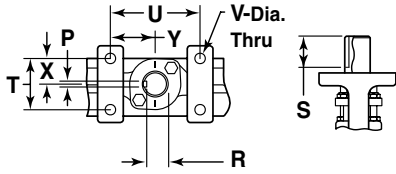
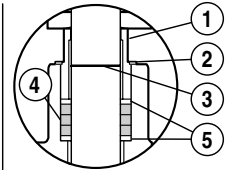
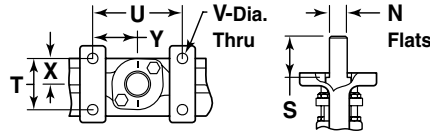


Dimensions (inches) - ANSI Class 150

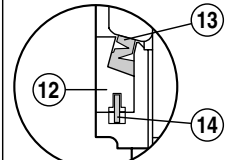
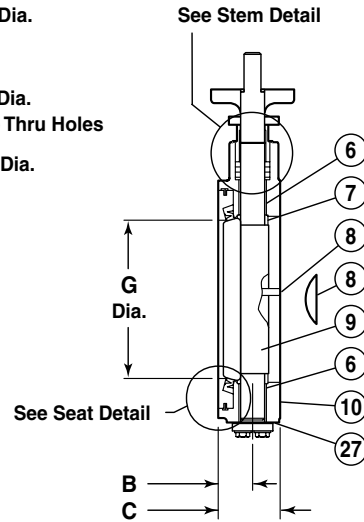
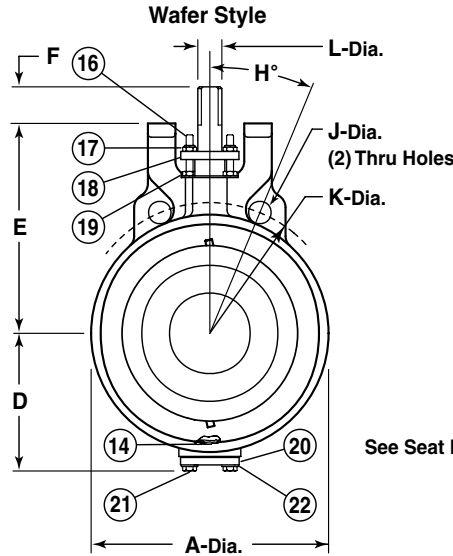
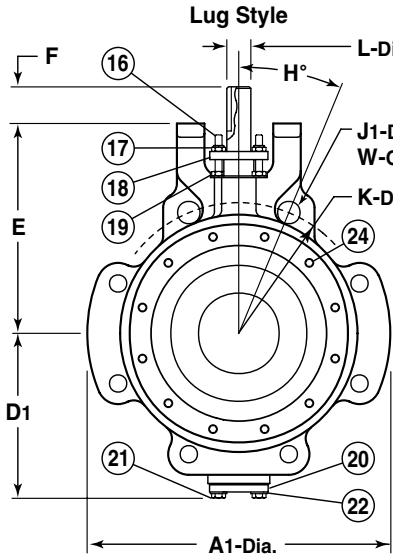
Keyed Stem
10"-24" Cl. 150
8"-12" Cl. 300



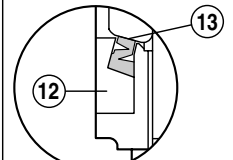
Flatted Stem
2 1/2"-8" Cl. 150
3"-6" Cl. 300



