

Table 1. Typical Values of Valve Style Modifier F_d (Full Size Trim)

VALVE TYPE	FLOW DIRECTION	RELATIVE FLOW COEFFICIENT Φ					
		0.10	0.20	0.40	0.60	0.80	1.00
Globe, parabolic plug	To open	0.10	0.15	0.25	0.31	0.39	0.46
	To close	0.20	0.30	0.50	0.60	0.80	1.00
Globe, 3 V-port plug	Either ⁽¹⁾	0.29	0.40	0.42	0.43	0.45	0.48
Globe, 4 V-port plug	Either ⁽¹⁾	0.25	0.35	0.36	0.37	0.39	0.41
Globe, 6 V-port plug	Either ⁽¹⁾	0.17	0.23	0.24	0.26	0.28	0.30
Globe, 60 equal diameter hole drilled cage	Either ⁽¹⁾	0.40	0.29	0.20	0.17	0.14	0.13
Globe, 120 equal diameter hole drilled cage	Either ⁽¹⁾	0.29	0.20	0.14	0.12	0.10	0.09
Butterfly, swing-through (centered shaft), to 70°	Either	0.26	0.34	0.42	0.50	0.53	0.57
Butterfly, fluted vane, to 70°	Either	0.08	0.10	0.15	0.20	0.24	0.30
	60° flat disk	Either					0.50
Eccentric rotary plug	Either	0.12	0.18	0.22	0.30	0.36	0.42
Segmented ball	Either	0.60	0.65	0.70	0.75	0.78	0.80

Note: These values are typical only; actual values shall be stated by manufacturer.
1. Limited P1 - P2 in flow to close direction.



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461 - Flow Down																
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
2 x 3	12.7	1/2 ⁽²⁾	19	3/4	C _V	0.597	0.982	1.38	1.87	2.54	3.45	4.91	7.22	9.95	11.7	0.49
					K _V	0.516	0.849	1.19	1.62	2.20	2.98	4.25	6.25	8.61	10.1	---
					X _T	0.301	0.205	0.186	0.198	0.206	0.212	0.196	0.159	0.160	0.187	---
	19.1	3/4 ⁽²⁾	19	3/4	C _V	0.991	1.55	2.21	3.10	4.17	5.99	9.09	13.3	19.6	25.4	0.41
					K _V	0.857	1.34	1.91	2.68	3.61	5.18	7.86	11.5	17.0	22.0	---
					X _T	0.188	0.147	0.144	0.170	0.178	0.188	0.175	0.174	0.154	0.154	---
	25.4	1 ⁽²⁾	19	3/4	C _V	1.69	2.30	2.94	3.52	4.97	7.58	12.2	18.6	29.8	41.1	0.42
					K _V	1.46	1.99	2.54	3.05	4.30	6.56	10.6	16.1	25.8	35.6	---
					X _T	0.176	0.182	0.234	0.348	0.370	0.341	0.280	0.249	0.160	0.156	---
	31.8	1-1/4 ⁽²⁾	29	1-1/8	C _V	2.58	3.93	5.69	8.16	11.9	17.8	26.6	39.6	56.2	74.9	0.42
					K _V	2.23	3.40	4.92	7.06	10.3	15.4	23.0	34.3	48.6	64.8	---
					X _T	0.154	0.138	0.138	0.137	0.137	0.136	0.137	0.137	0.137	0.137	---
	38.1	1-1/2 ⁽³⁾	29	1-1/8	C _V	5.20	9.00	15.2	24.3	35.2	48.8	64.5	81.2	94.1	100	0.50
					K _V	4.50	7.79	13.1	21.0	30.4	42.2	55.8	70.2	81.4	86.5	---
					X _T	0.124	0.156	0.168	0.155	0.153	0.151	0.150	0.158	0.176	0.189	---
	41.3	1-5/8 ⁽³⁾	29	1-1/8	C _V	4.66	10.6	17.4	26.6	41.2	58.3	75.0	89.6	99.4	106	0.57
					K _V	4.03	9.17	15.1	23.0	35.6	50.4	64.9	77.5	86.0	91.7	---
					X _T	0.234	0.225	0.220	0.217	0.178	0.158	0.163	0.178	0.209	0.233	---
3 x 4	25.4	1 ⁽²⁾	19	3/4	C _V	1.58	2.40	3.25	4.02	5.92	9.04	14.2	22.5	35.7	45.2	0.42
					K _V	1.37	2.08	2.81	3.48	5.12	7.82	12.3	19.5	30.9	39.1	---
					X _T	0.324	0.315	0.372	0.503	0.434	0.357	0.290	0.218	0.150	0.135	---
	31.8	1-1/4 ⁽²⁾	29	1-1/8	C _V	2.38	3.97	6.03	8.02	9.05	12.7	20.0	36.9	61.9	79.4	0.42
					K _V	2.06	3.43	5.22	6.94	7.83	11.0	17.3	31.9	53.5	68.7	---
					X _T	0.274	0.198	0.182	0.213	0.324	0.333	0.291	0.173	0.125	0.124	---
	38.1	1-1/2 ⁽³⁾	29	1-1/8	C _V	6.34	12.3	19.8	28.3	40.0	57.4	73.8	86.2	96.7	104	0.47
					K _V	5.48	10.6	17.1	24.5	34.6	49.7	63.8	74.6	83.6	90.0	---
					X _T	0.192	0.155	0.146	0.149	0.140	0.117	0.117	0.129	0.146	0.160	---
	44.5	1-3/4 ⁽³⁾	29	1-1/8	C _V	4.59	9.97	18.9	31.4	42.0	57.2	75.6	91.8	105	112	0.55
					K _V	3.97	8.62	16.3	27.2	36.3	49.5	65.4	79.4	90.8	96.9	---
					X _T	0.244	0.244	0.193	0.171	0.184	0.179	0.174	0.192	0.218	0.243	---
	50.8	2 ⁽³⁾	29	1-1/8	C _V	9.72	23.0	37.0	53.1	70.1	85.0	97.4	109	117	123	0.62
					K _V	8.41	19.9	32.0	45.9	60.6	73.5	84.3	94.3	101	106	---
					X _T	0.246	0.150	0.148	0.151	0.160	0.179	0.218	0.259	0.295	0.314	---
	57.2	2-1/4 ⁽³⁾	29	1-1/8	C _V	7.08	16.0	32.9	46.4	59.4	79.2	94.2	106	116	122	0.70
					K _V	6.12	13.8	28.5	40.1	51.4	68.5	81.5	91.7	100	106	---
					X _T	0.292	0.247	0.180	0.212	0.251	0.258	0.305	0.353	0.380	0.410	---



Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
4 x 6	50.8	2 ⁽³⁾	29	1-1/8	C _V	7.26	10.5	20.8	28.5	42.2	64.2	97.4	129	159	191	0.44
					K _V	6.28	9.08	18.0	24.7	36.5	55.5	84.3	112	138	165	---
					X _T	0.168	0.343	0.254	0.299	0.284	0.226	0.171	0.159	0.155	0.137	---
	57.2	2-1/4 ⁽³⁾	29	1-1/8	C _V	6.51	10.9	19.3	30.8	45.6	75.5	112	149	189	217	0.49
					K _V	5.63	9.43	16.7	26.6	39.4	65.3	96.9	129	163	188	---
					X _T	0.175	0.372	0.438	0.394	0.398	0.253	0.199	0.183	0.172	0.162	---
	63.5	2-1/2 ⁽³⁾	38	1-1/2	C _V	17.1	31.4	45.7	57.2	93.6	131	184	246	286	311	0.44
					K _V	14.8	27.2	39.5	49.5	81.0	113	159	213	247	269	---
					X _T	0.168	0.173	0.207	0.280	0.218	0.194	0.164	0.141	0.141	0.139	---
	69.9	2-3/4 ⁽³⁾	38	1-1/2	C _V	21.5	41.2	63.1	74.4	110	163	223	270	304	332	0.49
					K _V	18.6	35.6	54.6	64.4	95.2	141	193	234	263	287	---
					X _T	0.153	0.142	0.147	0.224	0.198	0.163	0.131	0.151	0.166	0.168	---
76.2	3 ⁽³⁾	38	1-1/2	C _V	14.8	36.4	55.3	87.4	125	204	248	273	305	331	0.56	
				K _V	12.8	31.5	47.8	75.6	108	176	215	236	264	286	---	
				X _T	0.264	0.210	0.256	0.228	0.227	0.149	0.164	0.201	0.214	0.226	---	
6 x 8	76.2	3 ⁽³⁾	38	1-1/2	C _V	16.9	34.5	56.5	84.6	120	162	213	273	322	342	0.42
					K _V	14.6	29.8	48.9	73.2	104	140	184	236	279	296	---
					X _T	0.244	0.244	0.241	0.241	0.238	0.235	0.229	0.216	0.199	0.209	---
	88.9	3-1/2 ⁽³⁾	51	2	C _V	27.5	43.9	55.4	84.8	128	209	329	395	429	475	0.52
					K _V	23.8	38.0	47.9	73.4	111	181	285	342	371	411	---
					X _T	0.179	0.284	0.464	0.448	0.388	0.263	0.168	0.183	0.211	0.202	---
	101.6	4 ⁽³⁾	51	2	C _V	29.7	61.7	100	151	214	289	372	474	568	605	0.53
					K _V	25.7	53.4	86.5	131	185	250	322	410	491	523	---
					X _T	0.244	0.244	0.242	0.240	0.236	0.234	0.231	0.220	0.198	0.207	---
	114.3	4-1/2 ⁽³⁾	51	2	C _V	38.7	79.2	127	193	272	378	498	620	722	764	0.57
					K _V	33.5	68.5	110	167	235	327	431	536	625	661	---
					X _T	0.244	0.243	0.242	0.240	0.237	0.234	0.229	0.215	0.199	0.207	---

1. At 100% travel.
2. Equal percentage characteristic (Micro Form).
3. Modified parabolic characteristic.

CL150										
Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _v	14	95	316	695	1200	1900	2840	3980	5120	6320
K _v		82.2	273	601	1038	1643	2457	3443	4429	5467
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.77	0.79	0.81	0.81	0.78	0.73	0.68	0.60	0.52
X _T		0.50	0.53	0.55	0.55	0.51	0.45	0.39	0.30	0.23
C _v	16	129	430	946	1640	2580	3870	5420	6970	8600
K _v		112	372	818	1419	2232	3348	4688	6029	7439
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.77	0.79	0.81	0.81	0.78	0.73	0.68	0.60	0.52
X _T		0.50	0.53	0.55	0.51	0.51	0.45	0.39	0.30	0.23
C _v	18	166	553	1220	2100	3320	4970	6960	8950	11,050
K _v		144	478	1055	1817	2872	4299	6020	7742	9558
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.77	0.79	0.81	0.81	0.78	0.73	0.68	0.60	0.52
X _T		0.50	0.53	0.55	0.55	0.51	0.45	0.39	0.30	0.23
C _v	20	208	692	1520	2630	4160	6230	8730	11,220	13,850
K _v		180	599	1315	2275	3598	5389	7551	9705	11,980
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.77	0.79	0.81	0.81	0.78	0.73	0.68	0.60	0.52
X _T		0.50	0.53	0.55	0.55	0.51	0.45	0.39	0.30	0.23
C _v	24	322	1080	2370	4080	6450	9670	13,540	17,410	21,500
K _v		277	934	2050	3529	5579	8365	11,712	15,060	18,598
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.77	0.79	0.81	0.81	0.78	0.73	0.68	0.60	0.52
X _T		0.50	0.53	0.55	0.55	0.51	0.45	0.39	0.30	0.23



CL300										
Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _v	14	136	341	704	1200	1860	2680	3450	4050	4550
K _v		118	295	609	1038	1609	2318	2984	3503	3936
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	16	169	422	873	1490	2310	3320	4280	5010	5630
K _v		146	365	755	1289	1998	2872	3702	4334	4870
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	18	247	617	1280	2180	3370	4860	6260	7330	8230
K _v		214	534	1107	1886	2915	4204	5415	6340	7119
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	20	286	714	1480	2520	3910	5620	7240	8480	9530
K _v		247	618	1280	2180	3382	4861	6263	7335	8243
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	24	375	938	1940	3320	5130	7380	9510	11,140	12,510
K _v		324	811	1678	2872	4437	6384	8226	9636	10,821
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23

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Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _V	2 ⁽¹⁾	2.25	11.4	19.9	32.6	48.1	58.9	64.0	69.8	80.2
K _V		1.95	9.86	17.2	28.2	41.6	50.9	55.4	60.4	69.4
F _L		---	0.78	0.77	0.76	0.74	0.76	0.77	0.76	0.71
X _T		0.295	0.289	0.315	0.314	0.357	0.497	0.540	0.518	0.442
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
C _V	3	3.21	20.8	40.5	66.7	90.1	115	150	189	237
K _V		2.78	18.0	35.0	57.7	77.9	99.5	130	163	205
F _L		0.78	0.89	0.80	0.75	0.68	0.71	0.65	0.61	0.58
X _T		0.855	0.602	0.461	0.404	0.372	0.358	0.306	0.259	0.232
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
C _V	4	18.2	52.6	96.7	154	199	270	351	447	499
K _V		15.7	45.5	83.6	133	172	234	304	387	432
F _L		0.80	0.85	0.79	0.73	0.74	0.69	0.64	0.61	0.53
X _T		0.474	0.474	0.500	0.416	0.407	0.326	0.271	0.220	0.196
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
C _V	6	34.7	109	198	321	452	664	882	1180	1250
K _V		30.0	94.3	171	278	391	574	763	1020	1080
F _L		0.85	0.83	0.75	0.71	0.71	0.67	0.65	0.61	0.55
X _T		0.389	0.552	0.528	0.438	0.424	0.331	0.278	0.206	0.203
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
C _V	8	60.5	190	345	560	788	1160	1540	2060	2180
K _V		52.3	164	298	484	682	1000	1330	1780	1890
F _L		0.81	0.81	0.79	0.82	0.71	0.66	0.60	0.55	0.48
X _T		0.368	0.520	0.498	0.412	0.399	0.310	0.261	0.193	0.191
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
C _V	10	83.3	259	463	727	1090	1670	2400	3340	3600
K _V		72.1	224	400	629	943	1440	2080	2890	3110
F _L		0.81	0.81	0.79	0.82	0.71	0.66	0.60	0.55	0.48
X _T		0.626	0.658	0.646	0.622	0.538	0.381	0.285	0.201	0.167
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
C _V	12	125	388	694	1090	1640	2500	3600	5010	5400
K _V		108	336	600	943	1420	2160	3110	4330	4670
F _L		0.83	0.78	0.78	0.78	0.75	0.66	0.61	0.52	0.47
X _T		0.528	0.556	0.547	0.528	0.451	0.324	0.241	0.170	0.141
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70

1. NPS 2 is multirated to CL150, 300 and 600.



Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _V	2 ⁽¹⁾	2.11	9.96	20.7	34.0	50.5	68.4	81.0	81.0	81.0
K _V		1.83	8.62	17.9	29.4	43.7	59.2	70.0	70.0	70.0
F _L		---	0.88	0.84	0.77	0.71	0.69	0.67	0.71	0.69
X _T		0.399	0.507	0.354	0.334	0.340	0.342	0.359	0.401	0.401
F _d		0.090	0.17	0.26	.034	0.42	0.49	0.57	0.64	0.70
C _V	3	1.79	23.0	37.0	58.8	91.9	139	192	270	259
K _V		1.55	19.9	32.0	50.9	79.5	120	166	234	224
F _L		0.70	0.81	0.73	0.76	0.75	0.66	0.60	0.50	0.54
X _T		0.449	0.455	0.395	0.417	0.423	0.313	0.256	0.188	0.203
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
C _V	4	17.2	50.2	87.8	146	206	285	365	465	521
K _V		14.9	43.4	75.9	126	178	247	316	402	451
F _L		0.72	0.84	0.79	0.75	0.71	0.63	0.58	0.53	0.55
X _T		0.445	0.471	0.481	0.417	0.370	0.276	0.225	0.191	0.196
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
C _V	6	30.6	100	173	285	424	640	893	1180	1290
K _V		26.5	86.5	150	247	367	554	772	1020	1120
F _L		0.83	0.83	0.80	0.78	0.76	0.69	0.59	0.52	0.54
X _T		0.444	0.608	0.574	0.485	0.441	0.316	0.227	0.176	0.182
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
C _V	8	53.6	175	303	499	743	1120	1560	2070	2260
K _V		46.4	151	262	432	643	969	1350	1790	1950
F _L		0.79	0.83	0.82	0.79	0.73	0.66	0.58	0.51	0.48
X _T		0.413	0.567	0.534	0.449	0.409	0.295	0.213	0.164	0.170
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
C _V	10	84.4	232	423	737	1180	1730	2560	3250	3710
K _V		73.0	200	366	638	1020	1500	2210	2810	3210
F _L		0.79	0.83	0.82	0.79	0.73	0.66	0.58	0.51	0.48
X _T		0.542	0.745	0.673	0.590	0.489	0.380	0.245	0.189	0.156
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
C _V	12	126	347	631	1100	1760	2590	3820	4850	5540
K _V		109	300	546	95.2	1520	2240	3300	4200	4790
F _L		0.78	0.87	0.85	0.80	0.75	0.69	0.55	0.51	0.47
X _T		0.491	0.671	0.610	0.535	0.443	0.343	0.222	0.171	0.141
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70

1. NPS 2 is multirated to CL150, 300 and 600.

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Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _V	2 ⁽¹⁾	2.25	11.4	19.9	32.6	48.1	58.9	64.0	69.8	80.2
K _V		1.95	9.86	17.2	28.2	41.6	50.9	55.4	60.4	69.4
F _L		---	0.78	0.77	0.75	0.74	0.75	0.77	0.75	0.71
X _T		0.299	0.292	0.319	0.318	0.362	0.502	0.546	0.525	0.446
F _d		0.090	0.17	0.26	.034	0.42	0.49	0.57	0.64	0.70
C _V	3	3.21	20.8	40.5	66.7	90.1	115	150	189	237
K _V		2.78	18.0	35.0	57.7	77.9	99.5	130	163	205
F _L		0.78	0.88	0.78	0.77	0.79	0.80	0.72	0.69	0.64
X _T		0.370	0.542	0.433	0.411	0.464	0.469	0.397	0.346	0.286
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
C _V	4	12.9	37.4	72.9	124	174	236	318	420	488
K _V		11.2	32.4	63.1	107	151	204	275	363	422
F _L		0.81	0.86	0.79	0.73	0.72	0.71	0.65	0.60	0.54
X _T		0.455	0.499	0.416	0.395	0.410	0.363	0.292	0.235	0.210
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
C _V	6	39.6	120	215	340	440	598	777	1050	1100
K _V		34.3	104	186	294	381	604	672	908	952
F _L		0.80	0.77	0.71	0.68	0.71	0.68	0.62	0.60	0.56
X _T		0.420	0.433	0.434	0.369	0.360	0.299	0.282	0.214	0.205
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
C _V	8	73.9	224	401	634	821	1120	1450	1960	2070
K _V		63.9	194	347	548	710	969	1250	1700	1790
F _L		0.80	0.79	0.77	0.75	0.71	0.66	0.61	0.55	0.49
X _T		0.367	0.380	0.381	0.322	0.314	0.260	0.248	0.187	0.177
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
C _V	10	64.6	248	453	706	1070	1630	2340	3280	3480
K _V		55.9	215	392	611	926	1410	2020	2840	3010
F _L		0.80	0.79	0.77	0.75	0.71	0.66	0.61	0.55	0.49
X _T		0.464	0.565	0.562	0.544	0.455	0.335	0.255	0.179	0.159
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
C _V	12	95.2	365	668	1040	1580	2410	3450	4840	5130
K _V		82.3	316	578	900	1370	2080	2980	4190	4440
F _L		0.86	0.80	0.78	0.79	0.74	0.67	0.59	0.53	0.48
X _T		0.422	0.514	0.506	0.492	0.412	0.301	0.231	0.162	0.144
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70

1. NPS 2 is multirated to CL150, 300 and 600.



Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _V	2 ⁽¹⁾	2.11	9.96	20.7	34.0	50.5	68.4	81.0	81.0	81.0
K _V		1.83	8.62	17.9	29.4	43.7	59.2	70.0	70.0	70.0
F _L		---	0.88	0.84	0.77	0.71	0.69	0.67	0.71	0.69
X _T		0.399	0.507	0.354	0.334	0.340	0.342	0.359	0.401	0.401
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
C _V	3	1.79	23.0	37.0	58.8	91.9	139	192	270	259
K _V		1.55	19.9	32.0	50.9	79.5	120	166	234	224
F _L		0.71	0.75	0.77	0.81	0.79	0.71	0.62	0.49	0.59
X _T		0.370	0.542	0.433	0.411	0.464	0.469	0.397	0.346	0.286
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
C _V	4	12.7	35.2	61.3	105	163	242	361	463	482
K _V		11.0	30.4	53.0	90.8	141	209	312	400	417
F _L		0.74	0.80	0.82	0.80	0.77	0.69	0.57	0.51	0.55
X _T		0.455	0.499	0.416	0.395	0.410	0.363	0.292	0.235	0.210
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
C _V	6	38.8	106	183	294	436	605	779	976	1100
K _V		33.6	91.7	158	254	377	523	674	844	952
F _L		0.78	0.81	0.79	0.80	0.74	0.68	0.59	0.58	0.57
X _T		0.420	0.433	0.434	0.369	0.360	0.299	0.282	0.214	0.205
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
C _V	8	73.1	200	345	554	821	1140	1470	1840	2090
K _V		63.2	173	298	479	710	986	1270	1590	1810
F _L		0.80	0.83	0.83	0.80	0.74	0.66	0.58	0.50	0.48
X _T		0.405	0.454	0.542	0.451	0.346	0.269	0.239	0.206	0.173
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
C _V	10	66.2	217	399	708	1110	1690	2400	3100	3560
K _V		57.3	188	345	612	960	1460	2080	2680	3080
F _L		0.80	0.83	0.83	0.80	0.74	0.66	0.58	0.50	0.48
X _T		0.505	0.714	0.672	0.557	0.465	0.339	0.243	0.187	0.155
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
C _V	12	100	328	603	1070	1680	2550	3620	4690	5380
K _V		86.5	284	522	926	1450	2210	3130	4060	4650
F _L		0.80	0.86	0.87	0.80	0.75	0.66	0.55	0.50	0.48
X _T		0.451	0.636	0.595	0.494	0.414	0.303	0.217	0.167	0.138
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70

1. NPS 2 is multirated to CL150, 300 and 600.

PN 10 through PN 40, CL150 and CL300											Approximately Linear Characteristic
Valve Size		Coefficients	Valve Rotation, Degrees								
DN	NPS		10	20	30	40	50	60	70	80	90
50	2	C _v	2.28	7.7	21.5	35.5	51	58.9	62.4	78.3	83.7
		K _v	1.97	6.7	18.6	30.7	44.1	50.9	53.9	67.7	72.3
		F _d	0.16	0.21	0.21	0.25	0.29	0.32	0.36	0.37	0.39
		F _L	---	0.91	0.84	0.76	0.73	0.78	0.80	0.68	0.66
		X _T	---	0.76	0.53	0.39	0.39	0.52	0.54	0.39	0.35
80	3	C _v	3.50	22.1	46.3	73.1	120	147	181	239	275
		K _v	3.02	19.1	40.0	63.2	103.7	127	156	206	238
		F _d	0.10	0.17	0.23	0.27	0.32	0.33	0.41	0.47	0.51
		F _L	0.77	0.81	0.79	0.79	0.69	0.70	0.67	0.62	0.58
		X _T	0.46	0.60	0.54	0.55	0.40	0.37	0.35	0.29	0.23
100	4	C _v	9.40	48.8	90.6	137	171	224	297	397	484
		K _v	8.12	42.2	78.3	118	148	194	257	343	418
		F _d	0.10	0.18	0.23	0.28	0.33	0.38	0.43	0.50	0.53
		F _L	0.9	0.83	0.80	0.77	0.77	0.74	0.68	0.62	0.58
		X _T	0.48	0.47	0.48	0.48	0.46	0.39	0.32	0.26	0.22
150	6	C _v	26.2	99.1	181	283	401	543	717	951	1000
		K _v	22.6	85.6	156	245	346	469	619	822	864
		F _d	0.10	0.18	0.26	0.31	0.36	0.40	0.43	0.47	0.49
		F _L	0.82	0.79	0.77	0.74	0.72	0.68	0.66	0.61	0.58
		X _T	0.44	0.48	0.52	0.48	0.42	0.36	0.32	0.26	0.22
200	8	C _v	44.6	138	285	457	698	994	1390	2190	2550
		K _v	38.5	119	246	395	603	859	1201	1892	2203
		F _d	0.13	0.20	0.25	0.31	0.37	0.43	0.47	0.51	0.55
		F _L	0.86	0.94	0.82	0.71	0.68	0.67	0.61	0.54	0.47
		X _T	0.49	0.43	0.54	0.52	0.45	0.36	0.31	0.18	0.14
250	10	C _v	72.0	225	423	729	1150	1720	2440	3370	3720
		K _v	62.2	194	365	630	994	1486	2108	2912	3214
		F _d	0.12	0.18	0.23	0.26	0.36	0.41	0.45	0.57	0.54
		F _L	0.89	0.78	0.82	0.75	0.70	0.66	0.60	0.55	0.50
		X _T	0.53	0.42	0.57	0.49	0.41	0.32	0.23	0.18	0.16
300	12	C _v	128	401	733	1220	1800	2490	3380	4470	5080
		K _v	111	346	633	1054	1555	2151	2920	3862	4389
		F _d	0.13	0.19	0.25	0.31	0.38	0.44	0.47	0.50	0.53
		F _L	0.83	0.73	0.74	0.70	0.69	0.66	0.61	0.51	0.50
		X _T	0.41	0.34	0.46	0.42	0.36	0.30	0.24	0.18	0.16



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**8590
CL600**

Modified Equal Percentage Characterized Disk
Reverse Flow

8590		Modified Equal Percentage Characteristic								
Valve Size	Coefficients	Valve Rotation, Degrees								
NPS		10	20	30	40	50	60	70	80	90
3	Cv	5	18	37	63	95	135	157	164	167
	Kv	4	16	32	54	82	117	136	142	144
	Fd	0.09	0.15	0.22	0.27	0.31	0.35	0.38	0.41	0.47
	FL	0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
	XT	0.05	0.52	0.50	0.43	0.36	0.31	0.29	0.29	0.29
4	Cv	9	26	57	100	156	225	267	293	302
	Kv	8	22	49	86	135	194	231	253	261
	Fd	0.08	0.14	0.21	0.29	0.34	0.37	0.37	0.41	0.49
	FL	0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
	XT	0.03	0.49	0.48	0.41	0.35	0.30	0.28	0.24	0.24
6	Cv	19	85	160	242	331	428	482	495	507
	Kv	16	73	138	209	286	370	416	428	438
	Fd	0.10	0.17	0.23	0.29	0.32	0.36	0.39	0.43	0.47
	FL	0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
	XT	0.16	0.41	0.40	0.37	0.34	0.31	0.30	0.31	0.33
8	Cv	82	129	226	372	567	813	1049	1252	1435
	Kv	71	111	195	321	490	702	906	1082	1240
	Fd	0.09	0.17	0.24	0.29	0.34	0.36	0.39	0.47	0.50
	FL	0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
	XT	0.10	0.43	0.48	0.43	0.36	0.31	0.27	0.24	0.22
10	Cv	95	232	415	646	922	1245	1545	1806	2041
	Kv	82	200	359	558	797	1076	1335	1560	1763
	Fd	0.10	0.16	0.23	0.29	0.31	0.34	0.38	0.44	0.48
	FL	0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
	XT	0.05	0.49	0.51	0.43	0.34	0.28	0.24	0.24	0.24
12	Cv	177	368	641	995	1431	1950	2462	2922	3354
	Kv	153	318	554	860	1236	1685	2127	2525	2898
	Fd	0.09	0.17	0.25	0.30	0.34	0.38	0.42	0.48	0.53
	FL	0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
	XT	0.05	0.47	0.52	0.45	0.37	0.30	0.25	0.23	0.22
14	Cv	197	396	693	1090	1585	2179	2786	3355	3912
	Kv	170	342	599	942	1369	1883	2407	2899	3380
	Fd	0.09	0.17	0.24	0.29	0.34	0.37	0.43	0.48	0.54
	FL	0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
	XT	0.07	0.45	0.50	0.44	0.37	0.32	0.27	0.24	0.22
16	Cv	342	680	1118	1658	2300	3043	3774	4422	5022
	Kv	295	588	966	1433	1987	2629	3261	3821	4339
	Fd	0.11	0.19	0.25	0.30	0.35	0.39	0.43	0.49	0.54
	FL	0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
	XT	0.10	0.41	0.45	0.41	0.35	0.29	0.26	0.24	0.24
18	Cv	365	720	1246	1943	2812	3853	4881	5819	6714
	Kv	315	622	1077	1679	2430	3329	4217	5028	5801
	Fd	0.09	0.17	0.24	0.29	0.33	0.37	0.41	0.45	0.51
	FL	0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
	XT	0.07	0.40	0.45	0.40	0.34	0.29	0.25	0.22	0.21
20	Cv	629	1154	1826	2646	3614	4730	5811	6754	7612
	Kv	543	997	1578	2286	3122	4087	5021	5835	6577
	Fd	0.12	0.19	0.25	0.29	0.34	0.37	0.41	0.46	0.52
	FL	0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
	XT	0.11	0.38	0.43	0.39	0.33	0.28	0.24	0.23	0.22
24	Cv	823	1491	2549	3998	5839	8070	10127	11930	13565
	Kv	711	1288	2202	3454	5045	6972	8750	10308	11720
	Fd	0.09	0.17	0.23	0.28	0.33	0.37	0.41	0.45	0.51
	FL	0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
	XT	0.06	0.36	0.39	0.33	0.27	0.22	0.19	0.18	0.18



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Conventional Disk		Approximately Equal Percentage Characteristic									
		Disk Angle of Opening, Degrees									
Valve Size, NPS	Coefficients	0	10	20	30	40	50	60	70	80	90
2	C _V	0	0.2	1.8	5.7	12.7	24.0	40.1	71.4	86.7	91.2
	K _V	0	0.17	1.56	4.93	11.0	20.8	34.7	61.8	75.0	78.9
	F _L	0	.78	.80	.82	.84	.80	.74	.67	.59	.55
	X _T	0	.490	.490	.563	.563	.494	.413	.255	.189	.185
3	C _V	0	0.5	5.1	16.1	35.8	67.6	112	200	243	256
	K _V	0	0.43	4.41	13.9	31.0	58.5	96.9	173	210	221
	F _L	0	.78	.80	.82	.84	.80	.74	.67	.59	.55
	X _T	0	.490	.490	.563	.563	.494	.413	.255	.189	.185
4	C _V	0	1.0	10.3	32.6	72.5	136	227	405	492	518
	K _V	0	0.87	8.91	28.2	62.7	118	196	350	426	448
	F _L	0	.78	.80	.82	.84	.80	.74	.67	.59	.55
	X _T	0	.490	.490	.563	.563	.494	.413	.255	.189	.185
6	C _V	0	22.7	55.9	131	244	454	769	1120	1610	1750
	K _V	0	19.6	48.4	113	211	393	665	969	1390	1510
	F _L	0	.78	.80	.82	.84	.80	.74	.67	.59	.55
	X _T	0	.391	.394	.426	.436	.449	.375	.270	.139	.128
8	C _V	0	36.6	90.2	211	394	733	1240	1800	2500	2820
	K _V	0	31.7	78.0	183	341	634	1070	1560	2160	2440
	F _L	0	.78	.80	.82	.84	.80	.74	.67	.59	.55
	X _T	0	.391	.394	.426	.436	.449	.375	.270	.139	.128
10	C _V	0	60.2	148	347	648	1200	2040	2960	4260	4630
	K _V	0	52.1	128	300	561	1040	1760	2560	3680	4000
	F _L	0	.78	.80	.82	.84	.80	.74	.67	.59	.55
	X _T	0	.391	.394	.426	.436	.449	.375	.270	.139	.128
12	C _V	0	91.2	224	526	982	1820	3090	4490	6460	7020
	K _V	0	78.9	194	455	849	1570	2670	3880	5590	6070
	F _L	0	.78	.80	.82	.84	.80	.74	.67	.59	.55
	X _T	0	.391	.394	.426	.436	.449	.375	.270	.139	.128



Valve Size, NPS		Coefficients	Disk Angle of Opening, Degrees									Approximately Equal Percentage Characteristic
			0	10	20	30	40	50	60	70	80	90
2	C _V	0	1.81	4.78	8.37	14.3	24.6	39.5	61.7	80	91	
	K _V	0	1.57	4.13	7.24	12.4	21.3	34.2	53.4	69.2	78.7	
	F _L	0	.84	.84	.84	.84	.82	.78	.71	.67	.66	
	X _T	0	.466	.559	.563	.601	.555	.462	.331	.294	.205	
3	C _V	0	4.0	10.6	18.7	31.8	54.8	92	138	179	203	
	K _V	0	3.46	9.17	16.2	27.5	47.4	79.6	119	155	176	
	F _L	0	.84	.84	.84	.84	.82	.78	.71	.67	.66	
	X _T	0	.466	.559	.563	.601	.555	.462	.331	.294	.205	
4	C _V	0	7.75	19.4	35	61.2	102	171	275	408	490	
	K _V	0	6.70	16.8	30.3	52.9	88.2	148	238	353	424	
	F _L	0	.84	.84	.84	.84	.82	.78	.71	.67	.66	
	X _T	0	.466	.559	.563	.601	.555	.462	.331	.294	.205	
6	C _V	0	16.8	44.3	78.9	141	232	399	638	994	1220	
	K _V	0	14.5	38.3	68.2	122	201	345	552	860	1060	
	F _L	0	.84	.84	.84	.84	.82	.78	.71	.67	.66	
	X _T	0	.466	.559	.766	.744	.620	.515	.372	.228	.160	
8	C _V	0	29.9	78.8	140	252	412	710	1130	1770	2170	
	K _V	0	25.9	68.2	121	218	356	614	977	1530	1880	
	F _L	0	.84	.84	.84	.84	.82	.78	.71	.67	.66	
	X _T	0	.466	.559	.766	.744	.620	.515	.372	.228	.160	
10	C _V	0	46	123	222	412	672	1170	1910	3160	4010	
	K _V	0	39.8	106	192	356	581	1010	1650	2730	3470	
	F _L	0	.84	.84	.84	.84	.82	.78	.71	.67	.66	
	X _T	0	.466	.559	.766	.744	.620	.515	.372	.228	.160	
12	C _V	0	79	178	322	592	967	1680	2720	4470	5640	
	K _V	0	68.3	154	279	512	836	1450	2350	3870	4880	
	F _L	0	.84	.84	.84	.84	.82	.78	.71	.67	.66	
	X _T	0	.466	.559	.766	.744	.620	.515	.372	.228	.160	

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CL150 to CL250																	
Valve Size, NPS ⁽¹⁾	Trim/Flow Char	Port Diameter		Experimentally Determined Cv at Valve Opening—Percent of Total Travel											F _L ⁽²⁾	X _T ⁽²⁾	F _d ⁽²⁾
		mm	Inch	5	10	20	30	40	50	60	70	80	90	100			
1/2	102 Linear	6.3	0.25	.00036	.0018	.0038	.0061	.008	.01	.012	.015	.016	.018	.02	0.95	0.76	0.18
		6.3	0.25	.002	.004	.008	.012	.02	.024	.031	.038	.041	.046	.05	0.95	0.76	0.18
		6.3	0.25	.0063	.011	.02	.025	.035	.045	.055	.065	.081	.09	.1	0.95	0.76	0.18
		6.3	0.25	.012	.021	.028	.045	.063	.085	.115	.147	.172	.19	.2	0.95	0.76	0.18
	577 =%	9.5	0.375	.006	.01	.02	.04	.06	.12	.2	.35	.5	.82	1	0.9	0.68	0.4
		9.5	0.375	.008	.015	.03	.05	.07	.14	.25	.41	.65	1	1.5	0.9	0.68	0.33
		9.5	0.375	.03	.09	.14	.25	.38	.55	.7	1	1.3	1.7	2.5	0.9	0.33	0.42
		20.6	0.8125	--	.17	.40	.65	.89	1.1	1.5	2.1	2.7	3.2	3.9	0.82	0.42	0.46
	548/588 =%	20.6	0.8125	.16	.24	.38	.6	.7	1	1.4	2.2	3	4.2	6	0.9	0.68	0.46
		6.3	0.25	0	.013	.02	.026	.034	.044	.056	.07	.102	.154	.2	0.98	0.5	0.28
		6.3	0.25	0	.01	.017	.027	.041	.062	.091	.136	.232	.406	.5	0.98	0.49	0.28
		6.3	0.25	.006	.01	.02	.04	.06	.12	.2	.35	.5	.82	1	0.9	0.68	0.4
		9.5	0.375	.008	.015	.03	.05	.07	.14	.25	.41	.65	1	1.5	0.9	0.68	0.33
		9.5	0.375	.015	.03	.06	.1	.2	.3	.6	.9	1.3	1.8	2.5	0.9	0.68	0.33
	677 Linear	20.6	0.8125	.195	.28	.52	.77	1.01	1.31	1.74	2.39	3.07	3.89	4	0.82	0.42	0.46
		20.6	0.8125	.16	.24	.38	.5	.7	1	1.4	2.1	2.9	4.1	6	0.9	0.68	0.46
		9.5	0.375	.004	.01	.02	.03	.04	.05	.06	.07	.08	.09	.1	0.9	0.08	0.33
		9.5	0.375	.009	.02	.04	.06	.08	.1	.12	.14	.16	.18	.2	0.9	0.08	0.33
		9.5	0.375	.03	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	0.9	0.08	0.33
		9.5	0.375	.01	.12	.23	.34	.45	.55	.64	.73	.82	.9	1	0.9	0.08	0.42
	648/688 Linear	9.5	0.375	.2	.5	.75	1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	0.9	0.08	0.42
		20.6	0.8125	--	.31	.74	1.1	1.5	1.9	2.3	2.7	3.1	3.7	5	0.9	0.68	0.46
		6.3	0.25	.03	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	0.9	0.68	0.19
		6.3	0.25	.01	.12	.23	.34	.45	.55	.64	.73	.82	.9	1	0.9	0.68	0.4
		9.5	0.375	.1	.2	.3	.5	.6	.73	.87	1.0	1.1	1.3	1.5	0.9	0.68	0.33
		9.5	0.375	.2	.5	.75	1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	0.9	0.68	0.46
	20.6	0.8125	.2	.4	.55	.7	1.0	1.3	1.6	2.1	2.6	3.3	4	0.9	0.68	0.46	
	20.6	0.8125	.52	1	1.9	2.5	3	3.5	4	4.5	5	5.5	6	0.9	0.68	0.46	

1. Max travel is 0.5 inches.
2. At 100% travel.

CL150 to CL250																	
Valve Size, NPS(1)	Trim/Flow Char	Port Diameter		Experimentally Determined Cv at Valve Opening—Percent of Total Travel											F _L (2)	X _T (2)	F _d (2)
		mm	Inch	5	10	20	30	40	50	60	70	80	90	100			
3/4	102 Linear	6.3	0.25	.00036	.0018	.0038	.0061	.008	.01	.012	.015	.016	.018	.02	0.95	0.76	0.18
		6.3	0.25	.002	.004	.008	.012	.02	.024	.031	.038	.041	.046	.05	0.95	0.76	0.18
		6.3	0.25	.0063	.011	.02	.025	.035	.045	.055	.065	.081	.09	.1	0.95	0.76	0.18
		6.3	0.25	.012	.021	.028	.045	.063	.085	.115	.147	.172	.19	.2	0.95	0.76	0.18
	577 =%	9.5	0.375	.006	.01	.02	.04	.06	.12	.2	.35	.5	.82	1	0.9	0.68	0.4
		9.5	0.375	.008	.015	.03	.05	.07	.14	.25	.41	.65	1	1.5	0.9	0.68	0.33
		9.5	0.375	.03	.09	.14	.25	.38	.55	.7	1	1.3	1.7	2.5	0.9	0.33	0.42
		20.6	0.8125	--	.17	.40	.65	.89	1.1	1.5	2.1	2.7	3.2	4	0.82	0.42	0.46
	548/ 588 =%	20.6	0.8125	.16	.24	.38	.6	.95	1.5	2.3	3.5	5.3	6.8	7.5	0.9	0.68	0.46
		6.3	0.25	0	.013	.02	.026	.034	.044	.056	.07	.102	.154	.2	0.98	0.5	0.28
		6.3	0.25	0	.01	.017	.027	.041	.062	.091	.136	.232	.406	.5	0.98	0.49	0.28
		6.3	0.25	.006	.01	.02	.04	.06	.12	.2	.35	.5	.82	1	0.9	0.68	0.4
		9.5	0.375	.008	.015	.03	.05	.07	.14	.25	.41	.65	1	1.5	0.9	0.68	0.33
		9.5	0.375	.015	.03	.06	.1	.2	.3	.6	.9	1.3	1.8	2.5	0.9	0.68	0.33
	677 Linear	20.6	0.8125	.195	.28	.52	.77	1.01	1.31	1.74	2.39	3.07	3.89	4	0.82	0.42	0.46
		20.6	0.8125	.16	.24	.38	.7	1	1.7	2.4	3.7	5.4	7	8	0.9	0.68	0.46
		9.5	0.375	.004	.01	.02	.03	.04	.05	.06	.07	.08	.09	.1	0.9	0.08	0.33
		9.5	0.375	.009	.02	.04	.06	.08	.1	.12	.14	.16	.18	.2	0.9	0.08	0.33
		9.5	0.375	.03	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	0.9	0.08	0.33
		9.5	0.375	.01	.12	.23	.34	.45	.55	.64	.73	.82	.9	1	0.9	0.08	0.42
	648/ 688 Linear	9.5	0.375	.2	.5	.75	1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	0.9	0.08	0.42
		20.6	0.8125	--	.31	.74	1.1	1.5	1.9	2.3	2.7	3.1	3.7	5	0.9	0.68	0.46
		6.3	0.25	.03	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	0.9	0.68	0.19
		6.3	0.25	.05	.1	.2	.3	.4	.5	.6	.7	.8	.9	1	0.9	0.68	0.4
		9.5	0.375	.1	.2	.3	.5	.6	.73	.87	1.0	1.1	1.3	1.5	0.9	0.68	0.46
		9.5	0.375	.2	.5	.75	1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	0.9	0.68	0.46
	20.6	0.8125	.2	.4	.55	.7	1.0	1.3	1.6	2.1	2.6	3.3	4	0.9	0.68	0.46	
	20.6	0.8125	.52	1	1.9	2.8	3.9	4.8	5.4	6.1	6.9	7.5	8	0.9	0.68	0.46	

1. Max travel is 0.5 inches.
2. At 100% travel.

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Flow Up

CL150 to CL250																	
Valve Size, NPS ⁽¹⁾	Trim/Flow Char	Port Diameter		Experimentally Determined Cv at Valve Opening—Percent of Total Travel											F _L ⁽²⁾	X _T ⁽²⁾	F _d ⁽²⁾
		mm	Inch	5	10	20	30	40	50	60	70	80	90	100			
1	102 Linear	6.3	0.25	.00036	.0018	.0038	.0061	.008	.01	.012	.015	.016	.018	.02	0.95	0.76	0.18
		6.3	0.25	.002	.004	.008	.012	.02	.024	.031	.038	.041	.046	.05	0.95	0.76	0.18
		6.3	0.25	.0063	.011	.02	.025	.035	.045	.055	.065	.081	.09	.1	0.95	0.76	0.18
		6.3	0.25	.012	.021	.028	.045	.063	.085	.115	.147	.172	.19	.2	0.95	0.76	0.18
	577 =%	9.5	0.375	.006	.01	.02	.04	.06	.12	.2	.35	.5	.82	1	0.9	0.68	0.4
		9.5	0.375	.008	.015	.03	.05	.07	.14	.25	.41	.65	1	1.5	0.9	0.68	0.33
		9.5	0.375	.03	.09	.14	.25	.38	.55	.7	1	1.3	1.7	2.5	0.9	0.33	0.42
		20.6	0.8125	.195	.28	.52	.77	1.01	1.31	1.74	2.39	3.07	3.89	4	0.82	0.42	0.46
	548/588 =%	20.6	0.8125	.16	.24	.38	.6	.95	1.5	2.5	3.7	5.3	7.5	8.5	0.9	0.68	0.46
		26.9	1.0625	.2	.3	.6	.92	1.4	2.2	3.4	5.3	8.8	12	13	0.9	0.68	0.46
		6.3	0.25	0	.013	.02	.026	.034	.044	.056	.07	.102	.154	.2	0.98	0.5	0.28
		6.3	0.25	0	.01	.017	.027	.041	.062	.091	.136	.232	.406	.5	0.98	0.49	0.28
	677 Linear	9.5	0.375	.008	.015	.03	.05	.07	.14	.25	.41	.65	1	1.5	0.9	0.68	0.33
		9.5	0.375	.015	.03	.06	.1	.2	.3	.6	.9	1.3	1.8	2.5	0.9	0.68	0.33
		20.6	0.8125	--	.10	.41	.71	.93	1.2	1.6	2.1	2.9	3.6	4	0.82	0.42	0.46
		20.6	0.8125	--	.16	.32	.57	.99	1.6	3.0	5.2	6.8	8.7	9	0.9	0.68	0.46
	648/688 Linear	26.9	1.0625	.15	.25	.44	.75	1.2	2	3.4	5.3	8	12	13	0.9	0.68	0.46
		9.5	0.375	.004	.01	.02	.03	.04	.05	.06	.07	.08	.09	.1	0.9	0.08	0.33
		9.5	0.375	.009	.02	.04	.06	.08	.1	.12	.14	.16	.18	.2	0.9	0.08	0.33
		9.5	0.375	.03	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	0.9	0.08	0.33
	648/688 Linear	9.5	0.375	.01	.12	.23	.34	.45	.55	.64	.73	.82	.9	1	0.9	0.08	0.42
		9.5	0.375	.2	.5	.75	1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	0.9	0.08	0.42
		20.6	0.8125	--	.31	.74	1.1	1.5	1.9	2.3	2.7	3.1	3.7	5	0.9	0.68	0.46
		6.3	0.25	.03	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	0.9	0.68	0.19
		6.3	0.25	.05	.1	.2	.3	.4	.5	.6	.7	.8	.9	1	0.9	0.68	0.4
		9.5	0.375	.1	.2	.3	.5	.6	.73	.87	1.0	1.1	1.3	1.5	0.9	0.68	0.46
	648/688 Linear	9.5	0.375	.2	.5	.75	1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	0.9	0.68	0.46
		20.6	0.8125	.2	.4	.55	.7	1.0	1.3	1.6	2.1	2.6	3.3	4	0.9	0.68	0.46
		20.6	0.8125	.52	1	1.9	2.8	3.9	4.8	5.5	6.3	7.2	8.1	9	0.9	0.68	0.46
		26.9	1.0625	.6	1.3	2.6	4.2	5.5	6.8	8.1	9.4	10.7	12	13	0.9	0.68	0.46

1. Max travel is 0.5 inches.
2. At 100% travel.

CL150 to CL250																		
Valve Size, NPS ⁽¹⁾	Trim/Flow Char	Port Diameter		Experimentally Determined Cv at Valve Opening—Percent of Total Travel											F _L ⁽²⁾	X _T ⁽²⁾	F _d ⁽²⁾	
		mm	Inch	5	10	20	30	40	50	60	70	80	90	100				
1-1/2	577 =%	31.8	1.25	.31	1	1.7	2.6	3.7	5	6.5	9.5	13.5	17.5	20	0.9	0.68	0.46	
		38.1	1.50	.3	.5	1.1	1.6	2.2	2.8	3.6	4.7	6.4	8.1	10	0.9	0.68	0.46	
		38.1	1.50	.5	1	1.6	2.8	4.2	6	8.8	11.2	14.2	15.8	17	0.9	0.68	0.46	
		38.1	1.50	.5	1	1.9	3	5	7.7	11	16	21	26	28	0.9	0.68	0.46	
	548/ 588 =%	31.8	1.25	.25	.5	.7	1	1.4	2	2.8	3.6	5.7	7.9	10	0.9	0.68	0.46	
		38.1	1.50	.25	.9	1.7	2.6	3.7	5	6.5	9.5	13.5	17.5	20	0.9	0.68	0.46	
		38.1	1.50	.3	.5	1.1	1.6	2.2	2.8	3.6	4.7	6.4	8.1	10	0.9	0.68	0.46	
		38.1	1.50	.4	1.1	1.7	2.7	4.1	6.1	8.9	11	14	16	17	0.9	0.68	0.46	
	677 Linear	38.1	1.50	.4	.9	1.6	2.5	3.6	4.5	5.6	6.5	7.5	8.7	10	0.9	0.68	0.46	
		38.1	1.50	.52	2.2	3.9	5.5	7	8.5	10	11.5	13.5	15.5	17	0.9	0.68	0.46	
	648/ 688 Linear	31.8	1.25	.52	2.2	3.9	5.5	8.5	10.5	12	14	16	18	20	0.9	0.68	0.46	
		38.1	1.50	.4	.9	1.6	2.5	3.6	4.5	5.6	6.5	7.5	8.7	10	0.9	0.68	0.46	
		38.1	1.50	.52	2.2	3.9	5.5	7	8.5	10	11.5	13.5	15.5	17	0.9	0.68	0.46	
		38.1	1.50	1.5	3	6	9	12	15	18	20	23	26	28	0.9	0.68	0.46	
	2	577 =%	38.1	1.50	.3	.5	1.1	1.6	2.2	2.8	3.6	4.7	6.4	8.1	10	0.9	0.68	0.46
			38.1	1.50	.5	1	1.6	2.8	4.2	6	8.8	11.2	14.2	15.8	17	0.9	0.68	0.46
38.1			1.50	.5	1	1.9	3	5	7.7	11	16	21	26	28	0.9	0.68	0.46	
50.8			2.0	.62	1.2	3.1	6.4	11	16	20	23	26	29	30	0.9	0.68	0.46	
548/ 588 =%		38.1	1.50	.3	.5	1.1	1.6	2.2	2.8	3.6	4.7	6.4	8.1	10	0.9	0.68	0.46	
		38.1	1.50	.4	1.1	1.7	2.7	4.1	6.1	8.9	11	14	16	17	0.9	0.68	0.46	
		38.1	1.50	.4	1	1.9	3	5	7.7	11	16	21	26	28	0.9	0.68	0.46	
		50.8	2.0	.62	1.2	33.1	6.4	11	16	20	23	26	29	30	0.9	0.68	0.46	
677 Linear		50.8	2.0	2	2.38	4.34	7.45	11.8	17.3	26.3	37	44.3	48.9	50	0.89	0.68	0.56	
		38.1	1.50	.4	.9	1.6	2.5	3.6	4.5	5.6	6.5	7.5	8.7	10	0.9	0.68	0.46	
		38.1	1.50	.52	2.2	3.9	5.5	7	8.5	10	11.5	13.5	15.5	17	0.9	0.68	0.46	
		50.8	2.0	1.5	3	6	9	12	14.9	17.8	19.8	23.9	26.9	30	0.9	0.68	0.46	
648/ 688 Linear		50.8	2.0	2	6	10	15	20	25	30	35	40	45	50	0.9	0.68	0.46	
		38.1	1.50	.4	.9	1.6	2.5	3.6	4.5	5.6	6.5	7.5	8.7	10	0.9	0.68	0.46	
		38.1	1.50	.52	2.2	3.9	5.5	7	8.5	10	11.5	13.5	15.5	17	0.9	0.68	0.46	
		38.1	1.50	1.5	3.0	6.0	9.0	12	15	18	20	23	26	28	0.9	0.68	0.46	
		50.8	2.0	1.5	3.0	6.0	9.0	12	14.9	17.8	19.8	23.9	26.9	30	0.9	0.68	0.46	
		50.8	2.0	3.0	6.0	10	15	20	25	30	32	40	45	50	0.9	0.68	0.56	

1. Max travel is 0.75 inches.
2. At 100% travel.

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Flow Up

CL150																	
Valve Size, NPS ⁽¹⁾	Trim/Flow Char	Port Diameter		Experimentally Determined Cv at Valve Opening—Percent of Total Travel											F _L ⁽²⁾	X _T ⁽²⁾	F _d ⁽²⁾
		mm	Inch	5	10	20	30	40	50	60	70	80	90	100			
1/2	102 Linear	6.3	0.25	.00036	.0018	.0038	.0061	.008	.01	.012	.015	.016	.018	.02	0.95	0.76	0.18
		6.3	0.25	.002	.004	.008	.012	.02	.024	.031	.038	.041	.046	.05	0.95	0.76	0.18
		6.3	0.25	.0063	.011	.02	.025	.035	.045	.055	.065	.081	.09	.1	0.95	0.76	0.18
		6.3	0.25	.012	.021	.028	.045	.063	.085	.115	.147	.172	.19	.2	0.95	0.76	0.18
	577 =%	9.5	0.375	.006	.01	.02	.04	.06	.12	.2	.35	.5	.82	1	0.9	0.40	0.46
		9.5	0.375	.008	.015	.03	.05	.07	.14	.25	.41	.65	1	1.5	0.9	0.33	0.46
		9.5	0.375	.03	.09	.14	.25	.38	.55	.7	1	1.3	1.7	2.5	0.9	0.42	0.46
		20.6	0.8125	.19	.28	.52	.77	1.0	1.3	1.7	2.3	3.0	3.8	4	0.82	0.68	0.46
	548/588 =%	20.6	0.8125	.16	.24	.38	.6	.7	1	1.4	2.2	3	4.2	6	0.9	0.68	0.46
		6.3	0.25	--	.013	.02	.026	.034	.044	.056	.07	.10	.15	.2	0.98	0.50	0.28
		6.3	0.25	--	.01	.017	.027	.041	.062	.091	.136	.23	.40	.5	0.98	0.49	0.28
		6.3	0.25	.006	.01	.02	.04	.06	.12	.2	.35	.5	.82	1	0.9	0.68	0.40
	677 Linear	9.5	0.375	.008	.015	.03	.05	.07	.14	.25	.41	.65	1	1.5	0.9	0.68	0.33
		9.5	0.375	.015	.03	.06	.1	.2	.3	.6	.9	1.3	1.8	2.5	0.9	0.68	0.42
		20.6	0.8125	.19	.28	.52	.77	1.0	1.3	1.7	2.3	3.0	3.8	4	0.82	0.42	0.46
		20.6	0.8125	--	.09	.25	.52	.94	1.5	3.2	5.0	5.9	7.3	7.7	0.91	0.65	0.46
	648/688 Linear	9.5	0.375	.004	.01	.02	.03	.04	.05	.06	.07	.08	.09	.1	0.9	0.68	0.08
		9.5	0.375	.009	.02	.04	.06	.08	.1	.12	.14	.16	.18	.2	0.9	0.68	0.12
		9.5	0.375	.03	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	0.9	0.68	0.19
		9.5	0.375	.05	.1	.2	.3	.4	.5	.6	.7	.8	.9	1	0.9	0.68	0.27
	677 Linear	9.5	0.375	.2	.5	.75	1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	0.9	0.68	0.42
		20.6	0.8125	.22	.45	.82	1.3	1.8	2.2	2.6	3.1	3.8	4.5	5	0.9	0.68	0.46
		6.3	0.25	.03	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	0.9	0.68	0.19
		6.3	0.25	.06	.12	.23	.34	.45	.55	.64	.73	.82	.9	1	0.9	0.68	0.4
	648/688 Linear	9.5	0.375	.1	.2	.3	.5	.6	.73	.87	1.0	1.1	1.3	1.5	0.9	0.68	0.33
		9.5	0.375	.2	.5	.75	1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	0.9	0.68	0.68
		20.6	0.8125	.2	.4	.55	.7	1.0	1.3	1.6	2.1	2.6	3.3	4	0.9	0.68	0.46
		20.6	0.8125	.52	1	1.9	2.5	3	3.5	4	4.5	5	5.5	6	0.9	0.68	0.46

1. Max travel is 0.5 inches.
2. At 100% travel.

CL150																	
Valve Size, NPS(1)	Trim/Flow Char	Port Diameter		Experimentally Determined Cv at Valve Opening—Percent of Total Travel											F _L (2)	X _T (2)	F _d (2)
		mm	Inch	5	10	20	30	40	50	60	70	80	90	100			
3/4	102 Linear	6.3	0.25	.00036	.0018	.0038	.0061	.008	.01	.012	.015	.016	.018	.02	0.95	0.76	0.18
		6.3	0.25	.002	.004	.008	.012	.02	.024	.031	.038	.041	.046	.05	0.95	0.76	0.18
		6.3	0.25	.0063	.011	.02	.025	.035	.045	.055	.065	.081	.09	.1	0.95	0.76	0.18
		6.3	0.25	.012	.021	.028	.045	.063	.085	.115	.147	.172	.19	.2	0.95	0.76	0.18
	577 =%	9.5	0.375	.006	.01	.02	.04	.06	.12	.2	.35	.5	.82	1	0.9	0.40	0.46
		9.5	0.375	.008	.015	.03	.05	.07	.14	.25	.41	.65	1	1.5	0.9	0.33	0.46
		9.5	0.375	.03	.09	.14	.25	.38	.55	.7	1	1.3	1.7	2.5	0.9	0.42	0.46
		20.6	0.8125	.19	.28	.52	.77	1.0	1.3	1.7	2.3	3.0	3.8	4	0.82	0.68	0.46
	548/ 588 =%	20.6	0.8125	.16	.24	.38	.6	.95	1.5	2.3	3.5	5.3	6.8	7.5	0.9	0.68	0.46
		6.3	0.25	--	.013	.02	.026	.034	.044	.056	.07	.10	.15	.2	0.98	0.50	0.28
		6.3	0.25	--	.01	.017	.027	.041	.062	.091	.13	.23	.40	.5	0.98	0.49	0.28
		.25	0.25	.006	.01	.02	.04	.06	.12	.2	.35	.5	.82	1	0.9	0.68	0.40
	677 Linear	9.5	0.375	.008	.015	.03	.05	.07	.14	.25	.41	.65	1	1.5	0.9	0.68	0.33
		9.5	0.375	.015	.03	.06	.1	.2	.3	.6	.9	1.3	1.8	2.5	0.9	0.68	0.42
		20.6	0.8125	.19	.28	.52	.77	1.0	1.3	1.7	2.3	3.0	3.8	4	0.82	0.42	0.46
		20.6	0.8125	--	.07	.22	.48	.85	1.6	3.6	5.1	6.8	8.8	10.1	0.96	0.68	0.46
	648/ 688 Linear	9.5	0.375	.004	.01	.02	.03	.04	.05	.06	.07	.08	.09	.1	0.9	0.68	0.08
		9.5	0.375	.009	.02	.04	.06	.08	.1	.12	.14	.16	.18	.2	0.9	0.68	0.12
		9.5	0.375	.03	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	0.9	0.68	0.19
		9.5	0.375	.05	.1	.2	.3	.4	.5	.6	.7	.8	.9	1	0.9	0.68	0.27
		9.5	0.375	.2	.5	.75	1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	0.9	0.68	0.42
	648/ 688 Linear	20.6	0.8125	.22	.45	.82	1.3	1.8	2.2	2.6	3.1	3.8	4.5	5	0.9	0.68	0.46
		6.3	0.25	.03	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	0.9	0.68	0.19
		6.3	0.25	.06	.12	.23	.34	.45	.55	.64	.73	.82	.9	1	0.9	0.68	0.40
		9.5	0.375	.1	.2	.3	.5	.6	.73	.87	1.0	1.1	1.3	1.5	0.9	0.68	0.33
		9.5	0.375	.2	.5	.75	1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	0.9	0.68	0.68
		20.6	0.8125	.2	.4	.55	.7	1.0	1.3	1.6	2.1	2.6	3.3	4	0.9	0.68	0.46
	20.6	0.8125	.52	1	1.9	2.8	3.9	4.8	5.4	6.1	6.9	7.5	8	0.9	0.68	0.46	

1. Max travel is 0.5 inches.
2. At 100% travel.

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Flow Up

CL150																	
Valve Size, NPS ⁽¹⁾	Trim/Flow Char	Port Diameter		Experimentally Determined Cv at Valve Opening—Percent of Total Travel											F _L ⁽²⁾	X _T ⁽²⁾	F _d ⁽²⁾
		mm	Inch	5	10	20	30	40	50	60	70	80	90	100			
1	102 Linear	6.3	0.25	.00036	.0018	.0038	.0061	.008	.01	.012	.015	.016	.018	.02	0.95	0.76	0.18
		6.3	0.25	.002	.004	.008	.012	.02	.024	.031	.038	.041	.046	.05	0.95	0.76	0.18
		6.3	0.25	.0063	.011	.02	.025	.035	.045	.055	.065	.081	.09	.1	0.95	0.76	0.18
		6.3	0.25	.012	.021	.028	.045	.063	.085	.115	.147	.172	.19	.2	0.95	0.76	0.18
	577 =%	9.5	0.375	.006	.01	.02	.04	.06	.12	.2	.35	.5	.82	1	0.9	0.40	0.46
		9.5	0.375	.008	.015	.03	.05	.07	.14	.25	.41	.65	1	1.5	0.9	0.33	0.46
		9.5	0.375	.03	.09	.14	.25	.38	.55	.7	1	1.3	1.7	2.5	0.9	0.42	0.46
		20.6	0.8125	.19	.28	.52	.77	1.0	1.3	1.7	2.3	3.0	3.8	4	0.82	0.68	0.46
	548/ 588 =%	20.6	0.8125	.16	.24	.38	.6	.95	1.5	2.5	3.7	5.3	7.5	8.5	0.9	0.68	0.46
		1.0625	1.0625	.2	.3	.6	.92	1.4	2.2	3.4	5.3	8.8	12	13	0.9	0.68	0.46
		6.3	0.25	--	.013	.02	.026	.034	.044	.056	.07	.10	.15	.2	0.98	0.50	0.28
		6.3	0.25	--	.01	.017	.027	.041	.062	.091	.13	.23	.40	.5	0.98	0.49	0.28
	677 Linear	9.5	0.375	.008	.015	.03	.05	.07	.14	.25	.41	.65	1	1.5	0.9	0.68	0.33
		9.5	0.375	.015	.03	.06	.1	.2	.3	.6	.9	1.3	1.8	2.5	0.9	0.68	0.42
		20.6	0.8125	.19	.28	.52	.77	1.0	1.3	1.7	2.3	3.0	3.8	4	0.82	0.42	0.46
		20.6	0.8125	--	.07	.22	.48	.85	1.6	3.6	5.1	6.8	8.8	10.1	0.9	0.68	0.46
	648/ 688 Linear	26.9	1.0625	--	.25	.52	.91	1.4	2.3	3.5	5.6	7.5	10.8	13.6	0.95	0.71	0.46
		9.5	0.375	.004	.01	.02	.03	.04	.05	.06	.07	.08	.09	.1	0.9	0.68	0.08
		9.5	0.375	.009	.02	.04	.06	.08	.1	.12	.14	.16	.18	.2	0.9	0.68	0.12
		9.5	0.375	.03	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	0.9	0.68	0.19
	648/ 688 Linear	9.5	0.375	.05	.1	.2	.3	.4	.5	.6	.7	.8	.9	1	0.9	0.68	0.27
		9.5	0.375	.2	.5	.75	1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	0.9	0.68	0.42
		20.6	0.8125	.22	.45	.82	1.3	1.8	2.2	2.6	3.1	3.8	4.5	5	0.9	0.68	0.46
		6.3	0.25	.03	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	0.9	0.68	0.19
		6.3	0.25	.06	.12	.23	.34	.45	.55	.64	.73	.82	.9	1	0.9	0.68	0.40
		9.5	0.375	.1	.2	.3	.5	.6	.73	.87	1.0	1.1	1.3	1.5	0.9	0.68	0.33
	648/ 688 Linear	9.5	0.375	.2	.5	.75	1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	0.9	0.68	0.68
		20.6	0.8125	.2	.4	.55	.7	1.0	1.3	1.6	2.1	2.6	3.3	4	0.9	0.68	0.46
20.6		0.8125	.52	1	1.9	2.8	3.9	4.8	5.5	6.3	7.2	8.1	9	0.9	0.68	0.46	
26.9		1.0625	.6	1.3	2.6	4.2	5.5	6.8	8.1	9.4	10.7	12	13	0.9	0.68	0.46	

1. Max travel is 0.5 inches.
2. At 100% travel.

CL150																		
Valve Size, NPS ⁽¹⁾	Trim/Flow Char	Port Diameter		Experimentally Determined Cv at Valve Opening—Percent of Total Travel											F _L ⁽²⁾	X _T ⁽²⁾	F _d ⁽²⁾	
		mm	Inch	5	10	20	30	40	50	60	70	80	90	100				
1-1/2	577 =%	31.8	1.25	.31	1	1.7	2.6	3.7	5	6.5	9.5	13.5	17.5	20	0.9	0.68	0.46	
		38.1	1.50	.3	.5	1.1	1.6	2.2	2.8	3.6	4.7	6.4	8.1	10	0.9	0.68	0.46	
		38.1	1.50	.5	1	1.6	2.8	4.2	6	8.8	11.2	14.2	15.8	17	0.9	0.68	0.46	
		38.1	1.50	.5	1	1.9	3	5	7.7	11	16	21	26	28	0.9	0.68	0.46	
	548/58 8 =%	31.8	1.25	.25	.5	.7	1	1.4	2	2.8	3.6	5.7	7.9	10	0.9	0.68	0.46	
		31.8	1.25	.25	.9	1.7	2.9	3.7	5	8.5	9.8	13.5	17.5	20	0.9	0.68	0.46	
		38.1	1.50	.3	.5	1.1	1.6	2.2	2.8	3.6	4.7	6.4	8.1	10	0.9	0.68	0.46	
		38.1	1.50	.4	1.1	1.7	2.7	4.1	6.1	8.9	11	14	16	17	0.9	0.68	0.46	
	677 Linear	38.1	1.50	--	.76	1.6	2.6	4.4	7.0	12.2	17.3	22.7	29.2	32.9	0.95	0.86	0.46	
		38.1	1.50	.4	.9	1.6	2.5	3.6	4.5	5.6	6.5	7.5	8.7	10	0.9	0.68	0.46	
	648/68 8 Linear	38.1	1.50	.52	2.2	3.9	5.5	7	8.5	10	11.5	13.5	15.5	17	0.9	0.68	0.46	
		31.8	1.25	.4	.9	1.6	2.5	3.6	4.5	5.6	6.5	7.5	8.7	10	0.9	0.68	0.46	
		31.8	1.25	.52	2.2	3.9	5.5	8.5	10.5	12	14	16	18	20	0.9	0.68	0.46	
		38.1	1.50	.4	.9	1.6	2.5	3.6	4.5	5.6	6.5	7.5	8.7	10	0.9	0.68	0.46	
	2	577 =%	38.1	1.50	.3	.5	1.1	1.6	2.2	2.8	3.6	4.7	6.4	8.1	10	0.9	0.68	0.46
			38.1	1.50	.5	1	1.6	2.8	4.2	6	8.8	11.2	14.2	15.8	17	0.9	0.68	0.46
38.1			1.50	.5	1	1.9	3	5	7.7	11	16	21	26	28	0.9	0.68	0.46	
50.8			2.0	.62	1.2	3.1	6.4	11	16	20	23	26	29	30	0.9	0.68	0.46	
548/58 8 =%		38.1	1.50	.3	.5	1.1	1.6	2.2	2.8	3.6	4.7	6.4	8.1	10	0.9	0.68	0.46	
		38.1	1.50	.4	1.1	1.7	2.7	4.1	6.1	8.9	11	14	16	17	0.9	0.68	0.46	
		38.1	1.50	--	.76	1.6	2.6	4.4	7.0	12.2	17.3	22.7	29.2	32.9	0.9	0.86	0.46	
		50.8	2.0	.62	1.2	3.1	6.4	11	16	20	23	26	29	30	0.9	0.68	0.46	
677 Linear		50.8	2.0	--	1.5	3.5	6.1	11.1	17.1	27.3	37.3	44.6	50.1	52.9	0.91	0.77	0.46	
		38.1	1.50	.4	.9	1.6	2.5	3.6	4.5	5.6	6.5	7.5	8.7	10	0.9	0.68	0.46	
648/68 8 Linear		38.1	1.50	.52	2.2	3.9	5.5	7	8.5	10	11.5	13.5	15.5	17	0.9	0.68	0.46	
		38.1	1.50	.4	.9	1.6	2.5	3.6	4.5	5.6	6.5	7.5	8.7	10	0.9	0.68	0.46	
		38.1	1.50	.52	2.2	3.9	5.5	7	8.5	10	11.5	13.5	15.5	17	0.9	0.68	0.46	
677 Linear		38.1	1.50	.4	.9	1.6	2.5	3.6	4.5	5.6	6.5	7.5	8.7	10	0.9	0.68	0.46	
		38.1	1.50	.52	2.2	3.9	5.5	7	8.5	10	11.5	13.5	15.5	17	0.9	0.68	0.46	
		50.8	2.0	1.5	3	6	9	12	14.9	17.8	19.8	23.9	26.9	30	0.9	0.68	0.46	
	50.8	2.0	2	6	10	15	20	25	30	35	40	45	50	0.9	0.68	0.46		
648/68 8 Linear	38.1	1.50	.4	.9	1.6	2.5	3.6	4.5	5.6	6.5	7.5	8.7	10	0.9	0.68	0.46		
	38.1	1.50	.52	2.2	3.9	5.5	7	8.5	10	11.5	13.5	15.5	17	0.9	0.68	0.46		
	38.1	1.50	1.5	3.0	6.0	9.0	12	15	18	20	23	26	28	0.9	0.68	0.46		
	50.8	2.0	1.5	3.0	6.0	9.0	12	14.9	17.8	19.8	23.9	26.9	30	0.9	0.68	0.46		
677 Linear	50.8	2.0	3.0	6.0	10	15	20	25	30	32	40	45	50	0.9	0.68	0.46		

