



Description

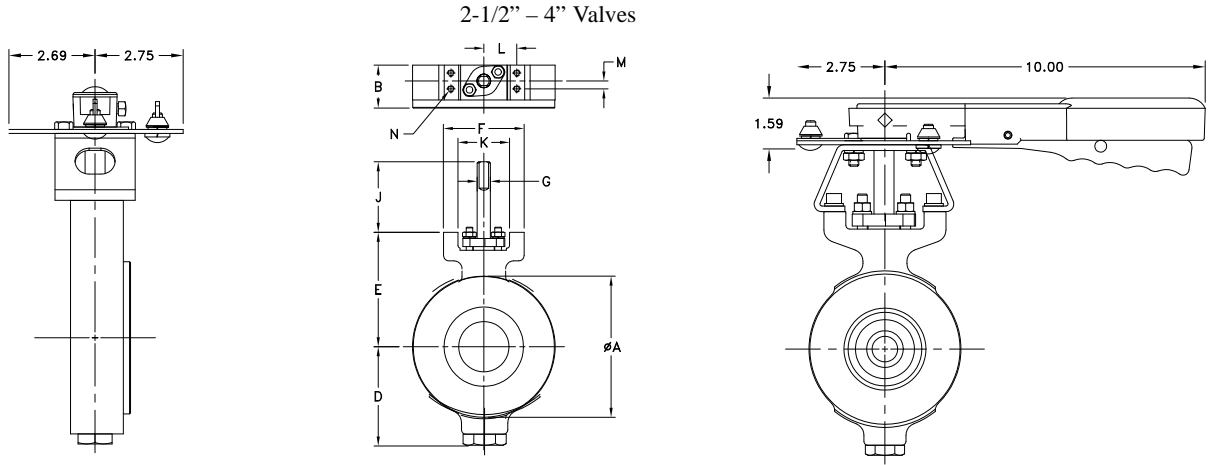
1. Direct installation of the actuator.
2. Continuous gasket compression surfaces.
3. Seat wide choice of materials, can withstand 648°C.
4. In-one valve shaft.
5. The whole cast base plate type valve.
6. Wide range of applications, from vacuum to high pressure equipment, from low to high temperature equipment.
7. Good throttle control performance of the fluid control.
8. The ability to bubble of level.

Selection of possible applications

BFV high performance butterfly valves handle a wide range of conditions and media such as corrosive chemicals, water, gases, acids, alkalis, hydrocarbons plus many other fluids.

Selection of possible flow media

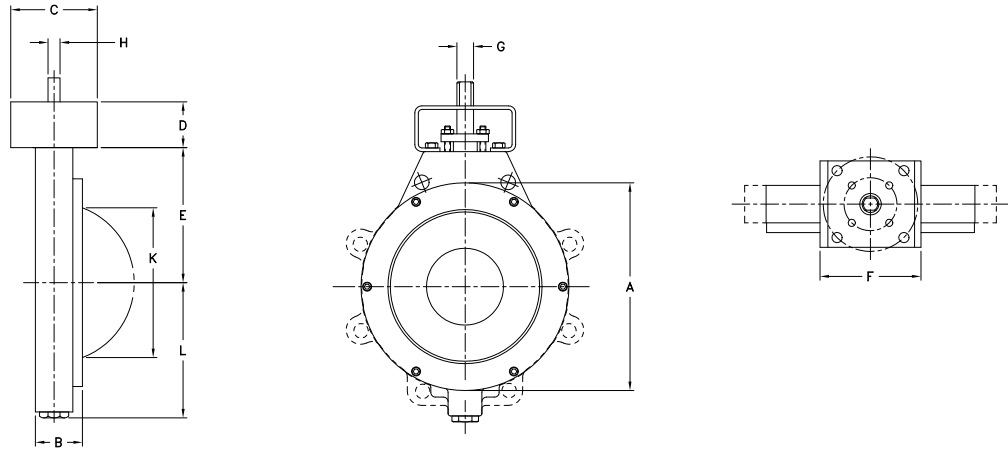
Corrosive chemicals, water, gases, acids, hydrocarbons plus other fluids



