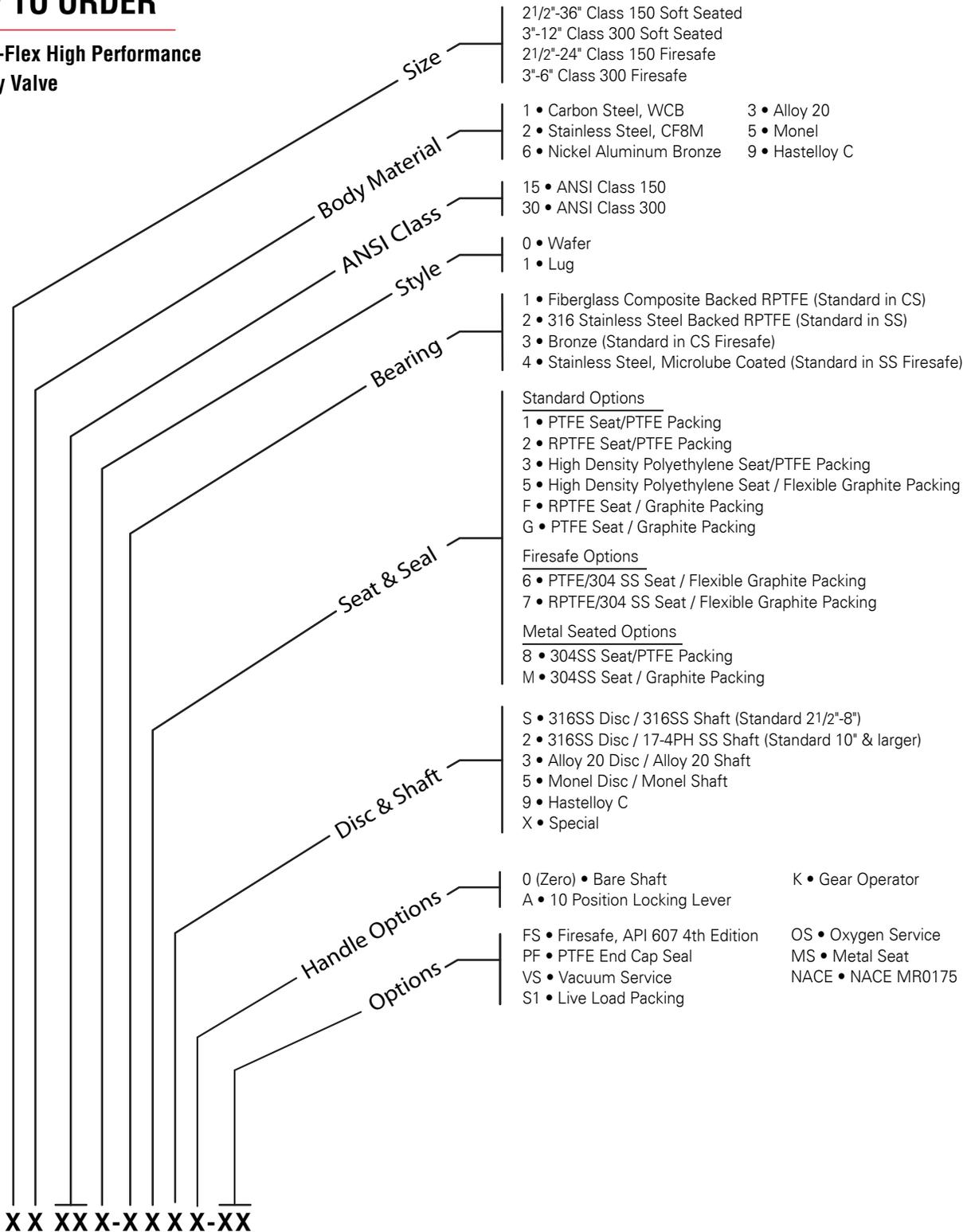
ANSI Class 150							
150# Wafer				150# Lug			
Size	(Qty) Long Studs Diameter UN(C) and Length	(Qty) Short Studs Diameter UN(C) and length	(Qty) Nuts Required	(Qty) Studs Diameter UN(C) and Length	(Qty) Nuts Required	(Qty) Gaskets	
2 1/2"	(4) 5/8"-11 X 6"		8	(8) 5/8"-11 X 2 1/2"	8	2	
3"	(4) 5/8"-11 X 6"		8	(8) 5/8"-11 X 2 1/2"	8	2	
4"	(8) 5/8"-11 X 6"		16	(16) 5/8"-11 X 2 1/2"	16	2	
5"	(8) 3/4"-10 X 6 1/2"		16	(16) 3/4"-10 X 3"	16	2	
6"	(8) 3/4"-10 X 6 1/2"		16	(16) 3/4"-10 X 3"	16	2	
8"	(8) 3/4"-10 X 7"		16	(16) 3/4"-10 X 3 1/2"	16	2	
10"	(12) 7/8"-9 X 7 3/4"		24	(24) 7/8"-9 X 3 1/2"	24	2	
12"	(12) 7/8"-9 X 8 1/4"		24	(24) 7/8"-9 X 3 3/4"	24	2	
14"	(12) 1"-8 X 9 1/4"		24	(24) 1"-8 X 4"	24	2	
16"	(16) 1"-8 X 9 3/4"		32	(32) 1"-8 X 4"	32	2	
18"	(12) 1 1/8"-8 X 10 3/4"		(8) 1 1/8"-8 X 4 3/4"	32	(32) 1 1/8"-8 X 4 3/4"	32	2
20"	(16) 1 1/8"-8 X 11 1/2"		(8) 1 1/8"-8 X 4 3/4"	40	(40) 1 1/8"-8 X 4 3/4"	40	2
24"	(16) 1 1/4"-8 X 13 1/2"		(8) 1 1/4"-8 X 5"	40	(40) 1 1/4"-8 X 5"	40	2
30"	(20) 1 1/4"-8 X 16"	(16) 1 1/4"-8 X 6 1/4"	56	(56) 1 1/4"-8 X 6 1/4"	56	2	
36"	(24) 1 1/2"-8 X 18 3/4"	(16) 1 1/2"-8 X 7 1/4"	64	(64) 1 1/2"-8 X 7 1/4"	64	2	

ANSI Class 300						
300# Wafer				300# Lug		
Size	(Qty) Long Studs Diameter UN(C) and Length	(Qty) Short Studs Diameter UN(C) and length	(Qty) Nuts Required	(Qty) Studs Diameter UN(C) and Length	(Qty) Nuts Required	(Qty) Gaskets
3"	(8) 3/4"-10 X 6 3/4"		16	(16) 3/4"-10 X 3 1/4"	16	2
4"	(8) 3/4"-10 X 7"		16	(16) 3/4"-10 X 3 1/2"	16	2
6"	(12) 3/4"-10 X 7 3/4"		24	(24) 3/4"-10 X 3 1/2"	24	2
8"	(12) 7/8"-9 X 8 3/4"		24	(24) 7/8"-9 X 4"	24	2
10"	(12) 1"-8 X 10"		(8) 1"-8 X 4 1/2"	32	(32) 1"-8 X 4 1/2"	32
12"	(12) 1 1/8"-8 X 10 3/4"	(8) 1 1/8"-8 X 5"	32	(32) 1 1/8"-8 X 5"	32	2



HOW TO ORDER

Quarter-Flex High Performance Butterfly Valve



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