1. Max travel is 0.75 inches.
2. At 100% travel.

CL150 to CL300																	
Valve Size, NPS (1)	Trim / Flow Char	Port Diameter		Experimentally Determined Cv at Valve Opening - Percent of Total Travel										FL ⁽²⁾	XT ⁽²⁾	Fd ⁽²⁾	
		mm	Inch	5	10	20	30	40	50	60	70	80	90				100
1/2	102 Linear	6.3	.25	.00036	.0018	.0038	.0061	.008	.010	.012	.015	.016	.018	.02	0.95	0.76	0.05
		6.3	.25	.002	.004	.008	.012	.020	.024	.031	.038	.041	.046	.05	0.95	0.76	0.08
		6.3	.25	.0063	.011	.020	.025	.035	.045	.055	.065	.081	.09	.10	0.95	0.76	0.12
		6.3	.25	.012	.021	.028	.045	.063	.085	.115	.147	.172	.19	.20	0.95	0.76	0.17
	151 (Flow Down Only) Mod =%	4.0	.156	---	---	.00001	.00002	.00003	.00005	.00006	.00008	.0001	.00012	.00013	0.98	0.81	0.01
		4.0	.156	---	.00001	.00002	.00004	.00006	.00009	.00011	.00015	.0002	.00023	.00025	0.98	0.81	0.01
		4.0	.156	---	.00001	.00004	.00006	.00009	.00013	.00021	.00031	.0004	.00045	.0005	0.98	0.81	0.01
		4.0	.156	.00001	.00003	.00008	.00012	.00017	.00025	.00037	.0006	.0008	.0009	.001	0.98	0.81	0.02
		4.0	.156	.00002	.00007	.00017	.00025	.00036	.0005	.0007	.0010	.0015	.0018	.002	0.98	0.81	0.03
		4.0	.156	.00004	.0001	.00025	.0004	.00058	.0009	.0014	.0020	.0029	.0036	.004	0.98	0.81	0.04
		4.0	.156	.00008	.00015	.0003	.00057	.0010	.0017	.0029	.0046	.0062	.0072	.008	0.98	0.81	0.05
		4.0	.156	.00009	.00018	.0004	.0008	.0016	.0031	.0057	.0087	.011	.014	.015	0.98	0.81	0.07
		4.0	.156	.0001	.0002	.0005	.0012	.0028	.006	.010	.016	.022	.026	.03	0.98	0.81	0.10
		4.0	.156	.00012	.00025	.0007	.0019	.005	.011	.022	.035	.046	.054	.06	0.98	0.81	0.15
		4.0	.156	.00015	.0003	.001	.003	.008	.021	.040	.062	.08	.09	.10	0.98	0.81	0.19
		4.0	.156	.0002	.0005	.002	.006	.016	.04	.079	.12	.16	.18	.20	0.98	0.81	0.29
	4.0	.156	.0017	.005	.011	.020	.034	.06	.11	.19	.29	.38	.45	0.98	0.81	0.51	
	177 Mod =%	7.9	.3125	---	---	.00001	.00004	.00008	.00014	.0002	.00028	.00037	.00044	.0005	0.95	0.76	0.01
		7.9	.3125	---	.00001	.00007	.00015	.00024	.00036	.00048	.0006	.0008	.0009	.001	0.95	0.76	0.01
		7.9	.3125	.00001	.00002	.0002	.00029	.00047	.00071	.0010	.0013	.0016	.0018	.002	0.95	0.76	0.01
		7.9	.3125	.00003	.00006	.0003	.00051	.00099	.0016	.0021	.0028	.0035	.0041	.005	0.95	0.76	0.02
		7.9	.3125	.00004	.00007	.0004	.0010	.0018	.0029	.0045	.0060	.0074	.0085	.010	0.95	0.76	0.03
		7.9	.3125	.00007	.0003	.0005	.0016	.0031	.005	.0075	.011	.013	.017	.020	0.95	0.76	0.04
		7.9	.3125	.0001	.0005	.0011	.003	.007	.012	.017	.025	.031	.041	.050	0.95	0.76	0.06
	577 =%	9.5	.375	---	---	.029	.056	.098	.15	.20	.30	.44	.71	1.0	0.90	0.60	0.25
		9.5	.375	---	---	.056	.10	.16	.22	.44	.76	1.0	1.3	1.6	0.90	0.66	0.34
		9.5	.375	---	.054	.23	.39	.55	.72	.89	1.1	1.5	2.3	2.7	0.90	0.71	0.49
		20.6	.8125	---	.17	.40	.65	.89	1.1	1.5	2.1	2.7	3.2	3.9	0.90	0.62	0.23
		20.6	.8125	---	---	.83	1.5	2.1	2.7	3.2	4.5	5.2	5.7	6.1	0.90	0.53	0.30
	548/588 =%	6.3	.25	---	0.0013	0.0054	0.011	0.019	0.033	.045	.062	.094	.14	0.22	0.98	0.81	0.18
		6.3	.25	---	.012	.021	.029	.048	.065	.10	.14	.24	.41	.61	0.98	0.81	0.32
		6.3	.25	.006	.01	.02	.04	.06	.12	.2	.35	.5	.82	1.0	0.98	0.68	0.46
		9.5	.375	---	.036	.087	.13	.19	.26	.53	.85	1.1	1.4	1.6	0.90	0.66	0.34
		9.5	.375	---	.032	.073	.11	.18	.33	.54	1.1	2.0	2.6	2.9	0.90	0.76	0.52
		20.6	.8125	---	---	.37	.58	.80	1.0	1.4	1.9	2.6	3.1	3.9	0.82	0.65	0.22
	677 Linear	20.6	.8125	---	.13	.29	.56	.97	1.5	2.9	4.4	5.2	5.9	6.1	0.90	0.53	0.30
		9.5	.375	.004	.01	.02	.03	.04	.05	.06	.07	.08	.09	.10	0.90	0.68	0.07
		9.5	.375	.009	.02	.04	.06	.08	.1	.12	.14	.16	.18	.20	0.90	0.68	0.11
		9.5	.375	.030	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	0.90	0.68	0.17
		9.5	.375	---	.06	.17	.28	.40	.50	.61	.72	.82	.92	1.0	0.90	0.64	0.25
		9.5	.375	---	.04	.33	.63	.91	1.1	1.4	1.6	1.9	2.4	2.8	0.90	0.73	0.51
	648/688 Linear	20.6	.8125	---	.25	.65	1.0	1.4	1.8	2.1	2.5	2.8	3.1	3.4	0.90	0.81	0.21
		6.3	.25	.03	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	0.90	0.68	0.27
		6.3	.25	.01	.12	.23	.34	.45	.55	.64	.73	.82	.90	1.0	0.90	0.68	0.43
9.5		.375	---	.03	.23	.44	.64	.83	1.0	1.1	1.3	1.5	1.6	0.90	0.66	0.34	
9.5		.375	---	.04	.32	.62	.90	1.1	1.4	1.6	1.9	2.5	2.9	0.90	0.76	0.52	
20.6		.8125	---	.30	.73	1.1	1.6	2.0	2.4	2.7	3.1	3.4	3.7	0.90	0.72	0.22	
20.6	.8125	---	.58	1.7	2.8	3.6	4.2	4.8	5.3	5.7	6.0	6.1	0.90	0.53	0.30		

1. Max travel is 0.5 inches.
2. At 100% travel.

CL150 to CL300																	
Valve Size, NPS (1)	Trim/Flow Char	Port Diameter		Experimentally Determined Cv at Valve Opening - Percent of Total Travel											FL ⁽²⁾	XT ⁽²⁾	Fd ⁽²⁾
		mm	Inch	5	10	20	30	40	50	60	70	80	90	100			
3/4	102 Linear	6.3	.25	.00036	.0018	.0038	.0061	.008	.010	.012	.015	.016	.018	.02	0.95	0.76	0.05
		6.3	.25	.002	.004	.008	.012	.020	.024	.031	.038	.041	.046	.05	0.95	0.76	0.08
		6.3	.25	.0063	.011	.020	.025	.035	.045	.055	.065	.081	.09	.10	0.95	0.76	0.12
		6.3	.25	.012	.021	.028	.045	.063	.085	.115	.147	.172	.19	.20	0.95	0.76	0.17
	151 (Flow Down Only) Mod =%	4.0	.156	---	---	.00001	.00002	.00003	.00005	.00006	.00008	.0001	.00012	.00013	0.98	0.81	0.01
		4.0	.156	---	.00001	.00002	.00004	.00006	.00009	.00011	.00015	.0002	.00023	.00025	0.98	0.81	0.01
		4.0	.156	---	.00001	.00004	.00006	.00009	.00013	.00021	.00031	.0004	.00045	.0005	0.98	0.81	0.01
		4.0	.156	.00001	.00003	.00008	.00012	.00017	.00025	.00037	.0006	.0008	.0009	.001	0.98	0.81	0.02
		4.0	.156	.00002	.00007	.00017	.00025	.00036	.0005	.0007	.0010	.0015	.0018	.002	0.98	0.81	0.03
		4.0	.156	.00004	.0001	.00025	.0004	.00058	.0009	.0014	.0020	.0029	.0036	.004	0.98	0.81	0.04
		4.0	.156	.00008	.00015	.0003	.00057	.0010	.0017	.0029	.0046	.0062	.0072	.008	0.98	0.81	0.05
		4.0	.156	.00009	.00018	.0004	.0008	.0016	.0031	.0057	.0087	.011	.014	.015	0.98	0.81	0.07
		4.0	.156	.0001	.0002	.0005	.0012	.0028	.006	.010	.016	.022	.026	.03	0.98	0.81	0.10
		4.0	.156	.00012	.00025	.0007	.0019	.005	.011	.022	.035	.046	.054	.06	0.98	0.81	0.15
		4.0	.156	.00015	.0003	.001	.003	.008	.021	.040	.062	.08	.09	.10	0.98	0.81	0.19
		4.0	.156	.0002	.0005	.002	.006	.016	.04	.079	.12	.16	.18	.20	0.98	0.81	0.29
	4.0	.156	.0017	.005	.011	.020	.034	.06	.11	.19	.29	.38	.45	0.98	0.81	0.51	
	177 Mod =%	7.9	.3125	---	---	.00001	.00004	.00008	.00014	.0002	.00028	.00037	.00044	.0005	0.95	0.76	0.01
		7.9	.3125	---	.00001	.00007	.00015	.00024	.00036	.00048	.0006	.0008	.0009	.001	0.95	0.76	0.01
		7.9	.3125	.00001	.00002	.00002	.000029	.00047	.00071	.0010	.0013	.0016	.0018	.002	0.95	0.76	0.01
		7.9	.3125	.00003	.00006	.0003	.00051	.00099	.0016	.0021	.0028	.0035	.0041	.005	0.95	0.76	0.02
		7.9	.3125	.00004	.00007	.0004	.0010	.0018	.0029	.0045	.0060	.0074	.0085	.010	0.95	0.76	0.03
		7.9	.3125	.00007	.0003	.0005	.0016	.0031	.005	.0075	.011	.013	.017	.020	0.95	0.76	0.04
		7.9	.3125	.0001	.0005	.0011	.003	.007	.012	.017	.025	.031	.041	.050	0.95	0.76	0.06
	577 =%	9.5	.375	---	---	.029	.056	.098	.15	.20	.30	.44	.71	1.0	0.90	0.60	0.25
		9.5	.375	---	---	.056	.10	.16	.22	.44	.76	1.0	1.3	1.6	0.90	0.66	0.34
		9.5	.375	---	.054	.23	.39	.55	.72	.89	1.1	1.5	2.3	2.7	0.90	0.71	0.49
		20.6	.8125	---	.17	.40	.65	.89	1.1	1.5	2.1	2.7	3.2	3.9	0.90	0.62	0.23
		20.6	.8125	.16	0.18	0.92	1.6	2.3	3	3.7	5.7	7.5	8.7	9.5	0.90	0.59	0.40
	548/588 =%	6.3	.25	---	.0013	.0054	.011	.019	.033	.045	.062	.094	.14	.22	0.98	0.81	0.18
		6.3	.25	---	.0110	.0210	.029	.048	.065	.10	.14	.24	.41	.61	0.98	0.81	0.32
		6.3	.25	.006	.010	.020	.04	.06	.12	.20	.35	.50	.82	1.0	0.90	0.68	0.43
		9.5	.375	---	.036	.087	.13	.19	.26	.53	.85	1.1	1.4	1.6	0.90	0.66	0.34
		9.5	.375	---	.032	.073	.11	.18	.33	.54	1.1	2.0	2.6	2.9	0.90	0.76	0.52
		20.6	.8125	---	---	.37	.58	.80	1.0	1.4	1.9	2.6	3.1	3.9	0.82	0.65	0.22
	20.6	.8125	---	.15	.31	.56	.98	1.6	2.8	5.0	6.7	8.6	9.8	0.82	0.60	0.38	
	677 Linear	9.5	.375	.004	.01	.02	.03	.04	.05	.06	.07	.08	.09	.10	0.90	0.68	0.07
		9.5	.375	.009	.02	.04	.06	.08	.1	.12	.14	.16	.18	.20	0.90	0.68	0.11
		9.5	.375	.03	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	0.90	0.68	0.17
		9.5	.375	---	.06	.17	.28	.40	.50	.61	.72	.82	.92	1.0	0.90	0.64	0.25
		9.5	.375	---	.04	.33	.63	.91	1.1	1.4	1.6	1.9	2.4	2.8	0.90	0.73	0.51
		20.6	.8125	---	.25	.65	1.0	1.4	1.8	2.2	2.5	2.8	3.1	3.4	0.90	0.81	0.21
	648/688 Linear	6.3	.25	.03	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	0.90	0.68	0.27
		6.3	.25	.01	.12	.23	.34	.45	.55	.64	.73	.82	.90	1.0	0.90	0.68	0.43
9.5		.375	---	.03	.23	.44	.64	.83	1.0	1.1	1.3	1.5	1.6	0.90	0.66	0.34	
9.5		.375	---	.04	.32	.62	.90	1.1	1.4	1.6	1.9	2.5	2.9	0.90	0.76	0.52	
20.6		.8125	---	.30	.73	1.1	1.6	2.0	2.4	2.7	3.1	3.4	3.7	0.90	0.72	0.22	
20.6		.8125	---	.51	1.7	2.9	3.9	4.9	5.9	7.0	7.9	8.8	9.8	0.90	0.60	0.41	

1. Max travel is 0.5 inches.
2. At 100% travel.



CL150 to CL300																	
Valve Size, NPS (1)	Trim/Flow Char	Port Diameter		Experimentally Determined Cv at Valve Opening - Percent of Total Travel											FL ⁽²⁾	XT ⁽²⁾	Fd ⁽²⁾
		mm	Inch	5	10	20	30	40	50	60	70	80	90	100			
1	102 Linear	6.3	.25	.00036	.0018	.0038	.0061	.008	.010	.012	.015	.016	.018	.02	0.95	0.76	0.05
		6.3	.25	.002	.004	.008	.012	.020	.024	.031	.038	.041	.046	.05	0.95	0.76	0.08
		6.3	.25	.0063	.011	.020	.025	.035	.045	.055	.065	.081	.09	.10	0.95	0.76	0.12
		6.3	.25	.012	.021	.028	.045	.063	.085	.115	.147	.172	.19	.20	0.95	0.76	0.17
	151 (Flow Down Only) Mod =%	4.0	.156	---	---	.00001	.00002	.00003	.00005	.00006	.00008	.0001	.00012	.00013	0.98	0.81	0.01
		4.0	.156	---	.00001	.00002	.00004	.00006	.00009	.00011	.00015	.0002	.00023	.00025	0.98	0.81	0.01
		4.0	.156	---	.00001	.00004	.00006	.00009	.00013	.00021	.00031	.0004	.00045	.0005	0.98	0.81	0.01
		4.0	.156	.00001	.00003	.00008	.00012	.00017	.00025	.00037	.0006	.0008	.0009	.001	0.98	0.81	0.02
		4.0	.156	.00002	.00007	.00017	.00025	.00036	.0005	.0007	.0010	.0015	.0018	.002	0.98	0.81	0.03
		4.0	.156	.00004	.0001	.00025	.0004	.00058	.0009	.0014	.0020	.0029	.0036	.004	0.98	0.81	0.04
		4.0	.156	.00008	.00015	.0003	.00057	.0010	.0017	.0029	.0046	.0062	.0072	.008	0.98	0.81	0.05
		4.0	.156	.00009	.00018	.0004	.0008	.0016	.0031	.0057	.0087	.011	.014	.015	0.98	0.81	0.07
		4.0	.156	.0001	.0002	.0005	.0012	.0028	.006	.010	.016	.022	.026	.03	0.98	0.81	0.10
		4.0	.156	.00012	.00025	.0007	.0019	.005	.011	.022	.035	.046	.054	.06	0.98	0.81	0.15
		4.0	.156	.00015	.0003	.001	.003	.008	.021	.040	.062	.08	.09	.10	0.98	0.81	0.19
		4.0	.156	.0002	.0005	.002	.006	.016	.04	.079	.12	.16	.18	.20	0.98	0.81	0.29
	4.0	.156	.0017	.005	.011	.020	.034	.06	.11	.19	.29	.38	.45	0.98	0.81	0.51	
	177 Mod =%	7.9	.3125	---	---	.00001	.00004	.00008	.00014	.0002	.00028	.00037	.00044	.0005	0.95	0.76	0.01
		7.9	.3125	---	.00001	.00007	.00015	.00024	.00036	.00048	.0006	.0008	.0009	.001	0.95	0.76	0.01
		7.9	.3125	.00001	.00002	.0002	.00029	.00047	.00071	.0010	.0013	.0016	.0018	.002	0.95	0.76	0.01
		7.9	.3125	.00003	.00006	.0003	.00051	.00099	.0016	.0021	.0028	.0035	.0041	.005	0.95	0.76	0.02
		7.9	.3125	.00004	.00007	.0004	.0010	.0018	.0029	.0045	.0060	.0074	.0085	.010	0.95	0.76	0.03
		7.9	.3125	.00007	.0003	.0005	.0016	.0031	.005	.0075	.011	.013	.017	.020	0.95	0.76	0.04
		7.9	.3125	.0001	.0005	.0011	.003	.007	.012	.017	.025	.031	.041	.050	0.95	0.76	0.06
	577 =%	9.5	.375	---	.019	.028	.062	.10	.15	.22	.32	.51	.79	1.1	0.90	0.63	0.27
		9.5	.375	---	.017	.056	.10	.16	.22	.47	.79	1.1	1.4	1.6	0.90	0.60	0.34
		9.5	.375	---	.052	.23	.39	.57	.73	.90	1.1	1.6	2.6	3.2	0.90	0.55	0.57
		20.6	.8125	---	.21	.45	.70	.96	1.2	1.6	2.4	3.0	3.7	5.0	0.90	0.47	0.26
		20.6	.8125	---	.27	.95	1.6	2.3	3.0	3.7	5.9	7.8	9.6	11	0.90	0.62	0.44
	548/588 =%	27.0	1.0625	.20	.30	.60	.92	1.4	2.2	3.4	5.3	8.8	12	13	0.90	0.62	0.34
		6.3	.25	---	.0013	.0054	.011	.019	.033	.045	.062	.094	.14	.22	0.98	0.81	0.18
		6.3	.25	---	.011	.0210	.029	.048	.065	.10	.14	.24	.41	.61	0.98	0.81	0.32
		6.3	.25	.006	.010	.020	.04	.06	.12	.20	.35	.50	.82	1.0	0.90	0.68	0.43
		9.5	.375	---	.029	.074	.12	.19	.26	.55	.88	1.2	1.5	1.7	0.90	0.64	0.35
		9.5	.375	---	.027	.067	.11	.18	.33	.54	1.0	2.2	3.0	3.3	0.90	0.62	0.58
		20.6	.8125	---	.17	.38	.65	.89	1.1	1.5	2.0	2.8	3.5	4.4	0.82	0.55	0.23
	677 Linear	20.6	.8125	---	.14	.31	.58	1.0	1.6	2.9	5.3	7.2	9.8	11	0.82	0.55	0.41
		27.0	1.0625	---	.27	.59	1.1	1.8	3.0	5.1	7.3	9.6	13.7	15.5	0.90	0.68	0.38
		9.5	.375	.004	.01	.02	.03	.04	.05	.06	.07	.08	.09	.10	0.90	0.68	0.07
		9.5	.375	.009	.02	.04	.06	.08	.1	.12	.14	.16	.18	.20	0.90	0.68	0.11
		9.5	.375	.03	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	0.90	0.68	0.17
		9.5	.375	---	.07	.19	.30	.41	.52	.63	.74	.85	.95	1.0	0.90	0.61	0.25
		9.5	.375	---	.04	.36	.66	.96	1.2	1.5	1.7	2.0	2.8	3.3	0.90	0.58	0.58
	648/688 Linear	20.6	.8125	---	.31	.74	1.1	1.5	1.9	2.3	2.7	3.1	3.7	5.1	0.90	0.46	0.27
		6.3	.25	.03	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	0.90	0.68	0.27
		6.3	.25	.01	.03	.09	.17	.23	.3	.37	.44	.52	.83	1.4	0.90	0.49	0.56
		9.5	.375	---	.03	.24	.45	.66	.86	1.0	1.2	1.4	1.6	1.7	0.90	0.60	0.35
		9.5	.375	---	.05	.37	.68	.97	1.2	1.5	1.7	2.1	2.9	3.3	0.90	0.61	0.58
		20.6	.8125	---	.25	.76	1.1	1.6	2.1	2.5	3.0	3.4	3.9	4.6	0.90	0.53	0.25
	648/688 Linear	20.6	.8125	---	.54	1.7	2.8	3.9	4.9	6.0	7.6	9.1	10	11	0.90	0.57	0.44
27.0		1.0625	.6	1.3	2.6	4.2	5.5	6.8	8.1	9.4	10	12	13	0.90	0.68	0.34	

1. 1. Max travel is 0.5 inches.
2. At 100% travel.

CL150 to CL300																	
Valve Size, NPS (1)	Trim/Flow Char	Port Diameter		Experimentally Determined Cv at Valve Opening - Percent of Total Travel											FL ⁽²⁾	XT ⁽²⁾	Fd ⁽²⁾
		mm	Inch	5	10	20	30	40	50	60	70	80	90	100			
1-1/2	577 =%	31.8	1.25	.81	1.2	2.3	3.2	4.3	6.1	12	17	22	25	26	0.73	0.68	0.38
		38.1	1.50	---	.16	.29	.58	1.1	1.7	2.5	3.6	5.3	7.7	13	0.90	0.68	0.22
		38.1	1.50	.48	.80	1.5	2.1	2.8	3.5	4.8	6.9	10	14	20	0.77	0.68	0.26
		38.1	1.50	1.3	2.1	3.6	5.6	7.8	13	19	24	29	31	33	0.71	0.68	0.34
	548/ 588 =%	31.8	1.25	.16	.20	.35	.60	1.0	1.5	2.3	3.3	4.8	6.9	10	0.80	0.68	0.22
		31.8	1.25	.24	.53	1.1	1.8	2.8	4.2	9.5	14	20	25	27	0.72	0.68	0.39
		38.1	1.50	.13	.16	.29	.52	.92	1.5	2.4	3.5	5.2	7.6	11	0.89	0.68	0.20
		38.1	1.50	.50	.74	1.4	2.0	2.7	3.4	4.4	6.2	9.3	13	19	0.81	0.68	0.26
	677 Linear	38.1	1.50	.66	1.1	2.0	3.1	5.0	7.7	14	19	24	29	31	0.67	0.68	0.32
		31.8	1.25	.99	2.1	4.6	6.9	9.1	11	16	20	24	25	26	0.73	0.68	0.30
		38.1	1.50	.28	.96	2.4	3.7	5.1	6.4	7.7	8.9	10	11	14	0.90	0.68	0.23
	648/ 688 Linear	38.1	1.50	.59	.94	3.4	6.1	8.6	11	13	16	18	20	23	0.75	0.68	0.28
		31.8	1.25	---	.51	1.6	2.8	3.9	5.0	6.1	7.2	8.2	9.0	11	0.86	0.68	0.24
		31.8	1.25	.48	1.3	3.1	4.8	6.4	7.9	10	14	18	23	26	0.74	0.68	0.38
		38.1	1.50	.19	.45	1.8	3.2	4.5	5.8	7.1	8.4	9.8	11	12	0.82	0.68	0.20
		38.1	1.50	.25	.55	1.9	4.6	7.3	9.8	12	14	17	19	22	0.73	0.68	0.27
2	577 =%	38.1	1.50	.63	1.5	3.1	4.8	6.3	8.1	12	18	24	28	31	0.67	0.68	0.32
		38.1	1.50	.08	.12	.29	.59	1.1	1.9	2.9	4.2	6.2	9.1	13	0.90	0.68	0.22
		38.1	1.50	.48	.80	1.5	2.1	2.8	3.5	4.8	6.9	10	14	20	0.77	0.68	0.26
		38.1	1.50	1.3	2.1	3.6	5.6	7.5	13	19	25	31	35	38	0.64	0.68	0.35
	548/ 588 =%	50.8	2.0	1.0	1.2	1.9	2.8	4.2	6.0	8.8	13	18	25	33	0.74	0.68	0.25
		38.1	1.50	.13	.16	.29	.52	.92	1.5	2.4	3.5	5.2	7.6	11	0.89	0.68	0.20
		38.1	1.50	.20	.51	1.2	1.8	2.5	3.1	4.2	5.9	8.7	13	18	0.81	0.68	0.25
		38.1	1.50	.41	.82	1.7	2.7	4.5	7.2	11	19	25	30	35	0.67	0.68	0.34
	677 Linear	50.8	2.0	1.0	1.6	3.7	6.7	12	19	30	39	47	52	55	0.67	0.68	0.32
		38.1	1.50	.28	.96	2.4	3.7	5.1	6.4	7.7	8.9	10	11	14	0.90	0.68	0.23
		38.1	1.50	.59	.94	3.4	6.1	8.6	11	13	16	18	20	23	0.75	0.68	0.28
		50.8	2.0	4.3	5.9	9.8	13	17	20	24	27	30	34	37	0.60	0.68	0.23
	648/ 688 Linear	50.8	2.0	3.2	4.6	7.5	13	22	32	42	47	52	55	56	0.69	0.68	0.33
		38.1	1.50	.19	.45	1.9	3.2	4.6	5.9	7.2	8.4	9.8	11	12	0.82	0.68	0.20
		38.1	1.50	.25	.55	1.9	4.6	7.3	9.8	12	14	17	19	22	0.73	0.68	0.27
		38.1	1.50	.47	1.2	2.8	4.5	6.1	7.6	11	18	24	30	35	0.90	0.68	0.42
50.8		2.0	.75	2.8	7.0	10	14	18	21	24	27	30	33	0.90	0.68	0.28	
50.8	2.0	1.0	1.3	3.9	7.4	12	19	29	39	46	51	55	0.90	0.68	0.38		

1. Max travel is 0.75 inches.
2. At 100% travel.

CL150 to CL300																		
Valve Size, NPS ⁽¹⁾	Trim/Flow Char	Port Diameter		Experimentally Determined Cv at Valve Opening—Percent of Total Travel											F _L ⁽²⁾	X _T ⁽²⁾	F _d ⁽²⁾	
		mm	Inch	5	10	20	30	40	50	60	70	80	90	100				
1/2	102 Linear	6.3	.25	.00036	.0018	.0038	.0061	.008	.010	.012	.015	.016	.018	.02	0.95	0.76	0.05	
		6.3	.25	.002	.004	.008	.012	.020	.024	.031	.038	.041	.046	.05	0.95	0.76	0.08	
		6.3	.25	.0063	.011	.020	.025	.035	.045	.055	.065	.081	.09	.10	0.95	0.76	0.12	
		6.3	.25	.012	.021	.028	.045	.063	.085	.115	.147	.172	.19	.20	0.95	0.76	0.17	
	151 (Flow Down Only) Mod =%	4.0	.156	---	---	.00001	.00002	.00003	.00004	.00005	.00006	.00007	.00008	.00009	0.98	0.81	0.01	
		4.0	.156	---	.00001	.00002	.00003	.00004	.00005	.00006	.00007	.00008	.00009	.00010	0.98	0.81	0.01	
		4.0	.156	---	.00001	.00004	.00006	.00009	.00013	.00021	.00031	.0004	.00045	.0005	0.98	0.81	0.01	
		4.0	.156	.00001	.00003	.00008	.00012	.00017	.00025	.00037	.0006	.0008	.0009	.001	0.98	0.81	0.02	
		4.0	.156	.00002	.00007	.00017	.00025	.00036	.0005	.0007	.0010	.0015	.0018	.002	0.98	0.81	0.03	
		4.0	.156	.00004	.0001	.00025	.0004	.00058	.0009	.0014	.0020	.0029	.0036	.004	0.98	0.81	0.04	
		4.0	.156	.00008	.00015	.0003	.00057	.0010	.0017	.0029	.0046	.0062	.0072	.008	0.98	0.81	0.05	
		4.0	.156	.00009	.00018	.0004	.0008	.0016	.0031	.0057	.0087	.011	.014	.015	0.98	0.81	0.07	
		4.0	.156	.0001	.0002	.0005	.0012	.0028	.006	.010	.016	.022	.026	.03	0.98	0.81	0.10	
		4.0	.156	.00012	.00025	.0007	.0019	.005	.011	.022	.035	.046	.054	.06	0.98	0.81	0.15	
		4.0	.156	.00015	.0003	.001	.003	.008	.021	.040	.062	.08	.09	.10	0.98	0.81	0.19	
		4.0	.156	.0002	.0005	.002	.006	.016	.04	.079	.12	.16	.18	.20	0.98	0.81	0.29	
		4.0	.156	.0017	.005	.011	.020	.034	.06	.11	.19	.29	.38	.45	0.98	0.81	0.51	
		177 Mod =%	7.9	.3125	---	---	.00001	.00004	.00008	.00014	.0002	.00028	.00037	.00044	.0005	0.95	0.76	0.01
			7.9	.3125	---	.00001	.00007	.00015	.00024	.00036	.00048	.0006	.0008	.0009	.001	0.95	0.76	0.01
			7.9	.3125	.00001	.00002	.0002	.00029	.00047	.00071	.0010	.0013	.0016	.0018	.002	0.95	0.76	0.01
	7.9		.3125	.00003	.00006	.0003	.00051	.00099	.0016	.0021	.0028	.0035	.0041	.005	0.95	0.76	0.02	
	7.9		.3125	.00004	.00007	.0004	.0010	.0018	.0029	.0045	.0060	.0074	.0085	.010	0.95	0.76	0.03	
	7.9		.3125	.00007	.0003	.0005	.0016	.0031	.005	.0075	.011	.013	.017	.020	0.95	0.76	0.04	
	577 =%	9.5	.375	.006	.01	.02	.04	.06	.12	.2	.35	.5	.82	1.0	0.9	0.68	0.40	
		9.5	.375	.008	.015	.03	.05	.07	.14	.25	.41	.65	1.0	1.5	0.9	0.68	0.40	
		9.5	.375	.03	.09	.14	.25	.38	.55	.7	1	1.3	1.7	2.5	0.9	0.68	0.33	
	548/588 =%	6.3	.25	--	.013	.02	.026	.034	.044	.056	.07	.10	.15	.22	0.98	0.81	0.28	
		6.3	.25	--	.01	.017	.027	.041	.062	.091	.136	.232	.406	.61	0.98	0.81	0.28	
		6.3	.25	.006	.01	.02	.04	.06	.12	.2	.35	.5	.82	1.0	0.9	0.68	0.40	
		9.5	.375	.008	.015	.03	.05	.07	.14	.25	.41	.65	1.0	1.5	0.9	0.68	0.40	
	677 Linear	9.5	.375	.015	.03	.06	.1	.2	.35	.6	.9	1.3	1.8	2.5	0.9	0.68	0.33	
		9.5	.375	.004	.01	.02	.03	.04	.05	.06	.07	.08	.09	.1	0.9	0.68	0.08	
		9.5	.375	.009	.02	.04	.06	.08	.1	.12	.14	.16	.18	.2	0.9	0.68	0.08	
		9.5	.375	.03	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	0.9	0.68	0.12	
		9.5	.375	.05	.1	.2	.3	.4	.5	.6	.7	.8	.9	1.0	0.9	0.68	0.19	
	648/688 Linear	9.5	.375	.03	.09	.14	.25	.38	.55	.7	1	1.3	1.7	2.5	0.9	0.68	0.27	
		6.3	.25	.03	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	0.9	0.68	0.40	
		6.3	.25	.01	.12	.23	.34	.45	.55	.64	.73	.82	.9	1.0	0.9	0.68	0.40	
		9.5	.375	.1	.2	.3	.5	.6	.73	.87	1.0	1.1	1.3	1.5	0.9	0.68	0.33	
			9.5	.375	.2	.5	.75	1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	0.9	0.68	0.42

1. Max travel is 0.75 inches.
2. At 100% travel.

CL150 to CL300																		
Valve Size, NPS ⁽¹⁾	Trim/Flow Char	Port Diameter		Experimentally Determined Cv at Valve Opening—Percent of Total Travel											F _L ⁽²⁾	X _T ⁽²⁾	F _d ⁽²⁾	
		mm	Inch	5	10	20	30	40	50	60	70	80	90	100				
1	102 Linear	6.3	.25	.00036	.0018	.0038	.0061	.008	.010	.012	.015	.016	.018	.02	0.95	0.76	0.05	
		6.3	.25	.002	.004	.008	.012	.020	.024	.031	.038	.041	.046	.05	0.95	0.76	0.08	
		6.3	.25	.0063	.011	.020	.025	.035	.045	.055	.065	.081	.09	.10	0.95	0.76	0.12	
		6.3	.25	.012	.021	.028	.045	.063	.085	.115	.147	.172	.19	.20	0.95	0.76	0.17	
	151 (Flow Down Only) Mod =%	4.0	.156	---	---	.00001	.00002	.00004	.00006	.00009	.00011	.00015	.0002	.00023	.00025	0.98	0.81	0.01
		4.0	.156	---	.00001	.00004	.00006	.00009	.00013	.00021	.00031	.0004	.00045	.0005	0.98	0.81	0.01	
		4.0	.156	.00001	.00003	.00008	.00012	.00017	.00025	.00037	.0006	.0008	.0009	.001	0.98	0.81	0.02	
		4.0	.156	.00002	.00007	.00017	.00025	.00036	.0005	.0007	.0010	.0015	.0018	.002	0.98	0.81	0.03	
		4.0	.156	.00004	.0001	.00025	.0004	.00058	.0009	.0014	.0020	.0029	.0036	.004	0.98	0.81	0.04	
		4.0	.156	.00008	.00015	.0003	.00057	.0010	.0017	.0029	.0046	.0062	.0072	.008	0.98	0.81	0.05	
		4.0	.156	.00009	.00018	.0004	.0008	.0016	.0031	.0057	.0087	.011	.014	.015	0.98	0.81	0.07	
		4.0	.156	.0001	.0002	.0005	.0012	.0028	.006	.010	.016	.022	.026	.03	0.98	0.81	0.10	
		4.0	.156	.00012	.00025	.0007	.0019	.005	.011	.022	.035	.046	.054	.06	0.98	0.81	0.15	
		4.0	.156	.00015	.0003	.001	.003	.008	.021	.040	.062	.08	.09	.10	0.98	0.81	0.19	
		4.0	.156	.0002	.0005	.002	.006	.016	.04	.079	.12	.16	.18	.20	0.98	0.81	0.29	
		4.0	.156	.0017	.005	.011	.020	.034	.06	.11	.19	.29	.38	.45	0.98	0.81	0.51	
		177 Mod =%	7.9	.3125	---	---	.00001	.00004	.00008	.00014	.0002	.00028	.00037	.00044	.0005	0.95	0.76	0.01
			7.9	.3125	---	.00001	.00007	.00015	.00024	.00036	.00048	.0006	.0008	.0009	.001	0.95	0.76	0.01
	7.9		.3125	.00001	.00002	.0002	.00029	.00047	.00071	.0010	.0013	.0016	.0018	.002	0.95	0.76	0.01	
	7.9		.3125	.00003	.00006	.0003	.00051	.00099	.0016	.0021	.0028	.0035	.0041	.005	0.95	0.76	0.02	
	7.9		.3125	.00004	.00007	.0004	.0010	.0018	.0029	.0045	.0060	.0074	.0085	.010	0.95	0.76	0.03	
	7.9		.3125	.00007	.0003	.0005	.0016	.0031	.005	.0075	.011	.013	.017	.020	0.95	0.76	0.04	
	577 =%	7.9	.3125	.0001	.0005	.0011	.003	.007	.012	.017	.025	.031	.041	.050	0.95	0.76	0.06	
		9.5	.375	.006	.01	.02	.04	.06	.12	.2	.35	.5	.82	1.0	0.9	0.68	0.40	
		9.5	.375	.008	.015	.03	.05	.07	.14	.25	.41	.65	1	1.5	0.9	0.68	0.40	
		9.5	.375	.03	.09	.14	.25	.38	.55	.7	1	1.3	1.7	2.5	0.9	0.68	0.33	
	548/588 =%	20.6	.8125	.19	.28	.52	.77	1.0	1.3	1.7	2.3	3.0	3.8	4.0	0.82	0.68	0.42	
		20.6	.8125	.16	.24	.38	.6	.95	1.5	2.4	3.7	5.3	7.5	8.5	0.9	0.68	0.42	
		6.3	.25	--	.013	.02	.026	.034	.044	.056	.07	.10	.15	.22	0.98	0.81	0.28	
		6.3	.25	--	.01	.017	.027	.041	.062	.091	.13	.23	.40	.61	0.98	0.81	0.28	
		6.3	.25	.006	.01	.02	.04	.06	.12	.2	.35	.5	.82	1.0	0.9	0.68	0.40	
		9.5	.375	.008	.015	.03	.05	.07	.14	.25	.41	.65	1	1.5	0.9	0.68	0.40	
		9.5	.375	.015	.03	.06	.1	.2	.35	.6	.9	1.3	1.8	2.5	0.9	0.68	0.33	
		20.6	.8125	.19	.28	.52	.77	1.0	1.3	1.7	2.3	3.0	3.8	4.7	0.82	0.68	0.42	
	677 Linear	20.6	.8125	.16	.24	.38	.7	1.1	1.7	2.6	3.8	5.7	8.5	9.5	0.9	0.68	0.42	
		9.5	.375	.004	.01	.02	.03	.04	.05	.06	.07	.08	.09	.1	0.9	0.68	0.08	
		9.5	.375	.009	.02	.04	.06	.08	.1	.12	.14	.16	.18	.2	0.9	0.68	0.08	
		9.5	.375	.03	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	0.9	0.68	0.12	
		9.5	.375	.05	.1	.2	.3	.4	.5	.6	.7	.8	.9	1.0	0.9	0.68	0.19	
	648/688 Linear	20.6	.8125	.22	.45	.82	1.2	1.6	2	2.4	2.8	3.2	3.6	4.0	0.9	0.68	0.27	
		6.3	.25	.03	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	0.9	0.68	0.40	
		6.3	.25	.01	.12	.23	.34	.45	.55	.64	.73	.82	.9	1	0.9	0.68	0.40	
		9.5	.375	.1	.2	.3	.5	.6	.73	.87	1.0	1.1	1.3	1.5	0.9	0.68	0.33	
		9.5	.375	.2	.5	.75	1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	0.9	0.68	0.42	
20.6		.8125	.2	.4	.55	.7	1.0	1.3	1.6	2.1	2.6	3.3	4.0	0.9	0.68	0.42		
		20.6	.8125	.52	1	1.9	2.8	3.9	4.8	5.7	6.7	7.6	8.6	9.5	0.9	0.68	0.46	

1. Max travel is 0.75 inches.
2. At 100% travel.

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Flow Up

CL150 to CL300																	
Valve Size, NPS ⁽¹⁾	Trim/Flow Char	Port Diameter		Experimentally Determined Cv at Valve Opening—Percent of Total Travel											F _L ⁽²⁾	X _T ⁽²⁾	F _d ⁽²⁾
		mm	Inch	5	10	20	30	40	50	60	70	80	90	100			
1-1/2	577 =%	31.8	1.25	.31	1	1.7	2.6	3.7	5.3	7.6	11	13.5	16	17.5	0.9	0.68	0.46
	548/ 588 =%	31.8	1.25	.25	.5	.7	1	1.4	2	2.8	3.6	5	7	9	0.9	0.68	0.46
		31.8	1.25	.25	.9	1.7	2.6	3.7	5.3	7.6	11	13.5	16	17.5	0.9	0.68	0.46
	677 Linear	31.8	1.25	.31	1	1.7	2.6	3.7	5.3	7.6	11	13.5	16	17.5	0.9	0.68	0.46
648/ 688 Linear	31.8	1.25	.52	2.2	3.9	5.5	7	8.5	10	11.5	13.5	15.5	17.5	0.9	0.68	0.46	
2	577 =%	38.1	1.50	.3	.5	1.1	1.6	2.2	2.8	3.6	4.7	6.4	8.1	10	0.9	0.68	0.46
		38.1	1.50	0.5	1	1.6	2.8	4.2	6	8.8	11.2	14.2	15.8	18	0.9	0.68	0.46
		38.1	1.50	0.5	1	1.9	3	5	7.7	11	15	20	24	30.5	0.9	0.68	0.46
	548/ 588 =%	38.1	1.50	.3	.5	1.1	1.6	2.2	2.8	3.6	4.7	6.4	8.1	10	0.9	0.68	0.46
		38.1	1.50	.4	1.1	1.7	2.7	4.1	6.1	8.9	11	14	16	17.5	0.9	0.68	0.46
		38.1	1.50	.4	1	1.9	3	5	7.7	11	15	20	24	30.5	0.9	0.68	0.46
	677 Linear	38.1	1.50	.3	.5	1.1	1.6	2.2	2.8	3.6	4.7	6.4	8.1	10	0.9	0.68	0.46
		38.1	1.50	0.31	1	1.7	2.6	3.7	5.3	7.6	11	13.5	16	17.5	0.9	0.68	0.46
	648/ 688 Linear	38.1	1.50	.4	.9	1.6	2.5	3.6	4.5	5.6	6.5	7.5	8.7	10	0.9	0.68	0.46
		38.1	1.50	.53	2.2	3.9	5.5	7	8.5	10	11.5	13.5	15.5	17.5	0.9	0.68	0.46
		38.1	1.50	1.5	3	6	9	12	15	18	21	24	27	30.5	0.9	0.68	0.46
	3	577 =%	50.8	2.0	0.72	1.4	3.6	7.5	12.8	18.7	23	27	30	33.8	35	0.9	0.68
548/ 588 =%		50.8	2.0	.72	1.4	3.6	7.5	12.8	18.7	23	27	30	33.8	35	0.9	0.68	0.46
		50.8	2.0	--	1.5	3.8	6.4	11.2	18.2	28.5	37.8	45.3	50.3	61	0.9	0.68	0.46
677 Linear		50.8	2.0	0.72	1.4	3.6	7.5	12.8	18.7	23	27	30	33.8	35	0.9	0.68	0.46
		50.8	2.0	3.1	6	13	20	26	32	38	44	50	55	61	0.9	0.68	0.46
648/ 688 Linear		50.8	2.0	.72	1.4	3.6	7.5	12.8	18.7	23	27	30	33.8	35	0.9	0.68	0.46
50.8	2.0	3	1.57	10	15	20	25	30	36	41	56	61	0.9	0.68	0.46		

1. Max travel is 0.75 inches.
2. At 100% travel.

CL150 to CL600																		
Valve Size, NPS(1)	Trim/Flow Char	Port Diameter		Experimentally Determined Cv at Valve Opening—Percent of Total Travel											FL(2)	XT(2)	Fd(2)	
		mm	Inch	5	10	20	30	40	50	60	70	80	90	100				
1/2	102 Linear	6.3	.25	.00036	.0018	.0038	.0061	.008	.010	.012	.015	.016	.018	.02	0.95	0.76	0.05	
		6.3	.25	.002	.004	.008	.012	.020	.024	.031	.038	.041	.046	.05	0.95	0.76	0.08	
		6.3	.25	.0063	.011	.020	.025	.035	.045	.055	.065	.081	.09	.10	0.95	0.76	0.12	
		6.3	.25	.012	.021	.028	.045	.063	.085	.115	.147	.172	.19	.20	0.95	0.76	0.17	
	151 (Flow Down Only) Mod =%	4.0	.156	---	---	.00001	.00002	.00004	.00006	.00009	.00011	.00015	.0002	.00023	.00025	0.98	0.81	0.01
		4.0	.156	---	.00001	.00004	.00006	.00009	.00013	.00021	.00031	.0004	.00045	.0005	0.98	0.81	0.01	
		4.0	.156	.00001	.00003	.00008	.00012	.00017	.00025	.00037	.0006	.0008	.0009	.001	0.98	0.81	0.02	
		4.0	.156	.00002	.00007	.00017	.00025	.00036	.0005	.0007	.0010	.0015	.0018	.002	0.98	0.81	0.03	
		4.0	.156	.00004	.0001	.00025	.0004	.00058	.0009	.0014	.0020	.0029	.0036	.004	0.98	0.81	0.04	
		4.0	.156	.00008	.00015	.0003	.00057	.0010	.0017	.0029	.0046	.0062	.0072	.008	0.98	0.81	0.05	
		4.0	.156	.00009	.00018	.0004	.0008	.0016	.0031	.0057	.0087	.011	.014	.015	0.98	0.81	0.07	
		4.0	.156	.0001	.0002	.0005	.0012	.0028	.006	.010	.016	.022	.026	.03	0.98	0.81	0.10	
		4.0	.156	.00012	.00025	.0007	.0019	.005	.011	.022	.035	.046	.054	.06	0.98	0.81	0.15	
		4.0	.156	.00015	.0003	.001	.003	.008	.021	.040	.062	.08	.09	.10	0.98	0.81	0.19	
		4.0	.156	.0002	.0005	.002	.006	.016	.04	.079	.12	.16	.18	.20	0.98	0.81	0.29	
		4.0	.156	.0017	.005	.011	.020	.034	.06	.11	.19	.29	.38	.45	0.98	0.81	0.51	
		177 Mod =%	7.9	.3125	---	---	.00001	.00004	.00008	.00014	.0002	.00028	.00037	.00044	.0005	0.95	0.76	0.01
			7.9	.3125	---	.00001	.00007	.00015	.00024	.00036	.00048	.0006	.0008	.0009	.001	0.95	0.76	0.01
	7.9		.3125	.00001	.00002	.0002	.00029	.00047	.00071	.0010	.0013	.0016	.0018	.002	0.95	0.76	0.01	
	7.9		.3125	.00003	.00006	.0003	.00051	.00099	.0016	.0021	.0028	.0035	.0041	.005	0.95	0.76	0.02	
	7.9		.3125	.00004	.00007	.0004	.0010	.0018	.0029	.0045	.0060	.0074	.0085	.010	0.95	0.76	0.03	
	7.9		.3125	.00007	.0003	.0005	.0016	.0031	.005	.0075	.011	.013	.017	.020	0.95	0.76	0.04	
	577 =%	9.5	.375	.006	.01	.02	.04	.06	.12	.2	.35	.5	.82	1	0.9	0.68	0.42	
		9.5	.375	.008	.015	.03	.05	.07	.14	.25	.41	.65	1	1.5	0.9	0.68	0.42	
		9.5	.375	.03	.09	.14	.25	.38	.55	.7	1	1.3	1.7	2	0.9	0.68	0.42	
	548/588 =%	6.3	.25	--	.013	.016	.022	.032	.042	.056	.082	0.12	0.16	0.2	0.98	0.50	0.28	
		6.3	.25	--	.014	.023	.033	.045	.069	.098	0.14	0.25	0.4	0.5	0.98	0.49	0.28	
		6.3	.25	.009	.014	.028	.048	0.08	0.12	.20	0.34	0.54	0.8	1.0	0.9	0.68	0.46	
		9.5	.375	.035	.043	0.094	0.14	0.2	0.26	0.54	0.84	1.1	1.3	1.5	0.9	0.68	0.46	
	677 Linear	9.5	.375	.025	.031	.098	0.11	0.18	0.31	0.5	1.0	1.7	1.9	2.0	0.9	0.68	0.46	
		9.5	.375	.004	.01	.02	.03	.04	.05	.06	.07	.08	.09	.1	0.9	0.68	0.08	
		9.5	.375	.009	.02	.04	.06	.08	.1	.12	.14	.16	.18	.2	0.9	0.68	0.12	
		9.5	.375	.03	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	0.9	0.68	0.19	
		9.5	.375	.05	.1	.2	.3	.4	.5	.6	.7	.8	.9	1.0	0.9	0.68	0.27	
	648/688 Linear	9.5	.375	.2	.5	.75	1	1.3	1.5	1.6	1.7	1.8	1.9	2.0	0.9	0.68	0.46	
		6.3	.25	.03	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	0.9	0.68	0.46	
		6.3	.25	.01	.12	.23	.34	.45	.55	.64	.73	.82	.9	1.0	0.9	0.68	0.46	
		9.5	.375	.1	.2	.3	.5	.6	.73	.87	1.02	1.15	1.3	1.5	0.9	0.68	0.46	
	9.5	.375	--	.083	0.32	.54	.72	.91	1.1	1.2	1.7	1.9	2.0	0.9	0.68	0.46		

1. Max travel is 0.5 inches.
2. At 100% travel.

CL150 to CL600																		
Valve Size, NPS ⁽¹⁾	Trim/Flow Char	Port Diameter		Experimentally Determined Cv at Valve Opening—Percent of Total Travel											F _L ⁽²⁾	X _T ⁽²⁾	F _d ⁽²⁾	
		mm	Inch	5	10	20	30	40	50	60	70	80	90	100				
3/4	102 Linear	6.3	.25	.00036	.0018	.0038	.0061	.008	.010	.012	.015	.016	.018	.02	0.95	0.76	0.05	
		6.3	.25	.002	.004	.008	.012	.020	.024	.031	.038	.041	.046	.05	0.95	0.76	0.08	
		6.3	.25	.0063	.011	.020	.025	.035	.045	.055	.065	.081	.09	.10	0.95	0.76	0.12	
		6.3	.25	.012	.021	.028	.045	.063	.085	.115	.147	.172	.19	.20	0.95	0.76	0.17	
	151 (Flow Down Only) Mod =%	4.0	.156	---	---	.00001	.00002	.00004	.00006	.00009	.00011	.00015	.0002	.00023	.00025	0.98	0.81	0.01
		4.0	.156	---	.00001	.00004	.00006	.00009	.00013	.00021	.00031	.0004	.00045	.0005	0.98	0.81	0.01	
		4.0	.156	.00001	.00003	.00008	.00012	.00017	.00025	.00037	.0006	.0008	.0009	.001	0.98	0.81	0.02	
		4.0	.156	.00002	.00007	.00017	.00025	.00036	.0005	.0007	.0010	.0015	.0018	.002	0.98	0.81	0.03	
		4.0	.156	.00004	.0001	.00025	.0004	.00058	.0009	.0014	.0020	.0029	.0036	.004	0.98	0.81	0.04	
		4.0	.156	.00008	.00015	.0003	.00057	.0010	.0017	.0029	.0046	.0062	.0072	.008	0.98	0.81	0.05	
		4.0	.156	.00009	.00018	.0004	.0008	.0016	.0031	.0057	.0087	.011	.014	.015	0.98	0.81	0.07	
		4.0	.156	.0001	.0002	.0005	.0012	.0028	.006	.010	.016	.022	.026	.03	0.98	0.81	0.10	
		4.0	.156	.00012	.00025	.0007	.0019	.005	.011	.022	.035	.046	.054	.06	0.98	0.81	0.15	
		4.0	.156	.00015	.0003	.001	.003	.008	.021	.040	.062	.08	.09	.10	0.98	0.81	0.19	
		4.0	.156	.0002	.0005	.002	.006	.016	.04	.079	.12	.16	.18	.20	0.98	0.81	0.29	
		4.0	.156	.0017	.005	.011	.020	.034	.06	.11	.19	.29	.38	.45	0.98	0.81	0.51	
		177 Mod =%	7.9	.3125	---	---	.00001	.00004	.00008	.00014	.0002	.00028	.00037	.00044	.0005	0.95	0.76	0.01
			7.9	.3125	---	.00001	.00007	.00015	.00024	.00036	.00048	.0006	.0008	.0009	.001	0.95	0.76	0.01
			7.9	.3125	.00001	.00002	.0002	.00029	.00047	.00071	.0010	.0013	.0016	.0018	.002	0.95	0.76	0.01
			7.9	.3125	.00003	.00006	.0003	.00051	.00099	.0016	.0021	.0028	.0035	.0041	.005	0.95	0.76	0.02
	7.9		.3125	.00004	.00007	.0004	.0010	.0018	.0029	.0045	.0060	.0074	.0085	.010	0.95	0.76	0.03	
	7.9		.3125	.00007	.0003	.0005	.0016	.0031	.005	.0075	.011	.013	.017	.020	0.95	0.76	0.04	
	577 =%	9.5	.375	.006	.01	.02	.04	.06	.12	.2	.35	.5	.82	1.0	0.9	0.68	0.42	
		9.5	.375	.008	.015	.03	.05	.07	.14	.25	.41	.65	1	1.5	0.9	0.68	0.42	
		9.5	.375	.03	.09	.14	.25	.38	.55	.7	1	1.3	1.7	2.0	0.9	0.68	0.42	
	548/588 =%	6.3	.25	--	.017	.023	.029	.037	.045	.056	.083	0.12	0.16	0.2	0.98	0.50	0.28	
		6.3	.25	--	.014	.022	.032	.045	.067	.096	0.13	0.22	0.39	0.5	0.98	0.49	0.28	
		6.3	.25	.016	.020	.034	.056	.07	0.13	.20	0.33	0.5	0.89	1	0.9	0.68	0.46	
		9.5	.375	.026	.034	.084	0.13	0.19	0.26	0.55	0.86	1.1	1.3	1.5	0.9	0.68	0.46	
	677 Linear	9.5	.375	.031	.039	.078	0.12	0.19	0.33	0.51	1.1	1.7	1.9	2.0	0.9	0.68	0.46	
		9.5	.375	.004	.01	.02	.03	.04	.05	.06	.07	.08	.09	.1	0.9	0.68	0.08	
		9.5	.375	.009	.02	.04	.06	.08	.1	.12	.14	.16	.18	.2	0.9	0.68	0.12	
		9.5	.375	.03	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	0.9	0.68	0.19	
		9.5	.375	.05	.1	.2	.3	.4	.5	.6	.7	.8	.9	1.0	0.9	0.68	0.27	
	648/688 Linear	9.5	.375	.2	.5	.75	1	1.3	1.5	1.7	1.9	2.1	2.3	2.0	0.9	0.68	0.46	
		6.3	.25	.03	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	0.9	0.68	0.46	
		6.3	.25	.01	.14	.23	.34	.45	.55	.64	.73	.82	.9	1.0	0.9	0.68	0.46	
		9.5	.375	.1	.2	.3	.5	.6	.73	.87	1.02	1.15	1.3	1.5	0.9	0.68	0.46	
			9.5	.375	.2	.5	.75	1	1.3	1.5	1.7	1.9	2.1	2.3	2.0	.9	0.68	0.46

1. Max travel is 0.5 inches.
2. At 100% travel.

CL150 to CL600																		
Valve Size, NPS ⁽¹⁾	Trim/Flow Char	Port Diameter		Experimentally Determined Cv at Valve Opening—Percent of Total Travel											F _L ⁽²⁾	X _T ⁽²⁾	F _d ⁽²⁾	
		mm	Inch	5	10	20	30	40	50	60	70	80	90	100				
1	102 Linear	6.3	.25	.00036	.0018	.0038	.0061	.008	.010	.012	.015	.016	.018	.02	0.95	0.76	0.05	
		6.3	.25	.002	.004	.008	.012	.020	.024	.031	.038	.041	.046	.05	0.95	0.76	0.08	
		6.3	.25	.0063	.011	.020	.025	.035	.045	.055	.065	.081	.09	.10	0.95	0.76	0.12	
		6.3	.25	.012	.021	.028	.045	.063	.085	.115	.147	.172	.19	.20	0.95	0.76	0.17	
	151 (Flow Down Only) Mod =%	4.0	.156	---	---	.00001	.00002	.00003	.00005	.00006	.00008	.00011	.00015	.00023	.00013	0.98	0.81	0.01
		4.0	.156	---	.00001	.00002	.00004	.00006	.00009	.00013	.00021	.00031	.0004	.00045	.0005	0.98	0.81	0.01
		4.0	.156	.00001	.00003	.00008	.00012	.00017	.00025	.00037	.0006	.0008	.0009	.001	0.98	0.81	0.02	
		4.0	.156	.00002	.00007	.00017	.00025	.00036	.0005	.0007	.0010	.0015	.0018	.002	0.98	0.81	0.03	
		4.0	.156	.00004	.0001	.00025	.0004	.00058	.0009	.0014	.0020	.0029	.0036	.004	0.98	0.81	0.04	
		4.0	.156	.00008	.00015	.0003	.00057	.0010	.0017	.0029	.0046	.0062	.0072	.008	0.98	0.81	0.05	
		4.0	.156	.00009	.00018	.0004	.0008	.0016	.0031	.0057	.0087	.011	.014	.015	0.98	0.81	0.07	
		4.0	.156	.0001	.0002	.0005	.0012	.0028	.006	.010	.016	.022	.026	.03	0.98	0.81	0.10	
		4.0	.156	.00012	.00025	.0007	.0019	.005	.011	.022	.035	.046	.054	.06	0.98	0.81	0.15	
		4.0	.156	.00015	.0003	.001	.003	.008	.021	.040	.062	.08	.09	.10	0.98	0.81	0.19	
		4.0	.156	.0002	.0005	.002	.006	.016	.04	.079	.12	.16	.18	.20	0.98	0.81	0.29	
		4.0	.156	.0017	.005	.011	.020	.034	.06	.11	.19	.29	.38	.45	0.98	0.81	0.51	
	177 Mod =%	7.9	.3125	---	---	.00001	.00004	.00008	.00014	.0002	.00028	.00037	.00044	.0005	0.95	0.76	0.01	
		7.9	.3125	---	.00001	.00007	.00015	.00024	.00036	.00048	.0006	.0008	.0009	.001	0.95	0.76	0.01	
		7.9	.3125	.00001	.00002	.0002	.00029	.00047	.00071	.0010	.0013	.0016	.0018	.002	0.95	0.76	0.01	
		7.9	.3125	.00003	.00006	.0003	.00051	.00099	.0016	.0021	.0028	.0035	.0041	.005	0.95	0.76	0.02	
		7.9	.3125	.00004	.00007	.0004	.0010	.0018	.0029	.0045	.0060	.0074	.0085	.010	0.95	0.76	0.03	
		7.9	.3125	.00007	.0003	.0005	.0016	.0031	.005	.0075	.011	.013	.017	.020	0.95	0.76	0.04	
	577 =%	7.9	.3125	.0001	.0005	.0011	.003	.007	.012	.017	.025	.031	.041	.050	0.95	0.76	0.06	
		9.5	.375	.006	.01	.02	.04	.06	.12	.2	.35	.5	.82	1.0	0.9	0.68	0.42	
		9.5	.375	.008	.015	.03	.05	.07	.14	.25	.41	.65	1	1.5	0.9	0.68	0.42	
		9.5	.375	.03	.09	.14	.25	.38	.55	.7	1	1.3	1.7	2.5	0.9	0.68	0.42	
	548/588 =%	20.6	.8125	.19	.28	.52	.77	1.0	1.3	1.7	2.3	3.0	3.8	4.0	0.82	0.68	0.42	
		20.6	.8125	.16	.24	.38	.6	.7	1	1.4	2.2	3.3	4.4	6.5	0.9	0.68	0.42	
		6.3	.25	--	.017	.023	.029	.037	.045	.056	.082	.12	.16	0.2	0.98	0.50	0.28	
		6.3	.25	--	.014	.021	.031	.046	.067	.095	.14	.23	.39	0.5	0.98	0.49	0.28	
		6.3	.25	.013	.017	.030	.052	.083	.12	.20	.34	.51	.93	1.0	0.9	0.68	0.46	
		9.5	.375	.025	.033	.08	.13	.18	.25	.54	.85	1.1	1.4	1.5	0.9	0.68	0.46	
		9.5	.375	.024	.030	.068	.11	.18	.32	.51	1.0	1.9	2.4	2.5	0.9	0.68	0.46	
	677 Linear	20.6	.8125	.12	.21	.44	.67	.91	1.1	1.5	2.0	2.6	3.3	4.0	0.9	0.68	0.46	
		20.6	.8125	.10	.15	.31	.57	.96	1.5	2.8	4.6	5.6	6.2	6.5	0.9	0.68	0.46	
		9.5	.375	.004	.01	.02	.03	.04	.05	.06	.07	.08	.09	.1	0.9	0.68	0.08	
		9.5	.375	.009	.02	.04	.06	.08	.1	.12	.14	.16	.18	.2	0.9	0.68	0.12	
		9.5	.375	.03	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	0.9	0.68	0.19	
		9.5	.375	.05	.1	.2	.3	.4	.5	.6	.7	.8	.9	1.0	0.9	0.68	0.27	
	648/688 Linear	9.5	.375	.2	.5	.75	1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	0.9	0.68	0.46	
		20.6	.8125	.22	.45	.82	1.2	1.6	2	2.4	2.8	3.2	3.6	4.0	0.9	0.68	0.46	
		6.3	.25	.03	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	0.9	0.68	0.46	
		6.3	.25	.01	.12	.23	.34	.45	.55	.64	.73	.82	.9	1.0	0.9	0.68	0.46	
		9.5	.375	.1	.2	.3	.5	.6	.73	.87	1.02	1.15	1.3	1.5	0.9	0.68	0.46	
9.5	.375	.2	.5	.75	1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	0.9	0.68	0.46			
20.6	.8125	.2	.4	.55	.7	1.02	1.31	1.6	2.1	2.65	3.3	4.0	0.9	0.68	0.46			
20.6	.8125	.52	1	1.9	2.8	3.9	4.8	5.5	5.7	6	6.3	6.5	0.9	0.68	0.46			

1. Max travel is 0.5 inches.
2. At 100% travel.

CWP 3000 to 6000 PSI																			
Valve Size, NPS ⁽¹⁾	Trim/Flow Char	Port Diameter		Experimentally Determined Cv at Valve Opening—Percent of Total Travel											F _L ⁽²⁾	X _T ⁽²⁾	F _d ⁽²⁾		
		mm	Inch	5	10	20	30	40	50	60	70	80	90	100					
1/2	102 Linear	6.3	.25	.00036	.0018	.0038	.0061	.008	.010	.012	.015	.016	.018	.02	0.95	0.76	0.05		
		6.3	.25	.002	.004	.008	.012	.020	.024	.031	.038	.041	.046	.05	0.95	0.76	0.08		
		6.3	.25	.0063	.011	.020	.025	.035	.045	.055	.065	.081	.09	.10	0.95	0.76	0.12		
		6.3	.25	.012	.021	.028	.045	.063	.085	.115	.147	.172	.19	.20	0.95	0.76	0.17		
	151 (Flow Down Only) Mod =%	4.0	.156	---	---	.00001	.00002	.00003	.00005	.00006	.00009	.00011	.00015	.0002	.00023	.00025	0.98	0.81	0.01
		4.0	.156	---	.00001	.00004	.00006	.00009	.00013	.00021	.00031	.0004	.00045	.0005	0.98	0.81	0.01		
		4.0	.156	.00001	.00003	.00008	.00012	.00017	.00025	.00037	.0006	.0008	.0009	.001	0.98	0.81	0.02		
		4.0	.156	.00002	.00007	.00017	.00025	.00036	.0005	.0007	.0010	.0015	.0018	.002	0.98	0.81	0.03		
		4.0	.156	.00004	.0001	.00025	.0004	.00058	.0009	.0014	.0020	.0029	.0036	.004	0.98	0.81	0.04		
		4.0	.156	.00008	.00015	.0003	.00057	.0010	.0017	.0029	.0046	.0062	.0072	.008	0.98	0.81	0.05		
		4.0	.156	.00009	.00018	.0004	.0008	.0016	.0031	.0057	.0087	.011	.014	.015	0.98	0.81	0.07		
		4.0	.156	.0001	.0002	.0005	.0012	.0028	.006	.010	.016	.022	.026	.03	0.98	0.81	0.10		
		4.0	.156	.00012	.00025	.0007	.0019	.005	.011	.022	.035	.046	.054	.06	0.98	0.81	0.15		
		4.0	.156	.00015	.0003	.001	.003	.008	.021	.040	.062	.08	.09	.10	0.98	0.81	0.19		
		4.0	.156	.0002	.0005	.002	.006	.016	.04	.079	.12	.16	.18	.20	0.98	0.81	0.29		
		4.0	.156	.0017	.005	.011	.020	.034	.06	.11	.19	.29	.38	.45	0.98	0.81	0.51		
	177 Mod =%	7.9	.3125	---	---	.00001	.00004	.00008	.00014	.0002	.00028	.00037	.00044	.0005	0.95	0.76	0.01		
		7.9	.3125	---	.00001	.00007	.00015	.00024	.00036	.00048	.0006	.0008	.0009	.001	0.95	0.76	0.01		
		7.9	.3125	.00001	.00002	.0002	.00029	.00047	.00071	.0010	.0013	.0016	.0018	.002	0.95	0.76	0.01		
		7.9	.3125	.00003	.00006	.0003	.00051	.00099	.0016	.0021	.0028	.0035	.0041	.005	0.95	0.76	0.02		
		7.9	.3125	.00004	.00007	.0004	.0010	.0018	.0029	.0045	.0060	.0074	.0085	.010	0.95	0.76	0.03		
		7.9	.3125	.00007	.0003	.0005	.0016	.0031	.005	.0075	.011	.013	.017	.020	0.95	0.76	0.04		
	577 =%	9.5	.375	.006	.01	.02	.04	.06	.12	.2	.35	.5	.82	1	0.9	0.68	0.42		
		9.5	.375	.008	.015	.03	.05	.07	.14	.25	.41	.65	1	1.5	0.9	0.68	0.42		
		9.5	.375	.03	.09	.14	.25	.38	.55	.7	1	1.3	1.7	2	0.9	0.68	0.42		
	548/588 =%	6.3	.25	--	.013	.016	.022	.032	.042	.056	.082	0.12	0.16	0.2	0.98	0.50	0.28		
		6.3	.25	--	.014	.023	.033	.045	.069	.098	0.14	0.25	0.4	0.5	0.98	0.49	0.28		
		6.3	.25	.009	.014	.028	.048	0.08	0.12	.20	0.34	0.54	0.8	1.0	0.9	0.68	0.46		
		9.5	.375	.035	.043	0.094	0.14	0.2	0.26	0.54	0.84	1.1	1.3	1.5	0.9	0.68	0.46		
	677 Linear	9.5	.375	.025	.031	.098	0.11	0.18	0.31	0.5	1.0	1.7	1.9	2.0	0.9	0.68	0.46		
		9.5	.375	.004	.01	.02	.03	.04	.05	.06	.07	.08	.09	.1	0.9	0.68	0.08		
		9.5	.375	.009	.02	.04	.06	.08	.1	.12	.14	.16	.18	.2	0.9	0.68	0.12		
		9.5	.375	.03	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	0.9	0.68	0.19		
		9.5	.375	.05	.1	.2	.3	.4	.5	.6	.7	.8	.9	1.0	0.9	0.68	0.27		
	648/688 Linear	9.5	.375	.2	.5	.75	1	1.3	1.5	1.6	1.7	1.8	1.9	2.0	0.9	0.68	0.46		
		6.3	.25	.03	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	0.9	0.68	0.46		
		6.3	.25	.01	.12	.23	.34	.45	.55	.64	.73	.82	.9	1.0	0.9	0.68	0.46		
		9.5	.375	.1	.2	.3	.5	.6	.73	.87	1.02	1.15	1.3	1.5	0.9	0.68	0.46		
			9.5	.375	--	.083	0.32	.54	.72	.91	1.1	1.2	1.7	1.9	2.0	0.9	0.68	0.46	