Dimensions and Weights(in/kg)

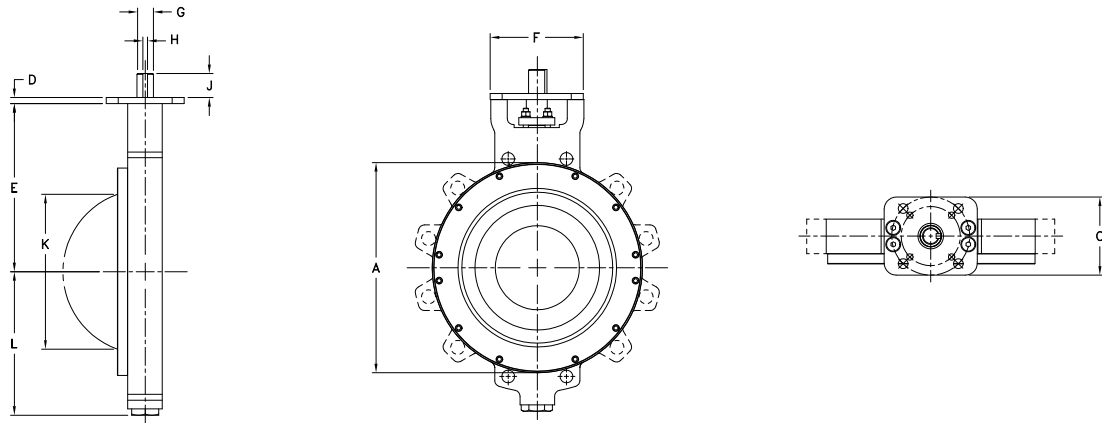
Size	A	B	C	D	E	F	G	H	J	K	L	M	N UNC-28	Weight
2½"	4.75	1.88	2.28	3.81	4.29	3.81	0.63	0.43	3.34	2.44	1.56	0.38	5/16-18	13
3"	5.25	1.88	2.86	4.09	4.54	3.81	0.63	0.43	3.34	2.44	1.56	0.38	5/16-18	15
4"	6.75	2.03	3.72	4.71	5.41	3.81	0.63	0.43	3.34	2.44	1.56	0.38	5/16-18	20

5" – 12" Valves



Dimensions and Weights(in/kg)

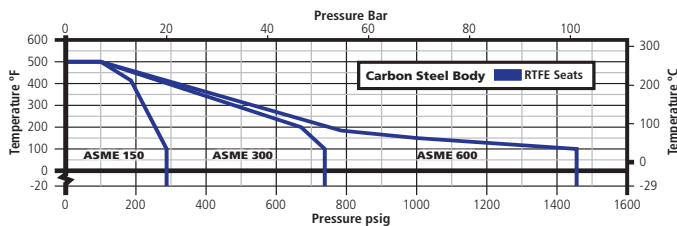
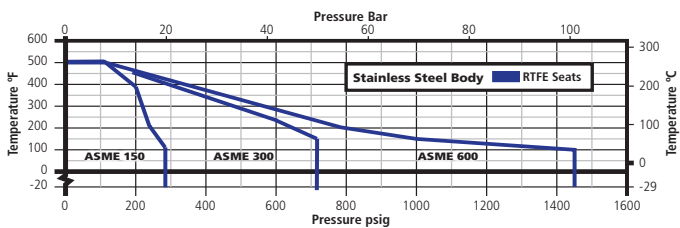
Size	A	B	C	D	E	F	G	H	J	K	L	N UNC-28	Weight
5"	7.62	2.23	4.50	2.38	5.12	5.12	0.75	0.51	1.25	4.83	5.07	3/8-16	23
6"	8.62	2.23	4.50	2.38	5.62	5.12	0.75	0.51	1.25	5.88	5.57	3/8-16	30
8"	10.81	2.40	4.50	2.38	7.12	5.12	0.87	0.63	1.25	7.80	6.94	3/8-16	43
10"	13.06	2.75	4.50	2.28	8.47	6.12	1.18	0.87	2.00	9.78	8.56	1/2-13	76
12"	15.42	3.08	4.50	2.28	9.97	6.12	1.18	0.87	2.00	11.74	10.18	1/2-13	119