Stem Detail



Wafer Style Seat Detail

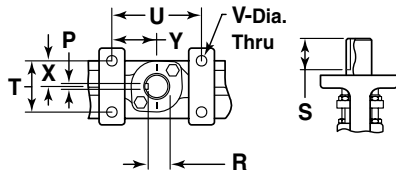


Lug Style Seat Detail

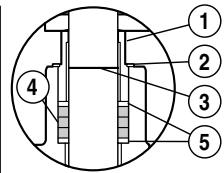
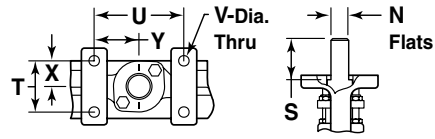
Size	Dimension (in.) - ANSI Class 150																							
	A	A1	B	C	D	D1	E	F	G	H	J	J1	K	L	N	P	R	S	T	U	V	W	X	Y
2.5	4.69	6.75	1.06	1.88	3.00	3.00	4.75	1.00	2.19	45.00	.69	5/8-11	5.50	.56	.38	—	—	1.078	1.50	3.25	.344	4	.75	1.63
3	5.19	7.25	1.06	1.88	3.25	3.31	5.13	1.00	2.81	45.00	.69	5/8-11	6.00	.56	.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	9.00	.88	.63	—	—	1.078	2.00	3.50	.406	8	1.00	1.75
6	8.63	11.00	1.25	2.25	5.00	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 1/8-8	29.50	2.75	—	.75	2.38	4.00	9.00	11.00	.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	36.00	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	37.00	11.00	34.0	5.63	1 1/2-8	1 1/2-8	4.75	3.999	—	1.0	3.437	4.50	6.50	9.50	1-8	32	3.25	4.75

Dimensions (millimeters) - ANSI Class 150

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

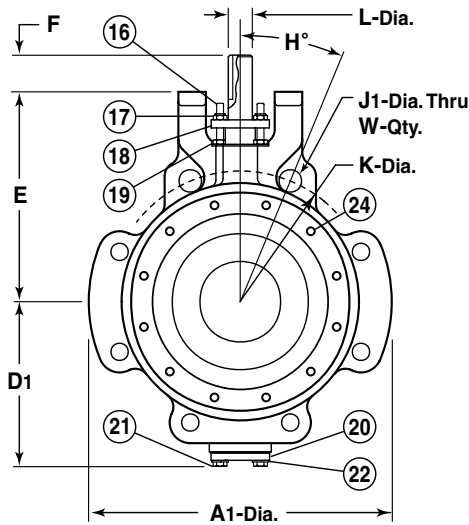


Flatted Stem
2 1/2"-8" Cl. 150
3"-6" Cl. 300

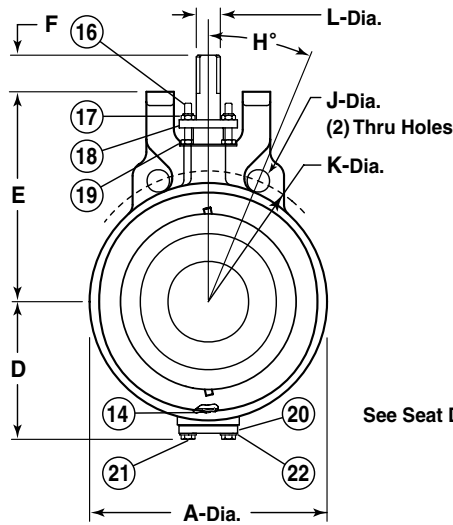


Stem Detail

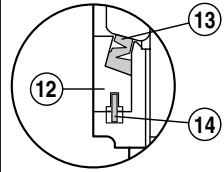
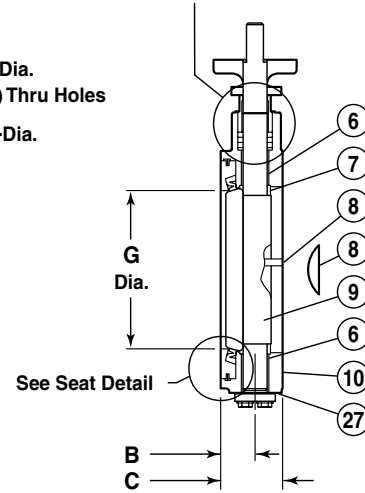
Lug Style