1. Max travel is 0.5 inches.
2. At 100% travel.

CWP 3000 to 6000 PSI																		
Valve Size, NPS(1)	Trim/Flow Char	Port Diameter		Experimentally Determined Cv at Valve Opening—Percent of Total Travel											FL(2)	XT(2)	Fd(2)	
		mm	Inch	5	10	20	30	40	50	60	70	80	90	100				
3/4	102 Linear	6.3	.25	.00036	.0018	.0038	.0061	.008	.010	.012	.015	.016	.018	.02	0.95	0.76	0.05	
		6.3	.25	.002	.004	.008	.012	.020	.024	.031	.038	.041	.046	.05	0.95	0.76	0.08	
		6.3	.25	.0063	.011	.020	.025	.035	.045	.055	.065	.081	.09	.10	0.95	0.76	0.12	
		6.3	.25	.012	.021	.028	.045	.063	.085	.115	.147	.172	.19	.20	0.95	0.76	0.17	
	151 (Flow Down Only) Mod =%	4.0	.156	---	---	.00001	.00002	.00003	.00005	.00006	.00008	.00011	.00015	.00023	.00013	0.98	0.81	0.01
		4.0	.156	---	.00001	.00002	.00004	.00006	.00009	.00013	.00021	.00031	.0004	.00045	.0005	0.98	0.81	0.01
		4.0	.156	.00001	.00003	.00008	.00012	.00017	.00025	.00037	.0006	.0008	.0009	.001	0.98	0.81	0.02	
		4.0	.156	.00002	.00007	.00017	.00025	.00036	.0005	.0007	.0010	.0015	.0018	.002	0.98	0.81	0.03	
		4.0	.156	.00004	.0001	.00025	.0004	.00058	.0009	.0014	.0020	.0029	.0036	.004	0.98	0.81	0.04	
		4.0	.156	.00008	.00015	.0003	.00057	.0010	.0017	.0029	.0046	.0062	.0072	.008	0.98	0.81	0.05	
		4.0	.156	.00009	.00018	.0004	.0008	.0016	.0031	.0057	.0087	.011	.014	.015	0.98	0.81	0.07	
		4.0	.156	.0001	.0002	.0005	.0012	.0028	.006	.010	.016	.022	.026	.03	0.98	0.81	0.10	
		4.0	.156	.00012	.00025	.0007	.0019	.005	.011	.022	.035	.046	.054	.06	0.98	0.81	0.15	
		4.0	.156	.00015	.0003	.001	.003	.008	.021	.040	.062	.08	.09	.10	0.98	0.81	0.19	
		4.0	.156	.0002	.0005	.002	.006	.016	.04	.079	.12	.16	.18	.20	0.98	0.81	0.29	
		4.0	.156	.0017	.005	.011	.020	.034	.06	.11	.19	.29	.38	.45	0.98	0.81	0.51	
	177 Mod =%	7.9	.3125	---	---	.00001	.00004	.00008	.00014	.0002	.00028	.00037	.00044	.0005	0.95	0.76	0.01	
		7.9	.3125	---	.00001	.00007	.00015	.00024	.00036	.00048	.0006	.0008	.0009	.001	0.95	0.76	0.01	
		7.9	.3125	.00001	.00002	.0002	.00029	.00047	.00071	.0010	.0013	.0016	.0018	.002	0.95	0.76	0.01	
		7.9	.3125	.00003	.00006	.0003	.00051	.00099	.0016	.0021	.0028	.0035	.0041	.005	0.95	0.76	0.02	
		7.9	.3125	.00004	.00007	.0004	.0010	.0018	.0029	.0045	.0060	.0074	.0085	.010	0.95	0.76	0.03	
		7.9	.3125	.00007	.0003	.0005	.0016	.0031	.005	.0075	.011	.013	.017	.020	0.95	0.76	0.04	
	577 =%	9.5	.375	.006	.01	.02	.04	.06	.12	.2	.35	.5	.82	1	0.9	0.68	0.42	
		9.5	.375	.008	.015	.03	.05	.07	.14	.25	.41	.65	1	1.5	0.9	0.68	0.42	
		9.5	.375	.03	.09	.14	.25	.38	.55	.7	1	1.3	1.7	2.5	0.9	0.68	0.42	
		20.6	.8125	.1	.15	.39	.6	.88	1.2	1.6	2.1	2.7	3.2	3.8	0.9	0.68	0.42	
	548/588 =%	6.3	.25	--	.017	.023	.029	.037	.045	.056	.083	0.12	0.16	0.2	0.98	0.50	0.28	
		6.3	.25	--	.014	.022	.032	.045	.067	.096	0.13	0.22	0.39	0.5	0.98	0.49	0.28	
		6.3	.25	.016	.020	.034	.056	.07	0.13	.20	0.33	0.5	0.89	1	0.9	0.68	0.46	
		9.5	.375	.026	.034	.084	0.13	0.19	0.26	0.55	0.86	1.1	1.3	1.5	0.9	0.68	0.46	
		9.5	.375	.031	.039	.078	0.12	0.19	0.33	0.51	1.1	1.7	2.0	2.5	0.9	0.68	0.46	
	677 Linear	20.6	.8125	0.1	.18	.40	0.62	.85	1.0	1.4	1.9	2.5	3.1	3.8	0.9	0.68	0.46	
		9.5	.375	.004	.01	.02	.03	.04	.05	.06	.07	.08	.09	.1	0.9	0.68	0.08	
		9.5	.375	.009	.02	.04	.06	.08	.1	.12	.14	.16	.18	.2	0.9	0.68	0.12	
		9.5	.375	.03	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	0.9	0.68	0.19	
		9.5	.375	.05	.1	.2	.3	.4	.5	.6	.7	.8	.9	1.0	0.9	0.68	0.27	
		9.5	.375	.2	.5	.75	1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	0.9	0.68	0.46	
	648/688 Linear	20.6	.8125	.2	.4	.55	.7	1.02	1.31	1.6	2.1	2.65	3.3	3.8	0.9	0.68	0.46	
		6.3	.25	.03	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	0.9	0.68	0.46	
		6.3	.25	.01	.14	.23	.34	.45	.55	.64	.73	.82	.9	1	0.9	0.68	0.46	
9.5		.375	.1	.2	.3	.5	.6	.73	.87	1.02	1.15	1.3	1.5	0.9	0.68	0.46		
9.5		.375	.2	.5	.75	1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	.9	0.68	0.46		
20.6	.8125	.2	.4	.55	.7	1.02	1.31	1.6	2.1	2.65	3.3	3.8	0.9	0.68	0.46			

1. Max travel is 0.5 inches.
 2. At 100% travel.

CWP 3000 to 6000 PSI																		
Valve Size, NPS ⁽¹⁾	Trim/Flow Char	Port Diameter		Experimentally Determined Cv at Valve Opening—Percent of Total Travel											F _L ⁽²⁾	X _T ⁽²⁾	F _d ⁽²⁾	
		mm	Inch	5	10	20	30	40	50	60	70	80	90	100				
1	102 Linear	6.3	.25	.00036	.0018	.0038	.0061	.008	.010	.012	.015	.016	.018	.02	0.95	0.76	0.05	
		6.3	.25	.002	.004	.008	.012	.020	.024	.031	.038	.041	.046	.05	0.95	0.76	0.08	
		6.3	.25	.0063	.011	.020	.025	.035	.045	.055	.065	.081	.09	.10	0.95	0.76	0.12	
		6.3	.25	.012	.021	.028	.045	.063	.085	.115	.147	.172	.19	.20	0.95	0.76	0.17	
	151 (Flow Down Only) Mod =%	4.0	.156	---	---	.00001	.00002	.00004	.00006	.00009	.00011	.00015	.0002	.00023	.00025	0.98	0.81	0.01
		4.0	.156	---	.00001	.00004	.00006	.00009	.00013	.00021	.00031	.0004	.00045	.0005	0.98	0.81	0.01	
		4.0	.156	.00001	.00003	.00008	.00012	.00017	.00025	.00037	.0006	.0008	.0009	.001	0.98	0.81	0.02	
		4.0	.156	.00002	.00007	.00017	.00025	.00036	.0005	.0007	.0010	.0015	.0018	.002	0.98	0.81	0.03	
		4.0	.156	.00004	.0001	.00025	.0004	.00058	.0009	.0014	.0020	.0029	.0036	.004	0.98	0.81	0.04	
		4.0	.156	.00008	.00015	.0003	.00057	.0010	.0017	.0029	.0046	.0062	.0072	.008	0.98	0.81	0.05	
		4.0	.156	.00009	.00018	.0004	.0008	.0016	.0031	.0057	.0087	.011	.014	.015	0.98	0.81	0.07	
		4.0	.156	.0001	.0002	.0005	.0012	.0028	.006	.010	.016	.022	.026	.03	0.98	0.81	0.10	
		4.0	.156	.00012	.00025	.0007	.0019	.005	.011	.022	.035	.046	.054	.06	0.98	0.81	0.15	
		4.0	.156	.00015	.0003	.001	.003	.008	.021	.040	.062	.08	.09	.10	0.98	0.81	0.19	
		4.0	.156	.0002	.0005	.002	.006	.016	.04	.079	.12	.16	.18	.20	0.98	0.81	0.29	
		4.0	.156	.0017	.005	.011	.020	.034	.06	.11	.19	.29	.38	.45	0.98	0.81	0.51	
		177 Mod =%	7.9	.3125	---	---	.00001	.00004	.00008	.00014	.0002	.00028	.00037	.00044	.0005	0.95	0.76	0.01
			7.9	.3125	---	.00001	.00007	.00015	.00024	.00036	.00048	.0006	.0008	.0009	.001	0.95	0.76	0.01
	7.9		.3125	.00001	.00002	.0002	.00029	.00047	.00071	.0010	.0013	.0016	.0018	.002	0.95	0.76	0.01	
	7.9		.3125	.00003	.00006	.0003	.00051	.00099	.0016	.0021	.0028	.0035	.0041	.005	0.95	0.76	0.02	
	7.9		.3125	.00004	.00007	.0004	.0010	.0018	.0029	.0045	.0060	.0074	.0085	.010	0.95	0.76	0.03	
	7.9		.3125	.00007	.0003	.0005	.0016	.0031	.005	.0075	.011	.013	.017	.020	0.95	0.76	0.04	
	7.9		.3125	.0001	.0005	.0011	.003	.007	.012	.017	.025	.031	.041	.050	0.95	0.76	0.06	
	577 =%	9.5	.375	.006	.01	.02	.04	.06	.12	.2	.35	.5	.82	1.0	0.9	0.68	0.42	
		9.5	.375	.008	.015	.03	.05	.07	.14	.25	.41	.65	1	1.5	0.9	0.68	0.42	
		9.5	.375	.03	.09	.14	.25	.38	.55	.7	1	1.3	1.7	2.5	0.9	0.68	0.42	
		20.6	.8125	.19	.28	.52	.77	1.0	1.3	1.7	2.3	3.0	3.8	4.0	0.82	0.68	0.42	
		20.6	.8125	.16	.24	.38	.6	.7	1	1.4	2.2	3.3	4.4	6.8	0.9	0.68	0.42	
	548/588 =%	6.3	.25	--	.017	.023	.029	.037	.045	.056	.082	.12	.16	0.2	0.98	0.50	0.28	
		6.3	.25	--	.014	.021	.031	.046	.067	.095	.14	.23	.39	0.5	0.98	0.49	0.28	
		6.3	.25	.013	.017	.030	.052	.083	.12	.20	.34	.51	.93	1.0	0.9	0.68	0.46	
		9.5	.375	.025	.033	.08	.13	.18	.25	.54	.85	1.1	1.4	1.5	0.9	0.68	0.46	
		9.5	.375	.024	.030	.068	.11	.18	.32	.51	1.0	1.9	2.4	2.5	0.9	0.68	0.46	
		20.6	.8125	.12	.21	.44	.67	.91	1.1	1.5	2.0	2.6	3.3	4.0	0.9	0.68	0.46	
		20.6	.8125	.10	.15	.31	.57	.96	1.5	2.8	4.6	5.6	6.2	6.8	0.9	0.68	0.46	
	677 Linear	9.5	.375	.004	.01	.02	.03	.04	.05	.06	.07	.08	.09	.1	0.9	0.68	0.08	
		9.5	.375	.009	.02	.04	.06	.08	.1	.12	.14	.16	.18	.2	0.9	0.68	0.12	
		9.5	.375	.03	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	0.9	0.68	0.19	
		9.5	.375	.05	.1	.2	.3	.4	.5	.6	.7	.8	.9	1.0	0.9	0.68	0.27	
		9.5	.375	.2	.5	.75	1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	0.9	0.68	0.46	
		20.6	.8125	.22	.45	.82	1.2	1.6	2	2.4	2.8	3.2	3.6	4.0	0.9	0.68	0.46	
	648/688 Linear	6.3	.25	.03	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	0.9	0.68	0.46	
		6.3	.25	.01	.12	.23	.34	.45	.55	.64	.73	.82	.9	1.0	0.9	0.68	0.46	
		9.5	.375	.1	.2	.3	.5	.6	.73	.87	1.02	1.15	1.3	1.5	0.9	0.68	0.46	
9.5		.375	.2	.5	.75	1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	0.9	0.68	0.46		
20.6		.8125	.2	.4	.55	.7	1.02	1.31	1.6	2.1	2.65	3.3	4.0	0.9	0.68	0.46		
20.6	.8125	.52	1	1.9	2.8	3.9	4.8	5.5	5.7	6	6.3	6.8	0.9	0.68	0.46			

1. Max travel is 0.5 inches.
2. At 100% travel.

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Flow Up

CWP 150 PSI																
Valve Size, NPS	Trim	Flow Char	Port Diameter		Experimentally Determined Cv at Valve Opening—Percent of Total Travel											F _L ⁽¹⁾
			mm	Inch	5	10	20	30	40	50	60	70	80	90	100	
1	177	=%	8	0.312	---	0.00	0.01	0.02	0.04	0.06	0.1	0.1	0.1	0.2	0.2	0.95
			13	0.5	0.01	0.03	0.10	0.19	0.45	0.86	1.4	2.1	3.0	4.2	5.4	---

1. At 100% travel.

Coefficients

Valve Size NPS	Port Dia. in.	Plug Tvl in.	CV AT VALVE OPENING - Percent of Plug Travel											F _d	F _L	X _T	K _C
			5	10	20	30	40	50	60	70	80	90	100				
1	0.312	0.5	0.00002	0.00005	0.00013	0.00024	0.00036	0.00048	0.0006	0.0007	0.0008	0.0009	0.001	0.7	0.98	0.81	0.94
			0.00004	0.00015	0.0004	0.0007	0.009	0.0012	0.0018	0.0025	0.0033	0.0041	0.005				
			0.00007	0.00015	0.0004	0.0008	0.0013	0.002	0.003	0.005	0.007	0.009	0.01				
			0.0001	0.0002	0.0006	0.0008	0.0017	0.0031	0.0048	0.007	0.01	0.013	0.02				
			0.0003	0.0005	0.001	0.002	0.004	0.008	0.012	0.017	0.023	0.033	0.05				
			0.008	0.016	0.034	0.045	0.053	0.061	0.069	0.075	0.081	0.09	0.1				
			0.02	0.03	0.04	0.06	0.08	0.1	0.12	0.14	0.16	0.18	0.2				
			0.03	0.04	0.08	0.12	0.16	0.2	0.24	0.28	0.32	0.36	0.4				
			0.06	0.08	0.16	0.25	0.32	0.41	0.48	0.56	0.64	0.72	0.8				
			0.07	0.11	0.2	0.31	0.41	0.52	0.63	0.71	0.82	0.91	1				
0.42																	
	0.375	0.5	0.02	0.042	0.113	0.271	0.541	0.85	1.18	1.72	2.08	2.32	2.5	0.46	0.86	0.68	0.73
	0.5	0.5	0.04	0.07	0.19	0.46	0.905	1.45	2	2.91	3.52	4	4.2	0.8	0.53	0.51	

CWP 3000 PSI																
Valve Size, NPS	Trim	Flow Char	Port Diameter		Experimentally Determined Cv at Valve Opening—Percent of Total Travel										FL ⁽¹⁾	
			mm	Inch	5	10	20	30	40	50	60	70	80	90		100
1/4	4	=%	4	0.156	---	0.00056	0.010	0.016	0.021	0.030	0.055	0.102	0.157	0.265	0.417	0.98
	5	=%	4	0.156	---	0.00009	0.00065	0.0043	0.011	0.015	0.021	0.043	0.089	0.132	0.152	0.98
	6	mod =%	4	0.156	0.00072	0.00180	0.0046	0.0091	0.016	0.033	0.059	0.086	0.095	0.100	0.103	0.98
	7	mod =%	4	0.156	---	0.00067	0.0033	0.0072	0.013	0.018	0.023	0.031	0.041	0.051	0.065	0.98
	8	mod =%	4	0.156	0.00045	0.00114	0.0027	0.0049	0.0077	0.012	0.016	0.021	0.026	0.033	0.041	0.98
	9	mod =%	4	0.156	---	0.00002	0.00039	0.00101	0.0021	0.0033	0.0047	0.0064	0.0082	0.010	0.014	0.98
	10	mod =%	4	0.156	---	0.00002	0.00023	0.00060	0.0011	0.0017	0.0026	0.0034	0.0044	0.0054	0.0066	0.98
	11	mod =%	4	0.156	0.00003	0.00010	0.00037	0.00065	0.0012	0.0018	0.0026	0.0033	0.0042	0.0050	0.0059	0.98
	12	mod =%	4	0.156	---	---	0.00004	0.00020	0.00042	0.00071	0.0011	0.0015	0.0020	0.0025	0.0030	0.98
	13	mod =%	4	0.156	---	---	0.00003	0.00011	0.00025	0.00039	0.00057	0.00080	0.0010	0.0013	0.0016	0.98
	14	mod =%	4	0.156	---	---	0.00002	0.00006	0.00012	0.00021	0.00030	0.00042	0.00052	0.00065	0.00079	0.98
	15	mod =%	4	0.156	0.000002	0.000006	0.00002	0.00004	0.00006	0.00009	0.00011	0.00015	0.0002	0.00023	0.00025	0.98
	16	mod =%	4	0.156	0.000001	0.000003	0.00001	0.00002	0.00003	0.00005	0.00006	0.00008	0.0001	0.00012	0.00013	0.98

1. At 100% travel.

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Flow Up

Flow Coefficients (ASME/ISA/IEC)

Valve Size	Orifice Diameter	Plug Travel	Trim Number	C _v AT VALVE OPENING - Percent of Plug Travel										
				5	10	20	30	40	50	60	70	80	90	100
mm (NPS)	mm (inch)	mm (inch)												
6.35 (1/4) 12.7 (1/2)	3.97 (0.156)	12.7 (0.5)	16	0.000001	0.000003	0.00001	0.00002	0.00003	0.00005	0.00006	0.00008	0.0001	0.0012	0.00013
			15	0.000002	0.000006	0.00002	0.00004	0.00006	0.00009	0.00011	0.00015	0.0002	0.00023	0.00025
			14	0.000004	0.000014	0.00004	0.00006	0.00009	0.00013	0.00021	0.00031	0.0004	0.00045	0.0005
			13	0.00001	0.00003	0.00008	0.00012	0.00017	0.00025	0.00037	0.0006	0.0008	0.0009	0.001
			12	0.00002	0.00007	0.00017	0.00025	0.00036	0.0005	0.0007	0.0010	0.0015	0.0018	0.002
			11	0.00004	0.0001	0.00025	0.00040	0.00058	0.0009	0.0014	0.0020	0.0029	0.0036	0.004
			10	0.00008	0.00015	0.00030	0.00057	0.0010	0.0017	0.0029	0.0046	0.0062	0.0072	0.008
			09	0.00009	0.00018	0.00040	0.0008	0.0016	0.0031	0.0057	0.0087	0.011	0.014	0.015
			08	0.00010	0.00020	0.0005	0.0012	0.0028	0.006	0.010	0.016	0.022	0.026	0.03
			07	0.00012	0.00025	0.0007	0.0019	0.005	0.011	0.022	0.035	0.046	0.054	0.06
			06	0.00015	0.0003	0.001	0.003	0.008	0.021	0.040	0.062	0.08	0.09	0.10
			05	0.0002	0.0005	0.002	0.006	0.016	0.04	0.079	0.12	0.16	0.18	0.20
04	0.0017	0.005	0.011	0.02	0.034	0.06	0.11	0.19	0.29	0.38	0.45			
12.7 (1/2)	9.53 (0.375)	12.7 (0.5)	03	0.009	0.014	0.030	0.06	0.11	0.17	0.25	0.35	0.45	0.60	1.0
			02	0.015	0.020	0.050	0.10	0.15	0.25	0.37	0.50	0.72	1.2	1.5
			01	0.023	0.035	0.075	0.15	0.25	0.42	0.61	0.88	1.2	1.7	2.5

Flow Coefficients (ASME/ISA/IEC)

Valve Size	Orifice Diameter	Plug Travel	Trim No.	F _d	F _L	X _T	K _C
mm (NPS)	mm (inch)	mm (inch)					
6.35 (1/4) 12.7 (1/2)	3.97 (0.156)	12.7 (0.5)	16	0.035	0.98	0.80	0.94
			15	0.04			
			14	0.05			
			13	0.06			
			12	0.075			
			11	0.10			
			10	0.11			
			09	0.15			
			08	0.18			
			07	0.22			
			06	0.25			
			05	0.3			
04	0.4						
12.7 (1/2)	9.53 (0.375)	12.7 (0.5)	03	0.23	0.95	0.75	0.86
			02	0.31	0.90	0.68	0.73
			01	0.60	0.88	0.65	0.68

Flow Coefficients (ASME/ISA/IEC) and ISA Sizing Factors

ORIFICE DIA- METER	DIA- PHRA GM TRAV EL	Cv AT VALVE OPENING - PERCENT OF VALVE STEM TRAVEL											F _L	F _d	X _T	K _C	
		5	10	20	30	40	50	60	70	80	90	100					
mm (Inch)	mm (Inch)																
0.635 (0.025)	0.177 (0.007)	0.0000 1	0.0001	0.0010	0.0024	0.0038	0.0052	0.0066	0.0076	0.0084	0.0092	0.01	0.85	0.50	0.61	0.61	
1.60 (0.063)		0.0000 3	0.0003	0.002	0.005	0.009	0.013	0.017	0.021	0.024	0.027	0.03		0.50			
7.92 (0.312)		0.0002	0.001	0.010	0.030	0.050	0.060	0.068	0.076	0.084	0.092	0.10		0.20			
7.92 (0.312)		0.381 (0.015)	0.0004	0.002	0.020	0.070	0.120	0.150	0.180	0.210	0.240	0.270		0.30			0.20
13.2 (0.520)		0.304 (0.012)	0.0007	0.003	0.040	0.100	0.150	0.200	0.250	0.310	0.370	0.430		0.50			0.20
13.2 (0.520)		0.381 (0.015)	0.001	0.005	0.070	0.160	0.220	0.300	0.380	0.460	0.540	0.620		0.70			0.20

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Flow Up

CWP 275 PSI																
Valve Size, NPS	Trim	Flow Char	Port Diameter		Experimentally Determined Cv at Valve Opening—Percent of Total Travel											FL ⁽¹⁾
			mm	Inch	5	10	20	30	40	50	60	70	80	90	100	
1/2	Air	mod =%	0.635	0.025	0.000	0.000	0.002	0.005	0.007	0.009	0.011	0.012	0.012	0.013	0.014	0.85
	Water	mod =%	0.635	0.025	---	0.000	0.001	0.003	0.005	0.008	0.009	0.009	0.010	0.010	0.011	0.82
	Air	mod =%	1.60	0.063	0.000	0.000	0.004	0.013	0.020	0.027	0.034	0.039	0.045	0.049	0.053	0.85
	Water	mod =%	1.60	0.063	---	---	0.000	0.007	0.015	0.021	0.028	0.033	0.038	0.044	0.047	0.67
	Air	mod =%	7.92	0.312	0.000	0.000	0.001	0.006	0.020	0.044	0.071	0.099	0.129	0.157	0.182	0.85
	Water	mod =%	7.92	0.312	---	0.000	0.005	0.017	0.035	0.056	0.076	0.098	0.120	0.141	0.160	0.67
	Air	mod =%	7.92	0.312	0.000	0.000	0.043	0.099	0.165	0.223	0.281	0.336	0.379	0.407	0.427	0.85
	Water	mod =%	7.92	0.312	---	---	0.034	0.092	0.149	0.205	0.263	0.314	0.352	0.385	0.414	0.76
	Air	mod =%	13.2	0.52	0.000	0.031	0.072	0.144	0.215	0.296	0.377	0.448	0.519	0.576	0.631	0.85
	Water	mod =%	13.2	0.52	---	---	0.073	0.146	0.226	0.298	0.382	0.451	0.539	0.606	0.675	0.85
	Water	mod =%	13.2	0.52	---	0.019	0.131	0.250	0.368	0.492	0.622	0.726	0.832	0.929	1.019	0.85
	Water	mod =%	13.2	0.52	---	0.01	0.14	0.32	0.54	0.71	0.86	1.02	1.13	1.23	1.30	0.91

1. At 100% travel.

Flow Coefficients (Cv Values)

ORIFICE DIA-METER	DIA-PHRAGM TRAVEL	Cv AT VALVE OPENING - PERCENT OF VALVE STEM TRAVEL										
		5	10	20	30	40	50	60	70	80	90	100
0.686 (0.027)	0.177 (0.007)	0.00001	0.0001	0.0015	0.0050	0.0075	0.0094	0.0108	0.0118	0.0123	0.0129	0.014
1.60 (0.063)		0.00003	0.0003	0.0040	0.0127	0.0200	0.0273	0.0340	0.0393	0.0450	0.0490	0.053
3.81 (0.150)		0.0002	0.0002	0.0010	0.0057	0.0197	0.0440	0.0707	0.0993	0.1293	0.1573	0.182
3.81 (0.150)	0.381 (0.015)	0.0004	0.002	0.043	0.099	0.165	0.223	0.281	0.336	0.379	0.407	0.427
9.40 (0.370)	0.304 (0.012)	0.0007	0.031	0.072	0.144	0.215	0.296	0.377	0.448	0.519	0.576	0.631
9.40 (0.370)	0.381 (0.015)	0.001	0.019	0.131	0.250	0.368	0.492	0.622	0.726	0.832	0.929	1.02

Flow Coefficients (Kv Values [$K_v = 0.86 \times C_v$])

ORIFICE DIA-METER	DIA-PHRAGM TRAVEL	Kv AT VALVE OPENING - PERCENT OF VALVE STEM TRAVEL										
		5	10	20	30	40	50	60	70	80	90	100
0.686 (0.027)	0.177 (0.007)	0.0000086	0.000086	0.00129	0.0043	0.0065	0.0081	0.0093	0.0101	0.0106	0.0111	0.0117
1.60 (0.063)		0.000026	0.000258	0.00344	0.0109	0.0172	0.0235	0.0292	0.0338	0.0387	0.0421	0.0453
3.81 (0.150)		0.00017	0.000172	0.00086	0.0049	0.0169	0.0378	0.0608	0.0854	0.1112	0.1353	0.1568
3.81 (0.150)	0.381 (0.015)	0.00034	0.00172	0.03698	0.0851	0.1419	0.1918	0.2417	0.289	0.326	0.350	0.367
9.40 (0.370)	0.304 (0.012)	0.0006	0.0267	0.0619	0.124	0.185	0.2546	0.324	0.385	0.446	0.4954	0.5427
9.40 (0.370)	0.381 (0.015)	0.00086	0.0160	0.1131	0.215	0.316	0.423	0.535	0.624	0.715	0.799	0.877

Flow Coefficients

ORIFICE DIAMETER	DIAPHRAGM TRAVEL	F _L	F _d	X _T	K _C
mm (Inch)	mm (Inch)				
0.686 (0.027)	0.177 (0.007)	0.82	0.5	0.55	0.56
1.60 (0.063)		0.7		0.34	0.41
3.81 (0.150)			0.2	0.76	0.44
3.81 (0.150)	0.304 (0.012)	0.95		0.86	0.76
9.40 (0.370)					
9.40 (0.370)	0.381 (0.015)				

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Flow Up

CWP 150 PSI																
Valve Size, NPS	Trim	Flow Char	Port Diameter		Experimentally Determined Cv at Valve Opening—Percent of Total Travel											FL ⁽¹⁾
			mm	Inch	5	10	20	30	40	50	60	70	80	90	100	
1	A-B(.5)	mod =%	25.4	1	0.018	0.021	0.11	0.29	0.54	0.84	1.20	1.58	1.99	2.38	2.79	---
	B-A(.5)	mod =%	25.4	1	0.00	0.00	0.10	0.33	0.61	0.93	1.34	1.69	2.10	2.49	2.91	---
	A-B(.5)	mod =%	25.4	1	0.00	0.002	0.036	0.49	1.13	1.86	2.55	3.32	4.03	4.71	5.33	---
	B-A(.5)	mod =%	25.4	1	0.00	0.001	0.079	0.66	1.37	2.06	2.77	3.49	4.30	5.07	5.84	---
	A-B(.75)	mod =%	25.4	1	0.014	0.204	0.925	2.01	4.00	5.59	6.23	6.61	6.61	6.64	6.60	---
1-1/2	B-A(.75)	mod =%	25.4	1	0.00	0.091	0.831	2.23	4.42	6.13	7.12	7.55	7.54	7.55	7.55	---
	A-B(.75)	mod =%	38.1	1.5	---	2.18	4.86	8.00	12.00	15.49	19.13	22.92	25.86	28.18	29.55	---
2	B-A(.75)	mod =%	38.1	1.5	1.68	2.73	5.39	8.43	12.10	14.06	15.73	17.85	20.20	22.51	24.17	---
	B-A(.5)	mod =%	50.8	2	---	0.002	0.092	2.22	5.13	9.34	13.02	15.59	17.35	19.05	21.34	---
	A-B(.75)	mod =%	50.8	2	---	3.90	3.90	8.46	14.20	20.50	26.08	31.01	35.29	39.64	42.59	---
	B-A(.75)	mod =%	50.8	2	---	0.00	1.35	3.06	11.31	16.17	21.49	24.54	25.99	29.16	32.53	---

1. At 100% travel.

Cv Values at Percent Plug Opening

VALVE SIZE NPS	FLOW DIRECTION (1)	ACTUATOR TRAVEL Inches	Cv VERSUS PERCENT OF ACTUATOR TRAVEL OPEN									
			10	20	30	40	50	60	70	80	90	100
1 Angle & Inline	A to B or B to A	0.50	0.02	0.09	0.20	0.40	0.64	0.90	1.16	1.44	1.72	2.00
		0.50	0.03	0.16	0.36	0.90	1.20	1.75	2.30	2.90	3.50	4.00
		0.75	0.04	0.24	0.62	1.20	2.00	3.10	4.20	5.50	6.80	8.00
1-1/2 Angle	A to B	0.50	1.45	3.07	4.86	6.95	9.34	12.0	14.3	16.7	19.1	21.7
		0.75	2.18	4.86	8.00	12.0	15.5	19.1	22.9	25.9	28.2	29.6
		B to A	0.50	1.82	3.61	5.39	7.42	9.66	12.1	13.4	14.6	15.7
0.75	2.73		5.39	8.43	12.1	14.1	15.7	17.8	20.2	22.5	24.2	
2 Angle	A to B	0.50	2.60	3.0	3.90	6.94	10.4	14.2	18.4	22.4	26.1	29.4
		0.75	2.70	3.90	8.46	14.2	20.5	26.1	31.0	35.3	39.6	42.6
	B to A	0.50	0.50	0.80	1.35	2.49	5.81	11.3	14.6	17.9	21.5	23.5
0.75		0.50	1.35	3.06	11.3	16.2	21.5	24.5	26.0	29.2	32.5	

1. Flow A to B is recommended for low discharge pressure. Low discharge pressure being defined as near or below atmospheric pressure.

Kv Values at Percent Plug Opening

VALVE SIZE DN	FLOW DIRECTION (1)	ACTUATOR TRAVEL mm	Kv VERSUS PERCENT OF ACTUATOR TRAVEL OPEN									
			10	20	30	40	50	60	70	80	90	100
25 Angle & Inline	A to B or B to A	12.7	0.017	0.077	0.17	0.34	0.55	0.77	0.998	1.24	1.48	1.72
		12.7	0.026	0.138	0.31	0.77	1.03	1.51	1.98	2.49	3.01	3.44
		19.05	0.034	0.206	0.53	1.03	1.72	2.67	3.61	4.73	5.85	6.88
40 Angle	A to B	12.7	1.25	2.64	4.18	5.98	8.03	10.32	12.29	14.36	16.43	18.66
		19.05	1.88	4.18	6.88	10.32	13.33	16.43	19.69	22.27	24.25	25.46
	B to A	12.7	1.57	3.10	4.64	6.38	8.31	10.41	11.52	12.56	13.50	14.71
19.05		2.35	4.64	7.25	10.41	12.13	13.50	15.31	17.37	19.35	20.81	
50 Angle	A to B	12.7	2.24	3.0	3.35	5.97	8.94	12.21	15.82	19.26	22.45	25.28
		19.05	2.33	3.35	7.28	12.21	17.63	22.45	26.66	30.36	34.06	36.64
	B to A	12.7	0.43	0.69	1.16	2.14	4.98	9.72	12.56	15.39	18.49	20.21
19.05		0.43	1.16	2.63	9.72	13.93	18.49	21.07	22.36	25.11	27.95	

1. Flow A to B is recommended for low discharge pressure. Low discharge pressure being defined as near or below atmospheric pressure.

CWP 275 PSI																
Valve Size, NPS	Trim	Flow Char	Port Diameter		Experimentally Determined Cv at Valve Opening—Percent of Total Travel											FL ⁽¹⁾
			mm	Inch	5	10	20	30	40	50	60	70	80	90	100	
1/2	N/A	mod linear	12.7	1/2	---	0.01	0.1	0.3	0.5	0.7	0.9	1.0	1.1	1.2	1.3	---

1. At 100% travel.

Flow Coefficients (ASME/ISA/IEC) and ISA Sizing Factors

PLUG TRAVEL mm (INCH)	ORIFICE DIAMETER mm (INCH)	Cv AT VALVE OPENING - PERCENT OF PLUG TRAVEL											FL	Fd	XT	Kc
		5	10	20	30	40	50	60	70	80	90	100				
7.9 (0.3125)	3.18 (0.125)	0.0025	0.005	0.0125	0.033	0.065	0.125	0.18	0.19	0.215	0.22	0.25	0.87	0.56	0.63	0.66
	9.40 (0.370)	0.0030	0.020	0.12	0.24	0.40	0.532	0.69	0.85	1.0	1.15	1.25	0.87	0.40	0.63	0.66

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Equal Percentage Cage

250 PSI CWP(1)																
VALVE SIZE		EQUAL PERCENTAGE C _v VALUES AT PERCENT OPEN											F _L	F _d	X _T	K _C
DN	NPS		10	20	30	40	50	60	70	80	90	100				
15	1/2	Cv	0.016	0.022	0.031	0.042	0.058	0.080	0.110	0.153	0.211	0.29	0.90	0.28	0.68	0.70
		Kv	0.014	0.019	0.026	0.036	0.050	0.069	0.095	0.131	0.181	0.25				
		Cv	0.06	0.09	0.12	0.17	0.23	0.32	0.44	0.61	0.84	1.2				
		Kv	0.06	0.08	0.11	0.15	0.20	0.28	0.38	0.53	0.73	1.0				
20	3/4	Cv	0.10	0.14	0.20	0.27	0.37	0.51	0.71	0.98	1.35	1.9	0.90	0.46	0.68	0.70
		Kv	0.09	0.12	0.17	0.23	0.32	0.44	0.61	0.84	1.16	1.6				
		Cv	0.26	0.35	0.49	0.67	0.93	1.28	1.77	2.44	3.37	4.7				
		Kv	0.22	0.30	0.42	0.58	0.80	1.10	1.52	2.10	2.90	4.0				
25	1	Cv	0.58	0.80	1.10	1.52	2.09	2.88	3.98	5.49	7.59	10	0.90	0.46	0.68	0.70
		Kv	0.49	0.68	0.95	1.31	1.80	2.47	3.42	4.73	6.53	9				
40	1-1/2	Cv	1.16	1.59	2.20	3.03	4.19	5.76	7.95	11.0	15.2	21	0.90	0.46	0.68	0.70
		Kv	1.00	1.37	1.89	2.61	3.60	4.95	6.84	9.45	13.1	18				
50	2	Cv	1.79	2.47	3.42	4.72	6.51	8.95	12.4	17.1	23.60	33	0.90	0.46	0.68	0.70
		Kv	1.5	2.1	2.9	4.1	5.6	7.7	10.6	14.7	20.3	28				
--	3	Cv	4.36	6.01	8.30	11.5	15.8	21.7	30.0	41.5	57.3	79	0.90	0.46	0.68	0.70
		Kv	3.75	5.17	7.14	9.86	13.6	18.7	25.8	35.7	49.3	68				
80	--	Cv	5.44	7.51	10.4	14.3	19.8	27.2	37.6	51.9	71.7	99	0.90	0.46	0.68	0.70
		Kv	4.67	6.46	8.93	12.3	17.0	23.4	32.3	44.6	61.6	85				
100	4	Cv	11.5	15.9	21.9	30.3	41.8	57.5	79.4	110	152	209	0.90	0.46	0.68	0.70
		Kv	9.90	13.7	18.9	26.1	36.0	49.5	68.5	94.6	130.6	180				
150	6	Cv	24.3	33.6	46.4	64.1	88.4	122	168	232	320	442	0.90	0.46	0.68	0.70
		Kv	20.9	28.9	39.9	55.1	76.0	104	144	200	276	380				

1.Cold Working Pressure

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CL150/150										
Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _v	30	608	2030	4460	7700	12,200	18,200	25,500	32,800	40,500
K _v		526	1760	3860	6660	10,600	15,700	22,100	28,400	35,000
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.77	0.79	0.81	0.81	0.78	0.73	0.68	0.60	0.52
X _T		0.50	0.53	0.55	0.55	0.51	0.45	0.39	0.30	0.23
C _v	36	910	3030	6670	11,500	18,200	27,300	38,200	49,100	60,600
K _v		787	2620	5770	9950	15,700	23,600	33,000	42,500	52,400
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.77	0.79	0.81	0.81	0.78	0.73	0.68	0.60	0.52
X _T		0.50	0.53	0.55	0.55	0.51	0.45	0.39	0.30	0.23
C _v	42	1200	3990	8780	15,200	24,000	35,900	50,300	64,700	79,800
K _v		1040	3450	7600	13,100	20,800	31,100	43,500	56,000	69,000
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.77	0.79	0.81	0.81	0.78	0.73	0.68	0.60	0.52
X _T		0.50	0.53	0.55	0.55	0.51	0.45	0.39	0.30	0.23
C _v	48	1590	5300	11,700	20,100	31,800	47,700	66,800	85,800	106,000
K _v		1380	4580	10,100	17,400	27,500	41,300	57,800	74,200	91,700
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.77	0.79	0.81	0.81	0.78	0.73	0.68	0.60	0.52
X _T		0.50	0.53	0.55	0.55	0.51	0.45	0.39	0.30	0.23

CL150										
Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _v	30	508	1690	3730	6440	10,200	15,200	21,300	27,400	33,900
K _v		439	1460	3230	5570	8823	13,100	18,400	23,700	29,300
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.77	0.79	0.81	0.81	0.78	0.73	0.68	0.60	0.52
X _T		0.50	0.53	0.55	0.55	0.51	0.45	0.39	0.30	0.23
C _v	36	757	2520	5550	9590	15,100	22,700	31,800	40,900	50,500
K _v		654	2180	4800	8300	13,100	19,600	27,500	35,400	43,700
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.77	0.79	0.81	0.81	0.78	0.73	0.68	0.60	0.52
X _T		0.50	0.53	0.55	0.55	0.51	0.45	0.39	0.30	0.23
C _v	42	1090	3640	8000	13,800	21,800	32,700	45,800	58,900	72,700
K _v		943	3150	6920	11,900	18,900	28,300	39,600	50,900	62,900
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.77	0.79	0.81	0.81	0.78	0.73	0.68	0.60	0.52
X _T		0.50	0.53	0.55	0.55	0.51	0.45	0.39	0.30	0.23
C _v	48	1390	4630	10,200	17,600	27,800	41,700	58,400	75,000	92,600
K _v		1200	4000	8820	15,200	24,000	36,100	50,500	64,900	80,100
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.77	0.79	0.81	0.81	0.78	0.73	0.68	0.60	0.52
X _T		0.50	0.53	0.55	0.55	0.51	0.45	0.39	0.30	0.23



CL300										
Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _v	30	715	1790	3700	6320	9780	14,000	18,100	21,200	23,800
K _v		618	1550	3200	5470	8460	12,100	15,700	18,300	20,600
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	36	1100	2760	5700	9750	15,100	21,700	28,000	32,800	36,800
K _v		952	2390	4930	8430	13,100	18,800	24,200	28,400	31,800
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	42	1710	4280	8840	15,100	23,400	33,700	43,400	50,800	57,100
K _v		1480	3700	7650	13,100	20,200	29,200	37,500	43,900	49,400
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	48	1870	4670	9650	16,500	25,500	36,700	47,300	55,400	62,200
K _v		1620	4040	8350	14,300	22,100	31,700	40,900	47,900	53,800
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23

CL600										
Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _v	3	5	16	31	51	84	122	151	169	182
K _v		4	14	27	44	73	106	131	146	157
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
X _T		0.51	0.55	0.55	0.52	0.45	0.37	0.29	0.25	0.23
C _v	4	8	23	43	71	116	169	209	234	252
K _v		7	20	37	61	100	146	181	202	218
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
X _T		0.51	0.55	0.55	0.52	0.45	0.37	0.29	0.25	0.23
C _v	6	15	46	87	144	236	344	426	477	513
K _v		13	40	75	125	204	298	368	413	444
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
X _T		0.51	0.55	0.55	0.52	0.45	0.37	0.29	0.25	0.23

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CL600										
Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _v	8	35	104	197	324	532	775	960	1080	1160
K _v		30	90	170	280	460	670	830	934	1000
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
X _T		0.51	0.55	0.55	0.52	0.45	0.37	0.29	0.25	0.23
C _v	10	62	185	350	577	947	1380	1710	1920	2060
K _v		53	160	303	499	819	1190	1480	1660	1780
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
X _T		0.51	0.55	0.55	0.52	0.45	0.37	0.29	0.25	0.23
C _v	12	85	255	481	793	1300	1900	2350	2630	2830
K _v		74	221	416	686	1120	1640	2030	2270	2450
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
X _T		0.51	0.55	0.55	0.52	0.45	0.37	0.29	0.25	0.23
C _v	14	104	312	590	971	1600	2320	2880	3230	3470
K _v		90	270	510	840	1380	2010	2490	2790	3000
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
X _T		0.51	0.55	0.55	0.52	0.45	0.37	0.29	0.25	0.23
C _v	16	138	413	781	1290	2110	3080	3810	4270	4590
K _v		119	357	676	1120	1830	2660	3300	3690	3970
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
X _T		0.51	0.55	0.55	0.52	0.45	0.37	0.29	0.25	0.23
C _v	18	175	524	989	1630	2680	3900	4830	5410	5820
K _v		151	453	855	1410	2320	3370	4180	4680	5030
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
X _T		0.51	0.55	0.55	0.52	0.45	0.37	0.29	0.25	0.23
C _v	20	196	588	1110	1830	3010	4380	5430	6080	6540
K _v		170	509	960	1580	2600	3790	4700	5260	5660
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
X _T		0.51	0.55	0.55	0.52	0.45	0.37	0.29	0.25	0.23
C _v	24	349	1050	1980	3260	5350	7790	9650	10,800	11,600
K _v		302	908	1710	2820	4630	6740	8350	9340	10,000
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.73	0.66	0.59	0.55	0.52
X _T		0.51	0.55	0.55	0.52	0.45	0.37	0.29	0.25	0.23



CL900										
Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _v	6	17	52	100	174	265	343	385	417	434
K _v		15	45	87	151	229	297	333	361	375
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.79	0.81	0.8	0.75	0.69	0.61	0.56	0.53	0.52
X _T		0.52	0.55	0.54	0.47	0.39	0.31	0.26	0.24	0.23
C _v	8	30	89	170	296	452	585	659	711	741
K _v		26	77	147	256	391	506	570	615	641
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.79	0.81	0.8	0.75	0.69	0.61	0.56	0.53	0.52
X _T		0.52	0.55	0.54	0.47	0.39	0.31	0.26	0.24	0.23
C _v	10	56	169	324	563	859	1112	1253	1352	1408
K _v		48	146	280	487	743	962	1084	1169	1218
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.79	0.81	0.8	0.75	0.69	0.61	0.56	0.53	0.52
X _T		0.52	0.55	0.54	0.47	0.39	0.31	0.26	0.24	0.23
C _v	12	50	151	290	504	769	995	1121	1210	1260
K _v		43	131	251	436	665	861	970	1047	1090
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.79	0.81	0.8	0.75	0.69	0.61	0.56	0.53	0.52
X _T		0.52	0.55	0.54	0.47	0.39	0.31	0.26	0.24	0.23
C _v	14	111	332	636	1106	1687	2184	2461	2654	2765
K _v		96	287	550	957	1459	1889	2129	2296	2392
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.79	0.81	0.8	0.75	0.69	0.61	0.56	0.53	0.52
X _T		0.52	0.55	0.54	0.47	0.39	0.31	0.26	0.24	0.23
C _v	16	140	421	806	1402	2138	2769	3119	3365	3505
K _v		121	364	697	1213	1849	2395	2698	2911	3032
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.79	0.81	0.8	0.75	0.69	0.61	0.56	0.53	0.52
X _T		0.52	0.55	0.54	0.47	0.39	0.31	0.26	0.24	0.23
C _v	18	182	546	1046	1820	2775	3594	4049	4367	4549
K _v		157	472	905	1574	2400	3109	3502	3777	3935
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.79	0.81	0.8	0.75	0.69	0.61	0.56	0.53	0.52
X _T		0.52	0.55	0.54	0.47	0.39	0.31	0.26	0.24	0.23
C _v	20	214	614	1228	2135	3256	4217	4751	5124	5338
K _v		185	531	1062	1847	2816	3648	4110	4432	4617
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.79	0.81	0.8	0.75	0.69	0.61	0.56	0.53	0.52
X _T		0.52	0.55	0.54	0.47	0.39	0.31	0.26	0.24	0.23
C _v	24	330	989	1895	3296	5029	6509	7333	7909	8239
K _v		285	855	1639	2851	4347	5630	6343	6841	7127
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.79	0.81	0.8	0.75	0.69	0.61	0.56	0.53	0.52
X _T		0.52	0.55	0.54	0.47	0.39	0.31	0.26	0.24	0.23

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CL1500										
Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _v	10	44	147	265	420	553	649	700	730	737
K _v		38	127	229	363	478	561	606	631	638
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.8	0.81	0.76	0.7	0.63	0.57	0.54	0.52	0.52
X _T		0.54	0.55	0.49	0.41	0.34	0.27	0.24	0.23	0.23
C _v	12	76	153	456	722	950	1115	1204	1254	1267
K _v		66	132	394	625	822	964	1041	1085	1096
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.8	0.81	0.76	0.7	0.63	0.57	0.54	0.52	0.52
X _T		0.54	0.55	0.49	0.41	0.34	0.27	0.24	0.23	0.23
C _v	14	83	275	495	784	1032	1211	1307	1362	1376
K _v		72	238	428	678	893	1048	1131	1178	1190
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.8	0.81	0.76	0.7	0.63	0.57	0.54	0.52	0.52
X _T		0.54	0.55	0.49	0.41	0.34	0.27	0.24	0.23	0.23
C _v	16	109	363	653	1033	1360	1595	1722	1795	1813
K _v		94	314	565	894	1176	1380	1490	1553	1568
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.8	0.81	0.76	0.7	0.63	0.57	0.54	0.52	0.52
X _T		0.54	0.55	0.49	0.41	0.34	0.27	0.24	0.23	0.23
C _v	18	166	554	997	1579	2077	2438	2631	2742	2770
K _v		144	479	862	1366	1797	2109	2276	2372	2396
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.8	0.81	0.76	0.7	0.63	0.57	0.54	0.52	0.52
X _T		0.54	0.55	0.49	0.41	0.34	0.27	0.24	0.23	0.23
C _v	20	203	677	1219	1931	2540	2981	3218	3353	3387
K _v		176	586	1054	1670	2197	2579	2784	2900	2930
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.7
F _L		0.8	0.81	0.76	0.7	0.63	0.57	0.54	0.52	0.52
X _T		0.54	0.55	0.49	0.41	0.34	0.27	0.24	0.23	0.23



CL600/300, CL900/300, and CL1500/300										
Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _v	3	6	14	29	50	77	111	143	167	188
K _v		5	12	25	43	67	96	124	144	163
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	4	12	30	63	107	166	238	307	360	404
K _v		10	26	54	93	144	206	266	311	349
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	6	32	81	167	285	441	635	818	958	1076
K _v		28	70	144	247	381	549	708	829	931
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	8	40	100	206	352	545	784	1010	1183	1329
K _v		35	87	178	304	471	678	874	1023	1150
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	10	71	178	367	628	971	1398	1800	2108	2369
K _v		61	154	317	543	840	1209	1557	1823	2049
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	12	110	276	571	975	1509	2172	2798	3276	3681
K _v		95	239	494	843	1305	1879	2420	2834	3184
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	14	136	341	704	1204	1863	2682	3454	4045	4545
K _v		118	295	609	1041	1611	2320	2988	3499	3931
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	16	169	422	873	1492	2309	3323	4280	5012	5632
K _v		146	365	755	1291	1997	2874	3702	4335	4872
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	18	247	617	1276	2181	3374	4856	6255	7325	8230
K _v		214	534	1104	1887	2919	4200	5411	6336	7119
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23

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CL600/300, CL900/300, and CL1500/300

Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _v	20	286	714	1477	2524	3906	5620	7240	8478	9526
K _v		247	618	1278	2183	3379	4861	6263	7333	8240
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	24	375	938	1939	3315	5130	7381	9508	11135	12511
K _v		324	811	1677	2867	4437	6385	8224	9632	10822
F _d		0.09	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23



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CL150, Reverse Flow, NPS 3 through 18

Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _v	3	6	14	29	50	77	111	143	167	188
K _v		5.19	12.1	25.1	43.3	66.6	96.0	124	144	163
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	4	12	30	63	107	165	238	307	359	404
K _v		10.4	26.0	54.5	92.6	143	206	266	311	349
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	6	32	81	167	285	441	635	818	957	1080
K _v		27.7	70.1	144	247	381	549	708	828	934
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	8	34	113	248	429	677	1020	1420	1830	2260
K _v		29.4	97.7	215	371	586	882	1228	1583	1955
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.77	0.79	0.81	0.81	0.78	0.73	0.68	0.60	0.52
X _T		0.50	0.53	0.55	0.55	0.51	0.45	0.39	0.30	0.23
C _v	10	47	159	349	604	953	1430	2000	2580	3180
K _v		40.7	138	302	522	824	1237	1730	2232	2751
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.77	0.79	0.81	0.81	0.78	0.73	0.68	0.60	0.52
X _T		0.50	0.53	0.55	0.55	0.51	0.45	0.39	0.30	0.23
C _v	12	74	247	543	939	1480	2220	3110	4000	4940
K _v		64.0	214	470	812	1280	1920	2690	3460	4273
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.77	0.79	0.81	0.81	0.78	0.73	0.68	0.60	0.52
X _T		0.50	0.53	0.55	0.55	0.51	0.45	0.39	0.30	0.23
C _v	14	95	316	695	1200	1900	2840	3980	5120	6320
K _v		82.2	273	601	1038	1643	2457	3443	4429	5467
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.77	0.79	0.81	0.81	0.78	0.73	0.68	0.60	0.52
X _T		0.50	0.53	0.55	0.55	0.51	0.45	0.39	0.30	0.23
C _v	16	129	430	946	1640	2580	3870	5420	6970	8600
K _v		112	372	818	1419	2232	3348	4688	6029	7439
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.77	0.79	0.81	0.81	0.78	0.73	0.68	0.60	0.52
X _T		0.50	0.53	0.55	0.55	0.51	0.45	0.39	0.30	0.23
C _v	18	166	553	1220	2100	3320	4970	6960	8950	11,050
K _v		144	478	1055	1817	2872	4299	6020	7742	9558
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.77	0.79	0.81	0.81	0.78	0.73	0.68	0.60	0.52
X _T		0.50	0.53	0.55	0.55	0.51	0.45	0.39	0.30	0.23



CL150, Reverse Flow, NPS 20 and 24

Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _v	20	208	692	1520	2630	4160	6230	8730	11,220	13,850
K _v		180	599	1315	2275	3598	5389	7551	9705	11,980
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.77	0.79	0.81	0.81	0.78	0.73	0.68	0.60	0.52
X _T		0.50	0.53	0.55	0.55	0.51	0.45	0.39	0.30	0.23
C _v	24	322	1080	2370	4080	6450	9670	13,540	17,410	21,500
K _v		277	934	2050	3529	5579	8365	11,712	15,060	18,598
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.77	0.79	0.81	0.81	0.78	0.73	0.68	0.60	0.52
X _T		0.50	0.53	0.55	0.55	0.51	0.45	0.39	0.30	0.23

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CL300, Reverse Flow, NPS 3 through 18

Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _v	3	6	14	29	50	77	111	143	167	188
K _v		5.19	12.1	25.1	43.3	66.6	96.0	124	144	163
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	4	12	30	63	107	165	238	307	359	404
K _v		10.4	26.0	54.5	92.6	143	206	266	311	349
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	6	32	81	167	285	441	635	818	957	1080
K _v		27.7	70.1	144	247	381	549	708	828	934
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	8	40	100	206	352	545	784	1010	1180	1330
K _v		34.6	86.5	178	304	471	677	874	1020	1150
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	10	71	178	367	628	971	1400	1800	2110	2370
K _v		61.4	154	317	543	840	1211	1557	1825	2050
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	12	110	276	570	975	1510	2170	2800	3280	3680
K _v		95.2	239	493	843	1306	1877	2422	2837	3183
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	14	136	341	704	1200	1860	2680	3450	4050	4550
K _v		118	295	609	1038	1609	2318	2984	3503	3936
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	16	169	422	873	1490	2310	3320	4280	5010	5630
K _v		146	365	755	1289	1998	2872	3702	4334	4870
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.47	0.40	0.33	0.26	0.26	0.23
C _v	18	247	617	1280	2180	3370	4860	6260	7330	8230
K _v		214	534	1107	1886	2915	4204	5415	6340	7119
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23



CL300, Reverse Flow, NPS 20 and 24

Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _v	20	286	714	1480	2520	3910	5620	7240	8480	9530
K _v		247	618	1280	2180	3382	4861	6263	7335	8243
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23
C _v	24	375	938	1940	3320	5130	7380	9510	11,140	12,500
K _v		324	811	1678	2872	4437	6384	8226	9636	10,821
F _d		0.090	0.17	0.26	0.34	0.42	0.49	0.57	0.64	0.70
F _L		0.78	0.81	0.81	0.79	0.75	0.69	0.62	0.56	0.52
X _T		0.51	0.55	0.55	0.53	0.47	0.40	0.33	0.26	0.23

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The Fisher® A31D flow coefficients are identical to the 8532. For NPS 14 through 24 A31D flow coefficients, refer to the 8532 information.

Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _V	3	6	14	29	50	77	111	143	167	188
K _V		5.19	12.1	25.1	43.3	66.6	96.0	124	144	163
F _L		---	.81	.81	.79	.75	.69	.62	.56	.52
X _T		.51	.55	.55	.47	.40	.33	.26	.26	.23
C _V	4	12	30	63	107	165	238	307	359	404
K _V		10.4	26.0	54.5	92.6	143	206	266	311	349
F _L		---	.81	.81	.79	.75	.69	.62	.56	.52
X _T		.51	.55	.55	.47	.40	.33	.26	.26	.23
C _V	6	32	81	167	285	441	635	818	957	1080
K _V		27.7	70.1	144	247	381	549	708	828	934
F _L		---	.81	.81	.79	.75	.69	.62	.56	.52
X _T		.51	.55	.55	.47	.40	.33	.26	.26	.23
C _V	8	34	113	248	429	677	1020	1420	1830	2260
K _V		29.4	97.7	215	371	586	882	1228	1583	1955
F _L		---	.81	.81	.79	.75	.69	.62	.56	.52
X _T		.51	.55	.55	.47	.40	.33	.26	.26	.23
C _V	10	47	159	349	604	953	1430	2000	2580	3180
K _V		40.7	138	302	522	824	1237	1730	2232	2751
F _L		---	.81	.81	.79	.75	.69	.62	.56	.52
X _T		.51	.55	.55	.47	.40	.33	.26	.26	.23
C _V	12	74	247	543	939	1480	2220	3110	4000	4940
K _V		64.0	214	470	812	1280	1920	2690	3460	4273
F _L		---	.81	.81	.79	.75	.69	.62	.56	.52
X _T		.51	.55	.55	.47	.40	.33	.26	.26	.23



The Fisher A31D flow coefficients are identical to the 8532. For NPS 14 through 24 A31D flow coefficients, refer to the 8532 information.

Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _V	3	6	14	29	50	77	111	143	167	188
K _V		5.19	12.1	25.1	43.3	66.6	96.0	124	144	163
F _L		---	.81	.81	.79	.75	.69	.62	.56	.52
X _T		.51	.55	.55	.47	.40	.33	.26	.26	.23
C _V	4	12	30	63	107	165	238	307	359	404
K _V		10.4	26.0	54.5	92.6	143	206	266	311	349
F _L		---	.81	.81	.79	.75	.69	.62	.56	.52
X _T		.51	.55	.55	.47	.40	.33	.26	.26	.23
C _V	6	32	81	167	285	441	635	818	957	1080
K _V		27.7	70.1	144	247	381	549	708	828	934
F _L		---	.81	.81	.79	.75	.69	.62	.56	.52
X _T		.51	.55	.55	.47	.40	.33	.26	.26	.23
C _V	8	40	100	206	352	545	783	1010	1180	1330
K _V		34.6	86.5	178	304	471	677	874	1020	1150
F _L		---	.81	.81	.79	.75	.69	.62	.56	.52
X _T		.51	.55	.55	.47	.40	.33	.26	.26	.23
C _V	10	71	178	367	628	971	1400	1800	2110	2370
K _V		61.4	154	317	543	840	1211	1557	1825	2050
F _L		---	.81	.81	.79	.75	.69	.62	.56	.52
X _T		.51	.55	.55	.47	.40	.33	.26	.26	.23
C _V	12	110	276	570	975	1510	2170	2800	3280	3680
K _V		95.2	239	493	843	1306	1877	2422	2837	3183
F _L		---	.81	.81	.79	.75	.69	.62	.56	.52
X _T		.51	.55	.55	.47	.40	.33	.26	.26	.23

A three-way butterfly valve consists of two standard butterfly valves mounted on a pipe tee. The valves are operated by a single actuator through a tandem linkage. The linkage is normally arranged so that one of the valves is opening while the other is closing. For additional three-way butterfly valve information, refer to Bulletin 51.4:020.

When sizing a three-way butterfly valve, the relationship between valve disc rotation and flow must be kept in mind. With butterfly valves, this relationship is equal percentage and not linear. Due to this relationship, at mid-travel of the valve disc, flow capacity is less than one-half total valve capacity. With a three-way butterfly valve, one valve is opening while the other valve is closing, and both valves are midway through total disc rotation of 60 or 90 degrees when the actuator is at mid-travel. The combined capacity of the two valves at mid-travel is less than wide-open capacity of one valve.

If each valve is sized to handle maximum pipe tee flow at full disc rotation, combined capacity of the two valves at mid-travel will be lower than the flow capacity of the tee. Although this reduction is present at all points of travel, it is most significant at mid-travel. This is illustrated in figures 1 and 2 for conventional discs. For Fishtail™ discs, one-half of total valve capacity is reached at an even larger angle of disc rotation, and the reduction in combined capacity at mid-travel is greater than it is with conventional discs.

For flow-switching (on/off) applications, this is not serious since the valves will be at mid-travel only momentarily while the valves are being stroked open and closed.

For throttling applications, it is possible that the valves will remain at mid-travel for significant periods of time. In these applications, the capacity reduction could cause system problems such as compressor surging. To avoid these problems, size each valve to carry one-half of the maximum pipe tee flow at mid-travel. Then, the combined flow capacity of the two valves at mid-travel will equal maximum flow.

Figure 1. Three-Way Valve Capacity with Single Actuator--60 Degree Maximum Valve Disc Rotation

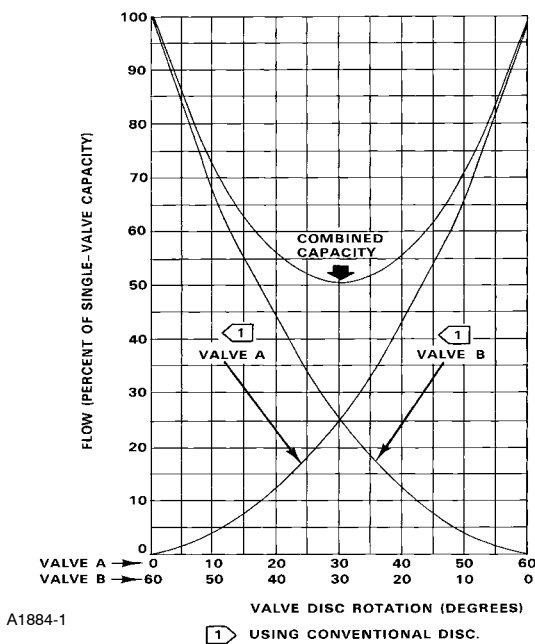
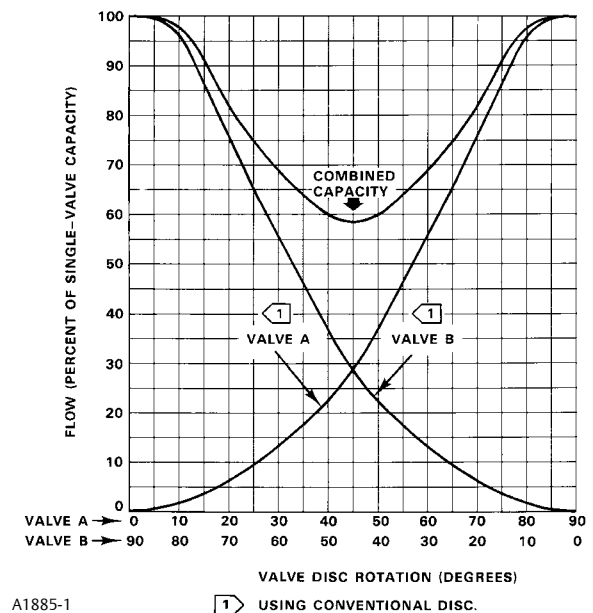
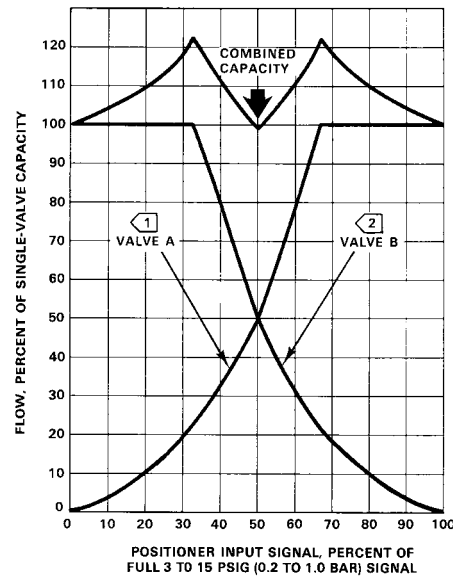


Figure 2. Three-Way Valve Capacity with Single Actuator--90 Degree Maximum Valve Disc Rotation



If it is not desirable to do this, operate each valve with a separate actuator and valve positioner. Use one direct-acting and one reverse-acting positioner and adjust the positioners for split-range operation. With this arrangement, a single input signal will open one valve while closing the other. Since split-range operation is being used, the positioners can be adjusted such that the mid-travel position of the disc is reached before the input signal reaches mid-range. Then at mid-range of the input signal, each valve can be at one-half of total capacity, rather than at one-half of total disc rotation. A typical example is shown in figure 3. Although figure 3 illustrates the use of piston actuators with Fisher 3570 positioners, a similar arrangement can be made with any actuator and positioner type. Contact your Emerson Process Management sales office for sizing assistance if dual actuation with split-range positioners is desired.

Figure 3. Three-Way Valve Capacity with Dual Actuators--60 Degree Maximum Valve Disc Rotation



- ① USING CONVENTIONAL DISC, PISTON ACTUATOR, AND DIRECT-ACTING 3-TO-15 PSIG (0.2 TO 1.0 BAR) TYPE 3570 POSITIONER ADJUSTED TO STROKE VALVE FULLY WITH 3-TO-11 PSIG (0.2 TO 0.8 BAR) SPLIT-RANGE INPUT SIGNAL.
- ② USING CONVENTIONAL DISC, PISTON ACTUATOR, AND REVERSE-ACTING 3-TO-15 PSIG (0.2 TO 1.0 BAR) TYPE 3570 POSITIONER ADJUSTED TO STROKE VALVE FULLY WITH 15-TO-7 PSIG (1.0 TO 0.5 BAR) SPLIT-RANGE INPUT SIGNAL.

A26761-1

CL2500 (Flow Down)																	Pure Linear Characteristic
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Minimum ⁽¹⁾	Valve Opening—Percent of Total Travel										F _L ⁽²⁾
	mm	Inch	mm	Inch			10	20	30	40	50	60	70	80	90	100	
2	38.1	1.5	38.1	1.5	C _v	0.46	0.52	1.49	2.55	3.50	4.53	5.40	6.25	7.00	7.67	8.25	0.99
					K _v	0.40	0.45	1.29	2.21	3.03	3.92	4.67	5.41	6.06	6.64	7.14	---
3	55.6	2.1875	51	2	C _v	0.65	0.5	2.2	3.9	5.5	7.2	8.7	10.3	11.8	13.3	14.6	0.99
					K _v	0.56	0.4	1.9	3.4	4.8	6.2	7.5	8.9	10.2	11.5	12.6	---
4	69.9	2.75	63.5	2.5	C _v	0.81	2.15	4.42	6.75	9.04	11.3	13.6	15.8	18.0	20.0	21.9	0.99
					K _v	0.70	1.86	3.82	5.84	7.82	9.78	11.8	13.7	15.6	17.3	18.9	---
6	111	4.375	101	4	C _v	1.30	4.45	10.9	17.4	23.4	29.2	35.0	40.7	46.1	50.9	55.6	0.99
					K _v	1.13	3.95	9.43	15.1	20.2	25.3	30.3	35.2	39.9	44.0	48.1	---
CL2500 (Flow Down)																	Approximately Linear Characteristic
						10	20	30	40	50	60	70	80	90	100	F _L ⁽²⁾	
2	38.1	1.5	38.1	1.5	C _v	0.46	0.31	1.11	2.12	3.44	5.02	6.55	7.99	9.35	10.6	11.3	0.99
					K _v	0.40	0.27	0.96	1.83	2.98	4.34	5.67	6.91	8.09	9.17	9.78	---
3	55.6	2.1875	51	2	C _v	0.65	0.5	2.2	3.9	5.6	7.2	9.7	12.9	16.7	20.7	24.0	0.99
					K _v	0.56	0.4	1.9	3.4	4.8	6.2	8.4	11.2	14.4	17.9	20.8	---
4	69.9	2.75	63.5	2.5	C _v	0.81	2.33	4.89	7.49	10.6	14.6	19.6	25.5	31.3	35.8	38.2	0.99
					K _v	0.07	2.02	4.23	6.48	9.17	12.6	17.0	22.1	27.1	31.0	33.0	---
6	111	4.375	101	4	C _v	1.30	3.90	10.1	16.9	24.1	33.4	45.2	58.4	71.0	82.1	89.1	0.99
					K _v	1.13	3.37	8.74	14.6	20.8	28.9	39.1	50.5	61.4	71.0	77.1	---

1. The ability of Cavitrol IV trim to prevent cavitation noise and damage is diminished when throttling for long times at C_vs less than these minimums.
2. At 100% travel.