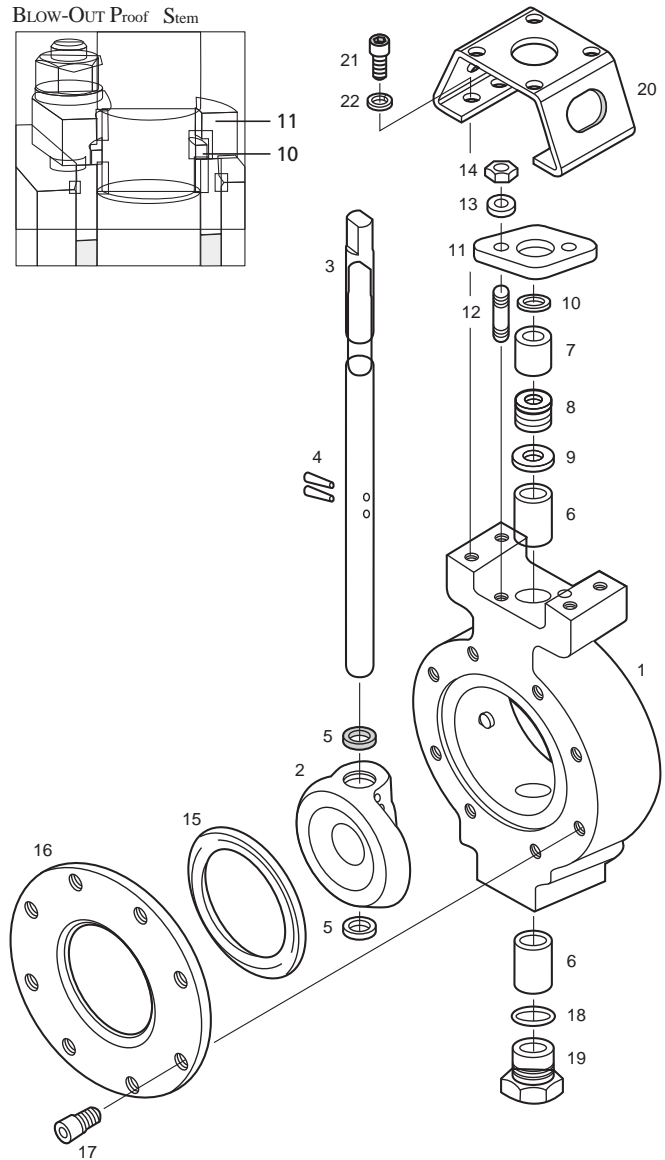
Dimensions and Weights(in /kg)