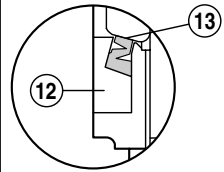
Wafer Style



See Stem Detail



Wafer Style Seat Detail

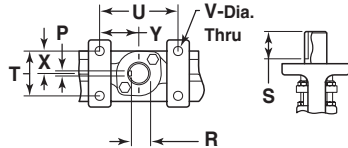


Lug Style Seat Detail

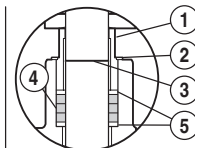
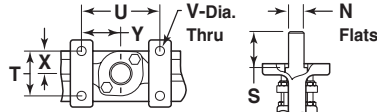
Size	Dimension (mm) - ANSI Class 150																							
	A	A1	B	C	D	D1	E	F	G	H	J	J1	K	L	N	P	R	S	T	U	V	W	X	Y
2.5	119.1	171.5	26.9	47.8	76.2	76.2	120.7	25.4	55.6	1143	17.5	5/8 - 11	139.7	14.2	9.7	—	—	27.4	38.1	82.6	8.7	4	19.1	41.4
3	131.8	184.2	26.9	47.8	82.6	84.1	130.3	25.4	71.4	1143	17.5	5/8 - 11	152.4	14.2	9.7	—	—	27.4	38.1	82.6	8.7	4	19.1	41.4
4	165.1	225.6	26.9	54.1	100.1	125.5	158.8	25.4	98.6	571.5	17.5	5/8 - 11	190.5	16	12.7	—	—	27.4	50.8	88.9	10.3	8	25.4	44.5
5	192	254	31.8	57.2	115.8	138.2	179.3	25.4	120.6	571.5	20.6	3/4 - 10	228.6	22.4	16	—	—	27.4	50.8	88.9	10.3	8	25.4	44.5
6	213.2	279.4	31.8	57.2	127	149.4	193.8	25.4	146.1	571.5	20.6	3/4 - 10	241.3	22.4	16	—	—	27.4	50.8	88.9	10.3	8	25.4	44.5
8	274.6	342.9	36.6	63.5	157.2	177.8	224.6	44.5	193.8	571.5	20.6	3/4 - 10	298.5	28.7	22.4	—	—	46.4	65	101.6	14.3	8	32.5	50.8
10	327.2	406.4	41.4	71.4	184.2	214.4	259.6	74.7	246.1	381	23.9	7/8 - 9	362	28.7	—	6.4	25	57.2	82.6	120.7	14.3	12	41.4	60.5
12	387.4	482.5	44.5	81	222.3	254	303.3	76.2	296.9	381	23.9	7/8 - 9	431.8	31.8	—	9.7	26.2	57.2	88.9	127	17.5	12	44.5	63.5
14	425.5	533.4	47.8	92.2	251	276.4	335	76.2	325.4	381	26.9	1-8	476.3	35.1	—	9.7	29.4	57.2	120.7	143	17.5	12	60.5	71.4
16	505	596.9	55.6	101.6	286.5	319.8	364.2	115.8	375.4	285.8	28.7	1-8	539.8	38.1	—	9.7	32.5	92.2	130.3	177.8	17.5	16	65	88.9
18	533.4	635	62.7	114.3	339.9	339.9	417.6	122.2	425.5	285.8	1 1/8 - 8	1 1/8 - 8	577.9	44.5	—	12.7	37.3	101.6	139.7	203.2	20.7	16	69.9	101.6
20	584.2	698.5	62.7	127	376.2	376.2	457.2	122.2	475.5	228.6	1 1/8 - 8	1 1/8 - 8	635	44.5	—	12.7	37.3	101.6	139.7	203.2	20.7	20	69.9	101.6
24	704.9	812.8	77	153.9	442.4	442.4	514.4	112.8	574.8	228.6	1 1/8 - 8	1 1/4 - 8	749.3	69.9	—	19.1	60.5	101.6	228.6	279.4	20.7	20	114.3	139.7
30	863	984	107	215	606	958	841	261	911	152	1 1/4 - 8	1 1/4 - 8	914	76	—	19.1	65	114	162	152	3/4 - 10	28	81	76
36	997	1200	104	212	695	695	660	290	863	142	1 1/2 - 8	1 1/2 - 8	1085	101	—	25.4	87.3	114	162	241	1-8	32	82	120