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**CHPD & CHPT
CL2500**

Linear and Equal Percentage Cages
Flow Down through the Port

Linear - Flow Down															Linear Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
8	136.5	5.375	152	6	C _v	57.9	134	205	262	308	363	417	458	500	519	0.86
					X _T	0.54	0.51	0.53	0.59	0.67	0.68	0.73	0.70	0.65	0.66	---

Modified Equal Percentage - Flow Down															Modified Equal Percentage Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
8	136.5	5.375	152	6	C _v	19.4	44.1	68.0	110	196	307	409	449	487	514	0.86
					X _T	0.55	0.55	0.56	0.55	0.53	0.60	0.69	0.70	0.68	0.65	---

Equal Percentage - Flow Down															Equal Percentage Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
8	136.5	5.375	102	4	C _v	11.5	27.9	44.1	60.6	75.4	110	164	236	307	381	0.84
					X _T	0.53	0.55	0.55	0.55	0.58	0.55	0.52	0.54	0.60	0.67	---

Cavitrol III Two-Stage, Flow Down															Cavitrol III Two Stage Characteristic	
Valve Size, NPS	Shutoff Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
8	136.5	5.375	152	6	C _v	9.56	28.4	47.0	65.6	83.8	102	119	136	153	169	0.98

Linear - Flow Up															Linear Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
8	136.5	5.375	152	6	C _v	58.7	133	206	267	313	343	382	421	456	482	0.84
					X _T	0.58	0.57	0.56	0.59	0.65	0.74	0.77	0.68	0.65	0.68	---

Modified Equal Percentage - Flow Up															Modified Equal Percentage Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
8	136.5	5.375	152	6	C _v	20.3	45.9	72.5	115	200	301	408	459	487	489	0.87
					X _T	0.57	0.55	0.53	0.53	0.54	0.61	0.69	0.72	0.69	0.69	---

Equal Percentage - Flow Up															Equal Percentage Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
8	136.5	5.375	102	4	C _v	11.3	28.5	45.9	63.5	82.7	115	169	237	301	375	0.8
					X _T	0.68	0.59	0.55	0.56	0.52	0.53	0.52	0.54	0.61	0.67	---

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PN 10 through PN 40, CL150 and CL300											Equal Percentage Characteristic
Valve Size		Coefficients	Valve Rotation, Degrees								
DN	NPS		10	20	30	40	50	60	70	80	90
50	2	C _v	1.52	5.20	9.68	13.2	19.8	25.2	33.1	44.5	60.7
		K _v	1.31	4.49	8.36	11.4	17.1	21.8	28.6	38.4	52.4
		F _d	0.14	0.10	0.13	0.14	0.19	0.21	0.25	0.27	0.33
		F _L	---	0.78	0.77	0.75	0.74	0.75	0.77	0.75	0.71
		X _T	0.30	0.29	0.32	0.32	0.36	0.50	0.54	0.52	0.44
80	3	C _v	4.60	11.0	17.0	28.3	48.4	71.6	107	162	227
		K _v	3.97	9.50	14.7	24.5	41.8	61.9	92.4	140	196
		F _d	0.09	0.11	0.12	0.16	0.21	0.27	0.34	0.46	0.52
		F _L	0.67	0.73	0.65	0.73	0.76	0.76	0.74	0.70	0.66
		X _T	0.41	0.44	0.39	0.47	0.51	0.50	0.53	0.45	0.31
100	4	C _v	9.99	25.3	33.5	51.4	79.4	124	190	282	391
		K _v	8.63	21.9	28.9	44.4	68.6	107	164	244	338
		F _d	0.09	0.11	0.12	0.16	0.21	0.28	0.35	0.43	0.49
		F _L	0.85	0.86	0.82	0.80	0.78	0.75	0.73	0.68	0.60
		X _T	0.50	0.46	0.45	0.45	0.43	0.41	0.36	0.30	0.27
150	6	C _v	25.8	61.0	86.6	134	207	320	509	749	883
		K _v	22.3	52.7	74.8	116	179	276	440	647	763
		F _d	0.10	0.12	0.13	0.18	0.25	0.32	0.39	0.45	0.50
		F _L	0.76	0.76	0.70	0.70	0.74	0.74	0.68	0.64	0.59
		X _T	0.71	0.42	0.38	0.40	0.45	0.46	0.38	0.31	0.24
200	8	C _v	56.8	104	147	214	361	589	906	1390	1930
		K _v	49.1	89.9	127	185	312	509	783	1201	1668
		F _d	0.11	0.11	0.13	0.19	0.26	0.33	0.39	0.46	0.54
		F _L	0.8	0.76	0.71	0.77	0.76	0.74	0.71	0.63	0.56
		X _T	0.30	0.35	0.32	0.41	0.39	0.46	0.38	0.32	0.21
250	10	C _v	76.0	183	275	409	669	1070	1650	2540	3270
		K _v	65.7	158	238	353	578	924	1426	2195	2825
		F _d	0.11	0.13	0.16	0.22	0.29	0.35	0.41	0.48	0.55
		F _L	0.81	0.75	0.71	0.80	0.79	0.73	0.67	0.61	0.54
		X _T	0.44	0.41	0.37	0.45	0.45	0.39	0.34	0.25	0.19
300	12	C _v	108	188	272	515	925	1450	2230	3080	4530
		K _v	93.3	162	235	445	799	1253	1927	2661	3914
		F _d	0.09	0.11	0.14	0.21	0.28	0.34	0.40	0.47	0.54
		F _L	0.77	0.71	0.78	0.80	0.78	0.74	0.68	0.68	0.54
		X _T	0.26	0.37	0.48	0.47	0.45	0.47	0.37	0.34	0.19



NPS 14 through 36, CL150										Equal Percentage Characteristic
Valve Size	Coefficients	Valve Rotation, Degrees								
NPS		10	20	30	40	50	60	70	80	90
14	C _v	175	260	370	600	1030	1750	2860	4420	6540
	K _v	151	225	320	518	890	1512	2471	3819	5651
	F _L	0.75	0.71	0.77	0.74	0.78	0.75	0.72	0.65	0.60
	X _T	0.17	0.17	0.40	0.56	0.54	0.43	0.33	0.25	0.19
	F _d	0.08	0.10	0.12	0.18	0.24	0.31	0.39	0.47	0.55
16	C _v	275	425	580	875	1430	2380	3860	5990	8900
	K _v	238	367	501	756	1236	2056	3335	5175	7690
	F _L	0.75	0.71	0.77	0.74	0.78	0.75	0.72	0.65	0.60
	X _T	0.17	0.15	0.33	0.50	0.51	0.41	0.32	0.24	0.18
	F _d	0.09	0.11	0.14	0.19	0.25	0.32	0.39	0.47	0.55
18	C _v	410	630	840	1210	1900	3090	4950	7640	11340
	K _v	354	544	726	1045	1642	2670	4277	6601	9798
	F _L	0.75	0.71	0.77	0.74	0.78	0.75	0.72	0.65	0.60
	X _T	0.08	0.07	0.16	0.26	0.29	0.25	0.19	0.15	0.11
	F _d	0.09	0.13	0.15	0.20	0.26	0.32	0.39	0.47	0.55
20	C _v	515	785	1060	1530	2380	3800	6000	9110	13400
	K _v	445	678	916	1322	2056	3283	5184	7871	11578
	F _L	0.75	0.71	0.77	0.74	0.78	0.75	0.72	0.65	0.60
	X _T	0.18	0.21	0.40	0.56	0.56	0.46	0.35	0.26	0.20
	F _d	0.09	0.12	0.15	0.20	0.26	0.33	0.40	0.48	0.55
24	C _v	520	975	1280	1810	2970	5150	8730	14100	21600
	K _v	449	842	1106	1564	2566	4450	7543	12182	18662
	F _L	0.75	0.71	0.77	0.74	0.78	0.75	0.72	0.65	0.60
	X _T	0.19	0.07	0.22	0.48	0.56	0.46	0.34	0.25	0.18
	F _d	0.07	0.09	0.11	0.16	0.23	0.30	0.38	0.46	0.54
30	C _v	1840	2530	3010	4000	6050	10000	16400	26000	39300
	K _v	1590	2186	2601	3456	5227	8640	14170	22464	33955
	F _L	0.75	0.71	0.77	0.74	0.78	0.75	0.72	0.65	0.60
	X _T	0.14	0.14	0.30	0.50	0.52	0.41	0.29	0.21	0.15
	F _d	0.10	0.13	0.17	0.22	0.28	0.34	0.41	0.49	0.56
36	C _v	2410	3550	4310	5750	8890	14800	24500	39100	59500
	K _v	2082	3067	3724	4968	7681	12787	21168	33782	51408
	F _L	0.75	0.71	0.77	0.74	0.78	0.75	0.72	0.65	0.60
	X _T	0.13	0.15	0.34	0.55	0.56	0.42	0.29	0.20	0.14
	F _d	0.10	0.13	0.17	0.22	0.28	0.34	0.42	0.50	0.56

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NPS 14 through 36, CL300										Equal Percentage Characteristic
Valve Size	Coefficients	Valve Rotation, Degrees								
NPS		10	20	30	40	50	60	70	80	90
14	C _v	140	200	305	500	840	1360	2120	3160	4540
	K _v	121	173	264	432	726	1175	1832	2730	3923
	F _L	0.75	0.71	0.77	0.74	0.78	0.75	0.72	0.65	0.60
	X _T	0.12	0.15	0.33	0.46	0.47	0.42	0.35	0.29	0.24
	F _d	0.08	0.11	0.14	0.17	0.25	0.32	0.40	0.48	0.54
16	C _v	230	365	505	720	1100	1700	2610	3910	5670
	K _v	199	315	436	622	950	1469	2255	3378	4899
	F _L	0.75	0.71	0.77	0.74	0.78	0.75	0.72	0.65	0.60
	X _T	0.15	0.13	0.26	0.42	0.48	0.44	0.37	0.29	0.23
	F _d	0.09	0.13	0.15	0.18	0.26	0.33	0.40	0.48	0.51
18	C _v	300	435	590	880	1420	2340	3750	5770	8510
	K _v	259	376	510	760	1227	2022	3240	4985	7353
	F _L	0.75	0.71	0.77	0.74	0.78	0.75	0.72	0.65	0.60
	X _T	0.10	0.12	0.29	0.47	0.49	0.41	0.32	0.24	0.19
	F _d	0.09	0.11	0.14	0.17	0.25	0.32	0.39	0.47	0.52
20	C _v	535	620	830	1270	2050	3290	5110	7600	10900
	K _v	462	536	717	1097	1771	2843	4415	6566	9418
	F _L	0.75	0.71	0.77	0.74	0.78	0.75	0.72	0.65	0.60
	X _T	0.14	0.25	0.44	0.53	0.48	0.39	0.30	0.23	0.19
	F _d	0.11	0.13	0.16	0.20	0.26	0.33	0.40	0.46	0.53
24	C _v	830	1000	1410	2130	3230	4800	6900	9610	13000
	K _v	717	864	1218	1840	2791	4147	5962	8303	11232
	F _L	0.75	0.71	0.77	0.74	0.78	0.75	0.72	0.65	0.60
	X _T	0.14	0.29	0.42	0.45	0.42	0.36	0.31	0.27	0.23
	F _d	0.12	0.14	0.16	0.20	0.28	0.34	0.41	0.48	0.53
30	C _v	1170	1940	2470	3210	4610	7120	11200	17200	25750
	K _v	1011	1676	2134	2773	3983	6152	9677	14861	22248
	F _L	0.75	0.71	0.77	0.74	0.78	0.75	0.72	0.65	0.60
	X _T	0.14	0.12	0.25	0.43	0.52	0.47	0.36	0.27	0.20
	F _d	0.10	0.13	0.16	0.19	0.25	0.32	0.39	0.46	0.53
36	C _v	1340	1920	2650	4060	6690	11100	17800	27400	40300
	K _v	1158	1659	2290	3508	5780	9590	15379	23674	34819
	F _L	0.75	0.71	0.77	0.74	0.78	0.75	0.72	0.65	0.60
	X _T	0.15	0.17	0.37	0.53	0.52	0.43	0.33	0.25	0.19
	F _d	0.08	0.11	0.14	0.19	0.25	0.32	0.38	0.47	0.54



CL600 Control-Disk								Equal Percentage Characteristic		
Valve Size NPS	Coefficients	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
3	C _v	2	12	14	22	35	53	75	102	132
	K _v	2	10	12	19	30	46	65	88	114
	F _d	0.08	0.13	0.13	0.15	0.18	0.24	0.32	0.39	0.48
	F _L	0.76	0.74	0.75	0.75	0.77	0.75	0.71	0.65	0.59
	X _T	0.33	0.31	0.36	0.35	0.34	0.33	0.32	0.33	0.33
4	C _v	5	20	23	33	51	79	118	168	231
	K _v	4	17	20	29	44	68	102	145	200
	F _d	0.08	0.12	0.13	0.15	0.19	0.24	0.31	0.39	0.48
	F _L	0.76	0.74	0.75	0.75	0.77	0.75	0.71	0.65	0.59
	X _T	0.27	0.26	0.29	0.33	0.34	0.33	0.32	0.29	0.27
6	C _v	16	55	67	92	132	186	253	332	425
	K _v	14	48	58	79	114	161	219	287	367
	F _d	0.10	0.14	0.14	0.16	0.19	0.24	0.32	0.40	0.46
	F _L	0.76	0.74	0.75	0.75	0.77	0.75	0.71	0.65	0.59
	X _T	0.37	0.36	0.34	0.34	0.34	0.35	0.36	0.37	0.38
8	C _v	36	71	108	142	201	310	493	776	1185
	K _v	31	61	93	123	174	268	426	670	1024
	F _d	0.09	0.11	0.13	0.16	0.21	0.28	0.36	0.45	0.51
	F _L	0.76	0.74	0.75	0.75	0.77	0.75	0.71	0.65	0.59
	X _T	0.26	0.30	0.18	0.29	0.43	0.47	0.41	0.33	0.26
10	C _v	53	125	162	241	378	584	876	1266	1769
	K _v	46	108	140	208	327	505	757	1094	1528
	F _d	0.10	0.12	0.14	0.17	0.21	0.27	0.34	0.43	0.50
	F _L	0.76	0.74	0.75	0.75	0.77	0.75	0.71	0.65	0.59
	X _T	0.30	0.30	0.33	0.40	0.43	0.41	0.38	0.34	0.30
12	C _v	104	177	196	315	553	927	1457	2160	3055
	K _v	90	153	169	272	478	801	1259	1866	2640
	F _d	0.09	0.11	0.13	0.16	0.22	0.30	0.38	0.47	0.52
	F _L	0.76	0.74	0.75	0.75	0.77	0.75	0.71	0.65	0.59
	X _T	0.24	0.18	0.43	0.54	0.49	0.40	0.33	0.28	0.24
14	C _v	121	170	229	407	717	1170	1781	2561	3522
	K _v	105	147	198	352	619	1011	1539	2213	3043
	F _d	0.09	0.10	0.12	0.17	0.22	0.30	0.38	0.46	0.53
	F _L	0.76	0.74	0.75	0.75	0.77	0.75	0.71	0.65	0.59
	X _T	0.29	0.23	0.48	0.53	0.48	0.42	0.37	0.33	0.29
16	C _v	234	380	436	679	1105	1707	2481	3419	4518
	K _v	202	328	377	587	955	1475	2144	2954	3904
	F _d	0.11	0.13	0.16	0.19	0.24	0.32	0.39	0.48	0.53
	F _L	0.76	0.74	0.75	0.75	0.77	0.75	0.71	0.65	0.59
	X _T	0.31	0.27	0.50	0.53	0.47	0.41	0.37	0.34	0.32
18	C _v	226	406	496	758	1225	1930	2903	4179	5789
	K _v	195	351	429	655	1058	1668	2508	3611	5002
	F _d	0.09	0.12	0.14	0.18	0.22	0.30	0.37	0.45	0.53
	F _L	0.76	0.74	0.75	0.75	0.77	0.75	0.71	0.65	0.59
	X _T	0.27	0.24	0.38	0.46	0.45	0.40	0.35	0.31	0.27
20	C _v	459	736	831	1201	1838	2735	3884	5276	6905
	K _v	397	636	718	1038	1588	2363	3356	4558	5966
	F _d	0.11	0.14	0.17	0.20	0.25	0.31	0.38	0.45	0.52
	F _L	0.76	0.74	0.75	0.75	0.77	0.75	0.71	0.65	0.59
	X _T	0.27	0.25	0.42	0.45	0.41	0.36	0.32	0.29	0.27
24	C _v	551	789	980	1530	2511	3998	6066	8788	12239
	K _v	476	682	847	1322	2170	3454	5241	7593	10574
	F _d	0.09	0.11	0.14	0.18	0.23	0.31	0.38	0.45	0.50
	F _L	0.76	0.74	0.75	0.75	0.77	0.75	0.71	0.65	0.59
	X _T	0.22	0.17	0.34	0.42	0.40	0.35	0.30	0.26	0.22

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Forward Flow		Modified Equal Percentage Characteristic								
Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C _v	3	4.74	14.1	34.6	60.1	84.0	107	133	163	166
K _v		4.10	12.2	29.9	52.0	72.7	92.6	115	141	144
F _d		0.18	0.24	0.33	0.43	0.53	0.63	0.75	0.99	0.99
F _L		0.85	0.86	0.84	0.83	0.87	0.86	0.80	0.71	0.69
X _T		0.294	0.632	0.511	0.494	0.537	0.559	0.501	0.384	0.372
C _v	4	11.1	27.1	61.7	106	149	193	252	324	346
K _v		9.60	23.4	53.4	91.7	129	167	218	280	299
F _d		0.18	0.28	0.34	0.43	0.51	0.59	0.70	0.99	0.99
F _L		0.76	0.89	0.86	0.82	0.85	0.83	0.77	0.66	0.62
X _T		0.263	0.616	0.526	0.476	0.497	0.501	0.422	0.311	0.276
C _v	6	15.7	33.0	86.1	154	229	330	497	718	809
K _v		13.6	28.5	74.5	133	198	285	430	621	700
F _d		0.12	0.24	0.32	0.40	0.48	0.56	0.64	0.74	0.99
F _L		0.93	0.82	0.81	0.78	0.77	0.74	0.70	0.61	0.57
X _T		0.281	0.174	0.311	0.449	0.522	0.459	0.322	0.228	0.221
C _v	8	21.5	82.4	156	259	402	592	832	1120	1440
K _v		18.6	71.3	135	224	348	512	720	969	1250
F _d		0.11	0.19	0.27	0.35	0.45	0.49	0.55	0.62	0.99
F _L		0.83	0.80	0.83	0.83	0.80	0.75	0.72	0.62	0.58
X _T		0.126	0.432	0.624	0.620	0.529	0.429	0.342	0.273	0.221
C _v	10	41.4	162	301	455	699	995	1300	1820	2360
K _v		35.8	140	260	394	605	861	1125	1514	2041
F _d		0.14	0.23	0.30	0.38	0.45	0.53	0.60	0.68	1.00
F _L		0.72	0.77	0.84	0.87	0.82	0.75	0.74	0.63	0.54
X _T		0.273	0.384	0.473	0.487	0.369	0.302	0.284	0.219	0.152
C _v	12	60.4	215	443	699	1020	1390	1850	2560	3050
K _v		52.2	186	383	605	882	1200	1600	2210	2640
F _d		0.14	0.24	0.32	0.40	0.48	0.55	0.63	0.73	1.00
F _L		0.81	0.78	0.77	0.72	0.78	0.73	0.68	0.63	0.51
X _T		0.714	0.336	0.366	0.449	0.452	0.416	0.360	0.263	0.223



Reverse Flow		Modified Equal Percentage Characteristic								
Coefficients	Valve Size, NPS	Valve Rotation, Degrees								
		10	20	30	40	50	60	70	80	90
C_v	3	3.25	14.2	34.2	61.8	94.5	129	160	181	181
K_v		2.81	12.3	29.6	53.5	81.7	112	138	157	157
F_d		0.18	0.24	0.33	0.43	0.53	0.63	0.75	0.99	0.99
F_L		0.96	0.91	0.80	0.73	0.70	0.64	0.57	0.54	0.53
X_T		0.581	0.555	0.515	0.466	0.406	0.345	0.289	0.253	0.258
C_v	4	7.20	27.2	64.8	116	172	223	263	290	300
K_v		6.23	23.5	56.1	100	149	193	227	251	260
F_d		0.18	0.28	0.34	0.43	0.51	0.59	0.70	0.99	0.99
F_L		0.98	0.93	0.84	0.72	0.67	0.65	0.63	0.62	0.61
X_T		0.436	0.685	0.526	0.410	0.354	0.334	0.322	0.305	0.308
C_v	6	5.20	33.3	88.5	170	268	372	476	600	808
K_v		4.50	28.8	76.6	147	232	322	412	519	699
F_d		0.12	0.24	0.32	0.40	0.48	0.56	0.64	0.74	0.99
F_L		0.69	0.80	0.84	0.80	0.72	0.67	0.63	0.60	0.49
X_T		0.668	0.620	0.544	0.459	0.403	0.366	0.339	0.294	0.198
C_v	8	8.68	61.1	156	293	463	656	856	1050	1240
K_v		7.51	52.9	135	253	400	567	740	908	1070
F_d		0.11	0.19	0.27	0.35	0.45	0.49	0.55	0.62	0.99
F_L		0.77	0.83	0.87	0.80	0.73	0.66	0.61	0.59	0.58
X_T		0.898	0.731	0.585	0.483	0.413	0.354	0.314	0.284	0.260
C_v	10	37.0	137	288	505	752	1080	1460	1710	2140
K_v		32.0	119	249	437	650	934	1260	1480	1850
F_d		0.14	0.23	0.30	0.38	0.45	0.53	0.60	0.68	1.00
F_L		0.84	0.86	0.90	0.79	0.74	0.64	0.58	0.57	0.49
X_T		0.248	0.462	0.483	0.366	0.308	0.250	0.207	0.203	0.166
C_v	12	39.0	192	411	703	1090	1560	2040	2490	3080
K_v		33.7	166	356	608	943	1350	1760	2150	2660
F_d		0.14	0.24	0.32	0.40	0.48	0.55	0.63	0.73	1.00
F_L		0.71	0.81	0.80	0.74	0.69	0.63	0.59	0.54	0.50
X_T		0.975	0.616	0.533	0.473	0.391	0.325	0.286	0.258	0.196

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Micro-Form - Flow Up															Equal Percentage Characteristic	
Valve Size, NPS	Port Diameter		Total Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1	6.4	1/4	19	3/4	C _v	0.070	0.115	0.164	0.224	0.315	0.450	0.641	0.921	1.28	1.66	.87
					K _v	0.061	0.099	0.142	0.194	0.272	0.389	0.554	0.797	1.11	1.44	---
					X _T	0.783	0.783	0.744	0.691	0.625	0.614	0.608	0.611	0.610	0.611	---
					F _d	0.12	0.14	0.17	0.20	0.24	0.29	0.35	0.43	0.55	0.68	---
	9.5	3/8	19	3/4	C _v	0.155	0.260	0.407	0.596	0.858	1.21	1.65	2.22	3.00	4.03	.84
					K _v	0.134	0.225	0.352	0.516	0.742	1.05	1.43	1.92	2.60	3.49	---
					X _T	0.625	0.535	0.534	0.539	0.535	0.535	0.538	0.534	0.537	0.536	---
					F _d	0.11	0.13	0.16	0.19	0.23	0.27	0.33	0.40	0.48	0.56	---
	12.7	1/2	19	3/4	C _v	0.273	0.436	0.631	0.911	1.30	1.84	2.57	3.65	5.08	6.51	.84
					K _v	0.236	0.377	0.546	0.788	1.13	1.59	2.22	3.16	4.39	5.63	---
					X _T	0.673	0.644	0.641	0.590	0.592	0.587	0.586	0.557	0.523	0.549	---
					F _d	0.11	0.13	0.16	0.19	0.23	0.27	0.33	0.40	0.48	0.56	---
	19.1	3/4	19	3/4	C _v	0.483	0.775	1.25	1.97	2.89	4.13	5.87	8.16	10.9	12.3	.92
					K _v	0.418	0.670	1.08	1.70	2.50	3.57	5.08	7.06	9.43	10.6	---
					X _T	0.571	0.599	0.527	0.473	0.492	0.519	0.537	0.505	0.486	0.628	---
					F _d	0.10	0.39	0.47	0.18	0.22	0.26	0.31	0.37	0.43	0.49	---
2	6.4	1/4	19	3/4	C _v	0.070	0.115	0.164	0.224	0.315	0.450	0.641	0.921	1.28	1.66	.87
					K _v	0.061	0.099	0.142	0.194	0.272	0.389	0.554	0.797	1.11	1.44	---
					X _T	0.783	0.783	0.744	0.691	0.625	0.614	0.608	0.611	0.610	0.611	---
					F _d	0.12	0.14	0.17	0.20	0.24	0.29	0.35	0.43	0.55	0.68	---
	9.5	3/8	19	3/4	C _v	0.155	0.260	0.407	0.596	0.858	1.21	1.65	2.22	3.00	4.03	.84
					K _v	0.134	0.225	0.352	0.516	0.742	1.05	1.43	1.92	2.60	3.49	---
					X _T	0.625	0.535	0.534	0.539	0.535	0.535	0.538	0.534	0.537	0.536	---
					F _d	0.11	0.13	0.16	0.19	0.22	0.27	0.33	0.41	0.50	0.61	---
	12.7	1/2	19	3/4	C _v	0.348	0.505	0.709	0.998	1.38	1.92	2.69	3.82	5.25	6.82	.81
					K _v	0.301	0.437	0.613	0.863	1.19	1.66	2.33	3.30	4.54	5.90	---
					X _T	0.613	0.627	0.585	0.576	0.565	0.553	0.535	0.509	0.490	0.501	---
					F _d	0.11	0.13	0.16	0.19	0.23	0.27	0.33	0.40	0.48	0.56	---
	19.1	3/4	19	3/4	C _v	0.613	0.952	1.44	2.06	2.92	4.13	5.87	8.16	11.1	14.1	.81
					K _v	0.530	0.823	1.25	1.78	2.53	3.57	5.08	7.06	9.60	12.2	---
					X _T	0.581	0.616	0.581	0.586	0.581	0.573	0.549	0.541	0.529	0.528	---
					F _d	0.10	0.39	0.47	0.18	0.22	0.26	0.31	0.37	0.43	0.49	---
	25.4	1	19	3/4	C _v	1.20	1.68	2.44	3.53	5.05	7.28	10.5	14.0	18.4	23.7	.82
					K _v	1.04	1.45	2.11	3.05	4.37	6.30	9.08	12.1	15.9	20.5	---
					X _T	0.517	0.569	0.559	0.542	0.544	0.540	0.507	0.508	0.507	0.508	---
					F _d	0.11	0.12	0.15	0.18	0.21	0.25	0.30	0.35	0.41	0.46	---
	31.8	1-1/4	19	3/4	C _v	1.32	1.76	2.50	3.66	5.42	8.25	12.7	20.6	29.0	34.5	.85
					K _v	1.14	1.52	2.16	3.17	4.69	7.14	11.0	17.8	25.1	29.8	---
					X _T	0.521	0.563	0.548	0.534	0.498	0.503	0.553	0.528	0.524	0.579	---
					F _d	0.087	0.10	0.12	0.15	0.18	0.22	0.28	0.33	0.39	0.44	---

1. At 100% travel.



Micro-Flute - Flow Up															Equal Percentage Characteristic	
Valve Size, NPS	Port Diameter		Total Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
All Sizes 1 and 2	6.4 1 Flute	1/4 1 Flute	19	3/4	C _v	0.0385	0.0455	0.0560	0.0719	0.0942	0.124	0.162	0.212	0.278	0.354	.87
					K _v	0.033	0.039	0.048	0.062	0.081	0.107	0.140	0.183	0.240	0.306	---
					X _T	0.778	0.734	0.690	0.653	0.642	0.635	0.637	0.634	0.632	0.656	---
	6.4 3 Flutes	1/4 3 Flutes	19	3/4	C _v	0.0562	0.0725	0.101	0.146	0.216	0.312	0.433	0.588	0.802	1.07	.90
					K _v	0.049	0.063	0.087	0.126	0.187	0.270	0.375	0.509	0.694	0.926	---
					X _T	0.692	0.648	0.639	0.625	0.600	0.586	0.597	0.613	0.620	0.624	---

1. At 100% travel.

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Flow Down															Equal Percentage Characteristic	
Valve Size, NPS	Port Diameter		Total Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1	6.4	1/4	19	3/4	C _v	0.096	0.173	0.294	0.481	0.727	0.995	1.35	1.99	2.73	3.21	0.45
					K _v	0.0830	0.150	0.254	0.416	0.629	0.861	1.17	1.72	2.36	2.78	---
					X _T	0.578	0.379	0.271	0.201	0.154	0.144	0.148	0.129	0.127	0.153	---
	9.5	3/8	19	3/4	C _v	0.189	0.343	0.624	1.05	1.45	1.84	2.47	3.81	5.58	7.06	0.45
					K _v	0.164	0.297	0.540	0.908	1.25	1.59	2.14	3.30	4.83	6.11	---
					X _T	0.516	0.355	0.220	0.151	0.152	0.180	0.194	0.163	0.163	0.163	---
	12.7	1/2	19	3/4	C _v	0.487	0.952	1.40	2.07	2.90	3.55	4.54	6.16	8.79	11.2	0.50
					K _v	0.421	0.823	1.21	1.79	2.51	3.07	3.93	5.33	7.60	9.69	---
					X _T	0.226	0.137	0.124	0.111	0.111	0.144	0.174	0.185	0.180	0.186	---
	19.1	3/4	19	3/4	C _v	0.840	1.58	2.25	2.86	3.82	5.51	8.69	11.8	14.4	16.8	0.67
					K _v	0.727	1.37	1.95	2.47	3.30	4.77	7.52	10.2	12.5	14.5	---
					X _T	0.194	0.142	0.168	0.238	0.288	0.292	0.242	0.259	0.318	0.372	---
2	6.4	1/4	19	3/4	C _v	0.096	0.177	0.353	0.546	0.742	0.995	1.35	1.99	2.73	3.21	0.50
					K _v	0.083	0.153	0.305	0.472	0.642	0.861	1.17	1.72	2.36	2.78	---
					X _T	0.578	0.362	0.188	0.156	0.148	0.144	0.148	0.138	0.139	0.164	---
	9.5	3/8	19	3/4	C _v	0.256	0.445	0.734	1.09	1.45	1.84	2.47	3.81	5.58	7.06	0.45
					K _v	0.221	0.385	0.635	0.943	1.25	1.59	2.14	3.30	4.83	6.11	---
					X _T	0.394	0.237	0.164	0.140	0.152	0.180	0.194	0.163	0.163	0.163	---
	12.7	1/2	19	3/4	C _v	0.641	1.03	1.55	2.20	2.90	3.55	4.63	7.13	9.86	12.1	0.45
					K _v	0.555	0.891	1.34	1.90	2.51	3.07	4.01	6.17	8.53	10.5	---
					X _T	0.265	0.195	0.162	0.143	0.146	0.168	0.179	0.165	0.165	0.164	---
	19.1	3/4	19	3/4	C _v	1.06	1.70	2.25	2.86	3.82	5.51	8.69	13.1	17.4	21.2	0.55
					K _v	0.917	1.47	1.95	2.47	3.30	4.77	7.52	11.3	15.1	18.3	---
					X _T	0.209	0.195	0.235	0.295	0.325	0.306	0.245	0.210	0.222	0.235	---
25.4	1	19	3/4	C _v	2.04	2.93	3.59	4.32	5.98	8.71	13.0	19.9	26.7	31.8	0.55	
				K _v	1.76	2.53	3.11	3.74	5.17	7.53	11.2	17.2	23.1	27.5	---	
				X _T	0.171	0.176	0.242	0.342	0.343	0.313	0.274	0.227	0.225	0.255	---	
31.8	1-1/4	19	3/4	C _v	1.72	2.31	3.31	4.71	6.78	10.5	17.6	26.0	35.2	44.9	0.59	
				K _v	1.49	2.00	2.86	4.07	5.86	9.08	15.2	22.5	30.4	38.8	---	
				X _T	0.312	0.311	0.311	0.311	0.310	0.310	0.312	0.311	0.311	0.310	---	

1. At 100% travel.



Flow Up															Equal Percentage Characteristic	
Valve Size, NPS	Port Diameter		Total Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1	6.4	1/4	19	3/4	C _V	0.070	0.115	0.164	0.224	0.315	0.450	0.641	0.921	1.28	1.66	0.87
					K _V	0.060	0.100	0.142	0.194	0.273	0.389	0.555	0.797	1.11	1.44	---
					X _T	0.783	0.783	0.744	0.695	0.625	0.614	0.609	0.611	0.610	0.611	---
	9.5	3/8	19	3/4	C _V	0.155	0.260	0.407	0.596	0.858	1.21	1.65	2.22	3.00	4.03	0.84
					K _V	0.134	0.225	0.352	0.516	0.742	1.05	1.43	1.92	2.60	3.49	---
					X _T	0.625	0.535	0.534	0.539	0.535	0.535	0.538	0.534	0.537	0.536	---
	12.7	1/2	19	3/4	C _V	0.273	0.436	0.631	0.911	1.30	1.84	2.57	3.65	5.08	6.51	0.84
					K _V	0.236	0.377	0.546	0.788	1.12	1.59	2.22	3.16	4.39	5.63	---
					X _T	0.673	0.644	0.641	0.590	0.592	0.587	0.586	0.557	0.524	0.549	---
	19.1	3/4	19	3/4	C _V	0.483	0.775	1.25	1.97	2.89	4.13	5.87	8.16	10.9	12.3	0.92
					K _V	0.418	0.670	1.08	1.70	2.50	3.57	5.08	7.06	9.43	10.6	---
					X _T	0.571	0.599	0.527	0.473	0.492	0.519	0.537	0.505	0.486	0.628	---
2	6.4	1/4	19	3/4	C _V	0.070	0.115	0.164	0.224	0.315	0.450	0.641	0.921	1.28	1.66	0.87
					K _V	0.061	0.100	0.142	0.194	0.273	0.389	0.555	0.797	1.11	1.44	---
					X _T	0.783	0.783	0.744	0.695	0.625	0.614	0.609	0.611	0.610	0.611	---
	9.5	3/8	19	3/4	C _V	0.155	0.260	0.407	0.596	0.858	1.21	1.65	2.22	3.00	4.03	0.84
					K _V	0.134	0.225	0.352	0.516	0.742	1.05	1.43	1.92	2.60	3.49	---
					X _T	0.625	0.535	0.534	0.539	0.535	0.535	0.538	0.534	0.537	0.536	---
	12.7	1/2	19	3/4	C _V	0.348	0.505	0.709	0.989	1.38	1.92	2.69	3.82	5.25	6.82	0.81
					K _V	0.301	0.437	0.613	0.856	1.19	1.66	2.33	3.30	4.54	5.90	---
					X _T	0.613	0.627	0.585	0.587	0.565	0.553	0.535	0.509	0.490	0.501	---
	19.1	3/4	19	3/4	C _V	0.613	0.952	1.44	2.06	2.92	4.13	5.87	8.16	11.1	14.1	0.81
					K _V	0.530	0.824	1.25	1.78	2.53	3.57	5.08	7.06	9.60	12.2	---
					X _T	0.582	0.616	0.581	0.586	0.581	0.573	0.549	0.541	0.529	0.528	---
	25.4	1	19	3/4	C _V	1.20	1.68	2.44	3.53	5.05	7.28	10.5	14.0	18.4	23.7	0.81
					K _V	1.04	1.45	2.11	3.05	4.37	6.30	9.08	12.1	15.9	20.5	---
					X _T	0.516	0.569	0.556	0.542	0.544	0.540	0.507	0.508	0.507	0.508	---
	31.8	1-1/4	19	3/4	C _V	1.32	1.76	2.50	3.66	5.42	8.25	12.7	20.6	29.0	34.5	0.87
					K _V	1.14	1.52	2.16	3.17	4.69	7.14	11.0	17.8	25.1	29.8	---
					X _T	0.520	0.563	0.548	0.534	0.498	0.503	0.554	0.528	0.524	0.578	---

1. At 100% travel.

Micro-Flute - Flow Down															Equal Percentage Characteristic	
Valve Size, NPS	Port Diameter		Total Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1 and 2	6.4 1 Flute	1/4 1 Flute	19	3/4	C _v	0.0313	0.0377	0.0470	0.0624	0.0874	0.124	0.175	0.243	0.330	0.407	0.79
					K _v	0.0271	0.0326	0.0407	0.0540	0.0756	0.107	0.151	0.210	0.286	0.352	---
					X _T	0.990	0.975	0.867	0.765	0.659	0.569	0.494	0.450	0.450	0.550	---
	6.4 3 Flutes	1/4 3 Flutes	19	3/4	C _v	0.0612	0.0900	0.136	0.210	0.310	0.430	0.573	0.784	1.12	1.42	0.68
					K _v	0.0529	0.0779	0.118	0.182	0.268	0.372	0.496	0.678	0.969	1.23	---
					X _T	0.669	0.520	0.388	0.313	0.295	0.306	0.326	0.326	0.313	0.378	---
Micro-Flute - Flow Up															Equal Percentage Characteristic	
1 and 2	6.4 1 Flute	1/4 1 Flute	19	3/4	C _v	0.0385	0.0455	0.0560	0.0719	0.0942	0.124	0.162	0.212	0.278	0.354	0.87
					K _v	0.0333	0.0394	0.0484	0.0622	0.0815	0.107	0.140	0.183	0.241	0.306	---
					X _T	0.778	0.734	0.690	0.653	0.642	0.635	0.637	0.634	0.632	0.656	---
	6.4 3 Flutes	1/4 3 Flutes	19	3/4	C _v	0.0562	0.0725	0.101	0.146	0.216	0.312	0.433	0.588	0.802	1.07	0.90
					K _v	0.049	0.0627	0.0874	0.126	0.187	0.270	0.375	0.509	0.694	0.926	---
					X _T	0.692	0.648	0.639	0.625	0.600	0.586	0.597	0.613	0.620	0.624	---

1. At 100% travel.



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Equal Percentage / Micro-Form Valve Plug

Equal Percentage / Micro-Form Plug													Equal Percentage Characteristic	
Valve Size, NPS	Flow Direction	Port Diameter Inches	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽³⁾
				10	20	30	40	50	60	70	80	90	100	
1	Up	0.375	C _V	0.266	0.480	0.698	0.984	1.31	1.69	2.10	2.63	3.23	3.70	0.94
			K _V	0.230	0.415	0.522	0.851	1.13	1.46	1.82	2.27	2.79	3.20	---
			X _T	0.449	0.455	0.468	0.481	0.477	0.495	0.482	0.488	0.516	0.572	---
		0.75	C _V	0.708	1.34	1.97	2.60	3.58	4.95	6.44	7.95	9.30	10.4	0.91
			K _V	0.612	1.16	1.70	2.25	3.10	4.28	5.57	6.88	8.04	9.00	---
			X _T	0.499	0.463	0.505	0.491	0.505	0.541	0.562	0.559	0.599	0.653	---
		1	C _V	1.38	2.70	3.98	5.30	6.80	8.00	9.60	11.2	12.5	13.6	0.86
			K _V	1.19	2.34	3.44	4.58	5.88	6.92	8.30	9.69	10.8	11.8	---
			X _T	0.457	0.449	0.520	0.544	0.542	0.564	0.542	0.572	0.662	0.761	---
	Down	0.375	C _V	0.600	1.02	1.40	1.90	2.37	2.74	2.90	3.78	4.58	5.00	0.59
			K _V	0.519	0.882	1.21	1.64	2.05	2.37	2.51	3.27	3.96	4.33	---
			X _T	0.163	0.172	0.161	0.188	0.250	0.342	0.450	0.454	0.435	0.376	---
		0.75	C _V	1.31	2.30	3.20	2.90	3.50	5.10	6.58	7.60	8.50	9.07	0.91
			K _V	1.13	1.99	2.77	2.51	3.03	4.41	5.69	6.57	7.35	7.85	---
			X _T	0.160	0.177	0.242	0.402	0.527	0.566	0.616	0.686	0.793	0.882	---
		1	C _V	1.50	2.90	4.85	6.58	7.25	8.00	8.70	9.84	10.8	11.5	0.90
			K _V	1.30	2.51	4.20	5.69	6.27	6.92	7.53	8.51	9.34	9.95	---
			X _T	0.250	0.344	0.415	0.518	0.585	0.639	0.654	0.749	0.819	0.983	---
2	Up	0.375	C _V	0.270	0.480	0.690	0.990	1.32	1.70	2.13	2.66	3.29	3.74	0.95
			K _V	0.233	0.415	0.597	0.856	1.14	1.47	1.84	2.30	2.85	3.24	---
			X _T	0.437	0.426	0.439	0.472	0.476	0.475	0.480	0.387	0.459	0.563	---
		0.75	C _V	0.653	1.28	1.90	2.55	3.50	4.86	6.58	8.40	10.1	11.5	0.92
			K _V	0.565	1.11	1.64	2.21	3.03	4.20	5.69	7.27	8.74	9.95	---
			X _T	0.510	0.489	0.476	0.476	0.482	0.504	0.513	0.509	0.496	0.478	---
		1	C _V	1.71	3.03	4.54	6.00	7.35	9.10	11.1	13.2	15.3	16.8	0.91
			K _V	1.48	2.62	3.93	5.19	6.36	7.87	9.60	11.4	13.2	14.5	---
			X _T	0.434	0.455	0.497	0.513	0.504	0.489	0.459	0.453	0.530	0.578	---
	Down	0.375	C _V	0.480	0.900	1.30	1.75	2.20	2.50	2.85	3.50	4.40	4.70	0.62
			K _V	0.415	0.779	1.12	1.51	1.90	2.16	2.47	3.03	3.81	4.07	---
			X _T	0.163	0.171	0.171	0.184	0.245	0.346	0.462	0.378	0.391	0.375	---
		0.75	C _V	1.08	2.00	3.00	3.20	3.50	5.00	6.75	8.26	9.40	10.4	0.91
			K _V	0.934	1.73	2.60	2.77	3.03	4.33	5.84	7.14	8.13	9.00	---
			X _T	0.164	0.179	0.199	0.357	0.501	0.530	0.560	0.583	0.650	0.683	---
		1	C _V	1.55	3.40	5.35	6.85	7.90	8.70	10.3	11.9	12.9	13.8	0.86
			K _V	1.34	2.94	4.63	5.93	6.83	7.53	8.91	10.3	11.2	11.9	---
			X _T	0.260	0.356	0.459	0.524	0.528	0.564	0.552	0.597	0.705	0.763	---



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Micro-Form - Flow Up														Equal Percentage Characteristic			
Valve Size, NPS	Port Diameter		Total Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L (1)	
	mm	Inches	mm	Inches		5	10	20	30	40	50	60	70	80	90		100
1	6.4	0.25	19	0.75	C _V	0.0679	0.0858	0.122	0.167	0.231	0.325	0.458	0.646	0.905	1.25	1.76	0.96
					K _V	0.0587	0.0742	0.106	0.144	0.200	0.281	0.396	0.559	0.783	1.08	1.52	---
					X _T	0.705	0.623	0.620	0.631	0.585	0.565	0.578	0.569	0.555	0.588	0.569	---
	9.5	0.375	19	0.75	C _V	0.114	0.132	0.205	0.298	0.426	0.590	0.834	1.21	1.75	2.45	3.53	0.95
					K _V	0.099	0.114	0.177	0.258	0.368	0.510	0.721	1.05	1.51	2.12	3.05	---
					X _T	0.776	0.848	0.656	0.673	0.626	0.608	0.589	0.582	0.575	0.588	0.691	---
	12.7	0.5	19	0.75	C _V	0.185	0.235	0.357	0.523	0.752	1.07	1.50	2.13	3.05	4.30	5.87	0.96
					K _V	0.160	0.203	0.309	0.452	0.650	0.926	1.30	1.84	2.64	3.72	5.08	---
					X _T	0.718	0.674	0.640	0.596	0.575	0.592	0.593	0.568	0.569	0.599	0.755	---
	19.1	0.75	19	0.75	C _V	0.324	0.358	0.571	0.900	1.30	1.91	3.04	5.08	7.75	9.56	11.2	0.94
					K _V	0.280	0.310	0.494	0.779	1.13	1.65	2.63	4.39	6.70	8.27	9.69	---
					X _T	0.561	0.684	0.645	0.594	0.605	0.614	0.592	0.594	0.613	0.696	0.783	---
2	6.4	0.25	19	0.75	C _V	0.0679	0.0858	0.122	0.167	0.231	0.325	0.458	0.646	0.905	1.25	1.76	0.96
					K _V	0.0587	0.0742	0.106	0.144	0.200	0.281	0.396	0.559	0.783	1.08	1.52	---
					X _T	0.705	0.623	0.620	0.631	0.585	0.565	0.578	0.569	0.555	0.588	0.569	---
	9.5	0.375	19	0.75	C _V	0.114	0.132	0.205	0.298	0.426	0.590	0.834	1.21	1.75	2.45	3.53	0.95
					K _V	0.099	0.114	0.177	0.258	0.368	0.510	0.721	1.05	1.51	2.12	3.05	---
					X _T	0.776	0.848	0.656	0.673	0.626	0.608	0.589	0.582	0.575	0.588	0.691	---
	12.7	0.5	19	0.75	C _V	0.186	0.244	0.359	0.540	0.784	1.09	1.52	2.25	3.20	4.49	6.27	0.95
					K _V	0.161	0.211	0.311	0.467	0.678	0.943	1.32	1.95	2.77	3.88	5.42	---
					X _T	0.814	0.699	0.799	0.685	0.593	0.560	0.573	0.531	0.536	0.547	0.612	---
	19.1	0.75	19	0.75	C _V	0.305	0.367	0.583	0.892	1.31	2.02	3.14	5.18	8.01	10.6	13.4	0.92
					K _V	0.264	0.317	0.504	0.772	1.13	1.75	2.72	4.48	6.93	9.17	11.6	---
					X _T	0.697	0.513	0.477	0.481	0.478	0.447	0.400	0.432	0.465	0.512	0.640	---
25.4	1	19	0.75	C _V	0.734	0.922	1.35	1.79	2.38	3.65	5.50	9.04	13.6	17.3	21.6	0.95	
				K _V	0.635	0.798	1.17	1.55	2.06	3.16	4.76	7.82	11.8	15.0	18.7	---	
				X _T	0.501	0.684	0.658	0.548	0.648	0.548	0.577	0.525	0.513	0.632	0.745	---	
31.8	1.25	19	0.75	C _V	1.08	1.22	1.65	2.26	3.24	5.14	8.90	15.2	22.6	26.9	33.2	0.94	
				K _V	0.934	1.06	1.43	1.96	2.80	4.45	7.70	13.1	19.5	23.3	28.7	---	
				X _T	0.587	0.686	0.636	0.638	0.649	0.520	0.706	0.687	0.680	0.767	0.761	---	

1. At 100% travel.




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With Liner															Quick Opening Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel ⁽¹⁾		Flow Coefficient	Coeffs. for 6 mm (1/4 in.) Travel ⁽²⁾	Valve Opening—Percent of Total Travel										F _L ⁽³⁾
	mm	Inches	mm	Inches			10	20	30	40	50	60	70	80	90	100	
1	33.3	0.3125	19	0.75	C _v	14.2	5.14	9.24	13.1	16.2	18.8	20.9	22.4	23.4	24.0	24.0	0.90
					K _v	12.3	4.45	7.99	11.3	14.0	16.3	18.1	19.4	20.2	20.8	20.8	---
					X _T	0.800	0.629	0.703	0.761	0.809	0.775	0.713	0.677	0.652	0.630	0.630	---
2	47.6	1.875	19	0.75	C _v	29.4	8.77	17.1	26.2	36.1	45.4	53.4	59.3	63.6	67.3	70.7	0.76
					K _v	25.4	7.59	14.8	22.7	31.2	39.3	46.2	51.3	55.0	58.2	61.2	---
					X _T	0.573	0.480	0.513	0.568	0.570	0.577	0.589	0.628	0.618	0.656	0.656	---
	33.3	1.3125	19	0.75	C _v	17.3	5.91	10.1	15.1	21.7	29.4	37.3	43.7	48.5	52.4	55.2	0.60
					K _v	15.0	5.11	8.74	13.1	18.8	25.4	32.3	37.8	42.0	45.3	47.7	---
					X _T	0.543	0.404	0.584	0.570	0.522	0.478	0.431	0.396	0.370	0.344	0.326	---
3	73.0	2.875	38	1.5	C _v	30.6	24.2	47.2	77.8	108	133	148	159	171	181	183	0.76
					K _v	26.5	20.9	40.8	67.3	93.4	115	128	138	148	157	158	---
					X _T	0.540	0.517	0.534	0.504	0.545	0.582	0.636	0.651	0.616	0.575	0.569	---
	47.6	1.875	19	0.75	C _v	29.8	7.96	15.5	25.7	37.4	49.0	61.2	72.5	83.1	92.8	102	0.60
					K _v	25.8	6.89	13.4	22.2	32.4	42.4	52.9	62.7	71.9	80.3	88.2	---
					X _T	0.576	0.549	0.624	0.603	0.541	0.525	0.482	0.452	0.422	0.391	0.349	---
4	87.3	3.4375	38	1.5	C _v	37.1	22.3	46.3	77.1	117	155	180	197	212	230	235	0.72
					K _v	32.1	19.3	40.0	66.7	101	134	156	170	183	199	203	---
					X _T	0.580	0.616	0.547	0.537	0.531	0.529	0.575	0.629	0.635	0.609	0.620	---
	58.7	2.3125	29	1.125	C _v	31.4	14.4	28.3	46.1	66.7	87.5	107	124	138	149	160	0.61
					K _v	27.2	12.5	24.5	39.9	57.7	75.7	92.6	107	119	129	138	---
					X _T	0.548	0.509	0.533	0.505	0.486	0.482	0.465	0.443	0.416	0.387	0.354	---
6	111.1	4.375	51	2	C _v	50.0	39.8	84.0	150	219	279	332	379	420	435	435	0.71
					K _v	43.3	34.4	72.7	130	189	241	287	328	363	376	376	---
					X _T	0.578	0.597	0.599	0.577	0.581	0.581	0.578	0.565	0.527	0.533	0.533	---
	73.0	2.875	38	1.5	C _v	38.7	23.9	47.1	74.9	109	142	174	201	219	244	248	0.59
					K _v	33.5	20.7	40.7	64.8	94.3	123	151	174	189	211	215	---
					X _T	0.353	0.353	0.353	0.353	0.353	0.356	0.352	0.353	0.352	0.353	0.354	---

1. When using Fisher 655-EAD as a control valve for on-off service, the maximum travel for sizing purposes is 19 mm (3/4 inch).
 2. When sizing self-operated regulators, use coefficients listed for 6 mm (1/4 inch) travel.
 3. At 100% travel.
 ■ Restricted trim.



Without Liner ⁽⁴⁾																Quick Opening Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel ⁽¹⁾		Flow Coefficient	Coeffs. for 6 mm (1/4 in.) Travel ⁽²⁾	Valve Opening—Percent of Total Travel										F _L ⁽³⁾
	mm	Inches	mm	Inches			10	20	30	40	50	60	70	80	90	100	
1	33.3	0.3125	19	0.75	C _v	14.8	5.07	9.36	13.6	16.8	19.2	20.9	22.2	23.1	23.6	23.7	0.87
					K _v	12.8	4.39	8.10	11.8	14.5	16.6	18.1	19.2	20.0	20.4	20.5	---
					X _T	0.757	0.638	0.753	0.753	0.766	0.736	0.703	0.670	0.650	0.640	0.636	---
2	47.6	1.875	19	0.75	C _v	28.0	8.06	15.7	24.9	34.3	43.1	51.0	57.1	61.4	64.6	67.2	0.87
					K _v	24.2	6.97	13.6	21.5	29.7	37.3	44.1	49.4	53.1	55.9	58.1	---
					X _T	0.629	0.531	0.621	0.623	0.631	0.641	0.638	0.656	0.676	0.686	0.682	---
	33.3	1.3125	19	0.75	C _v	17.2	6.02	10.4	15.4	20.9	27.1	33.7	38.5	41.7	44.2	45.6	0.71
					K _v	14.9	5.27	9.00	13.3	18.1	23.4	29.2	33.3	36.1	38.2	39.4	---
					X _T	0.573	0.470	0.541	0.570	0.575	0.563	0.526	0.510	0.492	0.476	0.470	---
3	73.0	2.875	38	1.5	C _v	39.2	23.4	47.9	78.7	108	128	142	153	163	171	171	0.81
					K _v	33.9	20.2	41.4	68.1	93.4	111	123	132	141	148	148	---
					X _T	0.576	0.588	0.573	0.534	0.573	0.635	0.662	0.654	0.626	0.600	0.605	---
	47.6	1.875	19	0.75	C _v	29.1	8.27	15.9	25.6	36.0	46.8	56.4	64.6	72.1	79.3	86.1	0.72
					K _v	25.2	7.15	13.8	22.1	31.1	40.5	48.8	55.9	62.4	68.6	74.5	---
					X _T	0.609	0.488	0.603	0.610	0.594	0.575	0.574	0.569	0.561	0.530	0.490	---
4	87.3	3.4375	38	1.5	C _v	39.0	23.9	48.2	80.3	118	151	178	195	209	223	223	0.76
					K _v	33.7	20.7	41.7	69.5	102	131	154	169	181	193	193	---
					X _T	0.562	0.588	0.566	0.554	0.556	0.580	0.610	0.659	0.669	0.644	0.650	---
	58.7	2.3125	29	1.125	C _v	30.9	13.6	27.0	43.9	62.5	80.6	96.0	109	120	127	133	0.73
					K _v	26.7	11.8	23.4	38.0	54.1	69.7	83.0	94.3	104	110	115	---
					X _T	0.608	0.593	0.614	0.582	0.578	0.587	0.590	0.576	0.547	0.533	0.513	---
6	111.1	4.375	51	2	C _v	45.8	37.6	79.6	142	207	265	311	351	383	398	398	0.76
					K _v	39.6	32.5	68.9	123	179	229	269	304	331	344	344	---
					X _T	0.652	0.680	0.652	0.639	0.639	0.655	0.686	0.683	0.666	0.657	0.667	---
	73.0	2.875	38	1.5	C _v	35.4	21.8	43.1	71.5	103	130	154	173	188	198	206	0.74
					K _v	30.6	18.9	37.3	61.8	89.1	112	133	150	163	171	178	---
					X _T	0.671	0.624	0.650	0.652	0.618	0.659	0.659	0.646	0.620	0.595	0.568	---

1. When using Fisher 655-EAD as a control valve for on-off service, the maximum travel for sizing purposes is 19 mm (3/4 inch).
2. When sizing self-operated regulators, use coefficients listed for 6 mm (1/4 inch) travel.
3. At 100% travel.
4. For NPS 8 values, please see the ED Catalog 12 pages.
 Restricted trim.

Note: The coefficients shown on this page are also appropriate for Fisher EAS and EAT.

With Liner - Flow Down															Linear Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1	33.3	1.3125	19	0.75	C _V	2.71	5.17	8.14	10.7	13.0	15.2	17.2	19.1	20.7	22.0	0.90
					K _V	2.34	4.47	7.04	9.26	11.2	13.1	14.9	16.5	17.9	19.0	---
					X _T	0.632	0.692	0.719	0.772	0.786	0.777	0.755	0.722	0.682	0.634	---
2	47.6	1.875	19	0.75	C _V	3.77	6.94	11.3	16.1	21.0	26.7	33.1	40.1	46.8	53.8	0.82
					K _V	3.26	6.00	9.77	13.9	18.2	23.1	28.6	34.7	40.5	46.5	---
					X _T	0.665	0.675	0.663	0.642	0.627	0.616	0.617	0.607	0.633	0.661	---
	33.3	1.3125	19	0.75	C _V	2.95	5.49	8.65	12.1	15.7	19.3	23.4	29.7	35.7	41.0	0.66
					K _V	2.55	4.75	7.48	10.5	13.6	16.7	20.2	25.7	30.9	35.5	---
					X _T	0.474	0.592	0.587	0.581	0.579	0.584	0.564	0.487	0.451	0.426	---
3	73.0	2.875	38	1.5	C _V	10.3	24.0	38.8	54.3	69.8	86.5	102	124	141	155	0.80
					K _V	8.91	20.8	33.6	47.0	60.4	74.8	88.2	107	122	134	---
					X _T	0.630	0.623	0.618	0.598	0.599	0.591	0.619	0.603	0.614	0.614	---
	47.6	1.875	19	0.75	C _V	3.37	6.45	10.6	15.3	19.8	25.3	32.2	40.1	48.4	58.1	0.74
					K _V	2.92	5.58	9.17	13.2	17.1	21.9	27.9	34.7	41.9	50.3	---
					X _T	0.630	0.682	0.693	0.665	0.663	0.637	0.600	0.588	0.569	0.548	---
4	87.3	3.4375	38	1.5	C _V	12.7	31.6	54.1	77.8	103	128	149	171	191	208	0.78
					K _V	11.0	27.3	46.8	67.3	89.1	111	129	148	165	180	---
					X _T	0.677	0.638	0.596	0.590	0.552	0.548	0.573	0.594	0.613	0.627	---
	58.7	2.3125	29	1.125	C _V	6.70	15.3	25.2	37.0	50.2	64.5	79.4	94.6	110	124	0.66
					K _V	5.80	13.2	21.8	32.0	43.4	55.8	68.7	81.8	95.2	107	---
					X _T	0.705	0.590	0.596	0.573	0.536	0.509	0.493	0.490	0.471	0.445	---
6	111.1	4.375	51	2	C _V	25.4	53.6	83.0	113	146	179	218	263	309	350	0.78
					K _V	22.0	46.4	71.8	97.7	126	155	189	227	267	303	---
					X _T	0.670	0.666	0.666	0.659	0.631	0.627	0.623	0.624	0.630	0.617	---
	73.0	2.875	38	1.5	C _V	10.6	25.2	41.1	57.7	76.1	94.8	116	139	168	195	0.67
					K _V	9.17	21.8	35.6	49.9	65.8	82.0	100	120	145	169	---
					X _T	0.445	0.443	0.448	0.445	0.445	0.445	0.443	0.448	0.442	0.444	---

1. At 100% travel.
 Restricted trim.

Note: The coefficients shown on this page are also appropriate for Fisher EAS and EAT.



Without Liner - Flow Down ⁽²⁾															Linear Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1	33.3	1.3125	19	0.75	C _V	2.90	5.78	8.85	11.6	13.9	16.0	18.0	19.7	21.2	22.3	0.89
					K _V	2.51	5.00	7.66	10.0	12.0	13.8	15.6	17.0	18.3	19.3	---
					X _T	0.778	0.704	0.699	0.736	0.745	0.747	0.730	0.699	0.664	0.624	---
2	47.6	1.875	19	0.75	C _V	3.68	6.98	11.3	15.9	20.8	26.4	32.7	39.2	45.7	52.5	0.84
					K _V	3.18	6.04	9.77	13.8	18.0	22.8	28.3	33.9	39.5	45.4	---
					X _T	0.676	0.667	0.684	0.666	0.624	0.627	0.632	0.625	0.655	0.679	---
	33.3	1.3125	19	0.75	C _V	3.01	5.45	8.95	12.5	15.9	19.1	23.3	28.4	33.2	37.6	0.73
					K _V	2.60	4.71	7.74	10.8	13.8	16.5	20.2	24.6	28.7	32.5	---
					X _T	0.790	0.768	0.661	0.618	0.608	0.611	0.582	0.545	0.535	0.516	---
3	73.0	2.875	38	1.5	C _V	10.9	25.1	41.3	58.4	75.7	93.9	112	128	143	153	0.83
					K _V	9.43	21.7	35.7	50.5	65.5	81.2	96.9	111	124	132	---
					X _T	0.736	0.638	0.591	0.548	0.538	0.532	0.543	0.583	0.619	0.631	---
	47.6	1.875	19	0.75	C _V	3.61	6.92	11.1	15.5	20.6	26.4	33.2	41.4	50.1	60.2	0.78
					K _V	3.12	5.99	9.60	13.4	17.8	22.8	28.7	35.8	43.3	52.1	---
					X _T	0.623	0.721	0.694	0.684	0.663	0.630	0.602	0.570	0.568	0.546	---
4	87.3	3.4375	38	1.5	C _V	14.0	33.8	56.3	80.2	104	127	148	169	185	201	0.81
					K _V	12.1	29.2	48.7	69.4	90.0	110	128	146	160	174	---
					X _T	0.640	0.638	0.611	0.588	0.570	0.568	0.593	0.622	0.660	0.664	---
	58.7	2.3125	29	1.125	C _V	7.02	15.7	25.7	36.9	48.6	60.9	72.9	84.6	97.2	108	0.76
					K _V	6.07	13.6	22.2	31.9	42.0	52.7	63.1	73.2	84.1	93.4	---
					X _T	0.712	0.626	0.625	0.597	0.587	0.577	0.590	0.604	0.580	0.566	---
6	111.1	4.375	51	2	C _V	24.2	51.2	81.8	109	140	171	208	256	300	341	0.78
					K _V	20.9	44.3	70.8	94.3	121	148	180	221	260	295	---
					X _T	0.643	0.697	0.666	0.693	0.672	0.668	0.684	0.663	0.668	0.662	---
	73.0	2.875	38	1.5	C _V	10.2	22.8	36.6	52.1	68.0	84.5	102	124	147	168	0.74
					K _V	8.82	19.7	31.7	45.1	58.8	73.1	88.2	107	127	145	---
					X _T	0.592	0.651	0.661	0.635	0.619	0.619	0.615	0.584	0.568	0.556	---

1. At 100% travel.
2. For NPS 8 values, please see the ED Catalog 12 pages.
Restricted trim.

Note: The coefficients shown on this page are also appropriate for Fisher EAS and EAT.

With Liner - Flow Down															Equal Percentage Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1	33.3	1.3125	19	0.75	C _V	1.02	1.49	2.07	2.70	3.92	5.68	8.18	11.7	15.5	18.5	0.93
					K _V	0.882	1.29	1.79	2.34	3.39	4.91	7.08	10.1	13.4	16.0	---
					X _T	0.902	0.902	0.820	0.740	0.741	0.737	0.738	0.734	0.742	0.739	---
2	47.6	1.875	19	0.75	C _V	1.44	2.38	3.54	5.10	7.60	11.6	18.1	26.9	37.8	48.1	0.83
					K _V	1.25	2.06	3.06	4.41	6.57	10.0	15.7	23.3	32.7	41.6	---
					X _T	0.619	0.649	0.671	0.678	0.666	0.639	0.574	0.578	0.578	0.576	---
	33.3	1.3125	19	0.75	C _V	0.792	1.28	1.84	2.56	3.78	5.66	8.64	13.3	19.9	27.6	0.75
					K _V	0.685	1.11	1.59	2.21	3.27	4.90	7.47	11.5	17.2	23.9	---
					X _T	0.648	0.654	0.682	0.659	0.683	0.661	0.592	0.534	0.479	0.468	---
3	73.0	2.875	38	1.5	C _V	4.38	7.99	12.1	16.5	24.2	36.5	56.6	85.9	116	151	0.78
					K _V	3.79	6.91	10.5	14.3	20.9	31.6	49.0	74.3	100	131	---
					X _T	0.783	0.746	0.680	0.652	0.620	0.588	0.551	0.525	0.553	0.550	---
	47.6	1.875	19	0.75	C _V	1.31	2.28	3.48	5.05	7.58	11.9	18.2	26.7	38.4	50.5	0.78
					K _V	1.13	1.97	3.01	4.37	6.56	10.3	15.7	23.1	33.2	43.7	---
					X _T	0.804	0.758	0.719	0.725	0.696	0.634	0.637	0.611	0.561	0.530	---
4	87.3	3.4375	38	1.5	C _V	2.31	0.470	7.45	11.3	17.8	28.7	47.9	77.5	112	152	0.81
					K _V	2.00	0.41	6.44	9.77	15.4	24.8	41.4	67.0	96.9	131	---
					X _T	0.780	0.780	0.791	0.726	0.652	0.630	0.565	0.546	0.549	0.545	---
	58.7	2.3125	29	1.125	C _V	2.24	3.67	5.44	7.81	11.7	17.9	27.6	41.9	62.6	86.3	0.73
					K _V	1.94	3.17	4.71	6.76	10.1	15.5	23.9	36.2	54.1	74.6	---
					X _T	0.630	0.668	0.662	0.672	0.659	0.610	0.593	0.574	0.500	0.456	---
6	111.1	4.375	51	2	C _V	5.54	11.0	18.1	30.9	51.7	84.3	136	205	276	336	0.74
					K _V	4.79	9.52	15.7	26.7	44.7	72.9	118	177	239	291	---
					X _T	0.727	0.684	0.657	0.624	0.599	0.585	0.590	0.587	0.573	0.576	---
	73.0	2.875	38	1.5	C _V	1.32	3.73	7.20	11.1	17.5	27.6	43.4	67.8	102	147	0.74
					K _V	1.14	3.23	6.23	9.60	15.1	23.9	37.5	58.6	88.2	127	---
					X _T	0.455	0.458	0.454	0.457	0.453	0.454	0.454	0.455	0.454	0.454	---

1. At 100% travel.
 Restricted trim.



Without Liner - Flow Down ⁽²⁾															Equal Percentage Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1	33.3	1.3125	19	0.75	C _V	1.08	1.62	2.20	2.96	4.18	6.04	8.74	12.5	16.5	19.0	0.91
					K _V	0.934	1.40	1.90	2.56	3.62	5.22	7.56	10.8	14.3	16.4	---
					X _T	0.912	0.860	0.808	0.771	0.742	0.706	0.693	0.699	0.697	0.694	---
2	47.6	1.875	19	0.75	C _V	1.67	2.60	3.82	5.43	7.79	12.2	18.9	27.4	37.8	47.2	0.85
					K _V	1.44	2.25	3.30	4.70	6.74	10.6	16.3	23.7	32.7	40.8	---
					X _T	0.680	0.690	0.702	0.725	0.707	0.619	0.622	0.621	0.619	0.623	---
	33.3	1.3125	19	0.75	C _V	1.11	1.55	2.05	2.87	4.07	5.95	8.84	13.4	19.6	26.8	0.79
					K _V	0.960	1.34	1.77	2.48	3.52	5.15	7.65	11.6	17.0	23.2	---
					X _T	0.938	0.899	0.848	0.789	0.761	0.692	0.636	0.568	0.519	0.507	---
3	73.0	2.875	38	1.5	C _V	4.59	8.29	12.0	16.9	25.0	37.7	57.3	85.1	121	148	0.80
					K _V	3.97	7.17	10.4	14.6	21.6	32.6	49.6	73.6	105	128	---
					X _T	0.779	0.744	0.715	0.684	0.630	0.582	0.583	0.579	0.578	0.580	---
	47.6	1.875	19	0.75	C _V	1.56	2.51	3.68	5.40	7.65	11.7	18.2	27.0	37.3	47.8	0.84
					K _V	1.35	2.17	3.18	4.67	6.62	10.1	15.7	23.4	32.3	41.3	---
					X _T	0.834	0.807	0.768	0.718	0.756	0.723	0.679	0.627	0.615	0.615	---
4	87.3	3.4375	38	1.5	C _V	2.51	5.10	8.03	12.0	18.7	30.7	47.4	80.3	116	156	0.81
					K _V	2.17	4.41	6.95	10.4	16.2	26.6	41.0	69.5	100	135	---
					X _T	0.890	0.770	0.744	0.701	0.696	0.637	0.668	0.572	0.566	0.565	---
	58.7	2.3125	29	1.125	C _V	2.33	3.56	5.64	8.18	11.9	18.0	28.2	42.6	62.2	81.8	0.79
					K _V	2.02	3.08	4.88	7.08	10.3	15.6	24.4	36.8	53.8	70.8	---
					X _T	0.753	0.846	0.702	0.666	0.682	0.656	0.619	0.609	0.559	0.530	---
6	111.1	4.375	51	2	C _V	5.51	10.9	17.9	30.2	50.5	82.0	133	200	269	328	0.78
					K _V	4.77	9.43	15.5	26.1	43.7	70.9	115	173	233	284	---
					X _T	0.705	0.701	0.663	0.646	0.612	0.604	0.606	0.605	0.596	0.604	---
	73.0	2.875	38	1.5	C _V	4.00	7.63	11.1	15.0	23.3	35.0	53.3	79.6	112	144	0.78
					K _V	3.46	6.60	9.60	13.0	20.2	30.3	46.1	68.9	96.9	125	---
					X _T	0.670	0.698	0.725	0.731	0.637	0.629	0.599	0.597	0.573	0.571	---

1. At 100% travel.
2. For NPS 8 values, please see the ED Catalog 12 pages.
Restricted trim.

Note: The coefficients shown on this page are also appropriate for Fisher EAS and EAT.