Size	A	B	C	D	E	F	G	H	J	K	L	N UNC-28	Weight
14"	17, 27	3.73	6 , 50	0.50	14, 00	7.75	1.38	10MMX10MM	2.00	12.90	11.95	3/4-10	315
16"	19.50	4.11	6.50	1.00	16.75	10.38	1.97	12MMX10MM	2.50	14.68	12.94	3/4-10	420
18"	21.38	4.61	6.50	1.00	19.00	10.38	1.97	12MMX10MM	2.50	16.97	14.15	1-8	480
20"	23.62	5.03	6.50	1.00	21.75	10.38	2.50	0.625X0.625	4.00	18.86	15.26	1-8	530
24"	27.96	6.00	11.75	0.75	24.25	15.38	3.00	0.75 X0.75	4.00	20.73	18.21	1-1/4-8	598
26"	27.96	6.37	11.75	0.75	24.25	15.38	3.00	0.75 X0.75	4.00	21.38	19.23	1-1/4-8	641
28"	32.41	6.50	11.75	0.75	26.06	15.38	3.00	0.75 X0.75	4.00	26.27	20.54	1-1/4-8	931
30"	34.4 1	7.50	13.50	0.75	27.88	19.50	3.50	0.875 X0.625	5.25	28.36	21.36	1-1/2-8	1187
32"	36.4 1	7.68	13.50	0.88	29.12	19.50	3.50	0.875 X0.625	5.25	29.11	22.36	1-1/2-8	1377
34"	38.41	7.80	13.50	0.88	29.12	19.50	3.50	0.875 X0.625	5.25	30.98	23.86	1-1/2-8	1736
36"	39.87	8.26	13.50	0.88	32.12	19.50	3.50	0.875 X0.625	5.25	34.17	25.27	1-1/2-8	2660
42"	46.20	9.51	13.50	0.88	37.12	19.50	4.50	1.0 X0.75	5.25	38.08	29.37	1-1/2-8	2882
48"	52.25	10.00	16.00	1.12	41.00	24.00	5.00	1.25 X0.875	6.00	46.12	32.75	1-1/2-8	3864

Pressure and Temperature



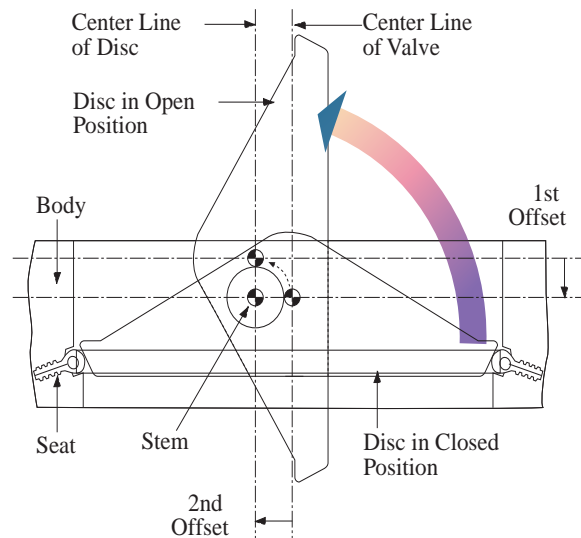
ITEM	NAME	MATERIAL
1	Body	Stainless Steel, ASTM A351 GR CF8M Carbon Steel, ASTM A216 GR WCB /A516 GR 70 Nickel Aluminum Bronze, ASTM B-148 C95800
2	Disc	Stainless Steel, ASTM A351 GR CF8M – Standard with Electroless Nickel Plating on disc edge – Fire Safe Nickel Aluminum Bronze, ASTM B-148 C95800
3	Stem	17-4 PH SS, ASTM A564-Type 630 Monel K500 316 Stainless Steel, ASTM 276 Type 316/A240-316**
4	Taper Pins	17-4 PH SS, ASTM A564-Type 630 Monel K500 Monel K500
5	Disc Spacers	316 Stainless Steel, ASTM 276 Type 316
6	Bearing Assembly	316 Stainless Steel with TFE & Glass Fabric Liner
7	Gland Ring	316 Stainless Steel, ASTM 276 Type 316
8	Stem Seal	PTFE rings plus 1 Carbon Fiber ring – Standard Valve Flexible Graphite rings – Fire Safe Valve
9	Thrust Washer	316 Stainless Steel, ASTM 276 Type 316
10	Retaining Ring	18-8 Stainless Steel
11	Gland Retainer	316 Stainless Steel, ASTM A351 CF8M Carbon Steel, ASTM A216 GR WCB /A516 GR 70
12	Stud	316 Stainless Steel, ASTM A193-B8M
13	Lock Washers	18-8 Stainless Steel
14	Hex Nut	18-8 Stainless Steel
15	Seat Assembly	RTFE with Silicone Rubber Energizer PTFE with Silicone Rubber Energizer
16	Seat Retainer Plate	Stainless Steel, ASTM A351 CF8M /A240-316 Carbon Steel, ASTM A216 GR WCB /A516 GR 70
17	Cap Screws	18-8 Stainless Steel Alloy Steel
18	Gasket	PTFE – Standard Valve Flexible Graphite – Fire Safe Valve
19	Locating Plug	316 Stainless Steel, ASTM 276 Type 316/A240-316 Carbon Steel, Phosphate Coated
20	Mounting Plate	18-8 Stainless Steel Carbon Steel, Phosphate Coated
21	Cap Screws	18-8 Stainless Steel Alloy Steel
22	Lock Washers	18-8 Stainless Steel Alloy Steel