Dimensions - ANSI Class 300

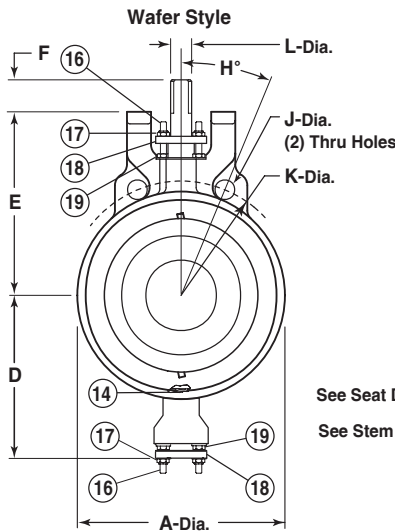
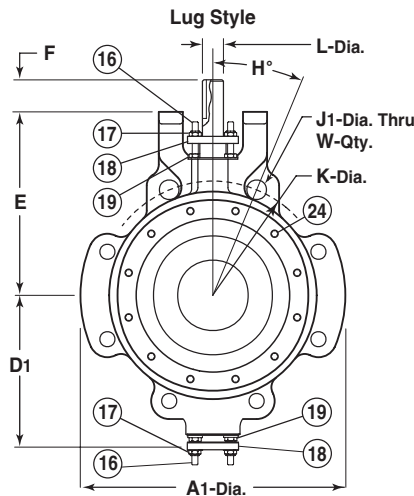
Keyed Stem
10"-24" Cl. 150
8"-12" Cl. 300



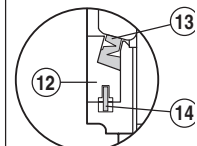
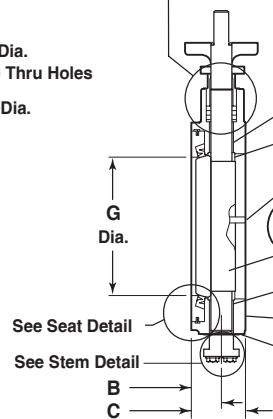
Flatted Stem
2 1/2"-8" Cl. 150
3"-6" Cl. 300



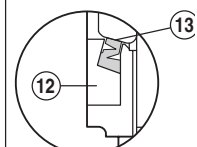
Upper and Lower Stem Detail



See Stem Detail



Wafer Style Seat Detail



Lug Style Seat Detail

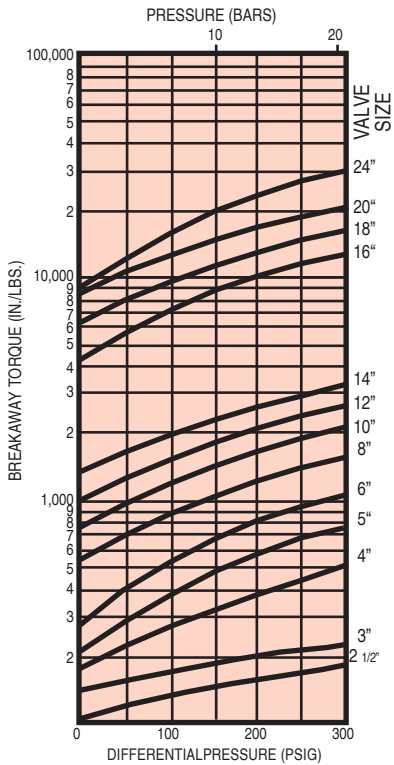
Size (in)	Dimensions (in.) - ANSI Class 300																							
	A	A1	B	C	D	D1	E	F	G	H	J	J1	K	L	N	P	R	S	T	U	V	W	X	Y
3	5.19	8.25	1.06	1.88	5.75	5.75	5.81	1.00	2.81	22.50	.81	3/4-10	6.63	.56	.38	-	-	1.078	1.50	3.25	.344	8	.75	1.63
4	6.50	9.38	1.06	2.13	6.69	6.69	6.75	1.00	3.88	22.50	.81	3/4-10	7.88	.63	.50	-	-	1.078	2.00	3.50	.406	8	1.00	1.75
6	8.63	12.00	1.25	2.31	7.88	7.88	8.25	1.00	5.75	15.00	.81	3/4-10	10.63	.88	.63	-	-	1.078	2.00	3.50	.406	12	1.00	1.75
8	10.63	15.00	1.61	2.88	9.50	9.50	10.25	2.31	7.50	15.00	.94	7/8-9	13.00	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	3.00	9.50	11.25	.106	1-8	15.25	1.38	-	.38	1.16	3.00	3.25	4.75	.563	16	1.63	2.38
12	15.50	20.50	2.00	3.63	15.31	15.31	15.00	3.00	11.30	11.25	1 1/8-8	1 1/8-8	17.75	1.75	-	.38	1.53	2.75	4.75	6.25	.688	16	2.38	3.13