Whisper Trim I - Flow Up ⁽¹⁾														Linear Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel									
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100
1	33.3	1.3125	19	0.75	C _v	2.17	5.30	8.44	11.8	14.7	16.6	19.5	21.5	23.1	24.1
					K _v	1.88	4.58	7.30	10.2	12.7	14.4	16.9	18.6	20.0	20.8
					X _T	0.390	0.406	0.424	0.454	0.456	0.490	0.490	0.506	0.526	0.536
2	47.6	1.875	19	0.75	C _v	4.98	11.0	19.7	27.9	34.5	40.6	45.7	50.1	53.7	55.9
					K _v	4.31	9.52	17.0	24.1	29.8	35.1	39.5	43.3	46.5	48.4
					X _T	0.670	0.633	0.403	0.330	0.322	0.327	0.343	0.359	0.372	0.386
3	73.0	2.875	38	1.5	C _v	12.4	30.4	48.3	67.6	84.2	95.2	112	123	132	138
					K _v	10.7	26.3	41.8	58.5	72.8	82.3	96.9	106	114	119
					X _T	0.307	0.303	0.330	0.329	0.332	0.331	0.361	0.360	0.360	0.375
4	87.3	3.4375	38	1.5	C _v	16.7	42.9	67.5	91.2	113	133	152	168	182	194
					K _v	14.4	37.1	58.4	78.9	97.7	115	131	145	157	168
					X _T	0.738	0.411	0.378	0.331	0.323	0.342	0.354	0.370	0.391	0.400
6	111.1	4.375	51	2	C _v	28.8	70.4	112	157	195	220	260	285	310	320
					K _v	24.9	60.9	96.9	136	169	190	225	247	268	277
					X _T	0.303	0.331	0.361	0.330	0.330	0.360	0.360	0.390	0.391	0.403

1. For NPS 8 values, please see the ED Catalog 12 pages.

Note: The coefficients shown on this page are also appropriate for Fisher EAT.



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Whisper Trim™ III

Whisper Trim III																	Linear Characteristic	
Valve Size, NPS ⁽²⁾	Port Diameter		Maximum Travel		Cage Level	Flow Coefficient	Valve Opening—Percent of Total Travel										X _T ⁽¹⁾	
	mm	Inches	mm	Inches			Min.	10	20	30	40	50	60	70	80	90		100
1	33.3	1.313	19.1	0.75	A1	Cv	2.5	2.5	4.8	6.7	8.5	10.3	11.9	13.3	14.7	15.4	15.9	0.569
						Kv	2.2	2.2	4.2	5.8	7.4	8.9	10.3	11.5	12.7	13.3	13.8	
2	47.6	1.875	19.1	0.75	A1	Cv	8.3	0.7	5.0	14.0	19.1	22.7	24.0	25.0	25.7	25.7	25.8	0.569
						Kv	7.2	0.6	4.3	12.1	16.5	19.6	20.8	21.6	22.2	22.2	22.3	
	33.3	1.313	19.1	0.75	A3	Cv	1.8	0.5	0.6	3.7	6.4	9.2	12.1	14.9	17.8	20.7	21.6	0.569
						Kv	1.6	0.4	0.5	3.2	5.5	8.0	10.5	12.9	15.4	17.9	18.7	
	33.3	1.313	19.1	0.75	B1	Cv	2.4	0.5	0.5	3.9	5.7	7.4	9.2	10.9	12.7	14.5	16.1	0.569
						Kv	2.1	0.4	0.4	3.4	4.9	6.4	8.0	9.4	11.0	12.5	13.9	
	33.3	1.313	19.1	0.75	B3	Cv	1.3	0.5	0.6	2.4	3.8	5.2	6.6	8.0	9.5	10.9	11.7	0.569
						Kv	1.1	0.4	0.5	2.1	3.3	4.5	5.7	6.9	8.2	9.4	10.1	
	19.1	0.750	28.6	1.13	C1	Cv	0.9	0.1	1.4	2.3	3.0	3.8	4.6	5.4	6.1	6.9	7.4	0.569
						Kv	0.8	0.1	1.2	2.0	2.6	3.3	4.0	4.7	5.3	6.0	6.4	
	19.1	0.750	28.6	1.13	C3	Cv	0.8	0.1	1.5	2.4	3.4	4.4	5.3	6.3	7.3	8.2	8.3	0.569
						Kv	0.7	0.1	1.3	2.1	2.9	3.8	4.6	5.4	6.3	7.1	7.2	
	19.1	0.750	28.6	1.13	D1	Cv	0.9	0.1	1.4	2.3	3.0	3.8	4.6	5.4	6.1	6.9	7.4	0.569
						Kv	0.8	0.1	1.2	2.0	2.6	3.3	4.0	4.7	5.3	6.0	6.4	
	19.1	0.750	28.6	1.13	D3	Cv	0.8	0.1	1.5	2.4	3.4	4.4	5.3	6.3	7.3	8.2	8.3	0.569
						Kv	0.7	0.1	1.3	2.1	2.9	3.8	4.6	5.4	6.3	7.1	7.2	
3	73.0	2.875	38.1	1.50	A1	Cv	8.9	1.2	12.1	28.7	41.7	52.0	60.1	66.3	70.0	73.3	74.0	0.569
						Kv	7.7	1.0	10.5	24.8	36.1	45.0	52.0	57.4	60.6	63.4	64.0	
	47.6	1.875	38.1	1.50	A3	Cv	2.7	0.7	3.5	11.6	18.7	25.4	31.9	38.2	44.2	49.8	52.0	0.569
						Kv	2.3	0.6	3.0	10.0	16.2	22.0	27.6	33.0	38.2	43.1	45.0	
	47.6	1.875	38.1	1.50	B1	Cv	3.1	0.8	3.5	8.0	11.8	15.4	18.9	22.2	25.5	28.7	29.0	0.569
						Kv	2.7	0.7	3.0	6.9	10.2	13.3	16.3	19.2	22.1	24.8	25.1	
	47.6	1.875	38.1	1.50	B3	Cv	2.1	0.7	2.6	7.6	12.1	16.3	20.3	24.1	28.0	31.6	35.2	0.569
						Kv	1.8	0.6	2.2	6.6	10.5	14.1	17.6	20.8	24.2	27.3	30.4	
	47.6	1.875	38.1	1.50	C1	Cv	3.1	0.7	3.5	7.5	10.6	13.5	16.3	19.0	21.7	24.3	25.2	0.569
						Kv	2.7	0.6	3.0	6.5	9.2	11.7	14.1	16.4	18.8	21.0	21.8	
	47.6	1.875	38.1	1.50	C3	Cv	1.7	0.7	2.1	5.1	7.7	10.3	12.7	15.1	17.4	19.6	21.4	0.569
						Kv	1.5	0.6	1.8	4.4	6.7	8.9	11.0	13.1	15.1	17.0	18.5	
	47.6	1.875	38.1	1.50	D1	Cv	3.1	0.7	3.5	7.5	10.6	13.5	16.3	19.0	21.7	24.3	25.2	0.569
						Kv	2.7	0.6	3.0	6.5	9.2	11.7	14.1	16.4	18.8	21.0	21.8	
	47.6	1.875	38.1	1.50	D3	Cv	1.7	0.7	2.1	5.1	7.7	10.3	12.7	15.1	17.4	19.6	21.4	0.569
						Kv	1.5	0.6	1.8	4.4	6.7	8.9	11.0	13.1	15.1	17.0	18.5	
4	87.3	3.438	38.1	1.50	A1	Cv	7.1	10.3	25.0	42.5	59.8	71.0	79.9	87.3	92.7	96.8	99.5	0.810
						Kv	6.1	8.9	21.6	36.8	51.7	61.4	69.1	75.5	80.2	83.7	86.1	
	58.7	2.313	38.1	1.50	A3	Cv	3.7	6.6	18.4	30.2	41.6	52.5	63.0	72.2	80.1	87.7	89.3	0.470
						Kv	3.2	5.7	15.9	26.1	36.0	45.4	54.5	62.5	69.3	75.9	77.2	
	58.7	2.313	38.1	1.50	B1	Cv	5.4	7.4	15.6	23.2	30.9	38.4	45.9	53.3	60.4	67.1	67.6	0.385
						Kv	4.7	6.4	13.5	20.1	26.7	33.2	39.7	46.1	52.2	58.0	58.5	
	58.7	2.313	38.1	1.50	B3	Cv	3.3	5.4	13.8	22.0	30.2	38.4	46.4	54.3	61.9	69.0	74.8	0.385
						Kv	2.9	4.7	11.9	19.0	26.1	33.2	40.1	47.0	53.5	59.7	64.7	
	58.7	2.313	38.1	1.50	C1	Cv	4.3	5.8	11.0	15.6	20.2	24.7	29.2	33.8	38.3	42.7	45.5	0.356
						Kv	3.7	5.0	9.5	13.5	17.5	21.4	25.3	29.2	33.1	36.9	39.4	
	58.7	2.313	38.1	1.50	C3	Cv	2.6	4.1	8.7	13.3	17.9	22.5	27.0	31.5	36.0	40.5	45.0	0.356
						Kv	2.2	3.5	7.5	11.5	15.5	19.5	23.4	27.2	31.1	35.0	38.9	
	58.7	2.313	38.1	1.50	D1	Cv	4.3	5.8	11.0	15.6	20.2	24.7	29.2	33.8	38.3	42.7	45.5	0.356
						Kv	3.7	5.0	9.5	13.5	17.5	21.4	25.3	29.2	33.1	36.9	39.4	
	54.2	2.133	38.1	1.50	D3	Cv	2.6	4.1	8.7	13.3	17.9	22.5	27.0	31.5	36.0	40.5	45.0	0.356
						Kv	2.2	3.5	7.5	11.5	15.5	19.5	23.4	27.2	31.1	35.0	38.9	



Valve Size, NPS(2)	Port Diameter		Maximum Travel		Cage Level	Flow Coefficient	Valve Opening—Percent of Total Travel										X _T (1)	
	mm	Inches	mm	Inches			Min.	10	20	30	40	50	60	70	80	90		100
6	111.1	4.375	50.8	2.00	A1	Cv	10.9	28.0	49.0	78.0	96.4	116.0	126.0	137.0	142.0	148.0	158.0	0.770
						Kv	9.4	24.2	42.4	67.5	83.4	100.3	109.0	118.5	122.8	128.0	136.7	
	87.3	3.438	50.8	2.00	A3	Cv	5.9	11.2	27.4	49.4	70.0	90.6	110.0	125.0	135.0	139.0	139.0	0.810
						Kv	5.1	9.7	23.7	42.7	60.6	78.4	95.2	108.1	116.8	120.2	120.2	
	87.3	3.438	50.8	2.00	B1	Cv	7.4	4.3	19.6	32.0	43.8	55.3	66.6	77.9	88.9	99.8	109.0	0.492
						Kv	6.4	3.7	17.0	27.7	37.9	47.8	57.6	67.4	76.9	86.3	94.3	
	87.3	3.438	50.8	2.00	B3	Cv	4.4	8.4	21.2	32.9	43.7	54.2	64.5	74.8	85.1	95.5	102.0	0.492
						Kv	3.8	7.3	18.3	28.5	37.8	46.9	55.8	64.7	73.6	82.6	88.2	
	87.3	3.438	50.8	2.00	C1	Cv	4.6	6.5	15.3	23.7	31.9	39.8	47.6	55.2	62.8	70.3	76.6	0.523
						Kv	4.0	5.6	13.2	20.5	27.6	34.4	41.2	47.8	54.3	60.8	66.3	
	87.3	3.438	50.8	2.00	C3	Cv	4.0	10.1	18.4	26.2	33.5	40.5	47.3	54.0	60.6	67.2	73.8	0.467
						Kv	3.5	8.7	15.9	22.7	29.0	35.0	40.9	46.7	52.4	58.1	63.8	
	87.3	3.438	50.8	2.00	D1	Cv	4.6	6.5	15.3	23.7	31.9	39.8	47.6	55.2	62.8	70.3	76.6	0.523
						Kv	4.0	5.6	13.2	20.5	27.6	34.4	41.2	47.8	54.3	60.8	66.3	
	87.3	3.438	50.8	2.00	D3	Cv	4.0	10.1	18.4	26.2	33.5	40.5	47.3	54.0	60.6	67.2	73.8	0.467
						Kv	3.5	8.7	15.9	22.7	29.0	35.0	40.9	46.7	52.4	58.1	63.8	

1. This column lists XT factors for Whisper Trim III calges at 100% travel.


Notes: The coefficients shown on this page are also appropriate for Fisher EAS, EAT valves.

Quick Opening																Quick Opening Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel ⁽¹⁾		Flow Coefficient	Coeffs. for 6 mm (1/4 in.) Travel ⁽²⁾	Valve Opening—Percent of Total Travel										F _L ⁽³⁾
	mm	Inches	mm	Inches			10	20	30	40	50	60	70	80	90	100	
1	33.3	1-5/16	19	3/4	C _v	15.6	4.90	9.94	14.3	17.9	20.5	22.3	23.3	23.6	23.8	23.9	0.90
					K _v	13.5	4.24	8.60	12.4	15.5	17.7	19.3	20.2	20.4	20.6	20.7	---
					X _T	0.719	0.726	0.736	0.722	0.709	0.670	0.646	0.625	0.614	0.607	0.604	---
2	47.6	1-7/8	19	3/4	C _v	29.2	7.90	16.4	25.8	35.9	44.8	53.3	59.9	64.2	67.2	69.9	0.81
					K _v	25.3	6.83	14.2	22.3	31.1	38.8	46.1	51.8	55.5	58.1	60.5	---
					X _T	0.648	0.601	0.631	0.645	0.641	0.646	0.628	0.622	0.631	0.622	0.602	---
	33.3	1-5/16	19	3/4	C _v	16.7	5.43	10.2	15.1	20.3	26.1	31.4	35.2	37.5	39.2	40.5	0.87
					K _v	14.4	4.70	8.82	13.1	17.6	22.6	27.2	30.4	32.4	33.9	35.0	---
					X _T	0.632	0.591	0.631	0.632	0.621	0.638	0.673	0.739	0.786	0.763	0.726	---
3	73.0	2-7/8	38	1-1/2	C _v	38.8	24.5	47.3	79.1	106	125	139	154	168	177	184	0.90
					K _v	33.6	21.2	40.9	68.4	91.7	108	120	133	145	153	159	---
					X _T	0.638	0.630	0.637	0.619	0.693	0.729	0.705	0.641	0.596	0.569	0.563	---
	47.6	1-7/8	19	3/4	C _v	29.7	7.34	15.9	26.8	36.4	45.3	53.7	60.7	66.6	71.8	76.5	0.97
					K _v	25.7	6.35	13.8	23.2	31.5	39.2	46.5	52.5	57.6	62.1	66.2	---
					X _T	0.568	0.598	0.594	0.561	0.571	0.623	0.664	0.713	0.778	0.820	0.819	---
4	87.3	3-7/16	38	1-1/2	C _v	37.5	23.8	46.3	79.6	116	150	176	197	217	233	245	0.79
					K _v	32.4	20.6	40.0	68.9	100	130	152	170	188	202	212	---
					X _T	0.608	0.594	0.604	0.621	0.646	0.632	0.619	0.613	0.605	0.593	0.590	---
	58.7	2-5/16	29	1-1/8	C _v	31.5	14.2	28.4	45.2	63.2	80.6	96.1	109	119	129	135	0.81
					K _v	27.2	12.3	24.6	39.1	54.7	69.7	83.1	94.3	103	112	117	---
					X _T	0.624	0.622	0.623	0.617	0.626	0.665	0.706	0.740	0.771	0.666	0.625	---
6	111.1	4-3/8	51	2	C _v	51.1	40.0	84.3	138	194	246	293	340	378	403	409	0.78
					K _v	44.2	34.6	72.9	119	168	213	253	294	327	349	354	---
					X _T	0.582	0.581	0.585	0.587	0.584	0.582	0.583	0.585	0.578	0.582	0.584	---
	73.0	2-7/8	38	1-1/2	C _v	36.5	21.3	45.3	71.4	98.9	123	142	159	175	186	192	0.81
					K _v	31.6	18.4	39.2	61.8	85.5	106	123	138	151	161	166	---
					X _T	0.721	0.720	0.722	0.718	0.717	0.718	0.723	0.718	0.715	0.731	0.719	---

1. When using 655-EAS as a control valve for on-off service, the maximum travel for sizing purposes is 19 mm (3/4 inch).
 2. When sizing self-operated regulators, use coefficients listed for 6 mm (1/4 inch) travel.
 3. At 100% travel.
 ■ Restricted trim.



Linear															Linear Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1	33.3	1-5/16	19	3/4	C _v	3.97	6.17	8.40	10.7	12.9	15.3	17.9	20.3	22.3	24.2	0.92
					K _v	3.43	5.34	7.27	9.26	11.2	13.2	15.5	17.6	19.3	20.9	---
					X _T	0.712	0.697	0.699	0.704	0.734	0.730	0.693	0.644	0.609	0.577	---
2	47.6	1-7/8	19	3/4	C _v	5.20	6.97	11.0	15.2	19.6	24.5	30.3	36.7	42.8	49.1	0.85
					K _v	4.50	6.03	9.52	13.1	17.0	21.2	26.2	31.7	37.0	42.5	---
					X _T	0.584	0.600	0.618	0.660	0.658	0.664	0.669	0.679	0.698	0.697	---
	33.3	1-5/16	19	3/4	C _v	2.45	4.35	6.44	8.80	11.8	15.4	19.4	23.6	28.1	32.7	0.89
					K _v	2.11	3.76	5.57	7.61	10.2	13.3	16.8	20.4	24.3	28.3	---
					X _T	0.723	0.723	0.749	0.736	0.690	0.651	0.642	0.655	0.688	0.720	---
3	73.0	2-7/8	38	1-1/2	C _v	10.5	22.9	35.5	48.7	61.8	76.3	91.3	109	129	149	0.85
					K _v	9.08	19.8	30.7	42.1	53.5	66.0	79.0	94.3	112	129	---
					X _T	0.651	0.649	0.691	0.692	0.701	0.698	0.702	0.686	0.666	0.646	---
	47.6	1-7/8	19	3/4	C _v	3.62	6.94	10.7	14.9	19.0	23.9	28.9	34.9	42.4	51.0	0.92
					K _v	3.13	6.00	9.26	12.9	16.4	20.7	25.0	30.2	36.7	44.1	---
					X _T	0.506	0.634	0.723	0.673	0.723	0.704	0.722	0.739	0.721	0.703	---
4	87.3	3-7/16	38	1-1/2	C _v	12.9	28.6	45.5	67.8	88.4	108	129	151	174	196	0.81
					K _v	11.2	24.7	39.4	58.6	76.5	93.4	112	131	151	170	---
					X _T	0.616	0.648	0.661	0.676	0.687	0.698	0.688	0.672	0.661	0.656	---
	58.7	2-5/16	29	1-1/8	C _v	6.84	13.9	22.1	31.2	40.9	51.3	62.0	73.2	84.8	95.0	0.87
					K _v	5.92	12.0	19.1	27.0	35.4	44.4	53.6	63.3	73.4	82.2	---
					X _T	0.647	0.661	0.688	0.655	0.631	0.623	0.625	0.644	0.696	0.723	---
6	111.1	4-3/8	51	2	C _v	26.1	52.3	78.3	105	132	164	200	247	303	361	0.81
					K _v	22.6	45.2	67.7	90.8	114	142	173	214	262	312	---
					X _T	0.631	0.684	0.727	0.718	0.720	0.690	0.683	0.670	0.647	0.623	---
	73.0	2-7/8	38	1-1/2	C _v	10.5	22.7	35.1	48.0	60.8	74.7	89.6	107	128	150	0.90
					K _v	9.08	19.6	30.4	41.5	52.6	64.6	77.5	92.6	111	130	---
					X _T	0.675	0.708	0.731	0.757	0.767	0.769	0.772	0.772	0.772	0.771	---

1. At 100% travel.
 Restricted trim.

Equal Percentage															Equal Percentage Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1	33.3	1-5/16	19	3/4	C _v	1.29	1.87	2.59	3.85	5.59	8.46	12.5	16.9	20.9	23.5	0.82
					K _v	1.12	1.62	2.24	3.33	4.84	7.32	10.8	14.6	18.1	20.3	---
					X _T	0.812	0.771	0.674	0.702	0.730	0.714	0.723	0.669	0.633	0.579	---
2	47.6	1-7/8	19	3/4	C _v	1.41	2.41	3.43	4.86	7.26	11.3	17.3	24.5	32.6	40.8	0.91
					K _v	1.22	2.09	2.97	4.20	6.28	9.78	15.0	21.2	28.2	35.3	---
					X _T	0.724	0.736	0.727	0.738	0.723	0.714	0.646	0.680	0.673	0.725	---
	33.3	1-5/16	19	3/4	C _v	0.850	1.35	1.87	2.42	3.64	5.54	8.22	11.9	16.6	21.8	0.95
					K _v	0.735	1.17	1.62	2.09	3.15	4.79	7.11	10.3	14.4	18.9	---
					X _T	0.858	0.827	0.846	0.800	0.810	0.675	0.644	0.696	0.727	0.760	---
3	73.0	2-7/8	38	1-1/2	C _v	4.16	6.90	10.4	14.7	21.2	32.6	49.3	73.3	101	128	0.85
					K _v	3.60	5.97	9.00	12.7	18.3	28.2	42.6	63.4	87.4	111	---
					X _T	0.718	0.867	0.770	0.743	0.766	0.712	0.683	0.687	0.671	0.670	---
	47.6	1-7/8	19	3/4	C _v	1.48	2.44	3.47	4.87	7.31	10.9	16.7	24.5	33.0	41.3	0.91
					K _v	1.28	2.11	3.00	4.21	6.32	9.43	14.4	21.2	28.5	35.7	---
					X _T	0.713	0.737	0.747	0.780	0.749	0.744	0.733	0.704	0.720	0.749	---
4	87.3	3-7/16	38	1-1/2	C _v	3.63	6.33	9.32	13.9	21.0	32.9	52.5	81.7	115	148	0.84
					K _v	3.14	5.48	8.06	12.0	18.2	28.5	45.4	70.7	99.5	128	---
					X _T	0.839	0.776	0.784	0.799	0.793	0.699	0.776	0.724	0.697	0.691	---
	58.7	2-5/16	29	1-1/8	C _v	1.94	3.36	4.81	6.76	10.7	16.4	25.0	36.8	51.4	67.6	0.91
					K _v	1.68	2.91	4.16	5.85	9.26	14.2	21.6	31.8	44.5	58.5	---
					X _T	0.693	0.694	0.692	0.794	0.792	0.724	0.694	0.676	0.692	0.692	---
6	111.1	4-3/8	51	2	C _v	5.21	10.3	16.9	28.0	45.6	73.5	121	184	251	310	0.84
					K _v	4.51	8.91	14.6	24.2	39.4	63.6	105	159	217	268	---
					X _T	0.968	0.846	0.801	0.794	0.769	0.770	0.728	0.712	0.687	0.690	---
	73.0	2-7/8	38	1-1/2	C _v	4.12	7.27	10.5	14.6	21.4	32.1	47.9	71.3	97.0	126	0.90
					K _v	3.56	6.29	9.08	12.6	18.5	27.8	41.4	61.7	83.9	109	---
					X _T	0.728	0.763	0.772	0.790	0.778	0.774	0.778	0.750	0.777	0.776	---

1. At 100% travel.
 Restricted trim.



Whisper Trim I													Linear Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel									
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100
1	33.3	1-5/16	19	3/4	C_v	2.30	5.62	8.95	12.5	15.6	17.6	20.7	22.8	24.5	25.5
					K_v	1.99	4.86	7.74	10.8	13.5	15.2	17.9	19.7	21.2	22.1
					X_T	0.351	0.377	0.395	0.423	0.419	0.448	0.448	0.467	0.484	0.498
2	47.6	1-7/8	19	3/4	C_v	4.77	10.6	18.8	26.9	33.2	39.2	44.0	48.8	52.9	56.1
					K_v	4.13	9.17	16.3	23.3	28.7	33.9	38.1	42.2	45.8	48.5
					X_T	0.794	0.635	0.409	0.341	0.335	0.339	0.363	0.372	0.383	0.384
3	73.0	2-7/8	38	1-1/2	C_v	12.8	33.9	56.6	76.4	96.3	114	130	143	156	164
					K_v	11.1	29.3	49.0	66.1	83.3	98.6	112	124	135	142
					X_T	0.638	0.471	0.350	0.332	0.317	0.326	0.331	0.349	0.361	0.377
4	87.3	3-7/16	38	1-1/2	C_v	19.2	49.3	77.6	105	130	153	175	193	209	223
					K_v	16.6	42.6	67.1	90.8	112	132	151	167	181	193
					X_T	0.478	0.402	0.371	0.324	0.317	0.336	0.348	0.364	0.385	0.394
6	111.1	4-3/8	51	2	C_v	31.7	77.5	123	173	214	242	286	313	341	352
					K_v	27.4	67.0	106	150	185	209	247	271	295	304
					X_T	0.292	0.318	0.350	0.318	0.320	0.347	0.347	0.377	0.377	0.389

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CL150, 300, 600, Micro-Flat Anti-Cavitation Plug & Seat, Flow Down with or without Liner														Linear Characteristic		
Valve Size	Port Diameter (1)		Travel		Flow Coefficient	Percent of Total Travel										FL(3)
	NPS	mm	inch	mm		inch	10(2)	20	30	40	50	60	70	80	90	
1, 2	6.4	1/4	19	3/4	Cv	0.001	0.001	0.003	0.007	0.012	0.017	0.023	0.03	0.037	0.044	0.775
					Kv	0.0009	0.001	0.003	0.006	0.010	0.015	0.020	0.026	0.032	0.038	
					Cv	0.001	0.003	0.02	0.046	0.078	0.114	0.154	0.197	0.243	0.292	0.775
					Kv	0.0009	0.003	0.017	0.040	0.067	0.098	0.133	0.170	0.209	0.252	
	9.5	3/8	19	3/4	Cv	0.001	0.005	0.03	0.068	0.115	0.169	0.229	0.294	0.364	0.437	0.775
					Kv	0.0009	0.004	0.026	0.059	0.099	0.146	0.197	0.253	0.314	0.377	
					Cv	0.001	0.008	0.06	0.136	0.23	0.337	0.457	0.587	0.726	0.873	0.775
					Kv	0.0009	0.007	0.052	0.117	0.198	0.290	0.394	0.506	0.626	0.753	
	12.7	1/2	19	3/4	Cv	0.001	0.016	0.12	0.275	0.465	0.684	0.926	1.188	1.468	1.764	0.775
					Kv	0.0009	0.014	0.103	0.237	0.401	0.590	0.798	1.024	1.265	1.521	
	19.1	3/4	19	3/4	Cv	0.002	0.03	0.229	0.524	0.887	1.306	1.77	2.274	2.813	3.383	0.775
					Kv	0.0017	0.026	0.197	0.452	0.765	1.126	1.526	1.960	2.425	2.916	
29			1-1/8	Cv	0.002	0.152	0.463	0.868	1.344	1.879	2.365	3.093	3.759	4.458	0.775	
				Kv	0.0017	0.131	0.399	0.748	1.159	1.620	2.039	2.666	3.240	3.843		
2	25.4	1	29	1 1/8	Cv	0.002	0.265	0.81	1.519	2.353	3.291	4.316	5.416	6.583	7.809	0.775
					Kv	0.0017	0.228	0.698	1.309	2.028	2.837	3.720	4.669	5.675	6.731	
	28.6	1-1/8	29	1 1/8	Cv	0.003	0.357	1.091	2.044	3.167	4.426	5.803	7.281	8.846	10.488	0.775
					Kv	0.0026	0.308	0.940	1.762	2.730	3.815	5.002	6.276	7.625	9.041	

1. Micro-flat Cavitation trims use a shutoff port diameter which is 0.125 inch larger than the flowing port diameter. Use the shutoff port diameter for actuator sizing.
 2. Clearance flow only
 3. At 100% travel



The EAS valve (Flow Down) has flow coefficients identical to the EAD valve. Refer to the EAD coefficients. For additional EAS valve body information, refer to Bulletin 51.1:ES.

The Fisher® EAT valve (“Flow Down”) has flow coefficients identical to the EAD valve. Refer to the EAD coefficients. For additional EAT valve body information, refer to Bulletin 51.1:ET.



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Quick Opening															Quick Opening Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel ⁽¹⁾		Flow Coefficient	Coeffs for 6 mm (0.25 in) Travel ⁽²⁾	Valve Opening—Percent of Total Travel										F _L ⁽³⁾
	mm	Inches	mm	Inches			10	20	30	40	50	60	70	80	90	100	
1 & 1-1/4	33.3	1.3125	19	0.75	C _v	14.7	4.86	9.39	13.4	16.9	18.9	20.3	21.1	21.8	21.9	22.1	0.81
					K _v	12.7	4.20	8.12	11.6	14.6	16.3	17.6	18.3	18.9	18.9	19.1	---
					X _T	0.703	0.556	0.744	0.724	0.666	0.626	0.584	0.566	0.549	0.554	0.556	---
1-1/2	47.6	1.875	19	0.75	C _v	22.6	7.79	14.4	20.5	26.8	32.0	36.6	39.4	41.3	42.7	44.0	0.79
					K _v	19.5	6.74	12.5	17.7	23.2	27.7	31.7	34.1	35.7	36.9	38.1	---
					X _T	0.679	0.494	0.641	0.682	0.680	0.686	0.661	0.649	0.638	0.616	0.597	---
	33.3	1.3125	19	0.75	F _d	---	0.22	0.28	0.32	0.34	0.35	0.36	0.36	0.36	0.36	0.36	---
					C _v	16.2	5.05	9.99	14.7	20.0	24.0	25.7	26.2	27.4	28.6	29.9	0.88
					K _v	14.0	4.37	8.64	12.7	17.3	20.8	22.2	22.7	23.7	24.7	25.9	---
X _T	0.942	0.803	0.904	0.946	0.872	0.838	0.849	0.874	0.832	0.795	0.756	---					
2	58.7	2.3125	29	1.125	C _v	29.7	13.4	26.8	39.9	51.3	62.9	70.6	73.7	75.6	76.8	77.6	0.77
					K _v	25.7	11.6	23.2	34.5	44.4	54.4	61.1	63.8	65.4	66.4	67.1	---
					X _T	0.773	0.605	0.695	0.737	0.761	0.703	0.658	0.641	0.635	0.626	0.623	---
	33.3	1.3125	19	0.75	F _d	---	0.24	0.30	0.33	0.35	0.36	0.36	0.36	0.36	0.36	0.36	---
					C _v	16.7	4.80	9.58	14.9	20.2	25.7	29.3	31.2	31.2	31.2	31.2	0.87
					K _v	14.4	4.15	8.29	12.9	17.5	22.2	25.3	27.0	27.0	27.0	27.0	---
X _T	0.705	0.578	0.733	0.695	0.698	0.666	0.689	0.735	0.791	0.805	0.805	---					
2-1/2	73.0	2.875	38	1.5	C _v	33.4	20.9	39.6	58.8	74.2	84.9	97.0	103	106	108	109	0.81
					K _v	28.9	18.1	34.3	50.9	64.2	73.4	83.9	89.1	91.7	93.4	94.3	---
					X _T	0.635	0.601	0.684	0.738	0.767	0.744	0.689	0.669	0.658	0.660	0.652	---
	47.6	1.875	19	0.75	F _d	---	0.25	0.31	0.34	0.35	0.36	0.36	0.36	0.36	0.36	0.35	---
					C _v	25.3	7.83	15.2	22.8	31.0	40.0	48.3	54.9	60.3	66.4	71.2	0.86
					K _v	21.9	6.77	13.1	19.7	26.8	34.6	41.8	47.5	52.2	57.4	61.6	---
X _T	0.642	0.498	0.618	0.627	0.636	0.640	0.669	0.725	0.758	0.737	0.710	---					
3	87.3	3.4375	38	1.5	C _v	43.6	27.2	52.2	77.9	99.5	124	140	149	154	158	161	0.77
					K _v	37.7	23.5	45.2	67.4	86.1	107	121	129	133	137	139	---
					X _T	0.635	0.626	0.671	0.745	0.796	0.703	0.657	0.619	0.602	0.591	0.577	---
	58.7	2.3125	29	1.125	F _d	---	0.22	0.29	0.32	0.34	0.35	0.36	0.36	0.36	0.36	0.36	---
					C _v	35.2	15.9	31.7	47.2	60.7	74.4	83.6	87.3	89.5	91.0	91.9	0.86
					K _v	30.4	13.8	27.4	40.8	52.5	64.4	72.3	75.5	77.4	78.7	79.5	---
X _T	0.852	0.718	0.837	0.889	0.905	0.842	0.784	0.763	0.760	0.744	0.744	---					

1. When using Fisher 655-ED or 655-ET as a control valve for on-off service, the maximum travel for sizing purposes is 19 mm (0.75 inch).
 2. When using self-operated regulators, use coefficients listed for 6 mm (0.25 inch) travel.
 3. At 100% travel.
 Restricted trim.

Notes: The coefficients shown on this page are also appropriate for Fisher EDR, ET, and ETR.

Valve Size, NPS	Port Diameter		Maximum Travel ⁽¹⁾		Flow Coefficient	Coeffs for 6 mm (0.25 in) Travel ⁽²⁾	Valve Opening—Percent of Total Travel										F _L ⁽³⁾
	mm	Inches	mm	Inches			10	20	30	40	50	60	70	80	90	100	
4	111.1	4.375	51	2	C _v	45.9	37.7	75.0	125	163	193	220	238	247	251	251	0.79
					K _v	39.7	32.6	64.9	108	141	167	190	206	214	217	217	---
					X _T	0.607	0.623	0.689	0.733	0.764	0.762	0.723	0.689	0.669	0.683	0.694	---
					F _d	---	0.22	0.27	0.29	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.30
	73.0	2.875	38	1.5	C _v	39.8	25.0	47.2	70.1	88.5	101	116	123	127	129	130	0.89
					K _v	34.4	21.6	40.8	60.6	76.6	87.4	100	106	110	112	112	---
6 ⁽⁴⁾	177.8	7	51	2	C _v	92.0	73.6	150	232	306	353	389	416	441	451	460	0.82
					K _v	79.6	63.7	130	201	265	305	336	360	381	390	398	---
					X _T	0.660	0.664	0.651	0.667	0.694	0.722	0.742	0.728	0.723	0.719	0.710	---
					F _d	---	0.17	0.22	0.25	0.26	0.27	0.28	0.28	0.28	0.28	0.28	---
	111.1	4.375	51	2	C _v	64.9	52.3	101	150	199	247	284	310	329	345	358	0.87
					K _v	56.1	45.2	87.4	130	172	214	246	268	285	298	310	---
					X _T	0.758	0.774	0.763	0.771	0.778	0.763	0.761	0.717	0.699	0.707	0.691	---
					F _d	---	0.19	0.24	0.26	0.27	0.28	0.28	0.28	0.28	0.28	0.27	---
8	203.2	8	51	2	C _v	108	80.3	188	290	389	480	554	615	658	705	744	0.87
					K _v	93.4	69.5	163	251	336	415	479	532	569	610	644	---
					X _T	0.653	0.670	0.628	0.679	0.731	0.766	0.806	0.829	0.859	0.863	0.866	---
8	203.2	8	76	3	C _v	108	135	291	434	551	639	706	759	807	841	863	0.85
					K _v	93.4	117	252	375	477	553	611	657	698	727	746	---
					X _T	0.653	0.643	0.699	0.757	0.807	0.838	0.861	0.857	0.841	0.838	0.827	---
					F _d	---	0.19	0.24	0.26	0.27	0.28	0.28	0.28	0.28	0.28	0.27	---

1. When using Fisher 655-ED or 655-ET as a control valve for on-off service, the maximum travel for sizing purposes is 19 mm (0.75 inch).
 2. When using self-operated regulators, use coefficients listed for 6 mm (0.25 inch) travel.
 3. At 100% travel.
 4. NPS 8 EAD/EAT valves use the same C_v values for sizing as NPS 6 ED valves with 177.8 mm (7 inch) port.
 Restricted trim.

Notes: The coefficients shown on this page are also appropriate for Fisher EDR, ET, and ETR.

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Linear															Linear Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel ⁽²⁾		Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1 & 1-1/4	33.3	1.3125	19	0.75	C _v	3.21	5.50	8.18	10.9	13.2	15.0	16.9	18.6	19.9	20.6	0.84
					K _v	2.78	4.76	7.08	9.43	11.4	13.0	14.6	16.1	17.2	17.8	---
					X _T	0.340	0.644	0.494	0.509	0.532	0.580	0.610	0.629	0.628	0.636	---
1-1/2	47.6	1.875	19	0.75	C _v	4.23	7.84	11.8	15.8	20.4	25.3	30.3	34.7	37.2	39.2	0.82
					K _v	3.66	6.78	10.2	13.7	17.6	21.9	26.2	30.0	32.2	33.9	---
					X _T	0.656	0.709	0.758	0.799	0.738	0.729	0.708	0.686	0.683	0.656	---
	F _d	0.30	0.37	0.41	0.44	0.44	0.41	0.38	0.35	0.34	0.34	---				
	33.3	1.3125	19	0.75	C _v	2.92	5.70	9.05	12.5	15.6	18.5	21.1	23.9	26.8	29.2	0.91
					K _v	2.53	4.93	7.83	10.8	13.5	16.0	18.3	20.7	23.2	25.3	---
X _T					0.690	0.651	0.633	0.634	0.650	0.666	0.708	0.718	0.737	0.733	---	
2	58.7	2.3125	29	1.125	C _v	7.87	16.0	24.9	33.4	42.1	51.8	62.0	68.1	70.6	72.9	0.77
					K _v	6.81	13.8	21.5	28.9	36.4	44.8	53.6	58.9	61.1	63.1	---
					X _T	0.641	0.720	0.728	0.767	0.793	0.754	0.683	0.658	0.652	0.638	---
	F _d	0.30	0.35	0.36	0.37	0.37	0.36	0.35	0.35	0.34	0.33	---				
	33.3	1.3125	19	0.75	C _v	3.53	6.36	9.92	13.3	16.5	19.7	22.7	25.6	29.3	33.3	0.87
					K _v	3.05	5.50	8.58	11.5	14.3	17.0	19.6	22.1	25.3	28.8	---
X _T					0.456	0.529	0.549	0.582	0.611	0.633	0.671	0.723	0.727	0.694	---	
2-1/2	73.0	2.875	38	1.5	C _v	9.34	21.6	35.5	49.5	62.7	74.1	83.6	93.5	102	108	0.81
					K _v	8.08	18.7	30.7	42.8	54.2	64.1	72.3	80.9	88.2	93.4	---
					X _T	0.680	0.660	0.644	0.669	0.674	0.706	0.716	0.687	0.658	0.641	---
	F _d	0.27	0.33	0.35	0.36	0.35	0.34	0.32	0.29	0.27	0.27	---				
	47.6	1.875	19	0.75	C _v	4.10	8.09	12.3	16.7	21.1	26.8	33.7	41.3	49.2	57.0	0.84
					K _v	3.55	7.00	10.6	14.4	18.3	23.2	29.2	35.7	42.6	49.3	---
X _T					0.668	0.646	0.684	0.688	0.698	0.694	0.678	0.668	0.669	0.666	---	
3	87.3	3.4375	38	1.5	C _v	14.5	32.9	52.1	70.4	88.5	105	118	133	142	148	0.82
					K _v	12.5	28.5	45.1	60.9	76.6	90.8	102	115	123	128	---
					X _T	0.671	0.699	0.697	0.720	0.733	0.718	0.707	0.650	0.630	0.620	---
	F _d	0.26	0.32	0.35	0.36	0.36	0.36	0.36	0.28	0.29	0.30	---				
	58.7	2.3125	29	1.125	C _v	8.06	16.9	26.7	37.5	49.0	61.4	73.8	85.3	94.7	102	0.85
					K _v	6.97	14.6	23.1	32.4	42.4	53.1	63.8	73.8	81.9	88.2	---
X _T					0.592	0.614	0.662	0.672	0.674	0.676	0.694	0.722	0.736	0.732	---	
4	111.1	4.375	51	2	C _v	23.3	50.3	78.1	105	127	152	181	203	223	236	0.82
					K _v	20.2	43.5	67.6	90.8	110	131	157	176	193	204	---
					X _T	0.691	0.714	0.720	0.731	0.764	0.757	0.748	0.762	0.732	0.688	---
	F _d	0.31	0.36	0.38	0.38	0.37	0.35	0.32	0.30	0.27	0.28	---				
	73.0	2.875	38	1.5	C _v	9.77	22.6	37.2	51.8	65.7	77.5	87.5	97.9	107	113	0.84
					K _v	8.45	19.5	32.2	44.8	56.8	67.0	75.7	84.7	92.6	97.7	---
X _T					0.926	0.899	0.873	0.904	0.919	0.962	0.972	0.937	0.891	0.872	---	

1. At 100% travel.
2. If coefficients listed above for the NPS 8 linear cage with 51 mm (2-inch) travel are not sufficient for your application, consider using the quick opening cage. The NPS 8 quick opening cage with 51 mm (2-inch) travel has approximately a linear characteristic.
Restricted trim.

Notes: The coefficients shown on this page are also appropriate for Fisher EDR, ET, and ETR. The full-size port coefficients for NPS 3 through 8 also apply to Fisher ET-C valves.

Valve Size, NPS	Port Diameter		Maximum Travel ⁽²⁾		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
6 ⁽³⁾	177.8	7	51	2	C _v	46.3	107	171	228	279	327	367	402	420	433	0.84
					K _v	40.0	92.6	148	197	241	283	317	348	363	375	---
					X _T	0.656	0.727	0.744	0.781	0.803	0.800	0.784	0.758	0.755	0.740	---
					F _d	0.21	0.26	0.29	0.30	0.31	0.31	0.31	0.28	0.28	0.28	---
	111.1	4.375	51	2	C _v	16.7	38.6	65.4	93.7	123	156	194	244	290	322	0.88
					K _v	14.4	33.4	56.6	81.1	106	135	168	211	251	279	---
					X _T	0.762	0.698	0.675	0.684	0.681	0.660	0.676	0.657	0.685	0.703	---
					F _d	0.23	0.28	0.30	0.31	0.31	0.31	0.31	0.28	0.28	0.28	---
8 ⁽²⁾	203.2	8	51	2	C _v	60.2	129	206	285	363	444	526	581	640	688	0.87
					K _v	52.1	112	178	247	314	384	455	503	554	595	---
					X _T	0.704	0.721	0.657	0.651	0.683	0.713	0.740	0.801	0.821	0.839	---
					F _d	0.23	0.28	0.30	0.31	0.31	0.31	0.31	0.31	0.31	0.31	---
8	203.2	8	76	3	C _v	91.4	207	325	440	550	639	711	760	795	846	0.87
					K _v	79.1	179	281	381	476	553	615	657	688	732	---
					X _T	0.651	0.624	0.677	0.746	0.786	0.803	0.823	0.836	0.843	0.807	---
					F _d	0.23	0.28	0.30	0.31	0.31	0.31	0.31	0.31	0.31	0.31	---

1. At 100% travel.
 2. If coefficients listed above for the NPS 8 linear cage with 51 mm (2-inch) travel are not sufficient for your application, consider using the quick opening cage. The NPS 8 quick opening cage with 51 mm (2-inch) travel has approximately a linear characteristic.
 3. NPS 8 EAD/EAT valves use the same C_v values for sizing as NPS 6 ED valves with 177.8 mm (7 inch) port.
 Restricted trim.

Notes: The coefficients shown on this page are also appropriate for Fisher EDR, ET, and ETR. The full-size port coefficients for NPS 3 through 8 also apply to Fisher ET-C valves.

Equal Percentage															Equal Percentage Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1 & 1-1/4	33.3	1.3125	19	0.75	C _v	0.783	1.54	2.20	2.89	4.21	5.76	7.83	10.9	14.1	17.2	0.88
					K _v	0.677	1.33	1.90	2.50	3.64	4.98	6.77	9.43	12.2	14.9	---
					X _T	0.766	0.614	0.587	0.667	0.672	0.687	0.743	0.760	0.733	0.667	---
1-1/2	47.6	1.875	19	0.75	C _v	1.52	2.63	3.87	5.41	7.45	11.2	17.4	24.5	30.8	35.8	0.84
					K _v	1.31	2.27	3.35	4.68	6.44	9.69	15.1	21.2	26.6	31.0	---
					X _T	0.780	0.735	0.716	0.715	0.738	0.727	0.690	0.685	0.685	0.679	---
	F _d	0.64	0.63	0.63	0.64	0.46	0.45	0.30	0.31	0.35	0.38	---				
	33.3	1.3125	19	0.75	C _v	1.12	1.56	2.22	3.10	4.27	6.17	9.01	13.1	18.2	23.1	0.91
					K _v	0.969	1.35	1.92	2.68	3.69	5.34	7.79	11.3	15.7	20.0	---
X _T					0.821	0.864	0.820	0.703	0.721	0.679	0.665	0.639	0.650	0.700	---	
2	58.7	2.3125	29	1.125	C _v	1.66	2.93	4.66	6.98	10.8	16.5	25.4	37.3	50.7	59.7	0.85
					K _v	1.44	2.53	4.03	6.04	9.34	14.3	22.0	32.3	43.9	51.6	---
					X _T	0.827	0.834	0.774	0.727	0.687	0.684	0.702	0.736	0.686	0.687	---
	F _d	0.41	0.50	0.53	0.58	0.37	0.32	0.27	0.26	0.29	0.31	---				
	33.3	1.3125	19	0.75	C _v	0.923	1.42	2.09	2.84	4.11	5.83	8.58	12.8	18.5	24.3	0.88
					K _v	0.798	1.23	1.81	2.46	3.56	5.04	7.42	11.1	16.0	21.0	---
X _T					0.775	0.744	0.742	0.707	0.715	0.714	0.714	0.641	0.621	0.649	---	
2-1/2	73.0	2.875	38	1.5	C _v	3.43	7.13	10.8	15.1	22.4	33.7	49.2	71.1	89.5	99.4	0.84
					K _v	2.97	6.17	9.34	13.1	19.4	29.2	42.6	61.5	77.4	86.0	---
					X _T	0.778	0.702	0.678	0.677	0.658	0.654	0.661	0.665	0.661	0.660	---
	F _d	0.45	0.49	0.49	0.47	0.35	0.32	0.30	0.24	0.25	0.27	---				
	47.6	1.875	19	0.75	C _v	1.57	2.57	3.82	5.44	7.64	11.5	18.2	26.7	35.1	43.9	0.89
					K _v	1.36	2.22	3.30	4.71	6.61	9.95	15.7	23.1	30.4	38.0	---
X _T					0.801	0.756	0.713	0.677	0.648	0.672	0.628	0.635	0.706	0.710	---	
3	87.3	3.4375	38	1.5	C _v	4.32	7.53	10.9	17.1	27.2	43.5	66.0	97.0	120	136	0.82
					K _v	3.74	6.51	9.43	14.8	23.5	37.6	57.1	83.9	104	118	---
					X _T	0.774	0.706	0.682	0.635	0.616	0.602	0.663	0.693	0.670	0.675	---
	F _d	0.52	0.63	0.68	0.39	0.36	0.29	0.26	0.28	0.30	0.32	---				
	58.7	2.3125	29	1.125	C _v	1.75	3.11	4.77	7.07	10.7	17.0	27.9	41.5	58.0	70.7	0.87
					K _v	1.51	2.69	4.13	6.12	9.26	14.7	24.1	35.9	50.2	61.2	---
X _T					0.944	0.840	0.803	0.757	0.735	0.642	0.531	0.613	0.629	0.702	---	
4	111.1	4.375	51	2	C _v	5.85	11.6	18.3	30.2	49.7	79.7	125	171	205	224	0.82
					K _v	5.06	10.0	15.8	26.1	43.0	68.9	108	148	177	194	---
					X _T	0.731	0.650	0.643	0.645	0.632	0.625	0.672	0.742	0.737	0.716	---
	F _d	0.45	0.42	0.40	0.33	0.30	0.28	0.23	0.24	0.26	0.28	---				
	73.0	2.875	38	1.5	C _v	3.82	7.65	11.4	16.9	25.5	38.2	60.5	85.7	105	112	0.89
					K _v	3.30	6.62	9.86	14.6	22.1	33.0	52.3	74.1	90.8	96.9	---
X _T					0.746	0.700	0.694	0.669	0.640	0.627	0.591	0.644	0.735	0.813	---	

1. At 100% travel.
 Restricted trim.

Notes: The coefficients shown on this page are also appropriate for Fisher EDR, ET, and ETR. The full-size port coefficients for NPS 3 through 8 also apply to Fisher ET-C valves.

Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
6 ⁽²⁾	177.8	7	51	2	C _v	12.9	25.8	43.3	67.4	104	162	239	316	368	394	0.85
					K _v	11.2	22.3	37.5	58.3	90.0	140	207	273	318	341	---
					X _T	0.688	0.680	0.682	0.709	0.700	0.720	0.736	0.744	0.780	0.778	---
					F _d	0.39	0.44	0.47	0.33	0.29	0.22	0.22	0.24	0.25	0.26	---
	111.1	4.375	51	2	C _v	5.40	10.1	15.8	26.7	45.2	71.2	111	169	232	274	0.88
					K _v	4.67	8.74	13.7	23.1	39.1	61.6	96.0	146	201	237	---
					X _T	0.834	0.834	0.735	0.654	0.626	0.613	0.614	0.610	0.629	0.695	---
					F _d	0.28	0.26	0.23	0.20	0.17	0.22	0.24	0.25	0.25	0.26	---
8	203.2	8	51	2	C _v	18.5	38.0	58.4	86.7	130	189	268	371	476	567	0.85
					K _v	16.0	32.9	50.5	75.0	112	163	232	321	412	490	---
					X _T	0.727	0.623	0.600	0.588	0.580	0.587	0.599	0.611	0.671	0.724	---
					F _d	0.28	0.26	0.23	0.20	0.17	0.22	0.24	0.25	0.25	0.26	---
8	203.2	8	76	3	C _v	27.0	58.1	105	188	307	478	605	695	761	818	0.86
					K _v	23.4	50.3	90.8	163	266	413	523	601	658	708	---
					X _T	0.644	0.654	0.636	0.611	0.643	0.615	0.725	0.809	0.804	0.807	---
					F _d	0.28	0.26	0.23	0.20	0.17	0.22	0.24	0.25	0.25	0.26	---

1. At 100% travel.
2. NPS 8 EAD/EAT valves use the same C_v values for sizing as NPS 6 ED valves with 177.8 mm (7 inch) port.
Restricted trim.

Notes: The coefficients shown on this page are also appropriate for Fisher EDR, ET, and ETR. The full-size port coefficients for NPS 3 through 8 also apply to Fisher ET-C valves.

Linear													Linear, Flow Down	
Body Size, NPS	Port Diameter inches	Travel Inches	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L
				10	20	30	40	50	60	70	80	90	100	
10	9.50	4.00	Cv	136	284	430	569	703	833	956	1060	1140	1190	0.88
			Xt	0.663	0.682	0.663	0.661	0.687	0.726	0.772	0.795	0.785	0.771	
12	11.00	5.00	Cv	189	374	568	771	979	1180	1360	1500	1570	1570	0.88
			Xt	0.651	0.687	0.649	0.652	0.706	0.769	0.805	0.792	0.775	0.818	
16	14.75	5.00	Cv	334	648	999	1380	1770	2120	2410	2630	2780	2880	0.88
			Xt	0.653	0.682	0.653	0.650	0.666	0.709	0.745	0.755	0.739	0.752	

Equal Percentage													Equal Percentage, Flow Down	
Body Size, NPS	Port Diameter inches	Travel Inches	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L
				10	20	30	40	50	60	70	80	90	100	
10	9.50	4	Cv	24	52	80	131	210	325	465	655	860	980	0.88
			Xt	0.602	0.599	0.598	0.591	0.595	0.604	0.583	0.630	0.706	0.811	
12	11.00	5	Cv	46.2	83.6	123	183	280	424	618	873	1190	1380	0.88
			Xt	0.750	0.737	0.715	0.656	0.595	0.570	0.578	0.625	0.692	0.804	
16	14.75	5	Cv	58.1	106	166	274	464	758	1150	1630	2210	2540	0.88
			Xt	0.613	0.647	0.689	0.643	0.585	0.565	0.589	0.688	0.623	0.685	

Whisper III Level A1													Whisper III Level A1, Flow Up	
Body Size, NPS	Port Diameter inches	Travel Inches	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L
				10	20	30	40	50	60	70	80	90	100	
10	9.50	8	Cv	112	224	379	512	645	773	894	994	1061	1100	
			Xt	0.681	0.681	0.681	0.681	0.681	0.681	0.681	0.681	0.681	0.681	0.681
12	11.00	8	Cv	165	358	555	752	939	1130	1306	1439	1527	1579	
			Xt	0.681	0.681	0.681	0.681	0.681	0.681	0.681	0.681	0.681	0.681	0.681
16	14.75	8	Cv	226	494	758	1015	1267	1515	1764	2613	2212	2371	
			Xt	0.664	0.664	0.664	0.664	0.664	0.664	0.664	0.664	0.664	0.664	0.664
		9	Cv	257	558	851	1134	1415	1692	1960	2198	2375	2488	
			Xt	0.672	0.672	0.672	0.672	0.672	0.672	0.672	0.672	0.672	0.672	0.672

Cavitrol III One Stage													Cavitrol III One Stage, Flow Down		
Body Size, NPS	Port Diameter inches	Travel Inches	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L	
				10	20	30	40	50	60	70	80	90	100		
10	9.50	8	Cv	107	244	373	491	595	687	786	833	890	938	0.91	
12	11.00	8	Cv	125	285	405	545	715	830	930	1020	1100	1185	0.91	
	11.00	9	Cv	145	325	495	650	788	908	1010	1100	1180	1240	0.91	
16	14.75	8	Cv	170	390	545	800	990	1165	1330	1475	1610	1735	0.91	
		9	Cv	195	440	675	897	1100	1290	1460	1610	1750	1870	0.91	

Cavitrol III Two Stage													Cavitrol III Two Stage, Flow Down		
Body Size, NPS	Port Diameter inches	Travel Inches	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L	
				10	20	30	40	50	60	70	80	90	100		
10	9.50	8	Cv	39	91	143	193	243	292	340	388	431	473	0.98	
12	11.00	8	Cv	45	110	165	225	285	345	400	455	508	560	0.98	
	11.00	9	Cv	53	121	188	255	321	385	447	508	566	622	0.98	
16	14.75	8	Cv	60	145	225	305	385	465	545	620	695	770	0.98	
		9	Cv	71	163	254	345	434	523	610	695	778	860	0.98	

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Whisper Trim I														Linear Characteristic	
Valve Size, NPS ⁽¹⁾	Port Diameter		Maximum Travel		Flow Coeffi- cient	Valve Opening—Percent of Total Travel									
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100
1 & 1-1/4	33.3	1.3125	19	0.75	C _v	3.28	7.39	12.0	14.2	14.9	15.3	15.7	16.0	16.4	16.8
					K _v	2.84	6.39	10.4	12.3	12.9	13.2	13.6	13.8	14.2	14.5
					X _T	0.581	0.605	0.617	0.644	0.764	0.790	0.809	0.813	0.795	0.768
1-1/2	47.6	1.875	19	0.75	C _v	2.62	7.42	13.9	20.8	23.2	24.2	24.9	25.4	26.1	26.7
					K _v	2.27	6.42	12.0	18.0	20.1	20.9	21.5	22.0	22.6	23.1
					X _T	0.892	0.766	0.632	0.498	0.614	0.771	0.876	0.919	0.901	0.894
	33.3	1.3125	19	0.75	C _v	3.12	7.36	13.0	18.5	20.7	21.4	21.8	23.1	23.9	25.2
					K _v	2.70	6.37	11.2	16.0	17.9	18.5	18.9	20.0	20.7	21.8
					X _T	0.559	0.605	0.460	0.383	0.472	0.622	0.768	0.823	0.874	0.857
2	58.7	2.3125	29	1.125	C _v	7.30	19.2	34.6	42.2	45.5	47.0	47.1	47.2	47.2	48.0
					K _v	6.31	16.6	29.9	36.5	39.4	40.7	40.7	40.8	40.8	41.5
					X _T	0.604	0.467	0.318	0.387	0.526	0.689	0.843	0.899	0.940	0.938
	33.3	1.3125	19	0.75	C _v	2.86	6.79	11.7	18.4	23.6	27.9	30.9	33.5	35.3	36.7
					K _v	2.47	5.87	10.1	15.9	20.4	24.1	26.7	29.0	30.5	31.7
					X _T	0.672	0.755	0.547	0.386	0.358	0.377	0.398	0.431	0.470	0.483
2-1/2	73.0	2.875	38	1.5	C _v	12.2	32.6	49.7	54.4	55.9	59.8	64.0	67.7	71.4	74.0
					K _v	10.6	28.2	43.0	47.1	48.4	51.7	55.4	58.6	61.8	64.0
					X _T	0.748	0.428	0.414	0.589	0.792	0.877	0.857	0.792	0.712	0.719
	47.6	1.875	19	0.75	C _v	3.11	8.31	14.9	22.4	29.9	36.0	41.6	46.4	50.5	53.6
					K _v	2.69	7.19	12.9	19.4	25.9	31.1	36.0	40.1	43.7	46.4
					X _T	0.603	0.761	0.596	0.467	0.397	0.395	0.398	0.411	0.427	0.439
3	87.3	3.4375	38	1.5	C _v	16.5	40.3	70.8	88.0	92.1	90.7	90.3	92.6	95.6	99.1
					K _v	14.3	34.9	61.2	76.1	79.7	78.5	78.1	80.1	82.7	85.7
					X _T	0.685	0.471	0.331	0.378	0.532	0.753	0.929	0.983	0.968	0.923
	58.7	2.3125	29	1.125	C _v	8.15	19.1	33.2	47.6	60.8	72.1	81.8	90.1	97.4	103
					K _v	7.05	16.5	28.7	41.2	52.6	62.4	70.8	77.9	84.3	89.1
					X _T	0.720	0.660	0.500	0.439	0.406	0.412	0.437	0.472	0.504	0.510
4	111.1	4.375	51	2	C _v	33.9	76.6	117	135	137	137	141	149	157	169
					K _v	29.3	66.3	101	117	119	119	122	129	136	146
					X _T	0.607	0.385	0.352	0.467	0.682	0.887	0.977	0.958	0.921	0.811
	73.0	2.875	38	1.5	C _v	13.6	32.5	54.3	75.5	94.6	112	127	141	153	160
					K _v	11.8	28.1	47.0	65.3	81.8	96.9	110	122	132	138
					X _T	0.674	0.481	0.374	0.344	0.345	0.354	0.370	0.385	0.407	0.428
6 ⁽²⁾	177.8	7	51	2	C _v	55.8	125	196	245	270	286	297	308	323	338
					K _v	48.3	108	170	212	234	247	257	266	279	292
					X _T	0.294	0.323	0.286	0.322	0.406	0.494	0.579	0.644	0.673	0.662
8	203.2	8	76	3	C _v	100	226	337	436	502	581	641	655	659	681
					K _v	86.5	195	292	377	434	503	554	567	570	589
					X _T	0.456	0.490	0.470	0.427	0.452	0.468	0.521	0.624	0.703	0.701
			102	4	C _v	142	303	428	542	611	652	669	689	700	726
					K _v	123	262	370	469	529	564	579	596	606	628
					X _T	0.549	0.450	0.436	0.441	0.513	0.624	0.707	0.709	0.729	0.718

1. NPS 6 easy-e with restricted Whisper Trim not available. Use EW valve body where this trim is desired.
 2. These values are also used to size NPS 8 EAD/EAT valves.
 Restricted trim.

Notes: The coefficients shown on this page are also appropriate for Fisher EDR, ET, and ETR. The full-size port coefficients for NPS 3 through 6 also apply to Fisher ET-C valves.