Double offset stem and design

The double offset design of the BFV series assures reduced seat wear and bidirectional, zero leakage shut off throughout the full pressure range.

At the initial point of disc opening, the offset disc produces a cam-like action, pulling the disc from the seat. This cam-like action reduces seat wear and eliminates seat deformation when the disc is in the open position. When open, the disc does not contact the seat, therefore seat service life is extended and operating torques are reduced. As the valve closes, the cam-like action converts the rotary motion of the disc to a linear type motion to effectively push the disc onto the seat. The wiping action of the disc against the seat prevents undesirable material build-up from slurries or suspended solids.



ASME 150 - Torques (Lb-Ins/N-m)

Valve Size Inches	Series 815 Standard - Valve Differential Pressure (PSIG/BARG)															
	Less than 150 psig/barg				>150-200 psig/barg				>200-250 psig/barg				>250-285 psig/barg			
	Retainer Upstream		Retainer Downstream		Retainer Upstream		Retainer Downstream		Retainer Upstream		Retainer Downstream		Retainer Upstream		Retainer Downstream	
2.5	170	19	200	23	190	21	240	27	210	24	280	32	215	24	300	34
3	185	21	220	25	210	24	260	29	225	25	300	34	230	26	320	36
4	275	31	320	36	300	34	370	42	315	36	420	47	320	36	460	52
5	550	62	650	73	640	72	800	90	705	80	940	106	730	82	1,040	118
6	690	78	810	92	770	87	960	108	825	93	1,100	124	840	95	1,200	136
8	1,280	145	1,500	170	1,400	158	1,700	192	1,500	170	1,950	220	1,570	177	2,100	237
10	2,400	271	2,800	316	3,640	411	3,300	373	2,820	319	3,760	425	2,870	324	4,100	463
12	3,500	396	4,100	463	4,000	452	5,000	565	4,400	497	5,900	667	4,550	514	6,500	735
14	5,400	610	6,300	712	5,920	669	7,400	836	6,400	723	8,500	961	6,650	751	9,500	1,074
16	7,700	870	9,100	1,028	9,040	1,022	11,300	1,277	10,100	1,141	13,500	1,526	10,500	1,187	15,000	1,695
18	11,900	1,345	14,000	1,582	13,600	1,537	17,000	1,921	15,000	1,695	20,000	2,260	15,400	1,740	22,000	2,486
20	15,300	1,729	18,000	2,034	17,100	1,932	21,300	2,407	18,500	2,091	24,700	2,791	18,900	2,136	27,000	3,051
24	24,650	2,785	29,000	3,277	27,680	3,128	34,600	3,910	30,000	3,390	40,100	4,531	30,800	3,480	44,000	4,972
26	24,650	2,785	29,000	3,277	27,680	3,128	34,600	3,910	30,000	3,390	40,100	4,531	30,800	3,480	44,000	4,972
28	34,850	3,938	41,000	4,633	37,600	4,249	47,000	5,311	44,300	5,006	59,200	6,690	44,500	5,029	63,500	7,176
30	39,950	4,514	47,000	5,311	42,960	4,854	53,700	6,068	50,800	5,740	67,700	7,650	52,500	5,933	75,000	8,475
32	45,000	5,085	53,000	5,989	48,800	5,514	61,000	6,893	57,600	6,509	76,800	8,678	58,800	6,644	84,000	9,492
34	45,000	5,085	53,000	5,989	48,800	5,514	61,000	6,893	57,600	6,509	76,800	8,678	58,800	6,644	84,000	9,492
36	54,000	6,102	64,000	7,232	64,800	7,322	81,000	9,153	73,500	8,306	98,000	11,074	77,000	8,701	110,000	12,430
40	62,000	7,006	73,000	8,249	73,600	8,317	92,000	10,396	82,500	9,323	110,000	12,430	84,700	9,571	121,000	13,673
42	71,000	8,023	83,000	9,379	84,000	9,492	105,000	11,865	95,250	10,763	127,000	14,351	101,000	11,413	143,000	16,159
48	98,000	11,074	115,000	12,995	121,600	13,741	152,000	17,176	142,500	16,103	190,000	21,470	151,900	17,165	217,000	24,521