Size (in)	Dimensions (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	41.4
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
8	270.0	381.0	40.9	73.2	241.3	241.3	260.4	58.7	190.5	381.0	23.9	7/8-9	330.2	31.8	-	9.7	26.2	60.5	82.6	120.7	14.3	12	41.4	60.5
10	333.5	444.5	39.6	82.6	309.6	309.6	352.4	76.2	241.3	285.8	26.9	1-8	387.4	35.1	-	9.7	29.5	76.2	82.6	120.7	14.3	16	41.4	60.5
12	393.7	520.7	50.8	92.2	388.9	388.9	381.0	76.2	287.0	285.8	28.7	1 1/8-8	450.9	44.5	-	9.7	38.9	69.9	12.7	158.8	17.5	16	60.5	79.5

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	N/A	19	23	N/A	37	60	92	176								
1301/2301	N/A	23	30	N/A	50	80	125	240								

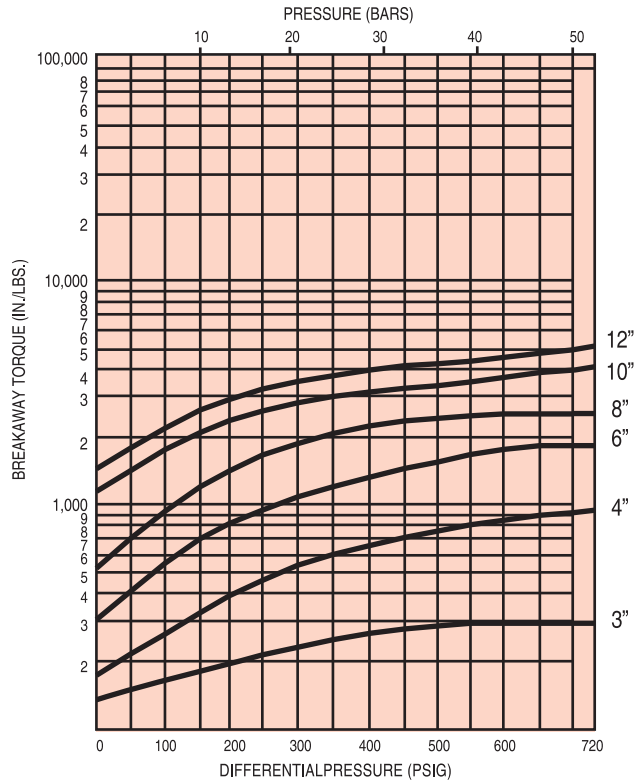
Technical Data

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	N/A	170	N/A	190	N/A	N/A	N/A	N/A
3	160	180	200	210	230	240	280	300	300
4	280	290	400	410	530	560	650	800	1000
5	380	N/A	550	N/A	750	N/A	N/A	N/A	N/A
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	N/A	2500	N/A	3100				
16	7300	N/A	11000	N/A	13000				
18	9500	N/A	13000	N/A	16000				
20	13000	N/A	17000	N/A	21000				
24	16000	N/A	24000	N/A	31000				
30	29000	N/A	39000	N/A	49000				
36	48000	N/A	69000	N/A	82000				

Note: All torques based on clean service without safety factor.