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Whisper Trim III																	Linear Characteristic ⁽²⁾	
Valve Size, NPS	Port Diameter		Maximum Travel		Cage Level	Flow Coefficient	Valve Opening—Percent of Total Travel										X _T ⁽¹⁾	
	mm	Inches	mm	Inches			Minimum	10	20	30	40	50	60	70	80	90		100
1	33.3	1.313	19.1	0.75	A1	Cv	2.5	2.5	4.8	6.7	8.5	10.3	11.9	13.3	14.7	15.4	15.9	0.569
						Kv	2.2	2.2	4.2	5.8	7.4	8.9	10.3	11.5	12.7	13.3	13.8	
1.5	47.6	1.875	19.1	0.75	A1	Cv	8.3	0.7	5.0	14.0	19.1	22.7	24.0	25.0	25.7	25.7	25.8	0.569
						Kv	7.2	0.6	4.3	12.1	16.5	19.6	20.8	21.6	22.2	22.2	22.3	
	33.3	1.313	19.1	0.75	A3	Cv	1.8	0.5	0.6	3.7	6.4	9.2	12.1	14.9	17.8	20.7	21.6	0.569
						Kv	1.6	0.4	0.5	3.2	5.5	8.0	10.5	12.9	15.4	17.9	18.7	
	33.3	1.313	19.1	0.75	B1	Cv	2.4	0.5	0.5	3.9	5.7	7.4	9.2	10.9	12.7	14.5	16.1	0.569
						Kv	2.1	0.4	0.4	3.4	4.9	6.4	8.0	9.4	11.0	12.5	13.9	
	33.3	1.313	19.1	0.75	B3	Cv	1.3	0.5	0.6	2.4	3.8	5.2	6.6	8.0	9.5	10.9	11.7	0.569
						Kv	1.1	0.4	0.5	2.1	3.3	4.5	5.7	6.9	8.2	9.4	10.1	
	19.1	0.750	28.6	1.13	C1 ⁽²⁾	Cv	0.9	0.1	1.4	2.3	3.0	3.8	4.6	5.4	6.1	6.9	7.4	0.569
						Kv	0.8	0.1	1.2	2.0	2.6	3.3	4.0	4.7	5.3	6.0	6.4	
	19.1	0.750	28.6	1.13	C3 ⁽²⁾	Cv	0.8	0.1	1.5	2.4	3.4	4.4	5.3	6.3	7.3	8.2	8.3	0.569
						Kv	0.7	0.1	1.3	2.1	2.9	3.8	4.6	5.4	6.3	7.1	7.2	
	19.1	0.750	28.6	1.13	D1 ⁽²⁾	Cv	0.9	0.1	1.4	2.3	3.0	3.8	4.6	5.4	6.1	6.9	7.4	0.569
						Kv	0.8	0.1	1.2	2.0	2.6	3.3	4.0	4.7	5.3	6.0	6.4	
	19.1	0.750	28.6	1.13	D3 ⁽²⁾	Cv	0.8	0.1	1.5	2.4	3.4	4.4	5.3	6.3	7.3	8.2	8.3	0.569
						Kv	0.7	0.1	1.3	2.1	2.9	3.8	4.6	5.4	6.3	7.1	7.2	
2	58.7	2.313	34.9	1.38	A1 ⁽³⁾	Cv	7.4	8.7	18.7	28.7	36.7	41.6	45.3	47.4	48.4	48.9	49.4	0.890
						Kv	6.4	7.5	16.2	24.8	31.7	36.0	39.2	41.0	41.9	42.3	42.7	
	33.3	1.313	31.8	1.25	A3	Cv	2.2	0.4	3.1	7.7	12.8	17.1	21.6	24.5	27.3	28.5	29.7	0.880
						Kv	1.9	0.3	2.7	6.7	11.1	14.8	18.7	21.2	23.6	24.7	25.7	
	33.3	1.313	31.8	1.25	B1	Cv	3.0	0.5	4.1	7.0	9.7	12.7	15.8	18.8	21.8	24.5	24.7	0.750
						Kv	2.6	0.4	3.5	6.1	8.4	11.0	13.7	16.3	18.9	21.2	21.4	
	33.3	1.313	31.8	1.25	B3	Cv	1.5	0.5	1.3	4.4	7.0	9.5	11.8	14.1	16.3	18.5	19.8	0.750
						Kv	1.3	0.4	1.1	3.8	6.1	8.2	10.2	12.2	14.1	16.0	17.1	
	33.3	1.313	31.8	1.25	C1	Cv	2.2	0.5	3.0	4.6	5.9	7.5	9.1	10.7	12.3	13.9	14.0	0.780
						Kv	1.9	0.4	2.6	4.0	5.1	6.5	7.9	9.3	10.6	12.0	12.1	
	33.3	1.313	31.8	1.25	C3	Cv	1.4	0.5	1.7	3.6	5.3	6.9	8.5	10.0	11.4	12.8	13.8	0.780
						Kv	1.2	0.4	1.5	3.1	4.6	6.0	7.4	8.7	9.9	11.1	11.9	
	33.3	1.313	31.8	1.25	D1	Cv	2.2	0.5	3.0	4.6	5.9	7.5	9.1	10.7	12.3	13.9	14.0	0.780
						Kv	1.9	0.4	2.6	4.0	5.1	6.5	7.9	9.3	10.6	12.0	12.1	
	33.3	1.313	31.8	1.25	D3	Cv	1.4	0.5	1.7	3.6	5.3	6.9	8.5	10.0	11.4	12.8	13.8	0.780
						Kv	1.2	0.4	1.5	3.1	4.6	6.0	7.4	8.7	9.9	11.1	11.9	
2.5	73.0	2.875	38.1	1.50	A1	Cv	8.9	1.2	12.1	28.7	41.7	52.0	60.1	66.3	70.0	73.3	74.0	0.569
						Kv	7.7	1.0	10.5	24.8	36.1	45.0	52.0	57.4	60.6	63.4	64.0	
	47.6	1.875	38.1	1.50	A3	Cv	2.7	0.7	3.5	11.6	18.7	25.4	31.9	38.2	44.2	49.8	52.0	0.569
						Kv	2.3	0.6	3.0	10.0	16.2	22.0	27.6	33.0	38.2	43.1	45.0	
	47.6	1.875	38.1	1.50	B1	Cv	3.1	0.8	3.5	8.0	11.8	15.4	18.9	22.2	25.5	28.7	29.0	0.569
						Kv	2.7	0.7	3.0	6.9	10.2	13.3	16.3	19.2	22.1	24.8	25.1	
	47.6	1.875	38.1	1.50	B3	Cv	2.1	0.7	2.6	7.6	12.1	16.3	20.3	24.1	28.0	31.6	35.2	0.569
						Kv	1.8	0.6	2.2	6.6	10.5	14.1	17.6	20.8	24.2	27.3	30.4	
	47.6	1.875	38.1	1.50	C1	Cv	3.1	0.7	3.5	7.5	10.6	13.5	16.3	19.0	21.7	24.3	25.2	0.569
						Kv	2.7	0.6	3.0	6.5	9.2	11.7	14.1	16.4	18.8	21.0	21.8	
	47.6	1.875	38.1	1.50	C3	Cv	1.7	0.7	2.1	5.1	7.7	10.3	12.7	15.1	17.4	19.6	21.4	0.569
						Kv	1.5	0.6	1.8	4.4	6.7	8.9	11.0	13.1	15.1	17.0	18.5	
	47.6	1.875	38.1	1.50	D1	Cv	3.1	0.7	3.5	7.5	10.6	13.5	16.3	19.0	21.7	24.3	25.2	0.569
						Kv	2.7	0.6	3.0	6.5	9.2	11.7	14.1	16.4	18.8	21.0	21.8	
	47.6	1.875	38.1	1.50	D3	Cv	1.7	0.7	2.1	5.1	7.7	10.3	12.7	15.1	17.4	19.6	21.4	0.569
						Kv	1.5	0.6	1.8	4.4	6.7	8.9	11.0	13.1	15.1	17.0	18.5	
3	87.3	3.438	38.1	1.50	A1	Cv	7.1	10.3	25.0	42.5	59.8	71.0	79.9	87.3	92.7	96.8	99.5	0.810
						Kv	6.1	8.9	21.6	36.8	51.7	61.4	69.1	75.5	80.2	83.7	86.1	
	58.7	2.313	38.1	1.50	A3	Cv	3.7	6.6	18.4	30.2	41.6	52.5	63.0	72.2	80.1	87.7	89.3	0.470
						Kv	3.2	5.7	15.9	26.1	36.0	45.4	54.5	62.5	69.3	75.9	77.2	
	58.7	2.313	38.1	1.50	B1	Cv	5.4	7.4	15.6	23.2	30.9	38.4	45.9	53.3	60.4	67.1	67.6	0.385
						Kv	4.7	6.4	13.5	20.1	26.7	33.2	39.7	46.1	52.2	58.0	58.5	

Valve Size, NPS	Port Diameter		Maximum Travel		Cage Level	Flow Coefficient	Valve Opening—Percent of Total Travel											X _T ⁽¹⁾
	mm	Inches	mm	Inches			Minimum	10	20	30	40	50	60	70	80	90	100	
3	58.7	2.313	38.1	1.50	B3	Cv	3.3	5.4	13.8	22.0	30.2	38.4	46.4	54.3	61.9	69.0	74.8	0.385
						Kv	2.9	4.7	11.9	19.0	26.1	33.2	40.1	47.0	53.5	59.7	64.7	
	58.7	2.313	38.1	1.50	C1	Cv	4.3	5.8	11.0	15.6	20.2	24.7	29.2	33.8	38.3	42.7	45.5	0.356
						Kv	3.7	5.0	9.5	13.5	17.5	21.4	25.3	29.2	33.1	36.9	39.4	
	58.7	2.313	38.1	1.50	C3	Cv	2.6	4.1	8.7	13.3	17.9	22.5	27.0	31.5	36.0	40.5	45.0	0.356
						Kv	2.2	3.5	7.5	11.5	15.5	19.5	23.4	27.2	31.1	35.0	38.9	
	58.7	2.313	38.1	1.50	D1	Cv	4.3	5.8	11.0	15.6	20.2	24.7	29.2	33.8	38.3	42.7	45.5	0.356
						Kv	3.7	5.0	9.5	13.5	17.5	21.4	25.3	29.2	33.1	36.9	39.4	
	54.2	2.133	38.1	1.50	D3	Cv	2.6	4.1	8.7	13.3	17.9	22.5	27.0	31.5	36.0	40.5	45.0	0.356
						Kv	2.2	3.5	7.5	11.5	15.5	19.5	23.4	27.2	31.1	35.0	38.9	
4	111.1	4.375	50.8	2.00	A1	Cv	10.9	28.0	49.0	78.0	96.4	116.0	126.0	137.0	142.0	148.0	158.0	0.770
						Kv	9.4	24.2	42.4	67.5	83.4	100.3	109.0	118.5	122.8	128.0	136.7	
	87.3	3.438	50.8	2.00	A3	Cv	5.9	11.2	27.4	49.4	70.0	90.6	110.0	125.0	135.0	139.0	139.0	0.810
						Kv	5.1	9.7	23.7	42.7	60.6	78.4	95.2	108.1	116.8	120.2	120.2	
	87.3	3.438	50.8	2.00	B1	Cv	7.4	4.3	19.6	32.0	43.8	55.3	66.6	77.9	88.9	99.8	109.0	0.492
						Kv	6.4	3.7	17.0	27.7	37.9	47.8	57.6	67.4	76.9	86.3	94.3	
	87.3	3.438	50.8	2.00	B3	Cv	4.4	8.4	21.2	32.9	43.7	54.2	64.5	74.8	85.1	95.5	102.0	0.492
						Kv	3.8	7.3	18.3	28.5	37.8	46.9	55.8	64.7	73.6	82.6	88.2	
	87.3	3.438	50.8	2.00	C1	Cv	4.6	6.5	15.3	23.7	31.9	39.8	47.6	55.2	62.8	70.3	76.6	0.523
						Kv	4.0	5.6	13.2	20.5	27.6	34.4	41.2	47.8	54.3	60.8	66.3	
	87.3	3.438	50.8	2.00	C3	Cv	4.0	10.1	18.4	26.2	33.5	40.5	47.3	54.0	60.6	67.2	73.8	0.467
						Kv	3.5	8.7	15.9	22.7	29.0	35.0	40.9	46.7	52.4	58.1	63.8	
	87.3	3.438	50.8	2.00	D1	Cv	4.6	6.5	15.3	23.7	31.9	39.8	47.6	55.2	62.8	70.3	76.6	0.523
						Kv	4.0	5.6	13.2	20.5	27.6	34.4	41.2	47.8	54.3	60.8	66.3	
	87.3	3.438	50.8	2.00	D3	Cv	4.0	10.1	18.4	26.2	33.5	40.5	47.3	54.0	60.6	67.2	73.8	0.467
						Kv	3.5	8.7	15.9	22.7	29.0	35.0	40.9	46.7	52.4	58.1	63.8	
6	136.5	5.375	76.2	3.00	A1	Cv	14.2	17.8	67.6	126.0	176.0	216.0	246.0	267.0	281.0	290.0	294.9	0.563
						Kv	12.3	15.4	58.5	109.0	152.2	186.9	212.8	231.0	243.1	250.9	255.1	
	177.8	7.000	50.8	2.00	A1	Cv	18.4	25.5	32.5	73.7	120.0	165.0	204.0	234.0	256.0	273.0	285.6	0.563
						Kv	15.9	22.1	28.1	63.8	103.8	142.7	176.5	202.4	221.5	236.2	247.1	
	136.5	5.375	76.2	3.00	A3	Cv	4.7	17.8	67.6	126.0	176.0	216.0	246.0	267.0	281.0	290.0	295.0	0.563
						Kv	4.0	15.4	58.5	109.0	152.2	186.9	212.8	231.0	243.1	250.9	255.2	
	136.5	5.375	76.2	3.00	B1	Cv	11.6	21.5	45.2	68.8	92.5	116.2	140.0	163.6	187.3	211.0	231.2	0.563
						Kv	10.0	18.6	39.1	59.5	80.0	100.5	121.1	141.5	162.0	182.5	200.0	
	136.5	5.375	76.2	3.00	B3	Cv	4.7	12.6	38.2	66.9	94.5	120.0	144.0	167.0	190.0	211.0	228.0	0.563
						Kv	4.0	10.9	33.0	57.9	81.7	103.8	124.6	144.5	164.4	182.5	197.2	
	136.5	5.375	76.2	3.00	C1	Cv	8.0	6.5	20.6	34.0	48.5	63.7	77.4	91.3	107.2	121.0	129.3	0.563
						Kv	6.9	5.6	17.8	29.4	42.0	55.1	67.0	79.0	92.7	104.7	111.9	
	136.5	5.375	76.2	3.00	C3	Cv	4.7	11.0	28.0	41.3	55.3	69.3	83.0	97.0	110.0	124.0	138.0	0.563
						Kv	4.0	9.5	24.2	35.7	47.8	59.9	71.8	83.9	95.2	107.3	119.4	
	136.5	5.375	76.2	3.00	D1	Cv	8.0	6.5	20.6	34.0	48.5	63.7	77.4	91.3	107.2	121.0	129.3	0.563
						Kv	6.9	5.6	17.8	29.4	42.0	55.1	67.0	79.0	92.7	104.7	111.9	
136.5	5.375	76.2	3.00	D3	Cv	4.7	5.1	6.7	9.5	19.9	31.4	46.0	61.0	75.7	89.7	104.0	0.563	
					Kv	4.0	4.4	5.8	8.2	17.2	27.2	39.8	52.8	65.5	77.6	90.0		
8	203.2	8.000	76.2	3.00	A1	Cv	21.5	20.0	77.9	136.1	194.4	249.3	300.3	347.1	384.0	416.0	425.7	0.626
						Kv	18.6	17.3	67.4	117.7	168.2	215.7	259.8	300.3	332.2	359.9	368.3	
	203.2	8.000	101.6	4.00	A1	Cv	22.0	51.9	144.0	213.0	282.0	374.0	443.0	495.0	558.0	601.0	638.0	0.626
						Kv	19.0	44.9	124.6	184.3	243.9	323.5	383.2	428.2	482.7	519.9	551.9	
	203.2	8.000	101.6	4.00	A3	Cv	22.0	51.9	144.0	213.0	282.0	374.0	443.0	495.0	558.0	601.0	638.0	0.626
						Kv	19.0	44.9	124.6	184.3	243.9	323.5	383.2	428.2	482.7	519.9	551.9	
	203.2	8.000	101.6	4.00	B1	Cv	15.0	43.0	85.0	126.0	168.0	209.0	250.0	292.0	333.0	374.0	406.0	0.566
						Kv	13.0	37.2	73.5	109.0	145.3	180.8	216.3	252.6	288.1	323.5	351.2	
	203.2	8.000	101.6	4.00	B3	Cv	12.7	32.3	75.8	119.0	163.0	206.0	241.0	285.0	328.0	363.0	407.0	0.566
						Kv	11.0	27.9	65.6	102.9	141.0	178.2	208.5	246.5	283.7	314.0	352.1	
	203.2	8.000	101.6	4.00	C1	Cv	13.0	34.0	61.0	88.0	116.0	143.0	171.0	198.0	226.0	253.0	280.0	0.566
						Kv	11.2	29.4	52.8	76.1	100.3	123.7	147.9	171.3	195.5	218.9	242.2	
	203.2	8.000	101.6	4.00	C3	Cv	10.2	26.7	47.1	74.4	102.0	129.0	156.0	184.0	204.0	232.0	259.0	0.566
						Kv	8.8	23.1	40.7	64.4	88.2	111.6	134.9	159.2	176.5	200.7	224.0	

1. This column lists X_T factors for Whisper Trim III cages at 100% travel.
 2. NPS 1 1/2 valves with 3/4" port diameter is for ES constructions only
 3. Not applicable for ET with Spring loaded seal ring or ED with Class IV multiple piston rings

Notes: The coefficients shown on this page are also appropriate for Fisher ES, ET valves. The coefficients for NPS 3 through 8 also apply to Fisher ET-C valves.

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WhisperFlo™ Level X																Linear Characteristic
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coeffi- cient	Valve Opening—Percent of Total Travel										
	mm	Inches	mm	Inches		Min	10	20	30	40	50	60	70	80	90	100
4	87.3	3.4375	76	3	C _v	6.4	12.7	27.8	41.9	55.4	68.5	81.4	91.9	101	108	114
					X _T	0.654	0.654	0.753	0.737	0.727	0.714	0.708	0.732	0.76	0.831	0.842
6 ⁽¹⁾	136.5	5.375	76	3	C _v	10.4	20.7	47.3	70.4	94.6	116	137	159	175	189	199
					X _T	0.638	0.638	0.673	0.716	0.688	0.692	0.723	0.708	0.735	0.747	0.77
8	177.8	7	152	6	C _v	30.4	60.9	120	179	237	287	331	368	397	421	441
					X _T	0.702	0.702	0.704	0.669	0.647	0.668	0.699	0.74	0.783	0.809	0.829

WhisperFlo Level Y																Linear Characteristic
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coeffi- cient	Valve Opening—Percent of Total Travel										
	mm	Inches	mm	Inches		Min	10	20	30	40	50	60	70	80	90	100
4	87.3	3.4375	76	3	C _v	6	12	23	35	47	59	70	82	94	105	117
					X _T	0.536	0.536	0.532	0.525	0.51	0.503	0.507	0.514	0.528	0.532	0.575
6 ⁽¹⁾	136.5	5.375	76	3	C _v	9	18	36	55	73	91	109	127	146	164	182
					X _T	0.536	0.536	0.532	0.525	0.51	0.503	0.507	0.514	0.528	0.532	0.575
8	177.8	7	152	6	C _v	11	42	84	125	167	209	251	293	334	376	418
					X _T	0.51	0.51	0.543	0.547	0.536	0.46	0.496	0.496	0.514	0.547	0.609

WhisperFlo Level Z																Linear Characteristic
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coeffi- cient	Valve Opening—Percent of Total Travel										
	mm	Inches	mm	Inches		Min	10	20	30	40	50	60	70	80	90	100
4	87.3	3.4375	76	3	C _v	3	6	13	19	25	32	38	44	50	57	63
					X _T	0.600	0.600	0.539	0.521	0.528	0.528	0.547	0.539	0.526	0.507	0.525
6 ⁽¹⁾	136.5	5.375	76	3	C _v	5	10	20	30	40	51	61	71	81	91	101
					X _T	0.600	0.600	0.539	0.521	0.528	0.528	0.547	0.539	0.525	0.507	0.525
8	177.8	7	152	6	C _v	7	26	52	78	104	130	156	182	208	234	260
					X _T	0.600	0.600	0.539	0.521	0.528	0.528	0.547	0.539	0.525	0.507	0.525

1. These values are also used to size NPS 8 EAD/EAT valves.

Notes: The coefficients shown on this page are also appropriate for Fisher EDR, ET, and ETR. The full-size port coefficients for NPS 4 through 8 also apply to Fisher ET-C valves.

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**Large ED/EWD
CL150 - CL600**

Linear Cage
Flow Down

Linear						Linear Characteristic												
Valve Size, NPS	Port Diameter		Maximum Travel		Constr uction	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L (1)	
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100
12	279.4	11	102	4	SNC	Cv	40	155	300	450	610	770	940	1100	1250	1390	1500	0.88
						Kv	34.6	134	260	389	528	666	813	952	1081	1202	1298	---
			Xt	0.391		0.609	0.678	0.676	0.645	0.654	0.693	0.746	0.789	0.799	0.792	---		
			140	5.5		Cv	40	206	415	630	852	1079	1295	1465	1557	1570	1570	0.88
						Kv	34.6	178	359	545	737	933	1120	1267	1347	1358	1358	---
Xt	0.391	0.644	0.683	0.644	0.654	0.704	0.769	0.792	0.775	0.818	0.82	---						
14	279.4	11	102	4	SNC	Cv	40	106	222	368	541	727	922	1109	1283	1437	1560	0.88
						Kv	34.6	92	192	319	468	629	797	959	1110	1243	1350	---
			Xt	0.391		0.837	0.811	0.749	0.703	0.703	0.722	0.748	0.769	0.774	0.777	---		
			140	5.5		Cv	40	136	346	552	821	1092	1328	1516	1643	1708	1753	0.88
						Kv	34.6	118	299	477	710	944	1149	1311	1421	1477	1516	---
Xt	0.391	0.851	0.813	0.736	0.707	0.723	0.752	0.766	0.764	0.782	0.788	---						
16x12	279.4	11	102	4	SNC	Cv	40	73	169	314	495	698	909	1115	1305	1468	1601	0.88
						Kv	34.6	63	146	272	428	604	786	965	1128	1270	1385	---
			Xt	0.391		0.989	0.899	0.797	0.742	0.735	0.741	0.749	0.756	0.758	0.767	---		
			140	5.5		Cv	40	90	300	500	800	1100	1350	1550	1700	1800	1875	0.88
						Kv	34.6	78	260	433	692	952	1168	1341	1471	1557	1622	---
Xt	0.391	0.989	0.899	0.797	0.742	0.735	0.741	0.749	0.756	0.758	0.767	---						
16	374.7	14.75	102	4	SNC	Cv	76	202	456	709	963	1232	1534	1900	2234	2526	2772	0.85
						Kv	66	175	394	613	833	1066	1327	1644	1933	2185	2398	---
						Xt		0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---
			140	5.5		Fd		0.19	0.26	0.29	0.31	0.31	0.27	0.27	0.28	0.35	0.30	---
						Cv	124	298	649	1000	1376	1846	2324	2701	2988	3188	3312	0.85
						Kv	107	258	562	865	1190	1597	2010	2337	2585	2757	2865	---
						Xt		0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---
Fd		0.22	0.28	0.31	0.29	0.27	0.29	0.30	0.30	0.30	0.31	0.31	---					
18	374.7	14.75	102	4	SNC	Cv	82	218	492	765	1038	1310	1622	1989	2311	2583	2810	0.85
						Kv	71	189	426	662	899	1134	1404	1721	2000	2236	2431	---
						Xt		0.81	0.81	0.76	0.76	0.78	0.78	0.86	0.82	0.79	0.81	---
			140	5.5		Fd		0.18	0.22	0.23	0.20	0.19	0.20	0.20	0.20	0.20	0.21	---
						Cv	133	322	701	1078	1460	1935	2396	2745	3010	3208	3351	0.85
						Kv	115	279	606	933	1263	1674	2073	2375	2605	2776	2900	---
						Xt		0.81	0.81	0.76	0.76	0.78	0.78	0.86	0.82	0.79	0.81	---
Fd		0.22	0.28	0.31	0.29	0.27	0.29	0.30	0.30	0.30	0.31	0.31	---					
20 x 16	374.7	14.75	102	4	SNC	Cv	80	213	480	747	1038	1316	1644	2044	2413	2742	3026	0.85
						Kv	70	184	415	646	898	1139	1422	1768	2087	2371	2618	---
						Xt		0.81	0.81	0.76	0.76	0.78	0.78	0.86	0.82	0.79	0.81	---
			140	5.5		Fd		0.18	0.22	0.23	0.20	0.19	0.20	0.20	0.20	0.20	0.21	---
						Cv	130	314	683	1079	1472	1984	2514	2944	3286	3543	3721	0.85
						Kv	113	272	591	933	1274	1716	2174	2546	2842	3065	3219	---
						Xt		0.81	0.81	0.76	0.76	0.78	0.78	0.86	0.82	0.79	0.81	---
Fd		0.22	0.28	0.31	0.29	0.27	0.29	0.30	0.30	0.30	0.31	0.31	---					
24 x 16	374.7	14.75	102	4	SNC	Cv	80	213	480	747	1000	1283	1627	2065	2490	2888	3253	0.85
						Kv	70	184	415	646	865	1110	1407	1786	2153	2498	2814	---
						Xt	0.81	0.81	0.81	0.76	0.76	0.78	0.78	0.86	0.82	0.79	0.81	---
			140	5.5		Fd		0.18	0.22	0.23	0.20	0.19	0.20	0.20	0.20	0.20	0.21	---
						Cv	130	314	683	1041	1445	1998	2609	3145	3606	3982	4265	0.85
						Kv	113	272	591	900	1250	1728	2257	2720	3119	3444	3689	---
						Xt	0.81	0.81	0.81	0.76	0.76	0.78	0.78	0.86	0.82	0.79	0.81	---
Fd		0.22	0.28	0.31	0.29	0.27	0.29	0.30	0.30	0.30	0.31	0.31	---					

1. At 100% travel.
2. Clearance flow only

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Large ED/EWD CL150 - CL600

Linear Cage
Flow Down

Valve Size, NPS	Port Diameter		Maximum Travel		Constr uction	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾		
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100	
20	464	18.25	203	8	SNC	Cv	270	647	1377	2089	2720	3274	3747	4309	4787	5196	5196	0.85	
						Kv	234	560	1192	1808	2354	2833	3243	3729	4143	4497	4497	---	
						Xt	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---
						Fd		0.22	0.28	0.31	0.32	0.32	0.31	0.30	0.30	0.30	0.30	0.30	---
24x20	464	18.25	203	8	SNC	Cv	271	649	1394	2123	2827	3455	4010	4589	5157	5626	5841	0.85	
						Kv	234	562	1206	1837	2446	2990	3470	3971	4463	4869	5055	---	
						Xt	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---
						Fd		0.22	0.28	0.31	0.32	0.32	0.31	0.30	0.30	0.30	0.30	0.30	---
30	610	24	302	11.88	SN	Cv	100	906	2000	3080	4230	5290	6690	7710	8450	9260	9530	0.99	
						Kv	87	784	1730	2664	3659	4576	5787	6669	7309	8010	8243	---	
						X _T		0.7	0.73	0.72	0.75	0.72	0.74	0.71	0.74	0.72	0.71	---	

1. At 100% travel.
2. Clearance flow only

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Equal Percentage						Equal Percentage Characteristic												
Valve Size, NPS	Port Diameter		Maximum Travel		Constru ction	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L (1)	
	mm	Inches	mm	Inches			Min(2)	10	20	30	40	50	60	70	80	90		100
12	279.4	11	140	5.5	SNC	Cv	22	43	84	123	182	280	424	618	873	1190	1380	0.88
						Kv	19.0	37	73	106	157	242	367	535	755	1029	1194	---
						Xt	0.391	0.75	0.737	0.715	0.656	0.595	0.57	0.578	0.625	0.692	0.804	---
14	279.4	11	140	5.5	SNC	Cv	22	51	95	139	193	277	406	582	803	1079	1397	0.88
						Kv	19.0	44	82	120	167	240	351	503	695	933	1208	---
						Xt	0.391	0.894	0.891	0.883	0.855	0.788	0.711	0.674	0.696	0.728	0.780	---
16x12	279.4	11	140	5.5	SNC	Cv	21	58	109	158	220	317	463	664	917	1232	1595	0.88
						Kv	20.3	56.0	105	153	212	306	447	641	885	1189	1539	---
						Xt	0.391	0.99	0.994	0.995	0.987	0.916	0.805	0.738	0.743	0.752	0.764	---
16	374.7	14.75	102	4	SNC	Cv	7	22	54	86	136	213	321	477	695	1010	1414	0.85
						Kv	6	19	47	74	117	184	277	412	601	873	1223	---
						Xt	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---
						Fd	0.41	0.46	0.45	0.27	0.28	0.27	0.26	0.24	0.22	0.24	---	
			140	5.5	SNC	Cv	13	35	79	145	263	454	765	1272	1808	2278	2664	0.85
						Kv	11	30	68	125	228	393	662	1100	1564	1971	2304	---
						Xt	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---	
						Fd	0.45	0.46	0.39	0.28	0.26	0.24	0.23	0.26	0.27	0.28	---	
			203	8	LNC	Cv	34	77	163	249	433	670	1003	1490	2154	2686	3054	0.85
						Kv	29	66	141	216	375	579	868	1289	1863	2323	2642	---
						Xt	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---	
						Fd	0.46	0.45	0.42	0.25	0.32	0.25	0.21	0.23	0.25	0.26	---	
18	374.7	14.75	102	4	SNC	Cv	8	24	58	93	146	230	346	514	750	1088	1499	0.85
						Kv	7	21	50	80	127	199	299	445	649	942	1297	---
						Xt	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---	
						Fd	0.46	0.45	0.42	0.25	0.32	0.25	0.21	0.23	0.25	0.26	---	
			140	5.5	SNC	Cv	14	38	85	156	284	490	825	1351	1897	2352	2711	0.85
						Kv	12	33	74	135	246	424	714	1169	1642	2036	2346	---
						Xt	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---	
						Fd	0.46	0.45	0.42	0.25	0.32	0.25	0.21	0.23	0.25	0.26	---	
			203	8	SNC	Cv	36	83	176	269	467	723	1082	1577	2234	2730	3073	0.85
						Kv	31	72	152	233	404	625	936	1364	1933	2363	2660	---
						Xt	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---	
						Fd	0.46	0.45	0.42	0.25	0.32	0.25	0.21	0.23	0.25	0.26	---	
20 x 16	374.7	14.75	102	4	SNC	Cv	8	23	57	90	143	224	338	502	732	1089	1513	0.85
						Kv	7	20	49	78	123	194	292	434	633	942	1309	---
						Xt	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---	
						Fd	0.46	0.45	0.42	0.25	0.32	0.25	0.21	0.23	0.25	0.26	---	
			140	5.5	SNC	Cv	14	37	83	153	277	478	805	1327	1952	2548	3089	0.85
						Kv	12	32	72	132	240	413	696	1175	1681	2130	2509	---
						Xt	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---	
						Fd	0.46	0.45	0.42	0.25	0.32	0.25	0.21	0.23	0.25	0.26	---	
			203	8	SNC	Cv	35	81	172	262	456	705	1082	1596	2324	2925	3369	0.85
						Kv	31	70	148	227	394	610	936	1380	2010	2530	2914	---
						Xt	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---	
						Fd	0.46	0.45	0.42	0.25	0.32	0.25	0.21	0.23	0.25	0.26	---	
24 x 16	374.7	14.75	102	4	SNC	Cv	8	23	57	90	143	224	338	502	732	1089	1513	0.85
						Kv	7	20	49	78	123	194	292	434	633	942	1309	---
						Xt	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---	
						Fd	0.46	0.45	0.42	0.25	0.32	0.25	0.21	0.23	0.25	0.26	---	
			140	5.5	SNC	Cv	14	37	83	153	277	478	805	1327	1952	2548	3089	0.85
						Kv	12	32	72	132	240	413	696	1148	1688	2204	2672	---
						Xt	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---	
						Fd	0.46	0.45	0.42	0.25	0.32	0.25	0.21	0.23	0.25	0.26	---	
			203	8	SNC	Cv	34	77	165	252	437	676	1044	1575	2385	3121	3724	0.85
						Kv	29	67	142	218	378	585	903	1363	2063	2700	3221	---
						Xt	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---	
						Fd	0.46	0.45	0.42	0.25	0.32	0.25	0.21	0.23	0.25	0.26	---	
20	464	18.25	203	8	SNC	Cv	38	90	214	408	733	1276	2122	2954	3661	4270	4820	0.85
						Kv	33	78	185	353	634	1104	1836	2557	3168	3695	4171	---
						Xt	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---	
						Fd	0.31	0.28	0.25	0.24	0.22	0.23	0.25	0.27	0.28	0.29	---	

1. At 100% travel.
2. Clearance flow only

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Large ED/EWD
CL150 - CL600
Equal Percentage Cage
Flow Down

Valve Size, NPS	Port Diameter		Maximum Travel		Constru ction	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L (¹)		
	mm	Inches	mm	Inches			Min(²)	10	20	30	40	50	60	70	80	90		100	
24x20	464	18.25	203	8	SNC	C _v	38	91	215	410	736	1282	2159	3087	3891	4579	5182	0.85	
						K _v	33	78	186	355	637	1109	1868	2671	3368	3963	4484	---	
						X _t	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---
						F _d		0.31	0.28	0.25	0.24	0.22	0.23	0.25	0.27	0.28	0.29	---	
30	610	24	302	11.88	SN	C _v	70	126	305	520	876	1343	2200	3599	5150	6563	7690	0.99	
						K _v	61	109	264	450	758	1162	1903	3113	4455	5677	6652	---	
						X _T		0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.65	0.68	0.7	---	
1. At 100% travel. 2. Clearance flow only																			

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Whisper Trim III - Level A1 - Flow Up																	Linear Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Construction	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾		
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100	
12	279.4	11	140	5.5	SNC	Cv	25	144	295	441	576	696	803	904	991	1070	1137	0.89	
						Kv		125	255	381	498	602	695	782	857	926	984	---	
						Xt		0.62	0.62	0.62	0.65	0.7	0.75	0.81	0.86	0.86	0.86	---	
			203	8	LNC	Cv	25	212	428	622	785	930	1052	1150	1229	1285	1315	1315	0.89
						Kv		183	370	538	679	804	910	995	1063	1112	1137	---	
						Xt		0.619	0.620	0.665	0.739	0.827	0.856	0.854	0.852	0.849	0.847	---	
14	279.4	11	140	5.5	SNC	Cv	25	144	295	441	584	721	851	981	1104	1225	1318	0.89	
						Kv		125	255	381	505	623	736	849	955	1059	1140	---	
						Xt		0.62	0.62	0.62	0.63	0.65	0.67	0.70	0.72	0.72	0.73	---	
			203	8	LNC	Cv	25	212	428	635	828	1016	1194	1332	1420	1482	1515	1515	0.89
						Kv		183	370	549	716	879	1033	1153	1229	1282	1310	---	
						Xt		0.619	0.620	0.639	0.668	0.703	0.715	0.739	0.800	0.823	0.824	---	
16x12	279.4	11	140	5.5	SNC	Cv	25	144	295	441	589	737	883	1033	1179	1328	1439	0.89	
						Kv		125	255	381	509	638	764	894	1020	1149	1245	---	
						Xt		0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.65	---	
			203	8	LNC	Cv	25	212	428	644	857	1073	1289	1454	1548	1613	1648	1648	0.89
						Kv		183	370	557	741	928	1115	1258	1339	1395	1425	---	
						Xt		0.619	0.620	0.621	0.621	0.621	0.621	0.621	0.663	0.765	0.805	0.809	---
16	374.7	14.75	203	8.00	LNC	Cv	38	335	677	1019	1298	1529	1721	1871	1985	2059	2095	0.89	
						Kv		290	585	882	1123	1322	1488	1618	1717	1781	1812	---	
						Xt		0.436	0.433	0.432	0.471	0.533	0.589	0.616	0.647	0.686	0.732	---	
18	374.7	14.75	203	8.00	SNC	Cv	48	233	549	530	1175	1433	1648	1824	1955	2053	2127	0.84	
						Kv		41	202	475	459	1017	1240	1427	1578	1692	1777	1840	---
						Xt		0.50	0.52	0.52	0.52	0.52	0.53	0.54	0.56	0.58	0.60	---	
			276	10.88	LNC	Cv	48	343	776	1194	1533	1791	1973	2094	2176	2240	2312	2312	0.84
						Kv		41	297	671	1033	1327	1550	1707	1812	1883	1938	2001	---
						Xt		0.51	0.52	0.52	0.52	0.54	0.57	0.59	0.62	0.63	0.66	---	
20x16	374.7	14.75	203	8.00	SNC	Cv	38	320	663	1001	1341	1685	1977	2211	2417	2590	2736	0.89	
						Kv		277	574	865	1160	1457	1710	1912	2090	2241	2367	---	
						Xt		0.436	0.433	0.432	0.432	0.432	0.451	0.493	0.541	0.570	0.589	---	
			276	10.88	LNC	Cv	38	443	907	1372	1836	2171	2449	2675	2846	2964	3029	3029	0.89
						Kv		383	785	1186	1588	1878	2119	2314	2462	2564	2620	---	
						Xt		0.434	0.433	0.432	0.432	0.484	0.549	0.580	0.607	0.639	0.677	---	
24x16	374.7	14.75	203	8.00	SNC	Cv	38	335	676	1019	1356	1698	1982	2219	2433	2620	2749	0.89	
						Kv		290	585	881	1173	1469	1714	1919	2105	2266	2378	---	
						Xt		0.435	0.433	0.432	0.432	0.432	0.457	0.495	0.539	0.563	0.575	---	
			276	10.88	LNC	Cv	38	461	924	1387	1838	2176	2466	2707	2901	3045	3122	3122	0.89
						Kv		399	799	1200	1590	1882	2133	2342	2509	2634	2701	---	
						Xt		0.434	0.433	0.432	0.438	0.487	0.546	0.571	0.592	0.616	0.638	---	
20	464	18.25	276	10.88	SNC	Cv	47	547	1123	1699	2128	2489	2776	2992	3135	3205	3214	0.89	
						Kv		473	972	1470	1841	2153	2402	2588	2711	2773	2780	---	
						Xt		0.434	0.433	0.432	0.494	0.567	0.604	0.637	0.677	0.726	0.784	---	
			378	14.88	LNC	Cv	77	762	1544	2168	2634	2962	3158	3217	3217	3217	3217	0.89	
						Kv		659	1335	1876	2278	2562	2731	2783	2783	2783	2783	---	
						Xt		0.43	0.43	0.5	0.59	0.63	0.69	0.76	0.83	0.85	0.85	---	

1. At 100% travel.
 2. Clearance flow only

Valve Size, NPS	Port Diameter		Maximum Travel		Construction	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾	
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100
24x20	464	18.25	276	10.88	SNC	C _v	70	481	987	1492	1923	2316	2673	2991	3271	3514	3720	0.89
						K _v		416	853	1291	1663	2004	2312	2587	2830	3040	3218	---
						X _t		0.53	0.53	0.52	0.57	0.57	0.58	0.6	0.62	0.65	0.67	---
			378	14.88	LNC	C _v	43	671	1358	2028	2614	3059	3369	3552	3708	3915	4187	0.89
						K _v		580	1174	1754	2261	2646	2914	3073	3207	3386	3622	---
						X _t		0.529	0.528	0.528	0.528	0.552	0.615	0.689	0.736	0.766	0.801	---
30	610	24	276	10.88	SN	C _v	55	684	1400	2118	2837	3555	4271	4687	5132	5519	5850	0.99
						K _v		592	1211	1832	2454	3075	3694	4054	4439	4774	5060	---
						X _T		0.6	0.6	0.6	0.6	0.57	0.54	0.58	0.59	0.61	0.63	---
			505	19.88	LN	C _v	55	1173	2370	3569	4544	5286	5873	6294	6559	6661	6661	0.99
						K _v		1015	2050	3087	3931	4572	5080	5444	5674	5762	5762	---
						X _T		0.6	0.6	0.57	0.57	0.6	0.63	0.67	0.72	0.78	0.78	---

1. At 100% travel.
2. Clearance flow only

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Whisper Trim - Level A3 - Flow Up																Linear Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Constr uction	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L (¹)	
	mm	Inches	mm	Inches			Min(²)	10	20	30	40	50	60	70	80	90		100
								Cv	Kv	Xt	Cv	Kv	Xt	Cv	Kv	Xt		Cv
12	279.4	11	140	5.5	SNC	Cv	17	123	253	381	508	617	719	813	901	978	1049	0.89
						Kv		106	219	330	439	534	622	703	779	846	907	---
						Xt		0.62	0.62	0.62	0.62	0.66	0.71	0.76	0.81	0.86	0.86	---
			203	8	LNC	Cv	17	181	371	550	705	839	960	1063	1149	1219	1272	0.89
						Kv		157	321	475	610	726	831	919	994	1055	1100	---
						Xt		0.619	0.620	0.638	0.700	0.769	0.851	0.856	0.854	0.852	0.850	---
14	279.4	11	140	5.5	SNC	Cv	17	123	253	381	509	630	748	863	978	1086	1192	0.89
						Kv		106	219	330	440	545	647	747	846	939	1031	---
						Xt		0.62	0.62	0.62	0.62	0.64	0.66	0.68	0.70	0.72	0.72	---
			203	8	LNC	Cv	17	181	371	554	731	896	1059	1212	1331	1410	1467	0.89
						Kv		157	321	479	632	775	916	1048	1152	1219	1269	---
						Xt		0.62	0.62	0.63	0.65	0.68	0.71	0.72	0.74	0.79	0.82	---
16x12	279.4	11	140	5.5	SNC	Cv	17	123	253	381	510	638	767	897	1029	1158	1287	0.89
						Kv		106	219	330	441	552	663	776	890	1002	1113	---
						Xt		0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	---
			203	8	LNC	Cv	17	181	371	557	748	934	1125	1311	1453	1537	1597	0.89
						Kv		157	321	482	647	808	973	1134	1256	1329	1381	---
						Xt		0.619	0.620	0.620	0.621	0.621	0.621	0.621	0.663	0.751	0.805	---
16	374.7	14.75	203	8.00	LNC	Cv	25	290	593	892	1178	1396	1590	1749	1880	1980	2049	0.89
						Kv		251	513	772	1019	1208	1375	1513	1626	1713	1772	---
						Xt		0.436	0.433	0.433	0.447	0.495	0.554	0.594	0.618	0.646	0.679	---
18	374.7	14.75	203	8.00	SNC	Cv	25	197	477	762	1041	1293	1506	1690	1838	1953	2043	0.84
						Kv	21	171	413	660	901	1119	1304	1462	1590	1690	1768	---
						Xt		0.49	0.52	0.52	0.52	0.51	0.52	0.53	0.55	0.56	0.58	---
			276	10.88	LNC	Cv	25	296	682	1062	1392	1654	1858	2002	2103	2174	2232	0.84
						Kv	21	256	590	919	1204	1432	1608	1732	1820	1881	1931	---
						Xt		0.50	0.52	0.52	0.52	0.53	0.55	0.57	0.60	0.61	0.63	---
20x16	374.7	14.75	203	8.00	SNC	Cv	25	290	593	892	1198	1495	1800	2032	2236	2416	2571	0.89
						Kv		251	513	772	1036	1293	1557	1758	1934	2089	2224	---
						X _T		0.436	0.433	0.432	0.432	0.432	0.432	0.460	0.498	0.541	0.569	---
			276	10.88	LNC	Cv	25	400	807	1223	1629	1994	2267	2503	2694	2844	2952	0.89
						Kv		346	698	1058	1409	1725	1961	2165	2330	2460	2554	---
						X _T		0.435	0.433	0.432	0.432	0.454	0.504	0.562	0.582	0.607	0.635	---
24x16	374.7	14.75	203	8.00	SNC	Cv	18	163	451	735	1025	1307	1597	1861	2075	2270	2425	0.89
						Kv		141	390	636	887	1131	1381	1610	1795	1964	2098	---
						X _T		0.440	0.434	0.433	0.432	0.432	0.432	0.441	0.471	0.505	0.537	---
			276	10.88	LNC	Cv	19	281	688	1103	1509	1895	2188	2449	2666	2849	2918	0.89
						Kv		243	595	954	1305	1639	1893	2118	2306	2464	2524	---
						X _T		0.437	0.433	0.432	0.432	0.445	0.489	0.542	0.567	0.585	0.594	---
20	464	18.25	276	10.88	SNC	Cv	31	470	976	1471	1912	2259	2555	2795	2980	3112	3189	0.89
						Kv		407	844	1272	1654	1954	2210	2418	2578	2692	2758	---
						Xt		0.435	0.433	0.432	0.461	0.517	0.583	0.607	0.635	0.669	0.710	---
			378	14.88	LNC	Cv	46	657	1337	1948	2407	2762	3014	3166	3216	3216	3216	0.89
						Kv		569	1157	1685	2082	2389	2607	2739	2781	2781	2781	---
						Xt		0.43	0.43	0.47	0.55	0.6	0.64	0.69	0.76	0.82	0.85	---

1. At 100% travel.
 2. Clearance flow only

Valve Size, NPS	Port Diameter		Maximum Travel		Construction	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾	
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100
24x20	464	18.25	276	10.88	SNC	C _v	42	414	857	1291	1702	2060	2394	2698	2973	3222	3440	0.89
						K _v		358	741	1117	1472	1782	2071	2334	2571	2787	2975	---
						X _T		0.53	0.53	0.52	0.54	0.56	0.57	0.59	0.6	0.62	0.64	---
			378	14.88	LNC	C _v	29	579	1177	1772	2323	2785	3135	3376	3537	3670	3830	0.89
						K _v		501	1018	1532	2010	2409	2711	2920	3060	3175	3313	---
						X _T		0.529	0.528	0.528	0.528	0.528	0.564	0.621	0.686	0.732	0.756	---
30	660	26	276	10.88	SN	C _v	50	594	1214	1833	2453	3073	3692	4312	4650	5043	5392	0.99
						K _v		514	1050	1586	2122	2658	3194	3730	4022	4362	4664	---
						X _T		0.6	0.6	0.6	0.6	0.6	0.56	0.54	0.58	0.59	0.61	---
			505	19.88	LN	C _v	50	1007	2050	3092	4215	4808	5413	5902	6270	6515	6642	0.99
						K _v		871	1773	2675	3568	4159	4682	5105	5424	5635	5745	---
						X _T		0.6	0.6	0.6	0.55	0.58	0.61	0.64	0.57	0.71	0.76	---

1. At 100% travel.
2. Clearance flow only

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Whisper Trim - Level B1 - Flow Up																	Linear Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Constr uction	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾		
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100	
12	279.4	11	140	5.5	SNC	Cv	21	79	157	238	311	384	464	537	597	659	721	0.89	
						Kv		68	136	206	269	332	401	465	516	570	624	---	
						Xt		0.62	0.62	0.62	0.62	0.62	0.62	0.64	0.66	0.68	0.71	---	
			203	8	LNC	Cv	21	120	228	337	453	557	646	730	813	889	949	0.89	
						Kv		104	197	291	392	482	559	631	703	769	821	---	
						Xt		0.618	0.619	0.620	0.620	0.641	0.675	0.713	0.756	0.803	0.846	---	
14	279.4	11	140	5.5	SNC	Cv	21	79	157	238	311	384	464	541	607	678	751	0.89	
						Kv		68	136	206	269	332	401	468	525	586	650	---	
						Xt		0.62	0.62	0.62	0.62	0.62	0.62	0.63	0.64	0.64	0.66	---	
			203	8	LNC	Cv	21	120	228	337	453	562	663	761	863	962	1044	0.89	
						Kv		104	197	292	392	486	573	658	747	832	903	---	
						Xt		0.62	0.62	0.62	0.62	0.63	0.64	0.66	0.68	0.69	0.71	---	
16x12	279.4	11	140	5.5	SNC	Cv	21	79	157	238	311	384	464	543	614	690	771	0.89	
						Kv		68	136	206	269	332	401	470	531	597	667	---	
						Xt		0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	---	
			203	8	LNC	Cv	21	120	228	337	453	566	674	782	897	1011	1107	0.89	
						Kv		104	197	291	392	489	583	676	776	875	958	---	
						Xt		0.618	0.619	0.620	0.620	0.621	0.621	0.621	0.621	0.621	0.621	---	
16	374.7	14.75	203	8.00	LNC	Cv	32	197	374	554	746	933	1111	1248	1385	1509	1603	0.89	
						Kv		170	324	479	645	807	961	1080	1198	1305	1387	---	
						Xt		0.438	0.435	0.433	0.433	0.432	0.432	0.461	0.493	0.528	0.56	---	
18	374.7	14.75	203	8.00	SNC	Cv	36	133	299	470	651	823	990	1150	1304	1441	1559	0.84	
						Kv		31	115	259	407	564	713	857	995	1128	1247	1349	---
						Xt		0.48	0.50	0.51	0.52	0.52	0.52	0.52	0.51	0.52	0.52	---	
			276	10.88	LNC	Cv	36	188	432	656	900	1118	1327	1498	1658	1785	1895	0.84	
						Kv		31	163	374	568	779	968	1149	1297	1435	1545	1640	---
						Xt		0.49	0.51	0.52	0.52	0.52	0.51	0.52	0.53	0.54	0.55	---	
20x16	374.7	14.75	203	8.00	SNC	Cv	31	196	374	554	746	933	1111	1290	1480	1669	1827	0.89	
						Kv		170	324	479	645	807	961	1116	1280	1444	1581	---	
						Xt		0.438	0.435	0.433	0.433	0.432	0.432	0.432	0.431	0.431	0.431	---	
			276	10.88	LNC	Cv	31	256	515	756	1016	1256	1517	1757	1974	2141	2307	0.89	
						Kv		221	445	654	879	1087	1313	1520	1707	1852	1995	---	
						Xt		0.437	0.434	0.433	0.432	0.432	0.432	0.432	0.432	0.451	0.480	0.514	---
24x16	374.7	14.75	203	8.00	SNC	Cv	31	196	374	554	746	933	1111	1290	1480	1669	1818	0.89	
						Kv		170	324	479	645	807	961	1116	1280	1444	1573	---	
						Xt		0.438	0.435	0.433	0.433	0.432	0.432	0.432	0.431	0.431	0.436	---	
			276	10.88	LNC	Cv	31	255	515	755	1016	1255	1516	1756	1964	2137	2290	0.89	
						Kv		221	445	653	879	1086	1311	1519	1699	1849	1981	---	
						Xt		0.437	0.434	0.433	0.432	0.432	0.432	0.432	0.455	0.481	0.509	---	
20	464	18.25	276	10.88	SNC	Cv	39	314	632	928	1247	1542	1824	2043	2260	2440	2614	0.89	
						Kv		292	587	862	1159	1432	1724	1937	2151	2331	2508	---	
						Xt		0.437	0.434	0.433	0.432	0.432	0.432	0.450	0.481	0.518	0.556	0.588	---
			378	14.88	LNC	Cv	61	437	855	1271	1688	2009	2298	2548	2756	2922	3051	0.89	
						Kv		378	739	1100	1460	1738	1988	2204	2384	2528	2639	---	
						Xt		0.43	0.43	0.43	0.43	0.48	0.52	0.58	0.6	0.63	0.65	---	
24x20	464	18.25	276	10.88	SNC	Cv	56	276	555	815	1095	1354	1635	1835	2063	2262	2467	0.89	
						Kv		239	480	705	948	1171	1414	1587	1784	1956	2134	---	
						Xt		0.53	0.53	0.53	0.52	0.52	0.52	0.56	0.56	0.57	0.57	---	
			378	14.88	LNC	Cv	36	385	754	1121	1486	1844	2191	2508	2783	3011	3196	0.89	
						Kv		333	652	969	1285	1595	1895	2169	2407	2605	2765	---	
						Xt		0.529	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.545	0.576	---	

1. At 100% travel.
2. Clearance flow only

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Whisper Trim - Level B3 - Flow Up																	Linear Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Constr uction	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾	
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100
12	279.4	11	140	5.5	SNC	Cv	15	78	152	230	305	381	458	528	595	654	716	0.89
						Kv		67	131	199	264	330	396	457	515	566	619	---
						Xt		0.62	0.62	0.62	0.62	0.62	0.62	0.63	0.66	0.68	0.71	---
			203	8	LNC	Cv	15	114	222	336	445	550	641	728	808	883	942	0.89
						Kv		99	192	291	385	476	554	630	699	764	815	---
						Xt		0.617	0.619	0.62	0.62	0.639	0.674	0.712	0.754	0.799	0.841	---
14	279.4	11	140	5.5	SNC	Cv	15	78	152	230	305	381	458	531	605	673	745	0.89
						Kv		67	131	199	264	330	396	459	523	582	645	---
						Xt		0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.64	0.64	0.66	---
			203	8	LNC	Cv	15	114	222	336	445	555	657	759	858	954	1045	0.89
						Kv		99	192	291	385	480	568	657	742	826	904	---
						Xt		0.62	0.62	0.62	0.62	0.63	0.64	0.66	0.67	0.69	0.71	---
16x12	279.4	11	140	5.5	SNC	Cv	15	78	152	230	305	381	458	533	612	685	765	0.89
						Kv		67	131	199	264	330	396	461	529	593	662	---
						Xt		0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	---
			203	8	LNC	Cv	15	114	222	336	445	558	668	780	891	1002	1114	0.89
						Kv		98	192	291	385	483	578	675	771	867	963	---
						Xt		0.617	0.619	0.620	0.620	0.621	0.621	0.621	0.621	0.621	0.621	---
16	374.7	14.75	203	8.00	LNC	Cv	21	178	349	528	700	878	1052	1201	1331	1451	1555	0.89
						Kv		154	302	457	606	759	910	1039	1151	1255	1345	---
						Xt		0.439	0.435	0.433	0.433	0.432	0.432	0.432	0.452	0.48	0.511	0.543
18	374.7	14.75	203	8.00	SNC	Cv	17	118	278	447	607	776	936	1101	1243	1380	1500	0.84
						Kv	15	102	240	387	525	672	810	953	1075	1194	1298	---
						Xt		0.48	0.50	0.51	0.52	0.52	0.52	0.52	0.51	0.52	0.52	---
			276	10.88	LNC	Cv	17	173	397	622	846	1070	1282	1445	1600	1734	1846	0.84
						Kv	15	150	344	538	732	926	1110	1250	1385	1500	1597	---
						Xt		0.49	0.51	0.52	0.52	0.52	0.51	0.52	0.52	0.53	0.55	---
20x16	374.7	14.75	203	8.00	SNC	Cv	21	178	349	528	701	878	1052	1228	1404	1578	1756	0.89
						Kv		154	302	457	606	760	910	1062	1215	1365	1519	---
						X _T		0.439	0.435	0.433	0.433	0.432	0.432	0.432	0.431	0.431	0.431	---
			276	10.88	LNC	Cv	21	236	475	714	954	1194	1434	1674	1896	2070	2229	0.89
						Kv		204	411	618	825	1032	1240	1448	1640	1791	1928	---
						X _T		0.437	0.434	0.433	0.432	0.432	0.432	0.432	0.439	0.467	0.497	---
24x16	374.7	14.75	203	8.00	SNC	Cv	21	178	349	528	701	878	1052	1228	1404	1578	1744	0.89
						Kv		154	302	457	606	759	910	1062	1214	1365	1509	---
						X _T		0.439	0.435	0.433	0.433	0.432	0.432	0.432	0.431	0.431	0.431	---
			276	10.88	LNC	Cv	21	236	475	714	953	1193	1433	1673	1886	2064	2217	0.89
						Kv		204	411	618	824	1032	1240	1447	1631	1785	1918	---
						X _T		0.437	0.434	0.433	0.432	0.432	0.432	0.432	0.444	0.470	0.495	---
20	464	18.25	276	10.88	SNC	Cv	26	292	588	884	1181	1478	1756	1982	2190	2378	2547	0.89
						Kv		252	508	765	1021	1278	1519	1715	1894	2057	2203	---
						Xt		0.437	0.434	0.433	0.432	0.432	0.441	0.471	0.505	0.542	0.582	---
			378	14.88	LNC	Cv	37	403	812	1213	1616	1951	2232	2477	2690	2866	3003	0.89
						Kv		348	702	1049	1398	1687	1931	2142	2327	2479	2598	---
						Xt		0.44	0.43	0.43	0.43	0.47	0.51	0.56	0.6	0.62	0.64	---

1. At 100% travel.
2. Clearance flow only

Valve Size, NPS	Port Diameter		Maximum Travel		Construction	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾	
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100
24x20	464	18.25	276	10.88	SNC	C _v	34	257	516	776	1037	1297	1558	1773	1988	2192	2386	0.89
						K _v		222	447	671	897	1122	1348	1534	1719	1896	2064	---
						X _T		0.53	0.53	0.53	0.52	0.52	0.52	0.55	0.56	0.56	0.57	---
			378	14.88	LNC	C _v	25	354	716	1070	1423	1778	2110	2416	2695	2933	3127	0.89
						K _v		307	620	925	1231	1538	1825	2090	2331	2537	2705	---
						X _T		0.529	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.534	0.562	---

1. At 100% travel.
2. Clearance flow only

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Whisper Trim - Level C1 - Flow Up																	Linear Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Constr uction	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾		
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100	
12	279.4	11	140	5.5	SNC	Cv	18	61	103	159	206	253	308	351	404	454	497	0.89	
						Kv		53	89	138	178	219	266	304	349	393	430	---	
						Xt		0.61	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	---
			203	8	LNC	Cv	18	84	153	222	293	368	444	512	571	628	688	0.89	
						Kv		73	132	192	253	318	384	443	494	543	595	---	
						Xt		0.616	0.619	0.620	0.620	0.620	0.621	0.627	0.647	0.670	0.695	---	
14	279.4	11	140	5.5	SNC	Cv	18	61	103	159	206	253	308	351	404	454	498	0.89	
						Kv		53	89	138	178	219	266	304	349	393	430	---	
						Xt		0.61	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	---	
			203	8	LNC	Cv	18	84	153	222	293	368	444	514	578	642	711	0.89	
						Kv		73	132	192	253	318	384	444	500	556	615	---	
						Xt		0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.63	0.64	0.65	---	
16x12	279.4	11	140	5.5	SNC	Cv	18	61	103	159	206	253	308	351	404	454	498	0.89	
						Kv		53	89	138	178	219	266	304	349	393	431	---	
						Xt		0.61	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	---	
			203	8	LNC	Cv	18	84	153	222	293	368	444	515	583	652	727	0.89	
						Kv		73	133	192	253	318	384	445	504	564	629	---	
						Xt		0.616	0.619	0.620	0.620	0.620	0.621	0.621	0.621	0.621	0.621	---	
16	374.7	14.75	203	8.00	LNC	Cv	27	131	244	351	460	577	696	811	919	1026	1132	0.89	
						Kv		113	211	304	398	499	602	702	795	887	979	---	
						Xt		0.442	0.436	0.434	0.433	0.433	0.432	0.432	0.432	0.431	0.439	---	
18	374.7	14.75	203	8.00	SNC	Cv	28	84	196	300	400	504	615	727	833	934	1038	0.84	
						Kv		24	72	169	259	346	436	532	629	721	809	898	---
						Xt		0.47	0.49	0.50	0.51	0.52	0.52	0.52	0.52	0.52	0.52	---	
			276	10.88	LNC	Cv	28	118	268	417	559	699	840	988	1131	1260	1374	0.84	
						Kv		24	102	232	361	484	605	726	855	979	1090	1189	---
						Xt		0.48	0.50	0.51	0.52	0.52	0.52	0.52	0.52	0.51	0.51	---	
20x16	374.7	14.75	203	8.00	SNC	Cv	27	131	244	351	459	577	696	811	919	1026	1142	0.89	
						Kv		113	211	303	397	499	602	701	795	888	987	---	
						X _T		0.442	0.436	0.434	0.433	0.433	0.432	0.432	0.432	0.431	0.431	---	
			276	10.88	LNC	Cv	27	161	318	478	637	787	936	1088	1247	1407	1562	0.89	
						Kv		139	275	414	551	681	810	941	1079	1217	1351	---	
						X _T		0.440	0.435	0.434	0.433	0.432	0.432	0.432	0.431	0.431	---		
24x16	374.7	14.75	203	8.00	SNC	Cv	27	131	244	351	459	577	696	811	919	1026	1142	0.89	
						Kv		113	211	304	397	499	602	702	795	887	988	---	
						X _T		0.442	0.436	0.434	0.433	0.433	0.432	0.432	0.432	0.431	0.431	---	
			276	10.88	LNC	Cv	27	161	318	478	636	787	936	1087	1246	1406	1562	0.89	
						Kv		139	275	413	550	681	810	940	1078	1216	1351	---	
						X _T		0.440	0.435	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.431	---	
20	464	18.25	276	10.88	SNC	Cv	33	199	393	591	787	972	1156	1344	1541	1726	1875	0.89	
						Kv		172	340	511	680	841	1000	1162	1333	1493	1622	---	
						Xt		0.440	0.435	0.434	0.433	0.432	0.432	0.432	0.432	0.438	0.457	---	
			378	14.88	LNC	Cv	51	272	531	791	1055	1320	1585	1814	2012	2194	2358	0.89	
						Kv		235	459	685	912	1141	1371	1569	1740	1898	2040	---	
						Xt		0.44	0.43	0.43	0.43	0.43	0.43	0.43	0.45	0.48	0.51	0.54	---

1. At 100% travel.
2. Clearance flow only

Valve Size, NPS	Port Diameter		Maximum Travel		Construction	Flow Coefficient	Valve Opening—Percent of Total Travel											F _L ⁽¹⁾
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90	100	
24x20	464	18.25	276	10.88	SNC	C _v	46	175	345	519	691	854	1015	1180	1353	1526	1666	0.89
						K _v		152	299	449	598	738	878	1021	1170	1320	1441	---
						X _T		0.53	0.53	0.53	0.53	0.52	0.52	0.52	0.52	0.52	0.54	---
			378	14.88	LNC	C _v	31	238	469	700	932	1165	1398	1628	1853	2069	2272	0.89
						K _v		206	405	605	806	1008	1209	1409	1603	1790	1965	---
						X _T		0.530	0.529	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528

1. At 100% travel.
2. Clearance flow only

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Whisper Trim - Level C3 - Flow Up																	Linear Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Constr uction	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾		
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100	
12	279.4	11	140	5.5	SNC	Cv	14	52	99	144	191	241	289	334	380	430	479	0.89	
						Kv		45	86	125	165	208	250	289	329	372	414	---	
						Xt		0.61	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	---
			203	8	LNC	Cv	14	73	143	209	281	349	418	490	548	607	651	689	0.89
						Kv		63	124	181	243	302	362	424	474	525	563	---	
						Xt		0.615	0.618	0.619	0.620	0.620	0.621	0.620	0.639	0.662	0.680	---	
14	279.4	11	140	5.5	SNC	Cv	14	52	99	144	191	241	289	334	380	430	479	0.89	
						Kv		45	86	125	165	208	250	289	329	372	414	---	
						Xt		0.61	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	---	
			203	8	LNC	Cv	14	73	143	209	282	349	418	490	553	619	679	0.89	
						Kv		63	124	181	244	302	362	424	478	535	587	---	
						Xt		0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.63	0.64	0.64	---	
16x12	279.4	11	140	5.5	SNC	Cv	14	52	99	144	191	241	289	334	380	430	479	0.89	
						Kv		45	86	125	165	208	250	289	329	372	414	---	
						Xt		0.61	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	---	
			203	8	LNC	Cv	14	73	143	209	282	349	418	490	556	627	697	0.89	
						Kv		63	124	181	243	302	361	424	481	542	603	---	
						Xt		0.615	0.618	0.619	0.620	0.620	0.621	0.621	0.621	0.621	0.621	---	
16	374.7	14.75	203	8.00	LNC	Cv	20	116	226	339	456	564	681	794	904	1023	1120	0.89	
						Kv		100	195	293	394	488	589	687	782	885	969	---	
						Xt		0.444	0.437	0.435	0.433	0.433	0.432	0.432	0.432	0.431	0.437	---	
18	374.7	14.75	203	8.00	SNC	Cv	15	76	182	292	394	503	610	713	825	927	1036	0.84	
						Kv		13	66	157	253	341	435	528	617	714	802	897	---
						Xt		0.47	0.49	0.50	0.51	0.52	0.52	0.52	0.52	0.52	0.52	---	
			276	10.88	LNC	Cv	14	112	261	405	546	696	839	981	1125	1248	1366	0.84	
						Kv		12	97	226	351	473	602	726	849	973	1080	1182	---
						Xt		0.48	0.50	0.51	0.52	0.52	0.52	0.52	0.52	0.51	0.51	---	
20x16	374.7	14.75	203	8.00	SNC	Cv	19	116	235	344	458	574	682	800	912	1023	1141	0.89	
						Kv		100	203	298	396	497	590	692	789	885	987	---	
						X _T		0.443	0.437	0.434	0.433	0.433	0.432	0.432	0.432	0.431	0.431	---	
			276	10.88	LNC	Cv	19	161	311	471	623	776	935	1085	1240	1398	1547	0.89	
						Kv		139	269	408	539	671	809	939	1073	1209	1338	---	
						X _T		0.440	0.435	0.434	0.433	0.432	0.432	0.432	0.431	0.431	---		
24x16	374.7	14.75	203	8.00	SNC	Cv	19	116	235	344	458	574	682	800	912	1023	1127	0.89	
						Kv		100	203	298	396	497	590	692	789	885	975	---	
						X _T		0.443	0.437	0.434	0.433	0.433	0.432	0.432	0.432	0.431	0.431	---	
			276	10.88	LNC	Cv	19	161	311	471	623	775	935	1085	1239	1398	1532	0.89	
						Kv		139	269	407	539	670	809	939	1072	1209	1325	---	
						X _T		0.440	0.435	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.431	---	
20	464	18.25	276	10.88	SNC	Cv	24	194	375	568	752	935	1127	1309	1495	1686	1826	0.89	
						Kv		168	325	491	650	809	975	1132	1293	1458	1579	---	
						Xt		0.440	0.435	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.450	---	
			378	14.88	LNC	Cv	32	264	518	770	1023	1279	1538	1772	1965	2144	2309	0.89	
						Kv		229	448	666	885	1107	1330	1533	1700	1854	1997	---	
						Xt		0.44	0.43	0.43	0.43	0.43	0.43	0.44	0.47	0.5	0.53	---	

1. At 100% travel.
 2. Clearance flow only

Valve Size, NPS	Port Diameter		Maximum Travel		Construction	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾	
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100
24x20	464	18.25	276	10.88	SNC	C _V	30	171	330	499	660	821	990	1149	1313	1480	1638	0.89
						K _V		148	285	431	571	710	856	994	1135	1280	1417	---
						X _T		0.53	0.53	0.53	0.53	0.52	0.52	0.52	0.52	0.52	0.52	---
			378	14.88	LNC	C _V	23	231	458	681	904	1130	1358	1582	1800	2009	2210	0.89
						K _V		199	396	589	782	978	1174	1369	1557	1738	1912	---
						X _T		0.530	0.529	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.528	---

1. At 100% travel.
2. Clearance flow only

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Whisper Trim - Level D3 - Flow Up																Linear Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Constr. uction	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾	
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100
12	254	10	203	8	LNC	Cv	12	67	132	192	259	321	384	445	496	549	594	0.89
						Kv		58	114	166	224	278	332	385	429	475	514	---
						Xt		0.615	0.618	0.619	0.620	0.620	0.621	0.636	0.658	0.685	0.710	---
14	254	10	203	8	LNC	Cv	12	67	132	192	259	321	384	449	505	566	622	---
						Kv		58	114	166	224	278	332	388	437	489	538	---
						Xt		0.62	0.62	0.62	0.62	0.62	0.62	0.63	0.64	0.65	0.66	---
16x12	254	10	203	8	LNC	Cv	12	67	132	192	259	321	384	451	511	577	641	0.89
						Kv		58	114	166	224	278	332	390	442	499	554	---
						Xt		0.615	0.618	0.619	0.620	0.620	0.621	0.621	0.621	0.621	0.621	---
16	374.7	14.75	203	8.00	LNC	Cv	20	116	226	339	456	564	681	794	904	1023	1120	0.89
						Kv		100	195	293	394	488	589	687	782	885	969	---
						Xt		0.444	0.437	0.435	0.433	0.433	0.432	0.432	0.432	0.431	0.437	---
18	374.7	14.75	203	8.00	SNC	Cv	15	76	182	292	394	503	610	713	825	927	1036	0.84
						Kv	13	66	157	253	341	435	528	617	714	802	897	---
						Xt		0.47	0.49	0.50	0.51	0.52	0.52	0.52	0.52	0.52	0.52	---
			276	10.88	LNC	Cv	14	112	261	405	546	696	839	981	1125	1248	1366	0.84
						Kv	12	97	226	351	473	602	726	849	973	1080	1182	---
						Xt		0.48	0.50	0.51	0.52	0.52	0.52	0.52	0.52	0.51	0.51	---
			378	14.88	LNC	Cv	14	168	363	562	762	963	1151	1318	1469	1605	1725	0.84
						Kv	12	145	315	486	660	833	996	1140	1271	1389	1493	---
						Xt		0.49	0.51	0.52	0.52	0.52	0.52	0.51	0.52	0.52	0.53	---
20x16	374.7	14.75	203	8.00	SNC	Cv	19	116	235	344	458	574	682	800	912	1023	1141	0.89
						Kv		100	203	298	396	497	590	692	789	885	987	---
						Xt		0.443	0.437	0.434	0.433	0.433	0.432	0.432	0.432	0.431	0.431	---
			276	10.88	LNC	Cv	19	161	311	471	623	776	935	1085	1240	1398	1547	0.89
						Kv		139	269	408	539	671	809	939	1073	1209	1338	---
						Xt		0.440	0.435	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.431	---
			378	14.88	LNC	Cv	19	220	430	639	849	1063	1277	1490	1700	1893	2046	0.89
						Kv		191	372	553	734	919	1105	1289	1470	1637	1769	---
						Xt		0.438	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.439	0.463	---
24x16	374.7	14.75	203	8.00	SNC	Cv	19	116	235	344	458	574	682	800	912	1023	1127	0.89
						Kv		100	203	298	396	497	590	692	789	885	975	---
						Xt		0.443	0.437	0.434	0.433	0.433	0.432	0.432	0.432	0.431	0.431	---
			276	10.88	LNC	Cv	19	161	311	471	623	775	935	1085	1239	1398	1532	0.89
						Kv		139	269	407	539	670	809	939	1072	1209	1325	---
						Xt		0.440	0.435	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.431	---
			378	14.88	LNC	Cv	19	220	430	639	849	1062	1276	1490	1700	1882	2027	0.89
						Kv		190	372	553	734	919	1104	1289	1471	1628	1753	---
						Xt		0.438	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.444	0.464	---
20	464	18.25	276	10.88	SNC	Cv	24	194	375	568	752	935	1127	1309	1495	1686	1826	0.89
						Kv		168	325	491	650	809	975	1132	1293	1458	1579	---
						Xt		0.440	0.435	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.450	---
			378	14.88	LNC	Cv	32	264	518	770	1023	1279	1538	1772	1965	2144	2309	0.89
						Kv		229	448	666	885	1107	1330	1533	1700	1854	1997	---
						Xt		0.44	0.43	0.43	0.43	0.43	0.43	0.43	0.44	0.47	0.5	0.53

1. At 100% travel.
 2. Clearance flow only

Valve Size, NPS	Port Diameter		Maximum Travel		Construction	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾	
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100
24x20	464	18.25	276	10.88	SNC	Cv	30	171	330	499	660	821	990	1149	1313	1480	1638	0.89
						Kv		148	285	431	571	710	856	994	1135	1280	1417	---
						Xt		0.53	0.53	0.53	0.53	0.52	0.52	0.52	0.52	0.52	0.52	---
			378	14.88	LNC	Cv	23	231	458	681	904	1130	1358	1582	1800	2009	2210	0.89
						Kv		199	396	589	782	978	1174	1369	1557	1738	1912	---
						Xt		0.530	0.529	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.528	---
30	610	24	505	19.88	LN	Cv	35	400	792	1183	1575	1968	2362	2756	3150	3545	3939	0.99
						Kv		346	685	1023	1362	1702	2043	2384	2725	3066	3407	---
						Xt		0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.57	0.55	---
1. At 100% travel. 2. Clearance flow only																		

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WhisperFlo Trim - Level X - Flow Up																	Linear Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Constr uction	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾		
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100	
12	279.4	11	140	5.5	SNC	Cv	62.2	92	180	274	366	454	538	616	689	757	820		
						Xt	0.53	0.71	0.7	0.69	0.68	0.68	0.69	0.69	0.7	0.71	0.73	---	
			203	8	LNC	Cv	62.2	128	257	382	508	633	728	820	901	978	1019	1089	0.89
						Xt	0.886	0.886	0.777	0.799	0.737	0.688	0.727	0.776	0.734	0.721	0.758	---	
14	279.4	11	140	5.5	SNC	Cv	62.2	92	180	276	370	461	549	633	714	791	863		
						Xt	0.53	0.71	0.70	0.69	0.68	0.67	0.68	0.67	0.68	0.68	0.69	---	
			203	8	LNC	Cv	62.2	126	258	386	517	642	762	866	961	1049	1113		
						Xt	0.69	0.69	0.66	0.69	0.66	0.65	0.66	0.71	0.70	0.70	0.73	---	
16x12	279.4	11	140	5.5	SNC	Cv	62.2	92	180	277	372	465	556	645	730	813	892		
						Xt	0.53	0.71	0.7	0.69	0.68	0.67	0.67	0.66	0.66	0.66	0.66	---	
			203	8	LNC	Cv	62.2	124	258	388	523	648	784	896	1001	1096	1175		
						Xt	0.556	0.556	0.58	0.614	0.612	0.629	0.615	0.665	0.678	0.691	0.719	---	
16	374.7	14.75	203	8.00	LNC	Cv	60.2	170	358	541	720	890	1052	1205	1348	1481	1604	---	
						Xt	0.534	0.711	0.697	0.688	0.684	0.684	0.687	0.694	0.703	0.715	0.729	---	
18	374.7	14.75	203	8.00	SNC	Cv	60.2	178	373	550	745	923	1110	1267	1419	1544	1661	---	
						Xt	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	---	
			276	10.88	LNC	Cv	60.2	248	513	781	1049	1284	1491	1666	1811	1927	2017	---	
						Xt	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	---	
			378	14.88	LNC	Cv	60.2	348	717	1080	1385	1638	1838	1983	2086	2159	2214	---	
						Xt	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	---	
20x16	374.7	14.75	203	8.00	SNC	Cv	60.2	170	359	546	731	912	1089	1260	1427	1587	1741	---	
						Xt	0.534	0.713	0.699	0.687	0.677	0.669	0.663	0.659	0.656	0.655	0.654	---	
			276	10.88	LNC	Cv	60.2	238	494	745	990	1226	1452	1667	1870	2061	2240	---	
						Xt	0.534	0.708	0.690	0.676	0.666	0.659	0.656	0.654	0.655	0.658	0.662	---	
			378	14.88	LNC	Cv	60.2	332	679	1015	1339	1633	1911	2165	2397	2606	2793	---	
						Xt	0.534	0.701	0.679	0.665	0.657	0.654	0.656	0.660	0.667	0.676	0.686	---	
24x16	374.7	14.75	203	8.00	SNC	Cv	60.2	170	360	548	735	921	1104	1285	1462	1636	1807	---	
						Xt	0.534	0.716	0.703	0.692	0.682	0.673	0.665	0.658	0.652	0.647	0.642	---	
			276	10.88	LNC	Cv	60.2	238	495	750	1001	1248	1490	1725	1953	2173	2385	---	
						Xt	0.534	0.711	0.695	0.681	0.669	0.659	0.651	0.644	0.639	0.635	0.632	---	
			378	14.88	LNC	Cv	60.2	333	683	1027	1363	1687	1999	2296	2578	2843	3092	---	
						Xt	0.534	0.705	0.685	0.668	0.655	0.645	0.638	0.633	0.630	0.628	0.628	---	
20	464	18.25	276	10.88	SNC	Cv	86.5	286	592	891	1179	1453	1712	1954	2179	2386	2576	---	
						Xt	0.534	0.708	0.694	0.685	0.682	0.683	0.688	0.696	0.708	0.722	0.738	---	
			378	14.88	LNC	Cv	86.5	399	813	1208	1577	1917	2223	2497	2740	2954	3141	---	
						Xt	0.534	0.702	0.687	0.682	0.685	0.695	0.711	0.731	0.755	0.781	0.809	---	
24x20	464	18.25	276	10.88	SNC	Cv	86.5	286	595	900	1200	1493	1779	2056	2322	2578	2823	---	
						Xt	0.534	0.710	0.695	0.683	0.673	0.665	0.659	0.656	0.654	0.653	0.654	---	
			378	14.88	LNC	Cv	86.5	400	820	1231	1630	2012	2376	2720	3043	3343	3622	---	
						Xt	0.534	0.704	0.686	0.672	0.662	0.656	0.653	0.653	0.655	0.659	0.665	---	