ASME 300 - Torques (Lb-Ins/N-m)

Valve Size Inches	Series 830 Standard- Valve Differential Pressure (PSIG/BARG)															
	Less than 150 psig/barg				>150-350 psig/barg				>350-550 psig/barg				>550-740 psig/barg			
	Retainer Upstream		Retainer Downstream		Retainer Upstream		Retainer Downstream		Retainer Upstream		Retainer Downstream		Retainer Upstream		Retainer Downstream	
2.5	170	19	200	23	290	33	360	41	380	43	510	58	470	53	670	76
3	185	21	220	25	310	35	380	43	400	45	530	60	490	55	690	78
4	270	31	320	36	420	47	530	60	550	62	730	82	700	79	1,000	113
5	550	62	650	73	1,000	113	1,250	141	1,390	157	1,850	209	1,800	203	2,550	288
6	850	96	1,000	113	1,320	149	1,650	186	1,720	194	2,300	260	2,100	237	3,000	339
8	1,580	179	1,850	209	2,480	280	3,100	350	3,230	365	4,300	486	3,700	418	5,300	599
10	2,800	316	3,300	373	4,400	497	5,500	622	5,700	644	7,600	859	7,000	791	10,000	1,130
12	4,250	480	5,000	565	6,640	750	8,300	938	8,630	975	11,500	1,300	10,500	1,187	15,000	1,695
14	7,300	825	8,600	972	10,720	1,211	13,400	1,514	13,700	1,548	18,300	2,068	15,400	1,740	22,000	2,486
16	11,900	1,345	14,000	1,582	17,200	1,944	21,500	2,430	21,800	2,463	29,000	3,277	26,600	3,006	38,000	4,294
18	15,300	1,729	18,000	2,034	21,600	2,441	27,000	3,051	27,100	3,062	36,100	4,079	31,500	3,560	45,000	5,085
20	20,400	2,305	24,000	2,712	29,400	3,322	36,700	4,147	37,000	4,181	49,300	5,571	42,700	4,825	61,000	6,893
24	32,300	3,650	38,000	4,294	45,600	5,153	57,000	6,441	57,500	6,498	76,700	8,667	66,500	7,515	95,000	10,735
30	68,000	7,684	80,000	9,040	101,600	11,481	127,000	14,351	129,000	14,577	172,000	19,436	147,000	16,611	210,000	23,730
36	101,150	11,430	119,000	13,447	144,000	16,272	180,000	20,340	180,000	20,340	240,000	27,120	203,000	22,939	290,000	32,770
40	115,600	13,063	136,000	15,368	168,000	18,984	210,000	23,730	222,000	25,086	296,000	33,448	278,600	31,482	398,000	44,974
48	127,500	14,408	150,000	16,950	217,600	24,589	272,000	30,736	321,000	36,273	428,000	48,364	403,200	45,562	576,000	65,088

ASME 600 - Torques (Lb-Ins/N-m)

Valve Size Inches	Series 860 - Valve Differential Pressure (PSIG/BARG)															
	Less than 150 psig/bar				>150-600 psig/bar				>600-1050 psig/bar				>1050-1480 psig/bar			
	Retainer Upstream		Retainer Downstream		Retainer Upstream		Retainer Downstream		Retainer Upstream		Retainer Downstream		Retainer Upstream		Retainer Downstream	
3	400	45	480	54	700	79	870	98	900	102	1,200	136	1,000	113	1,450	164
4	850	96	960	108	1,280	145	1,600	181	1,580	179	2,100	237	1,900	215	2,700	305
6	1,450	164	1,700	192	2,560	289	3,200	362	3,450	390	4,600	520	4,100	463	5,800	655
8	3,500	396	4,100	463	5,760	651	7,200	814	7,600	859	10,100	1,141	9,800	1,107	14,000	1,582
10	7,100	802	8,300	938	9,600	1,085	12,000	1,356	13,500	1,526	18,000	2,034	16,800	1,898	24,000	2,712
12	10,100	1,141	11,800	1,333	11,200	1,266	14,000	1,582	19,500	2,204	26,000	2,938	21,000	2,373	30,000	3,390
14	11,900	1,345	14,000	1,582	19,200	2,170	24,000	2,712	24,800	2,802	33,000	3,729	30,000	3,390	43,000	4,859
16	14,000	1,582	16,500	1,865	28,400	3,209	35,500	4,012	34,500	3,899	46,000	5,198	45,500	5,142	65,000	7,345
18	16,200	1,831	19,000	2,147	34,400	3,887	43,000	4,859	49,000	5,537	65,000	7,345	64,400	7,277	92,000	10,396
20	21,300	2,407	25,000	2,825	45,600	5,153	57,000	6,441	66,000	7,458	88,000	9,944	87,000	9,831	124,000	14,012
24	33,000	3,729	39,000	4,407	71,000	8,023	89,000	10,057	94,000	10,622	125,000	14,125	123,000	13,899	175,000	19,775
30	71,000	8,023	83,000	9,379	137,000	15,481	172,000	19,436	180,000	20,340	240,000	27,120	217,000	24,521	310,000	35,030

Estimating Dynamic Torque

Dynamic torque can be estimated using the following empirical equations:

Liquid Flow:

Imperial..... T_d (Lb-inches) = $C_t D^3 \Delta p$
Metric..... T_d (N-m) = $.0001 C_t D^3 \Delta p$

Gas Flow:

Imperial..... T_d (Lb-inches) = $C_t D^3 Y \Delta p$
Metric..... T_d (N-m) = $.0001 C_t D^3 Y \Delta p$

Dynamic Torque - Terminology

C_t - dynamic torque coefficient (see graphs and tables on Pg. 12 for values of C_t .) Positive value of C_t means that the dynamic torque acts to close the valve and a negative value of C_t to open the valve.

D - nominal valve size (inch or mm)

F_k - ratio of specific heat factor (dimensionless)

$F_k = k/1.40$ or $F_k = 1$ for air

k - ratio of specific heat (dimensionless)

Δp - effective pressure drop across the valve (psi or bar)

p_1 - valve inlet pressure (psia or bar abs.)

T_d - dynamic torque (Lb-inches or N-m)

$x - x = \Delta p/p_1$

Y - gas expansion factor (dimensionless)

$Y = 1 - x / (3 F_k x_t)$

x_t - gas critical pressure ratio (dimensionless)

Values of x_t change with disc position and are identical for seat retainer upstream and downstream.

° Open	x_t	° Open	x_t
10°	0.46	55°	0.31
15°	0.46	60°	0.28
20°	0.46	65°	0.27
25°	0.45	70°	0.25
30°	0.44	75°	0.24
35°	0.42	80°	0.22
40°	0.39	85°	0.21
45°	0.35	90°	0.19
50°	0.33		