1. At 100% travel.
2. Clearance flow only

WhisperFlo Trim - Level Y - Flow Up																	Linear Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Construction	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾	
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100
12	279.4	11	140	5.5	SNC	Cv	35	55	109	168	225	282	338	392	445	496	546	0.89
						Xt	0.53	0.56	0.55	0.55	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.55
			203	8	LNC	Cv	35	90	180	270	360	450	540	630	720	810	900	0.89
						Xt	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532
14	279.4	11	140	5.5	SNC	Cv	35	55	109	168	226	284	340	396	452	505	558	
						Xt	0.53	0.56	0.56	0.55	0.54	0.54	0.54	0.53	0.53	0.53	0.54	---
			203	8	LNC	Cv	35	90	180	270	360	450	540	630	720	810	900	
						Xt	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53
16x12	279.4	11	140	5.5	SNC	Cv	35	55	109	168	227	285	342	399	456	511	566	
						Xt	0.53	0.56	0.56	0.55	0.54	0.54	0.54	0.53	0.53	0.53	0.53	---
			203	8	LNC	Cv	35	90	180	270	360	450	540	630	720	810	900	
						Xt	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532
16	374.7	14.75	203	8.00	LNC	Cv	53.4	124	258	392	525	654	779	901	1018	1130	1238	---
						Xt	0.534	0.616	0.607	0.600	0.596	0.594	0.593	0.594	0.598	0.602	0.608	---
18	374.7	14.75	203	8.00	SNC	Cv	53.4	113	239	365	491	617	744	870	998	1113	1223	---
						Xt	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	---
			276	10.88	LNC	Cv	53.4	164	342	519	697	875	1053	1213	1360	1494	1614	---
						Xt	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	---
			378	14.88	LNC	Cv	53.4	229	473	716	957	1188	1389	1565	1715	1840	1941	---
						Xt	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	---
20x16	374.7	14.75	203	8.00	SNC	Cv	53.4	124	259	394	529	662	794	923	1051	1176	1298	---
						Xt	0.534	0.617	0.608	0.601	0.594	0.588	0.584	0.580	0.577	0.575	0.573	---
			276	10.88	LNC	Cv	53.4	171	356	539	720	897	1070	1239	1402	1560	1712	---
						Xt	0.534	0.614	0.603	0.594	0.586	0.581	0.577	0.574	0.573	0.573	0.574	---
			378	14.88	LNC	Cv	53.4	239	491	738	979	1212	1435	1648	1849	2038	2216	---
						Xt	0.534	0.609	0.596	0.586	0.579	0.574	0.573	0.573	0.575	0.579	0.585	---
24x16	374.7	14.75	203	8.00	SNC	Cv	53.4	125	259	395	531	666	800	933	1065	1195	1324	---
						Xt	0.534	0.619	0.611	0.604	0.598	0.592	0.587	0.582	0.578	0.574	0.570	---
			276	10.88	LNC	Cv	53.4	171	357	541	724	906	1085	1262	1436	1607	1774	---
						Xt	0.534	0.616	0.606	0.597	0.590	0.583	0.577	0.572	0.568	0.564	0.561	---
			378	14.88	LNC	Cv	53.4	240	492	743	991	1234	1472	1703	1928	2146	2356	---
						Xt	0.534	0.612	0.600	0.589	0.580	0.573	0.567	0.562	0.559	0.556	0.555	---
20	464	18.25	276	10.88	SNC	Cv	77.3	198	405	612	816	1016	1210	1397	1577	1750	1915	---
						Xt	0.534	0.576	0.568	0.562	0.559	0.557	0.557	0.559	0.562	0.567	0.574	---
			378	14.88	LNC	Cv	77.3	272	558	837	1108	1367	1614	1849	2063	2265	2452	---
						Xt	0.534	0.573	0.564	0.558	0.557	0.559	0.563	0.571	0.581	0.593	0.607	---
24x20	464	18.25	276	10.88	SNC	Cv	77.3	198	406	615	823	1029	1232	1433	1629	1822	2010	---
						Xt	0.534	0.577	0.569	0.562	0.556	0.552	0.548	0.544	0.542	0.540	0.539	---
			378	14.88	LNC	Cv	77.3	272	560	845	1125	1401	1669	1931	2183	2427	2662	---
						Xt	0.534	0.574	0.564	0.556	0.550	0.545	0.542	0.540	0.539	0.540	0.541	---

1. At 100% travel.
2. Clearance flow only

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WhisperFlo Trim - Level Z - Flow Up																	Linear Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Constr uction	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾	
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100
12	279.4	11	140	5.5	SNC	Cv	21	42	80	119	160	202	242	282	322	361	399	
						Xt	0.53	0.44	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43
			203	8	LNC	Cv	21	55	110	165	220	275	330	385	440	495	550	0.89
						Xt	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532
14	279.4	11	140	5.5	SNC	Cv	21	42	80	119	161	202	243	284	324	364	404	
						Xt	0.53	0.44	0.44	0.43	0.43	0.43	0.43	0.43	0.42	0.42	0.42	0.42
			203	8	LNC	Cv	21	55	110	165	220	275	330	385	440	495	550	
						Xt	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53
16x12	279.4	11	140	5.5	SNC	Cv	21	42	80	119	161	202	244	285	326	366	407	
						Xt	0.53	0.44	0.44	0.43	0.43	0.43	0.43	0.42	0.42	0.42	0.42	0.42
			203	8	LNC	Cv	21	55	110	165	220	275	330	385	440	495	550	
						Xt	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532
16	374.7	14.75	203	8.00	LNC	Cv	48.1	91	179	273	366	458	548	638	725	811	895	---
						Xt	0.534	0.466	0.462	0.459	0.456	0.454	0.453	0.453	0.453	0.453	0.454	0.456
18	374.7	14.75	203	8	SNC	Cv	48.1	68	143	219	295	370	446	522	598	673	749	---
						Xt	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46
			276	10.88	LNC	Cv	48.1	103	206	312	419	526	633	740	846	951	1059	---
						Xt	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46
378	14.88	LNC	Cv	48.1	137	281	429	576	721	868	1012	1150	1276	1394	---			
			Xt	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	---		
20x16	374.7	14.75	203	8.00	SNC	Cv	48.1	91	179	273	367	460	553	645	737	827	917	---
						Xt	0.534	0.467	0.463	0.459	0.456	0.453	0.450	0.448	0.446	0.445	0.444	---
			276	10.88	LNC	Cv	48.1	121	247	374	501	627	751	874	994	1113	1229	---
						Xt	0.534	0.465	0.460	0.456	0.452	0.449	0.446	0.444	0.443	0.442	0.442	---
378	14.88	LNC	Cv	48.1	166	341	514	685	854	1019	1180	1336	1488	1634	---			
			Xt	0.534	0.463	0.457	0.451	0.447	0.444	0.443	0.442	0.442	0.443	0.445	---			
24x16	374.7	14.75	203	8.00	SNC	Cv	48.1	91	179	273	368	462	555	649	742	834	926	---
						Xt	0.534	0.468	0.464	0.461	0.458	0.455	0.453	0.450	0.448	0.446	0.444	---
			276	10.88	LNC	Cv	48.1	121	267	375	503	630	756	881	1006	1129	1251	---
						Xt	0.534	0.466	0.462	0.458	0.454	0.451	0.447	0.445	0.442	0.440	0.438	---
378	14.88	LNC	Cv	48.1	166	341	516	689	861	1032	1200	1365	1528	1688	---			
			Xt	0.534	0.465	0.459	0.454	0.449	0.445	0.442	0.439	0.437	0.435	0.434	---			
20	464	18.25	276	10.88	SNC	Cv	71.8	148	288	437	585	731	875	1016	1155	1290	1422	---
						Xt	0.534	0.453	0.448	0.445	0.443	0.441	0.440	0.440	0.441	0.442	0.445	---
			378	14.88	LNC	Cv	71.8	200	403	607	808	1005	1196	1381	1560	1730	1894	---
						Xt	0.534	0.451	0.446	0.446	0.441	0.440	0.441	0.444	0.448	0.453	0.459	---
24x20	464	18.25	276	10.88	SNC	Cv	71.8	149	292	444	595	745	894	1042	1188	1333	1476	---
						Xt	0.534	0.453	0.449	0.446	0.442	0.440	0.437	0.435	0.433	0.432	0.431	---
			378	14.88	LNC	Cv	71.8	200	404	610	815	1018	1218	1416	1609	1800	1986	---
						Xt	0.534	0.452	0.442	0.442	0.438	0.435	0.433	0.431	0.430	0.430	0.430	---

1. At 100% travel.
2. Clearance flow only

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The Fisher® EDR valve has flow coefficients identical to the NPS 1 through 4 CL125 - 600 ED valve. Please refer to those coefficients. For additional EDR valve body information, refer to Bulletin 51.1:ED.



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Linear - Flow Down															Linear Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
8 & 10x8	177.8	7	76	3	C _V	105	212	332	458	578	689	788	878	954	1020	0.82
					K _V	90.8	183	287	396	500	596	682	759	825	882	---
					X _T	0.591	0.676	0.661	0.653	0.633	0.620	0.624	0.622	0.614	0.592	---
12 & 14x12	254.0	10	102	4	C _V	211	390	593	804	1010	1240	1460	1660	1830	1970	0.80
					K _V	183	337	513	695	874	1073	1263	1436	1583	1704	---
					X _T	0.443	0.652	0.669	0.664	0.671	0.653	0.662	0.669	0.658	0.629	---

Equal Percentage - Flow Down															Equal Percentage Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
8 & 10x8	177.8	7	76	3	C _V	32.5	59.6	85.3	114	159	229	334	468	619	755	0.85
					K _V	28.1	51.6	73.8	98.6	138	198	289	405	535	653	---
					X _T	0.969	0.939	0.842	0.944	0.840	0.731	0.641	0.633	0.639	0.639	---
12 & 14x12	254.0	10	102	4	C _V	81.3	143	207	286	382	557	752	1000	1290	1570	0.82
					K _V	70.3	124	179	247	330	482	650	865	1116	1358	---
					X _T	0.689	0.581	0.579	0.557	0.606	0.582	0.647	0.644	0.616	0.596	---

1. At 100% travel.

Notes: The coefficients in this table are also appropriate for the EHT Valve.

Modified Equal Percentage - Flow Down															Modified Equal Percentage Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
8 & 10x8	177.8	7	89	3.5	C _V	38.3	70.2	103	145	216	324	495	684	844	912	0.85
					K _V	33.1	60.7	89.1	125	187	280	428	592	730	789	---
					X _T	0.946	0.891	0.910	0.835	0.744	0.669	0.669	0.664	0.668	0.667	---
12 & 14x12	254.0	10	114	4.5	C _V	95.9	156	229	313	487	710	988	1280	1610	1830	0.83
					K _V	83.0	135	198	271	421	614	855	1107	1393	1583	---
					X _T	0.579	0.607	0.561	0.618	0.577	0.617	0.576	0.620	0.610	0.611	---

1. At 100% travel.

Notes: The coefficients in this table are also appropriate for the EHT Valve.



Linear - Flow Down															Linear Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L (¹)
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
2 & 3 x 2	38.1	1.5	29	1.125	C _v	1.44	3.39	9.44	15.2	20.5	25.0	29.0	32.3	34.9	36.1	0.93
					K _v	1.25	2.93	8.17	13.1	17.7	21.6	25.1	27.9	30.2	31.2	---
					X _T	0.718	0.612	0.566	0.605	0.648	0.697	0.727	0.740	0.740	0.735	---
3 & 4 x 3	58.7	2.3125	38	1.5	C _v	2.77	13.2	31.0	47.4	59.7	68.7	75.5	80.6	83.9	85.9	0.95
					K _v	2.40	11.4	26.8	41.0	51.6	59.4	65.3	69.7	72.6	74.3	---
					X _T	0.685	0.574	0.612	0.668	0.714	0.731	0.735	0.718	0.701	0.706	---
4 & 6 x 4	73.0	2.875	51	2	C _v	2.99	17.4	38.1	57.8	78.8	100	119	130	136	139	0.88
					K _v	2.59	15.1	33.0	50.0	68.2	86.5	103	112	118	120	---
					X _T	0.757	0.624	0.570	0.533	0.559	0.632	0.681	0.706	0.697	0.689	---
6 & 8 x 6	111.1	4.375	76	3	C _v	17.5	38.9	86.1	141	195	241	274	293	301	309	0.89
					K _v	15.1	33.6	74.5	122	169	208	237	253	260	267	---
					X _T	0.187	0.624	0.548	0.559	0.597	0.640	0.681	0.697	0.689	0.681	---
8 & 10x8	136.5	5.375	64	2.5	C _v	75.1	140	212	289	366	435	495	547	590	621	0.82
					K _v	65.0	121	183	250	317	376	428	473	510	537	---
					X _T	0.772	0.833	0.840	0.779	0.741	0.733	0.729	0.715	0.704	0.688	---
12 & 14x12	177.8	7	76	3	C _v	104	229	369	477	587	691	804	906	981	1030	0.81
					K _v	90.0	198	319	413	508	598	695	784	849	891	---
					X _T	0.406	0.476	0.478	0.523	0.543	0.561	0.552	0.547	0.558	0.584	---

Equal Percentage - Flow Down															Equal Percentage Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L (¹)
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
2 & 3 x 2	38.1	1.5	22	0.875	C _v	1.25	1.36	2.47	4.14	6.33	9.48	13.8	18.7	23.1	27.0	0.93
					K _v	1.08	1.18	2.14	3.58	5.48	8.20	11.9	16.2	20.0	23.4	---
					X _T	0.766	0.761	0.608	0.589	0.601	0.601	0.593	0.605	0.660	0.735	---
3 & 4 x 3	58.7	2.3125	29	1.125	C _v	1.73	2.77	5.34	9.70	15.6	23.3	33.7	46.2	56.8	65.3	0.92
					K _v	1.50	2.40	4.62	8.39	13.5	20.2	29.2	40.0	49.1	56.5	---
					X _T	0.870	0.710	0.605	0.581	0.616	0.648	0.640	0.632	0.668	0.748	---
4 & 6 x 4	73.0	2.875	38	1.5	C _v	2.57	6.53	10.0	12.5	17.3	25.1	33.8	42.8	59.6	81.1	0.84
					K _v	2.22	5.65	8.65	10.8	15.0	21.7	29.2	37.0	51.6	70.2	---
					X _T	0.783	0.585	0.589	0.597	0.566	0.533	0.518	0.526	0.526	0.537	---
6 & 8 x 6	111.1	4.375	51	2	C _v	3.07	9.29	17.8	24.5	35.6	59.7	98.7	141	188	217	0.85
					K _v	2.66	8.04	15.4	21.2	30.8	51.6	85.4	122	163	188	---
					X _T	0.922	0.723	0.620	0.660	0.640	0.555	0.529	0.578	0.559	0.640	---
8 & 10x8	136.5	5.375	64	2.5	C _v	19.8	34.4	50.3	69.2	96.8	139	210	307	399	484	0.82
					K _v	17.1	29.8	43.5	59.9	83.7	120	182	266	345	419	---
					X _T	0.584	0.686	0.697	0.609	0.629	0.745	0.702	0.653	0.663	0.683	---
12 & 14x12	177.8	7	76	3	C _v	38.4	64.8	88.0	119	168	248	360	496	654	800	0.81
					K _v	33.2	56.1	76.1	103	145	215	311	429	566	692	---
					X _T	0.727	0.701	0.736	0.664	0.709	0.582	0.552	0.556	0.556	0.553	---

1. At 100% travel.

Notes: The coefficients on this page are also appropriate for the EHT Valve.

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Modified Equal Percentage - Flow Down														Modified Equal Percentage Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
2 & 3 x 2	38.1	1.5	29	1.125	C _v	1.24	1.82	3.91	6.86	11.1	16.9	23.3	28.1	30.4	33.2	0.94
					K _v	1.07	1.57	3.38	5.93	9.60	14.6	20.2	24.3	26.3	28.7	---
					X _T	0.792	0.681	0.578	0.581	0.605	0.628	0.652	0.693	0.731	0.710	---
3 & 4 x 3	58.7	2.3125	38	1.5	C _v	1.94	4.28	9.66	18.1	29.9	45.4	60.5	68.9	74.7	80.9	0.96
					K _v	1.68	3.70	8.36	15.7	25.9	39.3	52.3	59.6	64.6	70.0	---
					X _T	0.805	0.640	0.593	0.624	0.668	0.672	0.677	0.753	0.779	0.710	---
4 & 6 x 4	73.0	2.875	51	2	C _v	2.99	9.01	12.7	19.6	30.3	44.5	65.8	96.3	114	126	0.90
					K _v	2.59	7.79	11.0	17.0	26.2	38.5	56.9	83.3	98.6	109	---
					X _T	0.681	0.578	0.593	0.559	0.526	0.518	0.544	0.597	0.693	0.693	---
6 & 8 x 6	111.1	4.375	76	3	C _v	5.82	16.2	30.6	59.8	115	185	234	254	278	293	0.88
					K _v	5.03	14.0	26.5	51.7	99.5	160	202	220	240	253	---
					X _T	0.806	0.677	0.624	0.574	0.559	0.597	0.664	0.723	0.706	0.689	---
8 & 10x8	136.5	5.375	76	3	C _v	22.9	41.9	61.9	86.4	140	225	334	451	537	584	0.85
					K _v	19.8	36.2	53.5	74.7	121	195	289	390	465	505	---
					X _T	0.563	0.698	0.726	0.739	0.734	0.691	0.666	0.682	0.734	0.740	---
12 & 14x12	177.8	7	89	3.5	C _v	42.4	73.7	104	147	223	351	523	717	899	1010	0.80
					K _v	36.7	63.8	90.0	127	193	304	452	620	778	874	---
					X _T	0.691	0.679	0.652	0.650	0.598	0.549	0.549	0.552	0.551	0.551	---

1. At 100% travel.

Notes: The coefficients on this page are also appropriate for the EHT Valve.



Linear - Flow Up															Linear Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
2 & 3 x 2	38.1	1.5	29	1.125	C _v	1.40	2.77	8.42	14.3	19.3	23.9	28.0	31.4	33.4	35.2	0.90
					K _v	1.21	2.40	7.28	12.4	16.7	20.7	24.2	27.2	28.9	30.4	---
					X _T	0.718	0.815	0.624	0.628	0.685	0.706	0.701	0.685	0.677	0.656	---
3 & 4 x 3	58.7	2.3125	38	1.5	C _v	2.98	11.7	28.3	45.7	58.8	67.9	75.3	82.0	86.4	88.6	0.94
					K _v	2.58	10.1	24.5	39.5	50.9	58.7	65.1	70.9	74.7	76.6	---
					X _T	0.706	0.664	0.697	0.710	0.731	0.731	0.727	0.710	0.689	0.681	---
4 & 6 x 4	73.0	2.875	51	2	C _v	2.92	15.1	30.6	48.6	68.0	86.8	103	116	123	125	0.92
					K _v	2.53	13.1	26.5	42.0	58.8	75.1	89.1	100	106	108	---
					X _T	0.748	0.819	0.792	0.636	0.624	0.697	0.779	0.797	0.788	0.797	---
6 & 8 x 6	111.1	4.375	76	3	C _v	9.11	37.3	78.2	128	180	224	254	269	278	282	0.89
					K _v	7.88	32.3	67.6	111	156	194	220	233	240	244	---
					X _T	0.620	0.656	0.589	0.574	0.601	0.648	0.689	0.718	0.714	0.714	---
Equal Percentage - Flow Up															Equal Percentage Characteristic	
2 & 3 x 2	38.1	1.5	22	0.875	C _v	1.06	1.31	2.10	3.73	6.26	9.46	13.1	17.3	22.1	26.3	0.91
					K _v	0.917	1.13	1.82	3.23	5.41	8.18	11.3	15.0	19.1	22.7	---
					X _T	0.970	0.757	0.731	0.689	0.652	0.624	0.624	0.648	0.693	0.723	---
3 & 4 x 3	58.7	2.3125	29	1.125	C _v	1.94	2.86	5.09	9.02	14.9	22.6	32.1	43.0	53.9	64.7	0.94
					K _v	1.68	2.47	4.40	7.80	12.9	19.5	27.8	37.2	46.6	56.0	---
					X _T	0.810	0.757	0.681	0.677	0.706	0.706	0.668	0.652	0.723	0.761	---
4 & 6 x 4	73.0	2.875	38	1.5	C _v	2.35	6.15	9.08	11.3	15.4	22.0	30.3	40.0	53.9	69.6	0.80
					K _v	2.03	5.32	7.85	9.77	13.3	19.0	26.2	34.6	46.6	60.2	---
					X _T	0.856	0.681	0.620	0.656	0.644	0.597	0.555	0.555	0.578	0.632	---
6 & 8 x 6	111.1	4.375	51	2	C _v	4.10	9.98	17.9	24.7	35.3	57.3	93.0	133	174	210	0.79
					K _v	3.55	8.63	15.5	21.4	30.5	49.6	80.4	115	151	182	---
					X _T	0.697	0.677	0.605	0.578	0.597	0.608	0.574	0.555	0.616	0.605	---
Modified Equal Percentage - Flow Up															Modified Equal Percentage Characteristic	
2 & 3 x 2	38.1	1.5	29	1.125	C _v	1.10	1.71	3.37	6.56	11.2	16.5	21.6	26.4	30.8	33.1	0.91
					K _v	0.952	1.48	2.92	5.67	9.69	14.3	18.7	22.8	26.6	28.6	---
					X _T	0.898	0.748	0.689	0.640	0.636	0.656	0.693	0.723	0.727	0.677	---
3 & 4 x 3	58.7	2.3125	38	1.5	C _v	2.11	4.16	8.97	16.9	28.4	42.5	55.8	68.2	78.5	84.0	0.
					K _v	1.83	3.60	7.76	14.6	24.6	36.8	48.3	59.0	67.9	72.7	---
					X _T	0.828	0.710	0.672	0.731	0.723	0.689	0.731	0.766	0.723	0.706	---
4 & 6 x 4	73.0	2.875	51	2	C _v	2.75	8.60	11.8	16.6	26.8	42.3	59.8	78.9	106	116	0.88
					K _v	2.38	7.44	10.2	14.4	23.2	36.6	51.7	68.2	91.7	100.3	---
					X _T	---	0.608	0.636	0.640	0.570	0.537	0.578	0.664	0.693	0.779	---
6 & 8 x 6	111.1	4.375	76	3	C _v	6.81	16.5	30.5	58.0	109	175	228	256	275	281	0.88
					K _v	5.89	14.3	26.4	50.2	94.3	151	197	221	238	243	---
					X _T	0.677	0.632	0.593	0.570	0.574	0.601	0.624	0.644	0.693	0.697	---

1. At 100% travel.

Micro-Form - Flow Up														Equal Percentage Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1, 1-1/2 x 1, & 2 x 1	6.4	0.25	19	0.75	C _v	0.072	0.106	0.163	0.232	0.324	0.449	0.626	0.871	1.22	1.58	0.91
					K _v	0.062	0.092	0.141	0.201	0.280	0.388	0.541	0.753	1.06	1.37	---
					X _T	0.778	0.717	0.421	0.474	0.513	0.540	0.558	0.566	0.569	0.644	---
	12.7	0.5	19	0.75	C _v	0.220	0.360	0.532	0.746	1.04	1.50	2.15	3.06	4.15	5.37	0.92
					K _v	0.190	0.311	0.460	0.645	0.900	1.30	1.86	2.65	3.59	4.65	---
					X _T	0.893	0.803	0.748	0.636	0.633	0.637	0.644	0.642	0.661	0.718	---
			22 ⁽²⁾	0.875 ⁽²⁾	C _v	0.254	0.445	0.636	0.890	1.40	2.23	3.50	4.77	5.72	6.36	0.93
					K _v	0.220	0.385	0.550	0.770	1.21	1.93	3.03	4.13	4.95	5.50	---
					X _T	0.632	0.627	0.630	0.632	0.629	0.628	0.629	0.626	0.633	0.630	---
	19.1	0.75	19	0.75	C _v	0.441	0.681	1.04	1.59	2.36	3.43	4.81	6.43	7.84	8.91	0.88
					K _v	0.381	0.589	0.900	1.38	2.04	2.97	4.16	5.56	6.78	7.71	---
					X _T	0.782	0.725	0.652	0.548	0.519	0.506	0.514	0.641	0.651	0.648	---
			22 ⁽²⁾	0.875 ⁽²⁾	C _v	0.550	0.721	1.24	1.85	2.78	4.43	6.70	8.45	9.27	10.3	0.84
					K _v	0.476	0.624	1.07	1.60	2.40	3.83	5.80	7.31	8.02	8.91	---
					X _T	0.516	0.693	0.581	0.587	0.586	0.589	0.585	0.583	0.587	0.585	---
2 & 3 x 2	25.4	22	0.875	C _v	0.653	1.19	1.89	2.89	4.50	7.08	10.9	15.9	20.0	21.5	0.95	
				K _v	0.565	1.03	1.63	2.50	3.89	6.12	9.43	13.8	17.3	18.6	---	
				X _T	0.809	0.812	0.814	0.809	0.810	0.811	0.817	0.806	0.810	0.810	---	
		29 ⁽²⁾	1.125 ⁽²⁾	C _v	0.884	1.67	2.86	4.96	9.08	15.6	20.9	23.0	23.9	24.2	0.92	
				K _v	0.765	1.44	2.47	4.29	7.85	13.5	18.1	19.9	20.7	20.9	---	
				X _T	0.696	0.700	0.698	0.700	0.696	0.700	0.697	0.745	0.714	0.700	--	

1. At 100% travel.
 2. Travels identified with this superscript are modified equal percentage characteristic. All other travels are equal percentage.



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EHS and EHT, Cavitrol - Flow Down Linear Characteristic

Trim Stage	Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Min. Throttling C _v ⁽²⁾	Valve Opening—Percent of Total Travel										F _L ⁽³⁾
		mm	Inches	mm	Inches			10	20	30	40	50	60	70	80	90	100	
Two Stage	1, 1-1/2 x 1, & 2 x 1 ⁽¹⁾	15.9	0.625	32	1.25	C _v	0.210	0.170	0.480	1.00	1.60	2.20	2.70	3.20	3.70	4.10	4.30	0.98
						K _v	0.182	0.147	0.415	0.865	1.38	1.90	2.34	2.77	3.20	3.55	3.72	---
	2 & 3 x 2	31.8	1.25	51	2	C _v	0.410	0.460	1.60	2.90	4.10	5.30	6.50	7.70	8.80	9.70	10.1	0.98
						K _v	0.355	0.398	1.38	2.51	3.55	4.58	5.62	6.66	7.61	8.39	8.74	---
	3 & 4 x 3	47.6	1.875	64	2.5	C _v	0.610	0.990	3.80	6.60	9.40	12.1	14.9	17.6	20.1	22.7	24.1	0.98
						K _v	0.528	0.856	3.29	5.71	8.13	10.5	12.9	15.2	17.4	19.6	20.8	---
	4 & 6 x 4	73.0	2.875	70	2.75	C _v	0.910	2.10	7.10	12.2	17.2	22.3	27.2	32.2	37.3	42.1	43.9	0.98
						K _v	0.787	1.82	6.14	10.6	14.9	19.3	23.5	27.9	32.3	36.4	38.0	---
	6 & 8 x 6	111.1	4.375	95	3.75	C _v	1.50	4.60	12.8	20.8	29.0	37.0	44.9	52.9	60.9	69.3	75.8	0.98
						K _v	1.30	3.98	11.1	18.0	25.1	32.0	38.8	45.8	52.7	59.9	65.6	---
Three Stage	1, 1-1/2 x 1, & 2 x 1	---	---	---	---	C _v	---	---	---	---	---	---	---	---	---	---	---	
						K _v	---	---	---	---	---	---	---	---	---	---	---	---
	2 & 3 x 2	15.9	0.625	51	2	C _v	0.420	0.280	0.740	1.20	1.60	2.00	2.50	2.90	3.30	3.60	3.70	0.99
						K _v	0.363	0.242	0.640	1.04	1.38	1.73	2.16	2.51	2.85	3.11	3.20	---
	3 & 4 x 3	33.3	1.3125	64	2.5	C _v	0.730	1.44	2.67	4.06	5.37	6.67	7.93	9.26	10.5	11.8	13.1	0.99
						K _v	0.631	1.25	2.31	3.51	4.65	5.77	6.86	8.01	9.08	10.2	11.3	---
	4 & 6 x 4	58.7	2.3125	70	2.75	C _v	1.00	1.00	3.90	6.50	8.90	11.7	14.4	16.9	19.0	20.3	20.8	0.99
						K _v	0.865	0.865	3.37	5.62	7.70	10.1	12.5	14.6	16.4	17.6	18.0	---
	6 & 8 x 6	111.1	4.375	95	3.75	C _v	2.80	4.4	11.2	16.3	21.5	28.3	35	38.5	45.2	51.9	55.2	0.99
						K _v	2.42	3.8	9.7	14.1	18.6	24.5	30.3	33.3	39.1	44.9	47.7	---

1. Cavitrol III trim in the CL2500, NPS 1, two-stage and in the CL2500, NPS 2, three-stage valve body sizes uses unbalanced valve plugs. These sizes and constructions are Fisher® EHS valves; all other valves in this table are EHT valves.
 2. Valves should not be required to throttle at a C_v less than the specified minimum of C_v for an extended period. Erosion damage to the valve seats might result.
 3. At 100 percent travel.

EHT, CL2500, Cavitrol III, Protected Inside Seat Design, Flow Down Linear Characteristic

Trim Stage	Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Minimum Throttling C _v	Valve Opening - Percent of Total Travel									
		mm	Inch	mm	Inch			10	20	30	40	50	60	70	80	90	100
Two Stage	3, 4 X 3	32.6	1.284	64	2.5	C _v	0.61	0.3	3.1	5.7	8.3	10.7	12.9	14.9	16.6	18.2	19.5
						K _v	0.528	0.26	2.7	4.9	7.2	9.3	11.2	12.1	14.4	15.7	16.8
	4, 6 X 4	58	2.284	70	2.75	C _v	0.91	1.1	6.2	11.2	16.1	20.9	25.5	30	34.2	38.3	41.1
						K _v	0.787	0.95	5.4	9.7	13.9	18.1	22.1	25.9	29.6	33.1	35.6
	6, 8 X 6	96.1	3.784	95	3.75	C _v	1.5	4.3	13.8	23	31.7	39.6	46.9	53.3	59	64	68.1
						K _v	1.3	3.7	11.9	19.9	27.4	34.3	40.6	46.1	51	55.4	58.9
Three Stage	3, 4 X 3	18.3	0.722	64	2.5	C _v	0.73	1	2.1	3	3.9	5.3	5.9	6.3	6.8	7.4	7.4
						K _v	0.631	0.865	1.8	2.6	3.4	4.6	5.1	5.4	5.9	6.4	6.4
	4, 6 X 4	43.7	1.722	70	2.75	C _v	1.0	2.0	4.0	5.8	7.7	11	12.8	14.5	16.3	18.2	19.2
						K _v	0.865	0.78	1.72	5	6.6	9.5	11.1	12.5	14.1	15.7	16.6
	6, 8 X 6	96.1	3.784	95	3.75	C _v	2.8	4.3	11.1	16.2	21.4	28.2	34.8	38.3	44.9	51.7	54.7
						K _v	2.42	3.7	9.6	14	18.5	24.4	30.1	33.1	38.8	44.7	47.3

Notes:

1. All other EHT flow coefficients are identical to EHD coefficients. Refer to EHD information using all flange ratings and cage styles. In applications where pressure drop decreases with travel, consider using characterized Cavitrol III cages. Contact your Emerson Process Management sales office for assistance.

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**EHS
CL3273**

Cavitrol™ III Three-Stage Micro-flat
Flow Down

**EHS, CL3273 Cavitrol III 3-Stage
Micro-Flat - Flow Down**

**Linear
Characteristic**

Valve Size, NPS	Shutoff Port Diameter ⁽²⁾		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel											F _L ⁽¹⁾
	mm	Inches	mm	Inches		Min	10	20	30	40	50	60	70	80	90	100	
2 ⁽³⁾	25.4	1	38.1	1.5	C _v	0.05	0.01	0.06	0.09	0.16	0.34	0.46	0.62	0.89	1.06	1.18	0.97
					K _v	0.04	0.01	0.05	0.08	0.14	0.29	0.40	0.54	0.77	0.92	1.02	
2 ⁽⁴⁾	25.4	1	63.5	2.5	C _v	0.06	0.01	0.14	0.37	0.72	1.20	1.86	2.75	3.74	4.53	5.54	0.97
					K _v	0.05	0.01	0.12	0.32	0.62	1.04	1.61	2.38	3.24	3.92	4.79	

1. At 100% travel
 2. Cavitrol III Micro-Flat trims use a shutoff port diameter which is larger than the flowing port diameter. Use the shutoff port diameter for actuator sizing.
 3. Flowing port: 12.7 mm / 0.5 Inch, Unbalanced Area: 5.065 cm² / 0.785 In², 3/4" stem
 4. Flowing port: 19.1 mm / 0.75 Inch, Unbalanced Area: 5.065 cm² / 0.785 In², 3/4" stem



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Quick Opening - Flow Up															Quick Opening Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽³⁾	
	mm	Inches	mm ⁽¹⁾	Inches ⁽¹⁾		Coeffs. for 6 mm (0.25 in.) Travel ⁽²⁾	10	20	30	40	50	60	70	80	90		100
1/2	33.3	1.3125	19	0.75	C _v	6.27	4.00	5.63	6.22	6.35	6.44	6.48	6.52	6.53	6.53	6.53	0.88
					K _v	5.42	3.46	4.87	5.38	5.49	5.57	5.61	5.64	5.65	5.65	5.65	---
					X _T	0.665	0.681	0.711	0.653	0.651	0.640	0.632	0.624	0.622	0.622	0.622	---
3/4	33.3	1.3125	19	0.75	C _v	12.3	4.94	8.80	11.8	13.1	13.8	14.1	14.2	14.2	14.2	14.2	0.83
					K _v	10.6	4.27	7.61	10.2	11.3	11.9	12.2	12.3	12.3	12.3	12.3	---
					X _T	0.593	0.576	0.688	0.605	0.571	0.552	0.539	0.534	0.534	0.534	0.534	---
1 & 1-1/4	33.3	1.3125	19	0.75	C _v	16.3	5.24	10.0	15.0	18.4	20.3	21.0	21.1	21.3	21.4	21.4	0.89
					K _v	14.1	4.53	8.65	13.0	15.9	17.6	18.2	18.3	18.4	18.5	18.5	---
					X _T	0.661	0.540	0.664	0.656	0.660	0.641	0.650	0.663	0.654	0.648	0.650	---
1-1/2	47.6	1.875	19	0.75	C _v	24.4	7.60	15.1	22.3	28.2	33.4	37.0	38.0	38.0	38.0	38.0	0.94
					K _v	21.1	6.57	13.1	19.3	24.4	28.9	32.0	32.9	32.9	32.9	32.9	---
					X _T	0.645	0.577	0.613	0.639	0.684	0.703	0.713	0.743	0.777	0.789	0.789	---
	33.3	1.3125	19	0.75	C _v	18.0	4.83	10.4	16.2	21.4	25.6	28.2	29.8	30.2	30.3	30.4	0.94
					K _v	15.6	4.18	9.00	14.0	18.5	22.1	24.4	25.8	26.1	26.2	26.3	---
					X _T	0.605	0.611	0.607	0.588	0.598	0.610	0.651	0.666	0.699	0.708	0.717	---
2	58.7	2.3125	29	1.125	C _v	35.3	14.3	31.1	48.6	59.3	65.2	67.2	67.2	67.2	67.2	67.2	0.93
					K _v	30.5	12.4	26.9	42.0	51.3	56.4	58.1	58.1	58.1	58.1	58.1	---
					X _T	0.607	0.633	0.627	0.619	0.732	0.758	0.771	0.797	0.810	0.810	0.810	---
	33.3	1.3125	19	0.75	C _v	18.6	5.12	10.5	16.7	22.2	26.9	30.9	33.9	36.3	38.1	39.4	0.91
					K _v	16.1	4.43	9.08	14.4	19.2	23.3	26.7	29.3	31.4	33.0	34.1	---
					X _T	0.560	0.588	0.617	0.565	0.571	0.640	0.722	0.796	0.826	0.785	0.734	---
2-1/2	73.0	2.875	38	1.5	C _v	35.3	21.8	42.0	66.6	83.8	91.1	93.1	93.1	93.1	93.1	93.1	0.91
					K _v	30.5	18.9	36.3	57.6	72.5	78.8	80.5	80.5	80.5	80.5	80.5	---
					X _T	0.675	0.659	0.684	0.720	0.790	0.795	0.827	0.848	0.868	0.868	0.868	---
	47.6	1.875	19	0.75	C _v	26.1	7.40	15.5	23.3	31.4	39.8	48.4	56.1	61.7	62.3	69.2	0.95
					K _v	22.6	6.40	13.4	20.2	27.2	34.4	41.9	48.5	53.4	53.9	59.9	---
					X _T	0.609	0.636	0.599	0.612	0.619	0.692	0.747	0.824	0.859	0.842	---	---
3	87.3	3.4375	38	1.5	C _v	37.4	23.3	45.5	78.3	106	120	130	136	143	146	150	0.87
					K _v	32.4	20.2	39.4	67.7	91.7	104	112	118	124	126	130	---
					X _T	0.590	0.585	0.592	0.602	0.685	0.740	0.726	0.737	0.731	0.733	0.720	---
	58.7	2.3125	29	1.125	C _v	36.3	14.7	32.4	51.2	68.8	83.1	94.3	103	108	112	115	0.91
					K _v	31.4	12.7	28.0	44.3	59.5	71.9	81.6	89.1	93.4	96.9	99.5	---
					X _T	0.564	0.609	0.565	0.565	0.593	0.679	0.729	0.751	0.774	0.785	0.752	---

1. When using Fisher 655-EC as a control valve for on-off service, the maximum travel for sizing purposes is 19 mm (0.75 inch).
 2. When sizing self-operated regulators, use coefficients listed for 6 mm (0.25 inch) travel.
 3. At 100% travel.
 ■ Restricted trim.



Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel											F _L ⁽³⁾
	mm	Inches	mm ⁽¹⁾	Inches ⁽¹⁾		Coeffs. for 6 mm (0.25 in.) Travel ⁽²⁾	10	20	30	40	50	60	70	80	90	100	
4	111.1	4.375	51	2	C _V	46.3	39.0	77.3	132	174	198	215	225	230	234	235	0.89
					K _V	40.0	33.7	66.9	114	151	171	186	195	199	202	203	---
					X _T	0.647	0.642	0.691	0.714	0.763	0.768	0.763	0.769	0.775	0.783	0.780	---
	73.0	2.875	38	1.5	C _V	41.2	26.9	47.2	76.4	108	135	156	169	178	181	183	0.88
					K _V	35.6	23.3	40.8	66.1	93.4	117	135	146	154	157	158	---
					X _T	0.613	0.524	0.683	0.669	0.664	0.688	0.741	0.783	0.763	0.752	0.736	---
6	177.8	7	51	2	C _V	102	89.9	162	255	322	365	395	418	436	455	469	0.82
					K _V	88.2	77.8	140	221	279	316	342	362	377	394	406	---
					X _T	0.642	0.572	0.612	0.601	0.652	0.664	0.677	0.681	0.701	0.698	0.700	---
	111.1	4.375	51	2	C _V	66.1	49.8	108	164	217	255	274	282	290	291	302	0.90
					K _V	57.2	43.1	93.4	142	188	221	237	244	251	252	261	---
					X _T	0.667	0.711	0.630	0.619	0.650	0.724	0.814	0.883	0.883	0.909	0.860	---
8	203.2	8	51	2	C _V	122	94.4	205	323	441	539	622	677	720	759	787	0.85
					K _V	106	81.7	177	279	381	466	538	586	623	657	681	---
					X _T	0.616	0.683	0.607	0.575	0.603	0.682	0.726	0.772	0.809	0.814	0.814	---
8	203.2	8	76	3	C _V	122	156	337	490	612	700	759	796	827	844	875	0.85
					K _V	106	135	292	424	529	606	657	689	715	730	757	---
					X _T	0.616	0.520	0.561	0.654	0.757	0.804	0.814	0.818	0.801	0.810	0.774	---

1. When using Fisher 655-EC as a control valve for on-off service, the maximum travel for sizing purposes is 19 mm (0.75 inch).
 2. When sizing self-operated regulators, use coefficients listed for 6 mm (0.25 inch) travel.
 3. At 100% travel.
 ■ Restricted trim.

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Linear - Flow Up															Linear Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1 & 1-1/4	33.3	1.3125	19	0.75	C _v	2.27	4.12	6.23	8.54	11.0	13.4	15.8	17.8	19.3	20.1	0.89
					K _v	1.96	3.56	5.39	7.39	9.52	11.6	13.7	15.4	16.7	17.4	---
					X _T	0.691	0.691	0.690	0.696	0.696	0.708	0.709	0.705	0.702	0.690	---
1-1/2	47.6	1.875	19	0.75	C _v	3.56	7.01	11.1	15.1	19.0	22.9	26.7	30.0	33.1	34.9	0.92
					K _v	3.08	6.06	9.60	13.1	16.4	19.8	23.1	25.9	28.6	30.2	---
					X _T	0.628	0.582	0.604	0.647	0.683	0.699	0.715	0.737	0.741	0.764	---
	33.3	1.3125	19	0.75	C _v	2.42	4.30	6.40	8.77	11.5	14.6	17.8	21.1	24.3	26.9	0.95
					K _v	2.09	3.72	5.54	7.59	9.95	12.6	15.4	18.3	21.0	23.3	---
					X _T	0.648	0.682	0.712	0.693	0.664	0.678	0.701	0.732	0.756	0.799	---
2	58.7	2.3125	29	1.125	C _v	8.49	17.1	25.9	35.3	44.4	52.9	59.2	62.0	63.9	65.3	0.91
					K _v	7.34	14.8	22.4	30.5	38.4	45.8	51.2	53.6	55.3	56.5	---
					X _T	0.618	0.635	0.689	0.710	0.723	0.732	0.742	0.759	0.761	0.762	---
	33.3	1.3125	19	0.75	C _v	2.22	4.11	6.06	8.25	11.0	14.3	18.0	21.8	26.0	30.9	0.91
					K _v	1.92	3.56	5.24	7.14	9.52	12.4	15.6	18.9	22.5	26.7	---
					X _T	0.725	0.694	0.729	0.746	0.688	0.675	0.667	0.686	0.711	0.722	---
2-1/2	73.0	2.875	38	1.5	C _v	10.4	22.2	34.9	47.1	58.2	66.6	73.7	79.3	84.4	86.5	0.93
					K _v	9.00	19.2	30.2	40.7	50.3	57.6	63.8	68.6	73.0	74.8	---
					X _T	0.672	0.727	0.739	0.776	0.783	0.832	0.858	0.877	0.854	0.866	---
	47.6	1.875	19	0.75	C _v	3.50	6.85	10.8	14.8	18.9	23.3	28.2	34.1	41.1	48.6	0.93
					K _v	3.03	5.93	9.34	12.8	16.3	20.2	24.4	29.5	35.6	42.0	---
					X _T	0.617	0.627	0.679	0.716	0.740	0.752	0.783	0.774	0.778	0.783	---
3	87.3	3.4375	38	1.5	C _v	15.3	34.3	52.8	71.4	87.8	101	112	121	129	135	0.89
					K _v	13.2	29.7	45.7	61.8	75.9	87.4	96.9	105	112	117	---
					X _T	0.607	0.631	0.663	0.694	0.720	0.742	0.762	0.786	0.771	0.751	---
	58.7	2.3125	29	1.125	C _v	6.39	13.0	20.7	29.1	38.2	47.9	58.0	68.4	79.3	88.8	0.91
					K _v	5.53	11.2	17.9	25.2	33.0	41.4	50.2	59.2	68.6	76.8	---
					X _T	0.662	0.677	0.704	0.677	0.648	0.646	0.643	0.658	0.714	0.742	---

1. At 100% travel.
2. If coefficients listed above for the NPS 8 linear cage with 51 mm (2 inch) travel are not sufficient for your application, consider using the quick opening cage. The NPS 8 quick opening cage with 51 mm (2 inch) travel has approximately a linear characteristic.
Restricted trim.



Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
4	111.1	4.375	51	2	C _v	23.7	46.4	72.9	98.2	122	145	165	183	199	212	0.89
					K _v	20.5	40.1	63.1	84.9	106	125	143	158	172	183	---
					X _T	0.553	0.619	0.644	0.680	0.713	0.737	0.743	0.823	0.816	0.791	---
	73.0	2.875	38	1.5	C _v	10.6	22.5	35.0	47.5	60.2	73.1	88.0	103	120	139	0.93
					K _v	9.17	19.5	30.3	41.1	52.1	63.2	76.1	89.1	104	120	---
					X _T	0.613	0.671	0.698	0.718	0.718	0.731	0.722	0.751	0.769	0.780	---
6	177.8	7	51	2	C _v	55.0	118	180	235	280	312	341	368	390	417	0.81
					K _v	47.6	102	156	203	242	270	295	318	337	361	---
					X _T	0.597	0.683	0.701	0.687	0.767	0.791	0.787	0.792	0.794	0.745	---
6	111.1	4.375	51	2	C _v	15.7	35.8	60.2	86.2	115	146	179	215	247	271	0.89
					K _v	13.6	31.0	52.1	74.6	99.5	126	180	186	214	234	---
					X _T	0.678	0.668	0.676	0.683	0.668	0.645	0.668	0.695	0.759	0.817	---
8 ⁽²⁾	203.2	8	51	2	C _v	66.6	147	221	292	375	450	522	592	652	701	0.84
					K _v	57.6	127	191	253	324	389	452	512	564	606	---
					X _T	0.758	0.588	0.597	0.637	0.640	0.676	0.702	0.720	0.738	0.757	---
8	203.2	8	76	3	C _v	100	213	330	451	553	648	719	773	809	836	0.85
					K _v	86.5	184	285	390	478	561	622	669	700	723	---
					X _T	0.616	0.624	0.669	0.691	0.738	0.747	0.762	0.780	0.787	0.799	---

1. At 100% travel.
 2. If coefficients listed above for the NPS 8 linear cage with 51 mm (2 inch) travel are not sufficient for your application, consider using the quick opening cage. The NPS 8 quick opening cage with 51 mm (2 inch) travel has approximately a linear characteristic.
 Restricted trim.

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Equal Percentage - Flow Up															Equal Percentage Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1 & 1-1/4	33.3	1.3125	19	0.75	C _v	0.783	1.29	1.86	2.71	4.18	6.44	9.54	13.1	15.7	17.4	0.95
					K _v	0.677	1.12	1.61	2.34	3.62	5.57	8.25	11.3	13.6	15.1	---
					X _T	0.754	0.794	0.763	0.670	0.652	0.621	0.630	0.677	0.718	0.721	---
1-1/2	47.6	1.875	19	0.75	C _v	1.54	2.52	3.57	4.94	7.41	11.6	17.2	23.5	28.7	33.4	0.94
					K _v	1.33	2.18	3.09	4.27	6.41	10.0	14.9	20.3	24.8	28.9	---
					X _T	0.674	0.670	0.694	0.731	0.706	0.681	0.698	0.692	0.789	0.793	---
	33.3	1.3125	19	0.75	C _v	0.882	1.35	1.89	2.52	3.68	5.52	8.13	12.0	16.6	21.0	0.96
					K _v	0.763	1.17	1.63	2.18	3.18	4.77	7.03	10.4	14.4	18.2	---
					X _T	0.858	0.845	0.867	0.810	0.833	0.755	0.776	0.766	0.766	0.766	---
2	58.7	2.3125	29	1.125	C _v	1.74	3.15	4.72	6.91	10.6	16.3	25.0	36.7	47.8	56.2	0.92
					K _v	1.51	2.72	4.08	5.98	9.17	14.1	21.6	31.7	41.3	48.6	---
					X _T	0.863	0.848	0.849	0.805	0.782	0.778	0.792	0.772	0.847	0.848	---
	33.3	1.3125	19	0.75	C _v	0.849	1.34	1.83	2.39	3.43	5.12	7.49	11.2	15.8	20.8	0.91
					K _v	0.734	1.16	1.58	2.07	2.97	4.43	6.48	9.69	13.7	18.0	---
					X _T	0.844	0.778	0.803	0.767	0.791	0.764	0.764	0.764	0.755	0.728	---
2-1/2	73.0	2.875	38	1.5	C _v	4.05	7.19	10.6	14.5	21.2	31.6	45.5	64.2	77.7	82.7	0.93
					K _v	3.50	6.22	9.17	12.5	18.3	27.3	39.4	55.5	67.2	71.5	---
					X _T	0.747	0.768	0.745	0.779	0.764	0.744	0.783	0.802	0.841	0.878	---
	47.6	1.875	19	0.75	C _v	1.43	2.37	3.34	4.76	7.25	11.3	17.3	24.2	31.8	40.3	0.95
					K _v	1.24	2.05	2.89	4.12	6.27	9.77	15.0	20.9	27.5	34.9	---
					X _T	0.664	0.721	0.741	0.765	0.679	0.681	0.678	0.681	0.748	0.744	---
3	87.3	3.4375	38	1.5	C _v	4.05	6.84	10.0	15.0	23.8	37.8	59.0	87.1	110	121	0.89
					K _v	3.50	5.92	8.65	13.0	20.6	32.7	51.0	75.3	95.2	105	---
					X _T	0.768	0.757	0.761	0.757	0.758	0.571	0.754	0.756	0.758	0.757	---
	58.7	2.3125	29	1.125	C _v	2.74	3.44	4.86	6.95	10.6	16.5	25.0	37.7	52.7	67.5	0.94
					K _v	2.37	2.98	4.20	6.01	9.17	14.3	21.6	32.6	45.6	58.4	---
					X _T	0.753	0.748	0.756	0.783	0.786	0.741	0.736	0.732	0.737	0.738	---
4	111.1	4.375	51	2	C _v	6.56	11.4	17.3	27.0	42.2	66.4	103	146	184	203	0.91
					K _v	5.67	9.86	15.0	23.4	36.5	57.4	89.1	126	159	176	---
					X _T	0.722	0.717	0.739	0.772	0.738	0.718	0.718	0.736	0.792	0.822	---
	73.0	2.875	38	1.5	C _v	3.96	7.14	10.6	14.5	21.1	31.7	48.0	69.7	95.6	121	0.94
					K _v	3.43	6.18	9.17	12.5	18.3	27.4	41.5	60.3	82.7	105	---
					X _T	0.792	0.803	0.770	0.767	0.760	0.725	0.703	0.717	0.763	0.764	---

1. At 100% travel.
Restricted trim.



Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
6	177.8	7	51	2	C _v	13.2	24.6	41.1	62.5	97.1	155	223	286	326	357	0.86
					K _v	11.4	21.3	35.6	54.1	84.0	134	193	247	282	309	---
					X _T	0.723	0.737	0.767	0.846	0.803	0.781	0.808	0.826	0.847	0.816	---
	111.1	4.375	51	2	C _v	4.96	9.02	14.0	24.2	39.4	60.8	94.6	144	199	233	0.91
					K _v	4.29	7.80	12.1	20.9	34.1	52.6	81.8	125	172	202	---
					X _T	0.842	0.792	0.778	0.709	0.723	0.739	0.729	0.706	0.719	0.806	---
8	203.2	8	51	2	C _v	18.8	33.6	53.6	79.8	114	168	242	345	467	570	0.85
					K _v	16.3	29.1	46.4	69.0	98.6	145	209	298	404	493	---
					X _T	0.874	0.865	0.769	0.748	0.731	0.697	0.712	0.707	0.697	0.694	---
8	203.2	8	76	3	C _v	25.9	53.3	97.8	178	299	461	618	727	768	808	0.85
					K _v	22.4	46.1	84.6	154	259	399	535	629	664	699	---
					X _T	0.825	0.728	0.681	0.616	0.678	0.716	0.735	0.793	0.825	0.827	---

1. At 100% travel.
 Restricted trim.

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Whisper Trim I														Linear Characteristic	
Valve Size, ⁽¹⁾ NPS	Port Diameter		Maximum Travel		Flow Coeffi- cient	Valve Opening—Percent of Total Travel									
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100
1 & 1-1/4	33.3	1.3125	19	0.75	C _v	3.16	6.97	11.8	15.1	16.5	17.2	17.3	17.4	17.4	18.4
					K _v	2.73	6.03	10.2	13.1	14.3	14.9	15.0	15.1	15.1	15.9
					X _T	0.828	0.747	0.553	0.570	0.645	0.667	0.686	0.694	0.709	0.678
1-1/2	47.6	1.875	19	0.75	C _v	3.42	8.78	14.6	22.2	27.7	31.6	34.0	35.1	36.0	37.2
					K _v	2.96	7.59	12.6	19.2	24.0	27.3	29.4	30.4	31.1	32.2
					X _T	0.635	0.649	0.594	0.455	0.457	0.504	0.563	0.625	0.648	0.640
	33.3	1.3125	19	0.75	C _v	2.84	6.74	11.3	17.4	22.1	25.6	27.7	28.7	29.1	29.3
					K _v	2.46	5.83	9.77	15.1	19.1	22.1	24.0	24.8	25.2	25.3
					X _T	0.669	0.709	0.563	0.424	0.401	0.428	0.487	0.569	0.661	0.711
2	58.7	2.3125	29	1.125	C _v	8.27	21.8	35.3	47.3	55.1	60.2	63.2	65.3	66.8	67.8
					K _v	7.15	18.9	30.5	40.9	47.7	52.1	54.7	56.5	57.8	58.6
					X _T	0.647	0.411	0.347	0.352	0.409	0.499	0.577	0.622	0.647	0.656
	33.3	1.3125	19	0.75	C _v	3.62	7.07	12.2	18.4	23.3	27.6	31.1	34.0	35.8	37.0
					K _v	3.13	6.12	10.6	15.9	20.2	23.9	26.9	29.4	31.0	32.0
					X _T	0.620	0.769	0.559	0.420	0.390	0.396	0.408	0.440	0.475	0.494
2-1/2	73.0	2.875	38	1.5	C _v	12.8	33.9	55.0	70.6	80.0	85.4	88.5	90.3	91.1	91.7
					K _v	11.1	29.3	47.6	61.1	69.2	73.9	76.6	78.1	78.8	79.3
					X _T	0.766	0.476	0.377	0.388	0.460	0.540	0.590	0.631	0.660	0.669
	47.6	1.875	19	0.75	C _v	3.07	8.65	15.3	23.4	31.2	36.8	43.4	48.3	52.1	55.8
					K _v	2.66	7.48	13.2	20.2	27.0	31.8	37.5	41.8	45.1	48.3
					X _T	0.766	0.766	0.613	0.450	0.384	0.389	0.380	0.399	0.420	0.428
3	87.3	3.4375	38	1.5	C _v	11.1	36.0	60.3	81.9	99.6	111	119	124	128	131
					K _v	9.60	31.1	52.2	70.8	86.2	96.0	103	107	111	113
					X _T	0.766	0.649	0.451	0.415	0.416	0.469	0.522	0.566	0.595	0.603
	58.7	2.3125	29	1.125	C _v	6.63	18.1	30.8	43.4	56.1	67.1	77.8	87.2	95.9	102
					K _v	5.73	15.7	26.6	37.5	48.5	58.0	67.3	75.4	83.0	88.2
					X _T	0.766	0.662	0.483	0.424	0.395	0.387	0.385	0.387	0.395	0.397
4	111.1	4.375	51	2	C _v	25.1	56.5	85.6	111	128	139	147	151	208	211
					K _v	21.7	48.9	74.0	96.0	111	120	127	131	180	183
					X _T	1.222	0.807	0.683	0.680	0.786	0.909	1.017	1.109	0.635	0.645
	73.0	2.875	38	1.5	C _v	12.8	33.9	56.6	76.4	96.3	114	130	143	156	164
					K _v	11.1	29.3	49.0	66.1	83.3	98.6	112	124	135	142
					X _T	0.766	0.471	0.350	0.332	0.317	0.325	0.331	0.349	0.361	0.377
6	177.8	7	51	2	C _v	54.1	114	174	231	281	319	349	369	387	401
					K _v	46.8	98.6	151	200	243	276	302	319	335	347
					X _T	0.407	0.453	0.409	0.367	0.383	0.419	0.450	0.487	0.514	0.532
8	203.2	8	76	3	C _v	84.6	229	360	462	531	607	660	695	712	735
					K _v	73.2	198	311	400	459	525	571	601	616	636
					X _T	0.729	0.409	0.346	0.354	0.410	0.451	0.507	0.560	0.602	0.633
			29	4	C _v	132	318	464	566	641	693	724	742	760	773
					K _v	114	275	401	490	554	599	626	642	657	669
					X _T	0.499	0.358	0.371	0.422	0.482	0.542	0.604	0.659	0.682	0.675

1. NPS 6 easy-e™ with restricted Whisper Trim not available. Use EW valve body where this trim is desired.
 Restricted trim.



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Cavitrol - Flow Down																Linear Characteristic	
Valve Size, NPS	Shutoff Port Diameter ⁽²⁾		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel											F _L ⁽¹⁾
	mm	Inches	mm	Inches		Min	10	20	30	40	50	60	70	80	90	100	
1 ⁽³⁾	22.2	0.875	19	0.75	C _v	0.04	0.02	0.04	0.05	0.07	0.09	0.12	0.16	0.21	0.26	0.30	0.97
					K _v	0.03	0.02	0.03	0.04	0.06	0.08	0.10	0.14	0.18	0.22	0.26	
1 ⁽⁴⁾	25.4	1	38.1	1.5	C _v	0.04	0.00	0.07	0.12	0.21	0.30	0.41	0.53	0.68	0.84	1.02	0.97
					K _v	0.03	0.00	0.06	0.10	0.18	0.26	0.35	0.46	0.59	0.73	0.88	
1 ⁽⁵⁾	25.4	1	28.5	1.125	C _v	0.05	0.00	0.02	0.17	0.32	0.48	0.65	0.80	1.04	1.36	1.66	0.97
					K _v	0.04	0.00	0.02	0.15	0.28	0.42	0.56	0.69	0.90	1.18	1.44	
1 ⁽⁵⁾	25.4	1	25.4	1	C _v	0.05	0.00	0.06	0.16	0.39	0.60	0.94	1.28	1.63	1.98	2.30	0.97
					K _v	0.04	0.00	0.05	0.14	0.34	0.52	0.81	1.11	1.41	1.71	1.99	
1-1/2 ⁽³⁾	22.2	0.875	19	0.75	C _v	0.04	0.02	0.04	0.05	0.07	0.09	0.12	0.16	0.21	0.26	0.30	0.97
					K _v	0.03	0.02	0.03	0.04	0.06	0.08	0.10	0.14	0.18	0.22	0.26	
1-1/2 ⁽⁵⁾	25.4	1	28.5	1.125	C _v	0.05	0.00	0.02	0.17	0.32	0.48	0.65	0.80	1.04	1.36	1.66	0.97
					K _v	0.04	0.00	0.02	0.15	0.28	0.42	0.56	0.69	0.90	1.18	1.44	
1-1/2 ⁽⁵⁾	25.4	1	25.4	1	C _v	0.05	0.00	0.06	0.16	0.39	0.60	0.94	1.28	1.63	1.98	2.30	0.97
					K _v	0.04	0.00	0.05	0.14	0.34	0.52	0.81	1.11	1.41	1.71	1.99	
1-1/2 ⁽⁵⁾	25.4	1	38.1	1.5	C _v	0.05	0.02	0.08	0.27	0.62	1.02	1.40	1.90	2.30	2.70	3.10	0.97
					K _v	0.04	0.02	0.07	0.23	0.54	0.88	1.21	1.64	1.99	2.34	2.68	
2 ⁽⁶⁾	22.2	0.875	19	0.75	C _v	0.04	0.02	0.04	0.05	0.07	0.09	0.12	0.16	0.21	0.26	0.30	0.97
					K _v	0.03	0.02	0.03	0.04	0.06	0.08	0.10	0.14	0.18	0.22	0.26	
2 ⁽⁵⁾	25.4	1	38.1	1.5	C _v	0.05	0.02	0.16	0.45	0.95	1.47	2.00	2.50	3.10	3.70	4.10	0.97
					K _v	0.04	0.02	0.14	0.39	0.82	1.27	1.73	2.16	2.68	3.20	3.55	

1. At 100% travel
2. Cavitrol III Micro-Flat trims use a shutoff port diameter which is larger than the flowing port diameter. Use the shutoff port diameter for actuator sizing.
3. Flowing port: 12.7 mm / 0.5 Inch, Unbalanced Area: 3.869 cm² / 0.601 In², 3/8" stem (optional 1/2" stem)
4. Flowing port: 12.7 mm / 0.5 Inch, Unbalanced Area: 5.065 cm² / 0.785 In², 1/2" stem
5. Flowing port: 19 mm / 0.75 Inch, Unbalanced Area: 5.065 cm² / 0.785 In², 1/2" stem
6. Flowing port: 12.7 mm / 0.5 Inch, Unbalanced Area: 3.869 cm² / 0.601 In², 3/4" stem



Catalog 12

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June 2014

CL150, 300, 600, Micro-Flat Anti-Cavitation Plug & Seat, with Flash Basket ⁽¹⁾ , Flow Down														Linear Characteristic		
Valve Size	Port Diameter ⁽²⁾		Travel		Flow Coeffi- cient	Percent of Total Travel										FL ⁽⁴⁾
	NPS	mm	inch	mm		inch	10 ⁽³⁾	20	30	40	50	60	70	80	90	
1, 1-1/2, 2	6.4	1/4	19	3/4	Cv	0.001	0.001	0.003	0.007	0.012	0.017	0.023	0.03	0.037	0.044	0.775
					Kv	0.0009	0.0009	0.0026	0.0060	0.0103	0.0146	0.0198	0.0258	0.0318	0.0378	
					Cv	0.001	0.002	0.013	0.029	0.049	0.072	0.097	0.124	0.154	0.18	0.775
					Kv	0.0009	0.0017	0.0112	0.0249	0.0421	0.0619	0.0834	0.1066	0.1324	0.1548	
					Cv	0.001	0.004	0.028	0.063	0.105	0.154	0.207	0.265	0.326	0.38	0.775
					Kv	0.0009	0.0034	0.0241	0.0542	0.0903	0.1324	0.1780	0.2279	0.2804	0.3268	
	9.5	3/8	19	3/4	Cv	0.001	0.005	0.03	0.068	0.115	0.169	0.229	0.294	0.364	0.437	0.775
					Kv	0.0009	0.0043	0.0258	0.0585	0.0989	0.1453	0.1969	0.2528	0.3130	0.3758	
					Cv	0.001	0.006	0.042	0.095	0.16	0.235	0.318	0.407	0.503	0.603	0.775
					Kv	0.0009	0.0052	0.0361	0.0817	0.1376	0.2021	0.2735	0.3500	0.4326	0.5186	
					Cv	0.001	0.008	0.06	0.136	0.23	0.337	0.457	0.587	0.726	0.873	0.775
					Kv	0.0009	0.0069	0.0516	0.1170	0.1978	0.2898	0.3930	0.5048	0.6244	0.7508	
19.1	3/4	19	3/4	Cv	0.002	0.016	0.115	0.263	0.445	0.654	0.886	1.138	1.407	1.69	0.775	
				Kv	0.0017	0.0138	0.0989	0.2262	0.3827	0.5624	0.7620	0.9787	1.2100	1.4534		
				Cv	0.002	0.03	0.229	0.524	0.887	1.306	1.77	2.274	2.813	3.383	0.775	
				Kv	0.0017	0.0258	0.1969	0.4506	0.7628	1.1232	1.5222	1.9556	2.4192	2.9094		

1. For additional capacities, contact GIS.
2. Micro-flat Cavitation trims use a shutoff port diameter which is 0.125 inch larger than the flowing port diameter. Use the shutoff port diameter for actuator sizing.
3. Clearance flow only
4. At 100% travel

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CL600 - Flow Down																Linear Characteristic	
Valve Size, NPS	Port Diameter		Total Travel		Minimum Throttling $C_v^{(1)}$	Flow Coefficient	Valve Opening—Percent of Total Travel										$F_L^{(3)}$
	mm	Inches	mm	Inches			10	20	30	40	50	60	70	80	90	100	
One Stage																	
1	33.3	1-5/16	25.4	1	1.9	C_v	0.25	0.48	2.36	5.04	7.36	9.47	11.2	13.1	14.6	15.5	0.90
						K_v	0.216	0.415	2.04	4.36	6.37	8.19	9.69	11.3	12.6	13.4	---
1-1/2	47.6	1-7/8	22.2	7/8	2.5	C_v	0.59	0.72	2.54	6.03	9.32	12.8	15.6	18.2	20.8	22.5	0.93
						K_v	0.510	0.623	2.20	5.22	8.06	11.1	13.5	15.7	18.0	19.5	---
2	58.7	2-5/16	28.6	1-1/8	3.9	C_v	0.84	1.49	6.68	12.3	17.3	22.1	26.7	30.9	34.4	36.1	0.93
						K_v	0.727	1.29	5.78	10.6	15.0	19.1	23.1	26.7	29.8	31.2	---
2-1/2	73.0	2-7/8	38.1 ⁽²⁾	1-1/2	4.2	C_v	0.84	6.83	16.2	25.0	33.0	41.2	48.8	55.5	61.7	64.4	0.91
						K_v	0.727	5.91	14.0	21.6	28.5	35.6	42.2	48.0	53.4	55.7	---
3	87.3	3-7/16	41.3 ⁽²⁾	1-5/8	4.6	C_v	1.65	10.8	22.3	34.3	45.3	55.5	64.7	72.7	80.0	86.7	0.89
						K_v	1.43	9.34	19.3	29.7	39.2	48.0	56.0	62.9	69.2	75.0	---
4	111.1	4-3/8	54.0 ⁽²⁾	2-1/8	5.2	C_v	3.47	22.7	43.3	63.4	81.8	100	116	131	144	151	0.90
						K_v	3.00	19.6	37.5	54.8	70.8	86.5	100	113	125	131	---
6 ⁽⁴⁾	177.8	7	57.2	2-1/4	10	C_v	4.6	30.0	65.3	99.7	134	165	195	219	241	259	0.91
						K_v	4.0	25.9	56.5	86.2	116	143	169	189	208	224	---
8	203.2	8	85.7	3-3/8	15	C_v	16.2	70.2	124	176	227	276	324	370	412	439	0.94
						K_v	14.0	60.7	107	152	196	239	280	320	356	380	---
Two Stage																	
1	25.4	1	25	1	0.28	C_v	0.11	0.41	1.08	1.75	2.43	3.10	3.78	4.45	5.12	5.80	0.98
						K_v	0.095	0.355	0.934	1.51	2.10	2.68	3.27	3.85	4.43	5.02	---
1-1/2	33.3	1-5/16	38	1-1/2	0.44	C_v	0.22	1.20	2.23	3.26	4.29	5.31	6.355	7.37	8.40	9.40	0.98
						K_v	0.19	1.04	1.93	2.82	3.71	4.59	5.50	6.38	7.27	8.13	---
2	47.6	1-7/8	51	2	0.92	C_v	0.80	3.05	5.29	7.56	9.83	12.1	14.3	16.5	18.8	21.0	0.98
						K_v	0.692	2.64	4.58	6.54	8.50	10.5	12.4	14.3	16.3	18.2	---
2-1/2	58.7	2-5/16	64	2-1/2	1.10	C_v	1.75	5.25	8.71	12.2	15.6	19.1	22.6	26.1	29.6	33.0	0.98
						K_v	1.51	4.54	7.53	10.6	13.5	16.5	19.5	22.6	25.6	28.5	---
3	73.0	2-7/8	76	3	1.20	C_v	3.14	8.23	13.3	18.5	23.5	28.7	33.8	38.9	44.0	49.0	0.98
						K_v	2.72	7.12	11.5	16.0	20.3	24.8	29.2	33.6	38.1	42.4	---
4	73.0	2-7/8	102	4	1.90	C_v	2.83	11.2	19.4	27.4	35.5	43.2	50.5	57.1	63.2	69.0	0.98
						K_v	2.45	9.69	16.8	23.7	30.7	37.4	43.7	49.4	54.7	59.7	---
6 ⁽⁴⁾	136.5	5-3/8	102	4	3.00	C_v	6.05	22.5	38.0	53.7	69.4	85.2	100	115	130	144	0.98
						K_v	5.23	19.5	32.9	46.5	60.0	73.7	86.5	99.5	112	125	---
8	177.8	7	152	6	7.00	C_v	19.8	47.5	74.5	101	129	156	184	211	238	265	0.98
						K_v	17.1	41.1	64.4	87.4	112	135	159	183	206	229	---

1. Valves should not be required to throttle at a C_v less than the specified minimum C_v for an extended period of time. Erosion damage to the valve seats may result.
 2. Less than fully available travel.
 3. At 100% travel.
 4. These values are also used to size NPS 8 EAT valves.

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Linear											Linear Characteristic							
Valve Size, NPS	Port Diameter		Maximum Travel		Constr uction	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L (1)	
	mm	Inches	mm	Inches			Min(2)	10	20	30	40	50	60	70	80	90		100
12	279.4	11	102	4	SNC	Cv	40	155	300	450	610	770	940	1100	1250	1390	1500	0.88
						Kv	34.6	134	260	389	528	666	813	952	1081	1202	1298	---
			Xt	0.391		0.609	0.678	0.676	0.645	0.654	0.693	0.746	0.789	0.799	0.792	---		
			140	5.5		Cv	40	206	415	630	852	1079	1295	1465	1557	1570	1570	0.88
						Kv	34.6	178	359	545	737	933	1120	1267	1347	1358	1358	---
Xt	0.391	0.644	0.683	0.644	0.654	0.704	0.769	0.792	0.775	0.818	0.82	---						
14	279.4	11	102	4	SNC	Cv	40	106	222	368	541	727	922	1109	1283	1437	1560	0.88
						Kv	34.6	92	192	319	468	629	797	959	1110	1243	1350	---
			Xt	0.391		0.837	0.811	0.749	0.703	0.703	0.722	0.748	0.769	0.774	0.777	---		
			140	5.5		Cv	40	136	346	552	821	1092	1328	1516	1643	1708	1753	0.88
						Kv	34.6	118	299	477	710	944	1149	1311	1421	1477	1516	---
Xt	0.391	0.851	0.813	0.736	0.707	0.723	0.752	0.766	0.764	0.782	0.788	---						
16x12	279.4	11	102	4	SNC	Cv	40	73	169	314	495	698	909	1115	1305	1468	1601	0.88
						Kv	34.6	63	146	272	428	604	786	965	1128	1270	1385	---
			Xt	0.391		0.989	0.899	0.797	0.742	0.735	0.741	0.749	0.756	0.758	0.767	---		
			140	5.5		Cv	40	90	300	500	800	1100	1350	1550	1700	1800	1875	0.88
						Kv	34.6	78	260	433	692	952	1168	1341	1471	1557	1622	---
Xt	0.391	0.989	0.899	0.797	0.742	0.735	0.741	0.749	0.756	0.758	0.767	---						
16	374.7	14.75	102	4	SNC	Cv	76	202	456	709	963	1232	1534	1900	2234	2526	2772	0.85
						Kv	66	175	394	613	833	1066	1327	1644	1933	2185	2398	---
						Xt		0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---
			140	5.5		Fd		0.19	0.26	0.29	0.31	0.31	0.27	0.27	0.28	0.35	0.30	---
						Cv	124	298	649	1000	1376	1846	2324	2701	2988	3188	3312	0.85
						Kv	107	258	562	865	1190	1597	2010	2337	2585	2757	2865	---
						Xt		0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---
Fd		0.22	0.28	0.31	0.29	0.27	0.29	0.30	0.30	0.30	0.31	0.31	---					
18	374.7	14.75	102	4	SNC	Cv	82	218	492	765	1038	1310	1622	1989	2311	2583	2810	0.85
						Kv	71	189	426	662	899	1134	1404	1721	2000	2236	2431	---
						Xt		0.81	0.81	0.76	0.76	0.78	0.78	0.86	0.82	0.79	0.81	---
			140	5.5		Fd		0.18	0.22	0.23	0.20	0.19	0.20	0.20	0.20	0.20	0.21	---
						Cv	133	322	701	1078	1460	1935	2396	2745	3010	3208	3351	0.85
						Kv	115	279	606	933	1263	1674	2073	2375	2605	2776	2900	---
						Xt		0.81	0.81	0.76	0.76	0.78	0.78	0.86	0.82	0.79	0.81	---
Fd		0.22	0.28	0.31	0.29	0.27	0.29	0.30	0.30	0.30	0.31	0.31	---					
20 x 16	374.7	14.75	102	4	SNC	Cv	80	213	480	747	1038	1316	1644	2044	2413	2742	3026	0.85
						Kv	70	184	415	646	898	1139	1422	1768	2087	2371	2618	---
						Xt		0.81	0.81	0.76	0.76	0.78	0.78	0.86	0.82	0.79	0.81	---
			140	5.5		Fd		0.18	0.22	0.23	0.20	0.19	0.20	0.20	0.20	0.20	0.21	---
						Cv	130	314	683	1079	1472	1984	2514	2944	3286	3543	3721	0.85
						Kv	113	272	591	933	1274	1716	2174	2546	2842	3065	3219	---
						Xt		0.81	0.81	0.76	0.76	0.78	0.78	0.86	0.82	0.79	0.81	---
Fd		0.22	0.28	0.31	0.29	0.27	0.29	0.30	0.30	0.30	0.31	0.31	---					
24 x 16	374.7	14.75	102	4	SNC	Cv	80	213	480	747	1000	1283	1627	2065	2490	2888	3253	0.85
						Kv	70	184	415	646	865	1110	1407	1786	2153	2498	2814	---
						Xt	0.81	0.81	0.81	0.76	0.76	0.78	0.78	0.86	0.82	0.79	0.81	---
			140	5.5		Fd		0.18	0.22	0.23	0.20	0.19	0.20	0.20	0.20	0.20	0.21	---
						Cv	130	314	683	1041	1445	1998	2609	3145	3606	3982	4265	0.85
						Kv	113	272	591	900	1250	1728	2257	2720	3119	3444	3689	---
						Xt	0.81	0.81	0.81	0.76	0.76	0.78	0.78	0.86	0.82	0.79	0.81	---
Fd		0.22	0.28	0.31	0.29	0.27	0.29	0.30	0.30	0.30	0.31	0.31	---					

1. At 100% travel.
2. Clearance flow only

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Large ET/EWT CL150 - CL600

Linear Cage
Flow Down

Valve Size, NPS	Port Diameter		Maximum Travel		Construction	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾		
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100	
20	464	18.25	203	8	SNC	Cv	270	647	1377	2089	2720	3274	3747	4309	4787	5196	5196	0.85	
						Kv	234	560	1192	1808	2354	2833	3243	3729	4143	4497	4497	---	
						Xt	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---
						Fd		0.22	0.28	0.31	0.32	0.32	0.31	0.30	0.30	0.30	0.30	0.30	---
24x20	464	18.25	203	8	SNC	Cv	271	649	1394	2123	2827	3455	4010	4589	5157	5626	5841	0.85	
						Kv	234	562	1206	1837	2446	2990	3470	3971	4463	4869	5055	---	
						Xt	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---
						Fd		0.22	0.28	0.31	0.32	0.32	0.31	0.30	0.30	0.30	0.30	0.30	---
30	610	24	302	11.88	SN	Cv	100	906	2000	3080	4230	5290	6690	7710	8450	9260	9530	0.99	
						Kv	87	784	1730	2664	3659	4576	5787	6669	7309	8010	8243	---	
						X _T		0.7	0.73	0.72	0.75	0.72	0.74	0.71	0.74	0.72	0.71	---	

1. At 100% travel.
2. Clearance flow only

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Equal Percentage						Equal Percentage Characteristic													
Valve Size, NPS	Port Diameter		Maximum Travel		Constr uction	Flow Coeffi- cient	Valve Opening—Percent of Total Travel											F _L (1)	
	mm	Inches	mm	Inches			Min(2)	10	20	30	40	50	60	70	80	90	100		
12	279.4	11	140	5.5	SNC	Cv	22	43	84	123	182	280	424	618	873	1190	1380	0.88	
						Kv	19.0	37	73	106	157	242	367	535	755	1029	1194	---	
						Xt	0.391	0.75	0.737	0.715	0.656	0.595	0.57	0.578	0.625	0.692	0.804	---	
14	279.4	11	140	5.5	SNC	Cv	22	51	95	139	193	277	406	582	803	1079	1397	0.88	
						Kv	19.0	44	82	120	167	240	351	503	695	933	1208	---	
						Xt	0.391	0.894	0.891	0.883	0.855	0.788	0.711	0.674	0.696	0.728	0.780	---	
16x12	279.4	11	140	5.5	SNC	Cv	21	58	109	158	220	317	463	664	917	1232	1595	0.88	
						Kv	20.3	56.0	105	153	212	306	447	641	885	1189	1539	---	
						Xt	0.391	0.99	0.994	0.995	0.987	0.916	0.805	0.738	0.743	0.752	0.764	---	
16	374.7	14.75	102	4	SNC	Cv	7	22	54	86	136	213	321	477	695	1010	1414	0.85	
						Kv	6	19	47	74	117	184	277	412	601	873	1223	---	
						Xt		0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---
						Fd		0.41	0.46	0.45	0.27	0.28	0.27	0.26	0.24	0.22	0.24	---	
			140	5.5	SNC	Cv	13	35	79	145	263	454	765	1272	1808	2278	2664	0.85	
						Kv	11	30	68	125	228	393	662	1100	1564	1971	2304	---	
						Xt		0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---	
						Fd		0.45	0.46	0.39	0.28	0.26	0.24	0.23	0.26	0.27	0.28	---	
			203	8	LNC	Cv	34	77	163	249	433	670	1003	1490	2154	2686	3054	0.85	
						Kv	29	66	141	216	375	579	868	1289	1863	2323	2642	---	
						Xt		0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---	
						Fd		0.46	0.45	0.42	0.25	0.32	0.25	0.21	0.23	0.25	0.26	---	
18	374.7	14.75	102	4	SNC	Cv	8	24	58	93	146	230	346	514	750	1088	1499	0.85	
						Kv	7	21	50	80	127	199	299	445	649	942	1297	---	
						Xt		0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---	
						Fd		0.46	0.45	0.42	0.25	0.32	0.25	0.21	0.23	0.25	0.26	---	
			140	5.5	SNC	Cv	14	38	85	156	284	490	825	1351	1897	2352	2711	0.85	
						Kv	12	33	74	135	246	424	714	1169	1642	2036	2346	---	
						Xt		0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---	
						Fd		0.46	0.45	0.42	0.25	0.32	0.25	0.21	0.23	0.25	0.26	---	
			203	8	SNC	Cv	36	83	176	269	467	723	1082	1577	2234	2730	3073	0.85	
						Kv	31	72	152	233	404	625	936	1364	1933	2363	2660	---	
						Xt		0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---	
						Fd		0.46	0.45	0.42	0.25	0.32	0.25	0.21	0.23	0.25	0.26	---	
20 x 16	374.7	14.75	102	4	SNC	Cv	8	23	57	90	143	224	338	502	732	1089	1513	0.85	
						Kv	7	20	49	78	123	194	292	434	633	942	1309	---	
						Xt	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---	
						Fd		0.46	0.45	0.42	0.25	0.32	0.25	0.21	0.23	0.25	0.26	---	
			140	5.5	SNC	Cv	14	37	83	153	277	478	805	1359	1943	2462	2900	0.85	
						Kv	12	32	72	132	240	413	696	1175	1681	2130	2509	---	
						Xt	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---	
						Fd		0.46	0.45	0.42	0.25	0.32	0.25	0.21	0.23	0.25	0.26	---	
			203	8	SNC	Cv	35	81	172	262	456	705	1082	1596	2324	2925	3369	0.85	
						Kv	31	70	148	227	394	610	936	1380	2010	2530	2914	---	
						Xt	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---	
						Fd		0.46	0.45	0.42	0.25	0.32	0.25	0.21	0.23	0.25	0.26	---	
24 x 16	374.7	14.75	102	4	SNC	Cv	8	23	57	90	143	224	338	502	732	1089	1513	0.85	
						Kv	7	20	49	78	123	194	292	434	633	942	1309	---	
						X _T	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---	
						Fd		0.46	0.45	0.42	0.25	0.32	0.25	0.21	0.23	0.25	0.26	---	
			140	5.5	SNC	Cv	14	37	83	153	277	478	805	1327	1952	2548	3089	0.85	
						Kv	12	32	72	132	240	413	696	1148	1688	2204	2672	---	
						Xt	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---	
						Fd		0.46	0.45	0.42	0.25	0.32	0.25	0.21	0.23	0.25	0.26	---	
			203	8	SNC	Cv	34	77	165	252	437	676	1044	1575	2385	3121	3724	0.85	
						Kv	29	67	142	218	378	585	903	1363	2063	2700	3221	---	
						Xt	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---	
						Fd		0.46	0.45	0.42	0.25	0.32	0.25	0.21	0.23	0.25	0.26	---	

1. At 100% travel.
2. Clearance flow only

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**Large ET/EWT
CL150 - CL600**
Equal Percentage Cage
Flow Down

Valve Size, NPS	Port Diameter		Maximum Travel		Constr uction	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾		
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100	
20	464	18.25	203	8	SNC	Cv	38	90	214	408	733	1276	2122	2954	3661	4270	4820	0.85	
						Kv	33	78	185	353	634	1104	1836	2557	3168	3695	4171	---	
						Xt	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---
						Fd		0.31	0.28	0.25	0.24	0.22	0.23	0.25	0.27	0.28	0.29	---	
24x20	464	18.25	203	8	SNC	Cv	38	91	215	410	736	1282	2159	3087	3891	4579	5182	0.85	
						Kv	33	78	186	355	637	1109	1868	2671	3368	3963	4484	---	
						Xt	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	---	
						Fd		0.31	0.28	0.25	0.24	0.22	0.23	0.25	0.27	0.28	0.29	---	
30	610	24	276	10.88	SN	Cv	70	126	305	520	876	1343	2200	3599	5150	6563	7690	0.99	
						Kv	61	109	264	450	758	1162	1903	3113	4455	5677	6652	---	
						X _T		0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.65	0.68	0.7	---	

1. At 100% travel.
2. Clearance flow only

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Whisper Trim III - Level A1 - Flow Up																		Linear Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Constr uction	Flow Coeffi- cient	Valve Opening—Percent of Total Travel											F _L (1)	
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90	100		
12	279.4	11	140	5.5	SNC	Cv	25	144	295	441	576	696	803	904	991	1070	1137	0.89	
						Kv		125	255	381	498	602	695	782	857	926	984	---	
						Xt		0.62	0.62	0.62	0.65	0.7	0.75	0.81	0.86	0.86	0.86	---	
			203	8	LNC	Cv	25	212	428	622	785	930	1052	1150	1229	1285	1315	0.89	
						Kv		183	370	538	679	804	910	995	1063	1112	1137	---	
						Xt		0.619	0.620	0.665	0.739	0.827	0.856	0.854	0.852	0.849	0.847	---	
14	279.4	11	140	5.5	SNC	Cv	25	144	295	441	584	721	851	981	1104	1225	1318	0.89	
						Kv		125	255	381	505	623	736	849	955	1059	1140	---	
						Xt		0.62	0.62	0.62	0.63	0.65	0.67	0.70	0.72	0.72	0.73	---	
			203	8	LNC	Cv	25	212	428	635	828	1016	1194	1332	1420	1482	1515	0.89	
						Kv		183	370	549	716	879	1033	1153	1229	1282	1310	---	
						Xt		0.619	0.620	0.639	0.668	0.703	0.715	0.739	0.800	0.823	0.824	---	
16x12	279.4	11	140	5.5	SNC	Cv	25	144	295	441	589	737	883	1033	1179	1328	1439	0.89	
						Kv		125	255	381	509	638	764	894	1020	1149	1245	---	
						Xt		0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.65	---	
			203	8	LNC	Cv	25	212	428	644	857	1073	1289	1454	1548	1613	1648	0.89	
						Kv		183	370	557	741	928	1115	1258	1339	1395	1425	---	
						Xt		0.619	0.620	0.621	0.621	0.621	0.621	0.621	0.663	0.765	0.805	0.809	---
16	374.7	14.75	203	8.00	LNC	Cv	38	335	677	1019	1298	1529	1721	1871	1985	2059	2095	0.89	
						Kv		290	585	882	1123	1322	1488	1618	1717	1781	1812	---	
						Xt		0.436	0.433	0.432	0.471	0.533	0.589	0.616	0.647	0.686	0.732	---	
	412.7	16.25	203	8.00	LNC	Cv	42	353	732	1104	1389	1628	1817	1960	2057	2106	2113	0.89	
						Kv		305	633	955	1201	1408	1572	1695	1779	1822	1828	---	
						Xt		0.436	0.433	0.432	0.490	0.563	0.603	0.635	0.674	0.722	0.780	---	
18	412.7	16.25	203	8.00	SNC	Cv	53	287	636	992	1335	1634	1896	2108	2278	2412	2512	0.84	
						Kv	46	249	551	858	1156	1414	1641	1824	1972	2088	2174	---	
						Xt		0.50	0.52	0.52	0.51	0.52	0.55	0.60	0.65	0.70	0.76	---	
			276	10.88	LNC	Cv	53	416	892	1361	1754	2067	2301	2466	2580	2676	2731	0.84	
						Kv	46	360	772	1178	1517	1789	1991	2134	2233	2316	2363	---	
						Xt		0.51	0.52	0.51	0.54	0.59	0.66	0.73	0.82	0.90	0.92	---	
378	14.88	LNC	Cv	53	587	1243	1791	2187	2445	2599	2702	2809	2912	2959	0.84				
			Kv	46	508	1075	1550	1893	2116	2249	2339	2431	2520	2561	---				
			Xt		0.52	0.51	0.55	0.61	0.72	0.83	0.90	0.94	0.91	0.94	---				
20x16	412.7	16.25	203	8.00	SNC	Cv	41	353	732	1104	1480	1859	2231	2508	2757	2973	3161	0.89	
						Kv		305	633	955	1280	1608	1930	2170	2385	2572	2735	---	
						X _T		0.436	0.433	0.432	0.432	0.432	0.432	0.466	0.506	0.550	0.572	---	
			276	10.88	LNC	Cv	41	489	1001	1514	2026	2460	2797	3080	3309	3485	3607	0.89	
						Kv		423	866	1309	1752	2128	2420	2664	2863	3014	3120	---	
						X _T		0.434	0.433	0.432	0.432	0.459	0.513	0.565	0.587	0.612	0.642	---	
378	14.88	LNC	Cv	41	681	1376	2079	2626	3038	3353	3564	3678	3696	3696	0.89				
			Kv		589	1190	1798	2272	2628	2900	3083	3181	3197	3197	---				
			Xt		0.434	0.432	0.432	0.483	0.561	0.592	0.629	0.676	0.734	0.776	---				
24x16	412.7	16.25	203	8.00	SNC	Cv	41	353	732	1104	1480	1859	2218	2501	2759	2986	3188	0.89	
						Kv		305	633	955	1280	1608	1919	2163	2387	2583	2758	---	
						X _T		0.436	0.433	0.432	0.432	0.432	0.436	0.469	0.505	0.545	0.564	---	
			276	10.88	LNC	Cv	41	489	1001	1513	2025	2450	2799	3099	3350	3552	3705	0.89	
						Kv		423	866	1309	1752	2119	2421	2681	2898	3072	3205	---	
						X _T		0.434	0.433	0.432	0.432	0.462	0.511	0.558	0.576	0.595	0.618	---	
378	14.88	LNC	Cv	41	680	1374	2077	2621	3054	3399	3648	3809	3877	3880	0.89				
			Kv		588	1189	1797	2267	2642	2940	3156	3295	3354	3356	---				
			Xt		0.43	0.43	0.43	0.48	0.56	0.58	0.61	0.64	0.69	0.73	---				

1. At 100% travel.
2. Clearance flow only

Valve Size, NPS	Port Diameter		Maximum Travel		Constr uction	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾		
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100	
20	502	19.75	276	10.88	SNC	Cv	50	593	1217	1841	2351	2767	3111	3382	3580	3706	3760	0.89	
						Kv		513	1053	1593	2034	2394	2691	2925	3097	3206	3252	---	
						Xt		0.434	0.433	0.432	0.475	0.538	0.592	0.619	0.652	0.692	0.741	---	
			378	14.88	LNC	Cv	84	825	1672	2397	2939	3343	3615	3749	3766	3766	3766	0.89	
						Kv		714	1446	2073	2542	2891	3127	3243	3258	3258	3258	---	
						Xt		0.43	0.43	0.48	0.57	0.61	0.66	0.72	0.79	0.84	0.85	---	
24x20	502	19.75	276	10.88	SNC	Cv	75	521	1069	1617	2106	2546	2949	3313	3640	3929	4180	0.89	
						Kv		450	924	1398	1822	2203	2551	2866	3148	3398	3615	---	
						Xt		0.53	0.53	0.52	0.55	0.56	0.58	0.59	0.61	0.63	0.65	---	
			378	14.88	LNC	Cv	46	727	1478	2197	2879	3404	3841	4020	4245	4416	4657	0.89	
						Kv		629	1278	1900	2490	2944	3322	3477	3672	3820	4028	---	
						Xt		0.529	0.528	0.528	0.528	0.531	0.586	0.649	0.721	0.746	0.775	---	
			429	16.88	LNC	Cv	46	825	1675	2488	3180	3687	4008	4213	4417	4706	5038	0.89	
						Kv		714	1449	2152	2751	3190	3467	3645	3821	4071	4358	---	
						Xt		0.529	0.528	0.528	0.528	0.567	0.636	0.719	0.748	0.781	0.821	---	
30	660	26	276	10.88	SN	Cv	60	728	1490	2254	3018	3782	4543	5123	5638	6099	6505	0.99	
						Kv		630	1289	1950	2611	3271	3930	4431	4877	5276	5627	---	
						X _T		0.6	0.6	0.6	0.6	0.6	0.56	0.57	0.58	0.6	0.61	---	
			505	19.88	LN	Cv	60	1380	2720	4040	5200	6040	6700	7040	7210	7440	7670	0.99	
						Kv		52	1194	2353	3495	4498	5225	5796	6090	6237	6436	6635	---
						X _T		0.32	0.36	0.4	0.42	0.49	0.51	0.56	0.61	0.65	0.72	---	

1. At 100% travel.
2. Clearance flow only

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Whisper Trim - Level A3 - Flow Up																	Linear Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Constr uction	Flow Coeffi- cient	Valve Opening—Percent of Total Travel											F _L (1)	
	mm	Inches	mm	Inches			Min(2)	10	20	30	40	50	60	70	80	90	100		
12	279.4	11	140	5.5	SNC	Cv	17	123	253	381	508	617	719	813	901	978	1049	0.89	
						Kv		106	219	330	439	534	622	703	779	846	907	---	
						Xt		0.62	0.62	0.62	0.62	0.66	0.71	0.76	0.81	0.86	0.86	---	
			203	8	LNC	Cv	17	181	371	550	705	839	960	1063	1149	1219	1272	1272	0.89
						Kv		157	321	475	610	726	831	919	994	1055	1100	---	
						Xt		0.619	0.620	0.638	0.700	0.769	0.851	0.856	0.854	0.852	0.850	---	
14	279.4	11	140	5.5	SNC	Cv	17	123	253	381	509	630	748	863	978	1086	1192	0.89	
						Kv		106	219	330	440	545	647	747	846	939	1031	---	
						Xt		0.62	0.62	0.62	0.62	0.64	0.66	0.68	0.70	0.72	0.72	---	
			203	8	LNC	Cv	17	181	371	554	731	896	1059	1212	1331	1410	1467	1467	0.89
						Kv		157	321	479	632	775	916	1048	1152	1219	1269	---	
						Xt		0.62	0.62	0.63	0.65	0.68	0.71	0.72	0.74	0.79	0.82	---	
16x12	279.4	11	140	5.5	SNC	Cv	17	123	253	381	510	638	767	897	1029	1158	1287	0.89	
						Kv		106	219	330	441	552	663	776	890	1002	1113	---	
						Xt		0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	---	
			203	8	LNC	Cv	17	181	371	557	748	934	1125	1311	1453	1537	1597	1597	0.89
						Kv		157	321	482	647	808	973	1134	1256	1329	1381	---	
						Xt		0.619	0.620	0.620	0.621	0.621	0.621	0.621	0.663	0.751	0.805	---	
16	374.7	14.75	203	8.00	LNC	Cv	25	290	593	892	1178	1396	1590	1749	1880	1980	2049	0.89	
						Kv		251	513	772	1019	1208	1375	1513	1626	1713	1772	---	
						Xt		0.436	0.433	0.433	0.447	0.495	0.554	0.594	0.618	0.646	0.679	---	
	412.7	16.25	203	8.00	LNC	Cv	28	317	652	979	1270	1497	1693	1849	1970	2054	2100	0.89	
						Kv		274	564	847	1099	1295	1464	1599	1704	1777	1817	---	
						Xt		0.436	0.433	0.433	0.463	0.520	0.584	0.609	0.638	0.673	0.714	---	
18	412.7	16.25	203	8.00	SNC	Cv	27	244	554	867	1173	1466	1715	1937	2120	2271	2393	0.84	
						Kv	23	211	479	751	1015	1269	1484	1676	1835	1965	2071	---	
						Xt		0.50	0.52	0.52	0.52	0.52	0.53	0.56	0.60	0.64	0.69	---	
			276	10.88	LNC	Cv	27	354	779	1197	1581	1893	2148	2336	2477	2575	2650	0.84	
						Kv	23	306	674	1036	1368	1638	1858	2022	2143	2229	2293	---	
						Xt		0.51	0.52	0.51	0.52	0.55	0.61	0.67	0.74	0.82	0.88	---	
378	14.88	LNC	Cv	27	514	1086	1613	2022	2311	2499	2620	2709	2792	2899	0.84				
			Kv	23	444	940	1396	1750	2000	2162	2267	2344	2416	2509	---				
			Xt		0.52	0.52	0.52	0.58	0.66	0.75	0.86	0.91	0.94	0.94	---				
20x16	412.7	16.25	203	8.00	SNC	Cv	28	317	651	979	1315	1642	1978	2291	2531	2750	2938	0.89	
						Kv		274	563	847	1138	1420	1711	1981	2189	2379	2541	---	
						Xt		0.436	0.433	0.432	0.432	0.432	0.432	0.438	0.469	0.505	0.542	---	
			276	10.88	LNC	Cv	28	438	886	1343	1790	2245	2569	2857	3099	3302	3461	0.89	
						Kv		379	767	1161	1548	1942	2222	2472	2680	2856	2993	---	
						Xt		0.435	0.433	0.432	0.432	0.432	0.475	0.525	0.566	0.586	0.608	---	
378	14.88	LNC	Cv	28	601	1223	1843	2403	2814	3148	3402	3576	3674	3695	0.89				
			Kv		520	1058	1594	2079	2434	2723	2943	3093	3178	3196	---				
			Xt		0.434	0.432	0.432	0.451	0.516	0.570	0.599	0.632	0.674	0.725	---				
24x16	412.7	16.25	203	8.00	SNC	Cv	28	304	635	970	1297	1634	1961	2269	2515	2740	2914	0.89	
						Kv		263	549	839	1122	1413	1696	1963	2175	2370	2521	---	
						Xt		0.436	0.433	0.433	0.432	0.432	0.432	0.442	0.471	0.503	0.532	---	
			276	10.88	LNC	Cv	28	421	877	1324	1781	2216	2557	2852	3114	3334	3519	0.89	
						Kv		364	759	1145	1541	1917	2212	2467	2694	2884	3044	---	
						Xt		0.435	0.433	0.432	0.432	0.436	0.476	0.520	0.559	0.574	0.592	---	
378	14.88	LNC	Cv	28	592	1205	1824	2383	2811	3163	3447	3660	3801	3870	0.89				
			Kv		512	1042	1578	2061	2432	2736	2982	3166	3288	3348	---				
			Xt		0.43	0.43	0.43	0.45	0.51	0.56	0.58	0.61	0.64	0.68	---				

1. At 100% travel.
2. Clearance flow only

Valve Size, NPS	Port Diameter		Maximum Travel		Constr uction	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾	
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100
20	502	19.75	276	10.88	SNC	Cv	33	509	1056	1592	2103	2498	2843	3132	3365	3547	3671	0.89
						Kv		440	914	1377	1819	2161	2459	2709	2911	3068	3175	---
						Xt		0.435	0.433	0.432	0.446	0.495	0.553	0.594	0.618	0.646	0.678	---
			378	14.88	LNC	Cv	50	711	1447	2144	2670	3091	3409	3628	3744	3765	3765	0.89
						Kv		615	1252	1855	2310	2674	2949	3138	3239	3256	3256	---
						Xt		0.43	0.43	0.45	0.52	0.59	0.62	0.66	0.72	0.78	0.83	---
24x20	502	19.75	276	10.88	SNC	Cv	45	448	928	1398	1877	2258	2632	2975	3290	3580	3837	0.89
						Kv		387	802	1209	1623	1953	2276	2574	2846	3096	3319	---
						Xt		0.53	0.53	0.52	0.52	0.57	0.56	0.58	0.59	0.61	0.62	---
			378	14.88	LNC	Cv	31	628	1275	1923	2537	3072	3502	3820	4037	4192	4338	0.89
						Kv		543	1103	1663	2194	2658	3029	3304	3492	3626	3753	---
						Xt		0.529	0.528	0.528	0.528	0.528	0.541	0.590	0.646	0.709	0.737	---
			429	16.88	LNC	Cv	31	718	1455	2175	2833	3373	3767	4026	4203	4374	4604	0.89
						Kv		621	1258	1881	2450	2918	3258	3482	3636	3784	3982	---
						Xt		0.529	0.528	0.528	0.528	0.528	0.580	0.642	0.714	0.742	0.770	---
30	660	26	276	10.88	SN	Cv	50	644	1316	1988	2660	3331	4003	4675	5153	5608	6021	0.99
						Kv	43	557	1138	1720	2301	2881	3463	4044	4457	4851	5208	---
						X _T		0.6	0.6	0.6	0.6	0.6	0.58	0.55	0.57	0.58	0.59	---
			505	19.88	LN	Cv	50	1092	2222	3352	4472	5335	6045	6639	7113	7462	7695	0.99
						Kv	43	945	1922	2899	3868	4615	5229	5743	6153	6455	6656	---
						X _T		0.6	0.6	0.6	0.56	0.57	0.59	0.62	0.65	0.68	0.72	---

1. At 100% travel.
2. Clearance flow only

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Whisper Trim - Level B1 - Flow Up																	Linear Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Constr uction	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾	
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100
12	279.4	11	140	5.5	SNC	Cv	21	79	157	238	311	384	464	537	597	659	721	0.89
						Kv		68	136	206	269	332	401	465	516	570	624	---
						Xt		0.62	0.62	0.62	0.62	0.62	0.62	0.64	0.66	0.68	0.71	---
			203	8	LNC	Cv	21	120	228	337	453	557	646	730	813	889	949	0.89
						Kv		104	197	291	392	482	559	631	703	769	821	---
						Xt		0.618	0.619	0.620	0.620	0.641	0.675	0.713	0.756	0.803	0.846	---
14	279.4	11	140	5.5	SNC	Cv	21	79	157	238	311	384	464	541	607	678	751	0.89
						Kv		68	136	206	269	332	401	468	525	586	650	---
						Xt		0.62	0.62	0.62	0.62	0.62	0.62	0.63	0.64	0.64	0.66	---
			203	8	LNC	Cv	21	120	228	337	453	562	663	761	863	962	1044	0.89
						Kv		104	197	292	392	486	573	658	747	832	903	---
						Xt		0.62	0.62	0.62	0.62	0.63	0.64	0.66	0.68	0.69	0.71	---
16x12	279.4	11	140	5.5	SNC	Cv	21	79	157	238	311	384	464	543	614	690	771	0.89
						Kv		68	136	206	269	332	401	470	531	597	667	---
						Xt		0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	---
			203	8	LNC	Cv	21	120	228	337	453	566	674	782	897	1011	1107	0.89
						Kv		104	197	291	392	489	583	676	776	875	958	---
						Xt		0.618	0.619	0.620	0.620	0.621	0.621	0.621	0.621	0.621	0.621	---
16	374.7	14.75	203	8.00	LNC	Cv	32	197	374	554	746	933	1111	1248	1385	1509	1603	0.89
						Kv		170	324	479	645	807	961	1080	1198	1305	1387	---
						Xt		0.438	0.435	0.433	0.433	0.432	0.432	0.461	0.493	0.528	0.56	---
	412.7	16.25	203	8.00	LNC	Cv	35	215	408	605	814	1018	1190	1337	1477	1604	1699	0.89
						Kv		186	353	523	704	881	1029	1157	1278	1387	1470	---
						Xt		0.438	0.435	0.433	0.433	0.432	0.448	0.479	0.515	0.556	0.586	---
18	412.7	16.25	203	8.00	SNC	Cv	39	158	354	538	719	908	1105	1290	1453	1610	1762	0.84
						Kv	34	137	306	465	622	786	956	1116	1258	1393	1525	---
						Xt		0.48	0.51	0.52	0.52	0.52	0.52	0.51	0.52	0.52	0.54	---
			276	10.88	LNC	Cv	39	233	477	743	988	1256	1477	1692	1875	2040	2178	0.84
						Kv	34	202	413	643	855	1086	1278	1465	1622	1765	1885	---
						Xt		0.50	0.52	0.52	0.52	0.51	0.52	0.53	0.55	0.58	0.62	---
	378	14.88	LNC	Cv	39	316	671	1026	1367	1660	1910	2119	2287	2419	2519	0.84		
				Kv	34	273	581	888	1183	1436	1653	1834	1979	2094	2180	---		
				Xt		0.50	0.52	0.52	0.51	0.53	0.56	0.60	0.65	0.70	0.77	---		
20x16	412.7	16.25	203	8.00	SNC	Cv	34	214	408	605	814	1018	1212	1407	1614	1821	1993	0.89
						Kv		185	353	523	704	880	1049	1217	1396	1575	1724	---
						X _T		0.438	0.435	0.433	0.433	0.432	0.432	0.432	0.431	0.431	0.431	---
			276	10.88	LNC	Cv	34	279	562	825	1109	1370	1655	1916	2201	2405	2603	0.89
						Kv		241	486	713	959	1185	1432	1658	1904	2081	2251	---
						X _T		0.437	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.452	0.480	---
	378	14.88	LNC	Cv	34	390	761	1131	1502	1874	2249	2527	2772	2986	3170	0.89		
				Kv		337	658	979	1299	1621	1946	2186	2398	2583	2742	---		
				Xt		0.435	0.433	0.432	0.432	0.432	0.433	0.469	0.509	0.553	0.573	---		
24x16	412.7	16.25	203	8.00	SNC	Cv	34	214	408	605	814	1018	1212	1407	1614	1821	1993	0.89
						Kv		185	353	523	704	881	1048	1217	1396	1575	1724	---
						X _T		0.438	0.435	0.433	0.433	0.432	0.432	0.432	0.431	0.431	0.431	---
			276	10.88	LNC	Cv	34	279	561	824	1108	1369	1654	1915	2193	2394	2576	0.89
						Kv		241	485	713	958	1184	1431	1656	1897	2071	2228	---
						X _T		0.437	0.434	0.433	0.432	0.432	0.432	0.432	0.434	0.456	0.479	---
	378	14.88	LNC	Cv	34	384	752	1118	1484	1853	2217	2500	2753	2978	3177	0.89		
				Kv		332	650	967	1284	1603	1918	2163	2381	2576	2748	---		
				Xt		0.43	0.43	0.43	0.43	0.43	0.44	0.47	0.5	0.54	0.56	---		

1. At 100% travel.
2. Clearance flow only

Valve Size, NPS	Port Diameter		Maximum Travel		Construction	Flow Coefficient	Valve Opening—Percent of Total Travel											F _L ⁽¹⁾
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90	100	
20	502	19.75	276	10.88	SNC	Cv	42	337	679	996	1340	1656	1993	2239	2487	2695	2899	0.89
						Kv		292	587	862	1159	1432	1724	1937	2151	2331	2508	---
						Xt		0.437	0.434	0.433	0.432	0.432	0.435	0.462	0.494	0.526	0.565	---
			378	14.88	LNC	Cv	66	470	918	1366	1813	2200	2530	2822	3070	3278	3449	0.89
						Kv		406	794	1181	1568	1903	2189	2441	2656	2836	2983	---
						Xt		0.43	0.43	0.43	0.43	0.46	0.5	0.55	0.59	0.61	0.63	---
24x20	502	19.75	276	10.88	SNC	Cv	60	297	596	875	1177	1454	1756	1994	2247	2468	2697	0.89
						Kv		257	516	757	1018	1258	1519	1725	1943	2135	2333	---
						Xt		0.53	0.53	0.53	0.52	0.52	0.52	0.55	0.57	0.56	0.57	---
			378	14.88	LNC	Cv	38	414	811	1205	1598	1988	2371	2730	3051	3330	3565	0.89
						Kv		358	702	1042	1382	1720	2051	2361	2639	2880	3084	---
						Xt		0.529	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.549	---
			429	16.88	LNC	Cv	38	464	915	1365	1811	2245	2654	3023	3344	3608	3817	0.89
						Kv		401	792	1181	1567	1942	2295	2615	2892	3121	3302	---
						Xt		0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.555	0.590	---

1. At 100% travel.
2. Clearance flow only

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Whisper Trim - Level B3 - Flow Up																	Linear Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Constr uction	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾		
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100	
12	279.4	11	140	5.5	SNC	Cv	15	78	152	230	305	381	458	528	595	654	716	0.89	
						Kv		67	131	199	264	330	396	457	515	566	619	---	
						Xt		0.62	0.62	0.62	0.62	0.62	0.62	0.63	0.66	0.68	0.71	---	
			203	8	LNC	Cv	15	114	222	336	445	550	641	728	808	883	942	0.89	
						Kv		99	192	291	385	476	554	630	699	764	815	---	
						Xt		0.617	0.619	0.62	0.62	0.639	0.674	0.712	0.754	0.799	0.841	---	
14	279.4	11	140	5.5	SNC	Cv	15	78	152	230	305	381	458	531	605	673	745	0.89	
						Kv		67	131	199	264	330	396	459	523	582	645	---	
						Xt		0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.64	0.64	0.66	---	
			203	8	LNC	Cv	15	114	222	336	445	555	657	759	858	954	1045	0.89	
						Kv		99	192	291	385	480	568	657	742	826	904	---	
						Xt		0.62	0.62	0.62	0.62	0.63	0.64	0.66	0.67	0.69	0.71	---	
16x12	279.4	11	140	5.5	SNC	Cv	15	78	152	230	305	381	458	533	612	685	765	0.89	
						Kv		67	131	199	264	330	396	461	529	593	662	---	
						Xt		0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	---	
			203	8	LNC	Cv	15	114	222	336	445	558	668	780	891	1002	1114	0.89	
						Kv		98	192	291	385	483	578	675	771	867	963	---	
						Xt		0.617	0.619	0.620	0.620	0.621	0.621	0.621	0.621	0.621	0.621	---	
16	374.7	14.75	203	8.00	LNC	Cv	21	178	349	528	700	878	1052	1201	1331	1451	1555	0.89	
						Kv		154	302	457	606	759	910	1039	1151	1255	1345	---	
						Xt		0.439	0.435	0.433	0.433	0.432	0.432	0.432	0.452	0.48	0.511	0.543	---
	412.7	16.25	203	8.00	LNC	Cv	24	195	382	578	767	962	1143	1291	1426	1549	1654	0.89	
						Kv		169	330	500	663	832	989	1117	1233	1340	1431	---	
						Xt		0.439	0.435	0.433	0.433	0.432	0.439	0.469	0.501	0.537	0.575	---	
18	412.7	16.25	203	8.00	SNC	Cv	19	145	322	506	681	866	1041	1227	1391	1551	1692	0.84	
						Kv		16	125	278	437	589	750	901	1062	1204	1343	1464	---
						Xt		0.48	0.50	0.52	0.52	0.52	0.52	0.51	0.52	0.52	0.53	---	
			276	10.88	LNC	Cv	19	208	454	700	945	1191	1421	1627	1812	1976	2119	0.84	
						Kv		16	180	393	606	818	1030	1230	1408	1568	1710	1834	---
						Xt		0.49	0.51	0.52	0.52	0.52	0.52	0.52	0.54	0.57	0.60	---	
378	14.88	LNC	Cv	19	301	633	965	1303	1595	1846	2060	2235	2371	2477	0.84				
			Kv		16	261	548	835	1128	1380	1597	1783	1934	2052	2143	---			
			Xt		0.50	0.52	0.52	0.51	0.52	0.55	0.59	0.63	0.68	0.74	---				
20x16	412.7	16.25	203	8.00	SNC	Cv	23	194	382	578	767	962	1152	1345	1537	1729	1922	0.89	
						Kv		168	330	500	663	832	996	1164	1329	1495	1663	---	
						X _T		0.439	0.435	0.433	0.433	0.432	0.432	0.432	0.432	0.431	0.431	---	
			276	10.88	LNC	Cv	23	258	520	782	1044	1307	1570	1833	2096	2328	2517	0.89	
						Kv		223	450	676	903	1131	1358	1586	1813	2014	2177	---	
						X _T		0.437	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.443	0.468	---	
378	14.88	LNC	Cv	23	357	719	1074	1431	1795	2153	2438	2683	2902	3086	0.89				
			Kv		309	622	929	1238	1553	1862	2109	2321	2510	2670	---				
			Xt		0.436	0.433	0.432	0.432	0.432	0.432	0.456	0.493	0.534	0.566	---				
24x16	412.7	16.25	203	8.00	SNC	Cv	23	194	382	578	767	962	1152	1345	1537	1729	1910	0.89	
						Kv		168	330	500	663	832	996	1163	1330	1496	1652	---	
						X _T		0.439	0.435	0.433	0.433	0.432	0.432	0.432	0.431	0.431	0.431	---	
			276	10.88	LNC	Cv	23	258	520	782	1044	1307	1570	1833	2096	2316	2496	0.89	
						Kv		223	450	676	903	1131	1358	1586	1813	2003	2159	---	
						X _T		0.437	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.447	0.469	---	
378	14.88	LNC	Cv	23	354	714	1067	1422	1784	2139	2417	2670	2899	3100	0.89				
			Kv		306	618	923	1230	1543	1850	2091	2310	2508	2682	---				
			Xt		0.43	0.43	0.43	0.43	0.43	0.43	0.46	0.49	0.53	0.56	---				

1. At 100% travel.
2. Clearance flow only

Valve Size, NPS	Port Diameter		Maximum Travel		Construction	Flow Coefficient	Valve Opening—Percent of Total Travel											F _L ⁽¹⁾
							28	314	633	952	1271	1591	1911	2175	2411	2628	2825	
20	502	19.75	276	10.88	SNC	Cv												0.89
						Kv		272	548	823	1100	1377	1653	1882	2086	2273	2444	---
						Xt		0.437	0.434	0.433	0.432	0.432	0.432	0.454	0.483	0.515	0.550	---
			378	14.88	LNC	Cv	39	434	874	1306	1741	2139	2459	2742	2995	3211	3389	0.89
						Kv		375	756	1130	1506	1850	2127	2372	2591	2778	2931	---
						Xt		0.44	0.43	0.43	0.43	0.45	0.49	0.53	0.58	0.6	0.62	---
24x20	502	19.75	276	10.88	SNC	Cv	36	277	556	836	1116	1397	1678	1933	2168	2395	2613	0.89
						Kv		239	481	723	966	1209	1452	1672	1875	2072	2260	---
						Xt		0.53	0.53	0.53	0.52	0.52	0.52	0.54	0.56	0.56	0.56	---
			378	14.88	LNC	Cv	27	382	773	1153	1535	1921	2286	2631	2954	3239	3482	0.89
						Kv		331	668	997	1328	1661	1978	2276	2555	2802	3012	---
						Xt		0.529	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.539	---
			429	16.88	LNC	Cv	27	433	873	1310	1745	2170	2571	2936	3257	3528	3747	0.89
						Kv		375	755	1133	1510	1877	2224	2540	2818	3052	3241	---
						Xt		0.529	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.545	0.576	---

1. At 100% travel.
2. Clearance flow only

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Whisper Trim - Level C1 - Flow Up																	Linear Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Constr uction	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾		
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100	
12	279.4	11	140	5.5	SNC	C _v	18	61	103	159	206	253	308	351	404	454	497	0.89	
						K _v		53	89	138	178	219	266	304	349	393	430	---	
						X _t		0.61	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	---
			203	8	LNC	C _v	18	84	153	222	293	368	444	512	571	628	688	747	0.89
						K _v		73	132	192	253	318	384	443	494	543	595	---	
						X _t		0.616	0.619	0.620	0.620	0.620	0.621	0.627	0.647	0.670	0.695	---	
14	279.4	11	140	5.5	SNC	C _v	18	61	103	159	206	253	308	351	404	454	498	0.89	
						K _v		53	89	138	178	219	266	304	349	393	430	---	
						X _t		0.61	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	---	
			203	8	LNC	C _v	18	84	153	222	293	368	444	514	578	642	711	0.89	
						K _v		73	132	192	253	318	384	444	500	556	615	---	
						X _t		0.62	0.62	0.62	0.62	0.62	0.62	0.63	0.63	0.64	0.65	---	
16x12	279.4	11	140	5.5	SNC	C _v	18	61	103	159	206	253	308	351	404	454	498	0.89	
						K _v		53	89	138	178	219	266	304	349	393	431	---	
						X _t		0.61	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	---	
			203	8	LNC	C _v	18	84	153	222	293	368	444	515	583	652	727	0.89	
						K _v		73	133	192	253	318	384	445	504	564	629	---	
						X _t		0.616	0.619	0.620	0.620	0.620	0.621	0.621	0.621	0.621	0.621	---	
16	374.7	14.75	203	8.00	LNC	C _v	27	131	244	351	460	577	696	811	919	1026	1132	0.89	
						K _v		113	211	304	398	499	602	702	795	887	979	---	
						X _t		0.442	0.436	0.434	0.433	0.433	0.432	0.432	0.432	0.431	0.439	---	
	412.7	16.25	203	8.00	LNC	C _v	30	146	272	392	513	645	778	906	1027	1138	1238	0.89	
						K _v		126	235	339	444	558	673	784	888	984	1071	---	
						X _t		0.442	0.436	0.434	0.433	0.433	0.432	0.432	0.432	0.438	0.458	---	
18	412.7	16.25	203	8.00	SNC	C _v	31	99	219	344	468	583	695	812	937	1062	1180	0.84	
						K _v		27	86	189	297	405	504	602	703	811	919	1021	---
						X _t		0.48	0.49	0.51	0.51	0.52	0.52	0.52	0.52	0.52	0.52	---	
			276	10.88	LNC	C _v	31	153	313	469	626	792	959	1125	1281	1423	1560	0.84	
						K _v		27	132	270	406	542	685	830	973	1109	1231	1350	---
						X _t		0.48	0.50	0.51	0.52	0.52	0.52	0.52	0.51	0.52	0.52	---	
378	14.88	LNC	C _v	31	210	434	656	875	1093	1310	1504	1682	1846	1992	0.84				
			K _v		27	182	375	568	757	946	1134	1302	1456	1597	1724	---			
			X _t		0.49	0.51	0.52	0.52	0.52	0.51	0.52	0.53	0.55	0.57	---				
20x16	412.7	16.25	203	8.00	SNC	C _v	30	146	272	392	513	645	777	906	1027	1147	1276	0.89	
						K _v		126	235	339	444	558	672	784	888	992	1104	---	
						X _T		0.442	0.436	0.434	0.433	0.433	0.432	0.432	0.432	0.431	0.431	---	
			276	10.88	LNC	C _v	30	180	355	534	712	880	1046	1216	1394	1573	1746	0.89	
						K _v		156	307	462	616	761	905	1052	1206	1361	1510	---	
						X _T		0.440	0.435	0.433	0.433	0.432	0.432	0.432	0.431	0.431	---		
378	14.88	LNC	C _v	30	247	481	717	956	1195	1435	1675	1913	2150	2347	0.89				
			K _v		214	416	620	827	1034	1241	1448	1655	1860	2030	---				
			X _t		0.437	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.431	0.445	---				
24x16	412.7	16.25	203	8.00	SNC	C _v	21	116	235	343	458	573	681	800	911	1022	1140	0.89	
						K _v		100	203	297	396	496	589	692	788	884	986	---	
						X _T		0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	---	
			276	10.88	LNC	C _v	21	161	311	470	623	774	934	1085	1238	1397	1547	0.89	
						K _v		139	269	407	539	670	808	939	1071	1208	1338	---	
						X _T		0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	---	
378	14.88	LNC	C _v	21	220	430	639	848	1061	1275	1489	1700	1909	2118	0.89				
			K _v		190	372	553	734	918	1103	1288	1471	1651	1832	---				
			X _t		0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	---				

1. At 100% travel.
2. Clearance flow only

Valve Size, NPS	Port Diameter		Maximum Travel		Construction	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾	
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100
20	502	19.75	276	10.88	SNC	Cv	36	218	430	647	861	1065	1266	1472	1688	1904	2082	0.89
						Kv		188	372	560	745	921	1095	1273	1460	1647	1801	---
						Xt		0.440	0.435	0.433	0.433	0.432	0.432	0.432	0.432	0.431	0.444	---
			378	14.88	LNC	Cv	55	298	581	867	1155	1445	1735	2013	2238	2446	2637	0.89
						Kv		258	502	750	999	1250	1501	1741	1936	2116	2281	---
						Xt		0.44	0.43	0.43	0.43	0.43	0.43	0.44	0.46	0.49	0.52	---
24x20	502	19.75	276	10.88	SNC	Cv	50	192	378	568	757	935	1112	1292	1481	1672	1855	0.89
						Kv		166	327	492	654	809	962	1118	1281	1446	1605	---
						Xt		0.53	0.53	0.53	0.53	0.52	0.52	0.52	0.52	0.52	0.52	---
			378	14.88	LNC	Cv	34	260	514	767	1022	1278	1533	1786	2036	2277	2506	0.89
						Kv		225	445	664	884	1105	1326	1545	1761	1969	2168	---
						Xt		0.530	0.529	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.528	---
			429	16.88	LNC	Cv	34	297	586	872	1157	1442	1727	2007	2281	2544	2792	0.89
						Kv		257	507	754	1001	1248	1494	1736	1973	2201	2415	---
						Xt		0.530	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528	---

1. At 100% travel.
2. Clearance flow only

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Whisper Trim - Level C3 - Flow Up																	Linear Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Constr uction	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾		
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100	
12	279.4	11	140	5.5	SNC	Cv	14	52	99	144	191	241	289	334	380	430	479	0.89	
						Kv		45	86	125	165	208	250	289	329	372	414	---	
						Xt		0.61	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	---
			203	8	LNC	Cv	14	73	143	209	281	349	418	490	548	607	651	0.89	
						Kv		63	124	181	243	302	362	424	474	525	563	---	
						Xt		0.615	0.618	0.619	0.620	0.620	0.621	0.620	0.620	0.639	0.662	0.680	---
14	279.4	11	140	5.5	SNC	Cv	14	52	99	144	191	241	289	334	380	430	479	0.89	
						Kv		45	86	125	165	208	250	289	329	372	414	---	
						Xt		0.61	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	---
			203	8	LNC	Cv	14	73	143	209	282	349	418	490	553	619	679	0.89	
						Kv		63	124	181	244	302	362	424	478	535	587	---	
						Xt		0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.63	0.64	0.64	---	
16x12	279.4	11	140	5.5	SNC	Cv	14	52	99	144	191	241	289	334	380	430	479	0.89	
						Kv		45	86	125	165	208	250	289	329	372	414	---	
						Xt		0.61	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	---
			203	8	LNC	Cv	14	73	143	209	282	349	418	490	556	627	697	0.89	
						Kv		63	124	181	243	302	361	424	481	542	603	---	
						Xt		0.615	0.618	0.619	0.620	0.620	0.621	0.621	0.621	0.621	0.621	0.621	---
16	374.7	14.75	203	8.00	LNC	Cv	20	116	226	339	456	564	681	794	904	1023	1120	0.89	
						Kv		100	195	293	394	488	589	687	782	885	969	---	
						Xt		0.444	0.437	0.435	0.433	0.433	0.432	0.432	0.432	0.432	0.431	0.437	---
	412.7	16.25	203	8.00	LNC	Cv	22	127	246	369	497	614	741	864	983	1113	1200	0.89	
						Kv		109	213	319	430	531	641	747	851	963	1038	---	
						Xt		0.444	0.437	0.435	0.433	0.433	0.432	0.432	0.432	0.432	0.431	0.450	---
18	412.7	16.25	203	8.00	SNC	Cv	15	91	213	324	441	560	670	791	906	1019	1140	0.84	
						Kv		13	79	184	281	382	484	580	684	784	882	987	---
						Xt		0.47	0.49	0.50	0.51	0.52	0.52	0.52	0.52	0.52	0.52	0.52	---
			276	10.88	LNC	Cv	15	137	290	453	608	763	926	1080	1237	1389	1521	0.84	
						Kv		13	119	251	392	526	660	802	935	1070	1202	1317	---
						Xt		0.48	0.50	0.51	0.52	0.52	0.52	0.52	0.51	0.52	0.52	0.52	---
			378	14.88	LNC	Cv	15	197	411	624	837	1054	1273	1469	1646	1807	1952	0.84	
						Kv		13	170	355	540	724	912	1102	1271	1424	1564	1689	---
						Xt		0.49	0.51	0.52	0.52	0.52	0.51	0.52	0.53	0.54	0.56	---	
20x16	412.7	16.25	203	8.00	SNC	Cv	21	126	246	369	497	614	741	864	983	1113	1226	0.89	
						Kv		109	213	319	430	531	641	747	851	963	1060	---	
						X _T		0.443	0.437	0.435	0.433	0.433	0.432	0.432	0.432	0.432	0.431	0.431	---
			276	10.88	LNC	Cv	21	170	338	502	676	840	1007	1180	1343	1513	1684	0.89	
						Kv		147	292	434	584	727	871	1021	1162	1308	1456	---	
						X _T		0.440	0.435	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.431	---	
			378	14.88	LNC	Cv	21	229	462	695	923	1151	1379	1611	1845	2077	2288	0.89	
						Kv		198	400	601	799	995	1193	1394	1596	1797	1979	---	
						Xt		0.438	0.434	0.433	0.432	0.432	0.432	0.432	0.432	0.431	0.431	0.438	---
24x16	412.7	16.25	203	8.00	SNC	Cv	21	109	217	325	423	531	639	737	845	953	1034	0.89	
						Kv		94	188	281	366	459	553	638	731	824	894	---	
						X _T		0.445	0.438	0.435	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.431	---
			276	10.88	LNC	Cv	21	155	297	439	580	722	864	1006	1148	1290	1431	0.89	
						Kv		134	257	380	502	625	747	870	993	1116	1238	---	
						X _T		0.441	0.436	0.434	0.433	0.432	0.432	0.432	0.432	0.432	0.431	0.431	---
			378	14.88	LNC	Cv	21	219	424	632	846	1056	1262	1467	1680	1893	2083	0.89	
						Kv		189	367	547	732	913	1092	1269	1453	1637	1802	---	
						Xt		0.438	0.434	0.433	0.432	0.432	0.432	0.432	0.432	0.431	0.431	0.431	---

1. At 100% travel.
2. Clearance flow only

Valve Size, NPS	Port Diameter		Maximum Travel		Construction	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾	
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100
20	502	19.75	276	10.88	SNC	Cv	26	213	412	623	825	1026	1237	1436	1641	1850	2030	0.89
						Kv		184	356	539	713	888	1070	1242	1419	1601	1756	---
						Xt		0.440	0.435	0.434	0.433	0.432	0.432	0.432	0.432	0.432	0.431	0.439
			378	14.88	LNC	Cv	35	290	568	845	1122	1404	1688	1971	2189	2393	2583	0.89
						Kv		251	492	731	971	1214	1460	1705	1893	2070	2234	---
						Xt		0.44	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.46	0.48	0.51
24x20	502	19.75	276	10.88	SNC	Cv	32	188	362	547	724	901	1086	1261	1441	1624	1797	0.89
						Kv		162	313	474	627	779	940	1091	1246	1405	1555	---
						Xt		0.53	0.53	0.53	0.53	0.52	0.52	0.52	0.52	0.52	0.52	---
			378	14.88	LNC	Cv	25	253	503	748	993	1241	1491	1739	1980	2214	2441	0.89
						Kv		219	435	647	859	1074	1290	1504	1713	1915	2111	---
						Xt		0.530	0.529	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.528	---
			429	16.88	LNC	Cv	25	286	571	853	1132	1411	1689	1963	2231	2488	2733	0.89
						Kv		248	494	737	979	1221	1461	1698	1929	2152	2364	---
						Xt		0.530	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528	---

1. At 100% travel.
2. Clearance flow only

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Whisper Trim - Level D3 - Flow Up																	Linear Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Constr uction	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾	
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100
12	254	10	203	8	LNC	Cv	12	67	132	192	259	321	384	445	496	549	594	0.89
						Kv		58	114	166	224	278	332	385	429	475	514	---
						Xt		0.615	0.618	0.619	0.620	0.620	0.621	0.636	0.658	0.685	0.710	---
14	254	10	203	8	LNC	Cv	12	67	132	192	259	321	384	449	505	566	622	---
						Kv		58	114	166	224	278	332	388	437	489	538	---
						Xt		0.62	0.62	0.62	0.62	0.62	0.62	0.63	0.64	0.65	0.66	---
16x12	254	10	203	8	LNC	Cv	12	67	132	192	259	321	384	451	511	577	641	0.89
						Kv		58	114	166	224	278	332	390	442	499	554	---
						Xt		0.615	0.618	0.619	0.620	0.620	0.621	0.621	0.621	0.621	0.621	---
16	374.7	14.75	203	8.00	LNC	Cv	20	116	226	339	456	564	681	794	904	1023	1120	0.89
						Kv		100	195	293	394	488	589	687	782	885	969	---
						Xt		0.444	0.437	0.435	0.433	0.433	0.432	0.432	0.432	0.431	0.437	---
18	374.7	14.75	203	8.00	SNC	Cv	15	76	182	292	394	503	610	713	825	927	1036	0.84
						Kv	13	66	157	253	341	435	528	617	714	802	897	---
						Xt		0.47	0.49	0.50	0.51	0.52	0.52	0.52	0.52	0.52	0.52	---
			276	10.88	LNC	Cv	14	112	261	405	546	696	839	981	1125	1248	1366	0.84
						Kv	12	97	226	351	473	602	726	849	973	1080	1182	---
						Xt		0.48	0.50	0.51	0.52	0.52	0.52	0.52	0.52	0.51	0.51	---
			378	14.88	LNC	Cv	14	168	363	562	762	963	1151	1318	1469	1605	1725	0.84
						Kv	12	145	315	486	660	833	996	1140	1271	1389	1493	---
						Xt		0.49	0.51	0.52	0.52	0.52	0.52	0.51	0.52	0.52	0.53	---
20x16	374.7	14.75	203	8.00	SNC	Cv	19	116	235	344	458	574	682	800	912	1023	1141	0.89
						Kv		100	203	298	396	497	590	692	789	885	987	---
						Xt		0.443	0.437	0.434	0.433	0.433	0.432	0.432	0.432	0.431	0.431	---
			276	10.88	LNC	Cv	19	161	311	471	623	776	935	1085	1240	1398	1547	0.89
						Kv		139	269	408	539	671	809	939	1073	1209	1338	---
						Xt		0.440	0.435	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.431	---
			378	14.88	LNC	Cv	19	220	430	639	849	1063	1277	1490	1700	1893	2046	0.89
						Kv		191	372	553	734	919	1105	1289	1470	1637	1769	---
						Xt		0.438	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.439	0.463	---
24x16	374.7	14.75	203	8.00	SNC	Cv	19	116	235	344	458	574	682	800	912	1023	1127	0.89
						Kv		100	203	298	396	497	590	692	789	885	975	---
						Xt		0.443	0.437	0.434	0.433	0.433	0.432	0.432	0.432	0.431	0.431	---
			276	10.88	LNC	Cv	19	161	311	471	623	775	935	1085	1239	1398	1532	0.89
						Kv		139	269	407	539	670	809	939	1072	1209	1325	---
						Xt		0.440	0.435	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.431	---
			378	14.88	LNC	Cv	19	220	430	639	849	1062	1276	1490	1700	1882	2027	0.89
						Kv		190	372	553	734	919	1104	1289	1471	1628	1753	---
						Xt		0.438	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.444	0.464	---
20	464	18.25	276	10.88	SNC	Cv	24	194	375	568	752	935	1127	1309	1495	1686	1826	0.89
						Kv		168	325	491	650	809	975	1132	1293	1458	1579	---
						Xt		0.440	0.435	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.450	---
			378	14.88	LNC	Cv	32	264	518	770	1023	1279	1538	1772	1965	2144	2309	0.89
						Kv		229	448	666	885	1107	1330	1533	1700	1854	1997	---
						Xt		0.44	0.43	0.43	0.43	0.43	0.43	0.43	0.44	0.47	0.5	0.53

1. At 100% travel.
2. Clearance flow only

Valve Size, NPS	Port Diameter		Maximum Travel		Construction	Flow Coefficient	Valve Opening—Percent of Total Travel											F _L ⁽¹⁾
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90	100	
24x20	464	18.25	276	10.88	SNC	Cv	30	171	330	499	660	821	990	1149	1313	1480	1638	0.89
						Kv		148	285	431	571	710	856	994	1135	1280	1417	---
						Xt		0.53	0.53	0.53	0.53	0.52	0.52	0.52	0.52	0.52	0.52	0.52
			378	14.88	LNC	Cv	23	231	458	681	904	1130	1358	1582	1800	2009	2210	0.89
						Kv		199	396	589	782	978	1174	1369	1557	1738	1912	---
						Xt		0.530	0.529	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528
30	610	24	505	19.88	LN	Cv	35	400	792	1183	1575	1968	2362	2756	3150	3545	3939	0.99
						Kv		346	685	1023	1362	1702	2043	2384	2725	3066	3407	---
						Xt		0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.57	0.55

1. At 100% travel.
2. Clearance flow only

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WhisperFlo Trim - Level X - Flow Up																		Linear Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Constr uction	Flow Coeffi- cient	Valve Opening—Percent of Total Travel											F _L ⁽¹⁾	
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90	100		
12	279.4	11	140	5.5	SNC	Cv	62.2	92	180	274	366	454	538	616	689	757	820		
						Xt	0.53	0.71	0.7	0.69	0.68	0.68	0.69	0.69	0.7	0.71	0.73	---	
			203	8	LNC	Cv	62.2	128	257	382	508	633	728	820	901	978	1019	1078	0.89
						Xt	0.886	0.886	0.777	0.799	0.737	0.688	0.727	0.776	0.734	0.721	0.758	---	
14	279.4	11	140	5.5	SNC	Cv	62.2	92	180	276	370	461	549	633	714	791	863		
						Xt	0.53	0.71	0.70	0.69	0.68	0.67	0.68	0.67	0.68	0.68	0.69	---	
			203	8	LNC	Cv	62.2	126	258	386	517	642	762	866	961	1049	1113		
						Xt	0.69	0.69	0.66	0.69	0.66	0.65	0.66	0.71	0.70	0.70	0.73	---	
16x12	279.4	11	140	5.5	SNC	Cv	62.2	92	180	277	372	465	556	645	730	813	892		
						Xt	0.53	0.71	0.7	0.69	0.68	0.67	0.67	0.66	0.66	0.66	0.66	---	
			203	8	LNC	Cv	62.2	124	258	388	523	648	784	896	1001	1096	1175		
						Xt	0.556	0.556	0.58	0.614	0.612	0.629	0.615	0.665	0.678	0.691	0.719	---	
16	374.7	14.75	203	8.00	LNC	Cv	60.2	170	358	541	720	890	1052	1205	1348	1481	1604	---	
						Xt	0.534	0.711	0.697	0.688	0.684	0.684	0.687	0.694	0.703	0.715	0.729	---	
18	374.7	14.75	203	8.00	SNC	Cv	60.2	178	373	550	745	923	1110	1267	1419	1544	1661	---	
						Xt	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	---	
			276	10.88	LNC	Cv	60.2	248	513	781	1049	1284	1491	1666	1811	1927	2017	---	
						Xt	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	---	
			378	14.88	LNC	Cv	60.2	348	717	1080	1385	1638	1838	1983	2086	2159	2214	---	
						Xt	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	---	
20x16	374.7	14.75	203	8.00	SNC	Cv	60.2	170	359	546	731	912	1089	1260	1427	1587	1741	---	
						Xt	0.534	0.713	0.699	0.687	0.677	0.669	0.663	0.659	0.656	0.655	0.654	---	
			276	10.88	LNC	Cv	60.2	238	494	745	990	1226	1452	1667	1870	2061	2240	---	
						Xt	0.534	0.708	0.690	0.676	0.666	0.659	0.656	0.654	0.655	0.658	0.662	---	
			378	14.88	LNC	Cv	60.2	332	679	1015	1339	1633	1911	2165	2397	2606	2793	---	
						Xt	0.534	0.701	0.679	0.665	0.657	0.654	0.656	0.660	0.667	0.676	0.686	---	
24x16	374.7	14.75	203	8.00	SNC	Cv	60.2	170	360	548	735	921	1104	1285	1462	1636	1807	---	
						Xt	0.534	0.716	0.703	0.692	0.682	0.673	0.665	0.658	0.652	0.647	0.642	---	
			276	10.88	LNC	Cv	60.2	238	495	750	1001	1248	1490	1725	1953	2173	2385	---	
						Xt	0.534	0.711	0.695	0.681	0.669	0.659	0.651	0.644	0.639	0.635	0.632	---	
			378	14.88	LNC	Cv	60.2	333	683	1027	1363	1687	1999	2296	2578	2843	3092	---	
						Xt	0.534	0.705	0.685	0.668	0.655	0.645	0.638	0.633	0.630	0.628	0.628	---	
20	464	18.25	276	10.88	SNC	Cv	86.5	286	592	891	1179	1453	1712	1954	2179	2386	2576	---	
						Xt	0.534	0.708	0.694	0.685	0.682	0.683	0.688	0.696	0.708	0.722	0.738	---	
			378	14.88	LNC	Cv	86.5	399	813	1208	1577	1917	2223	2497	2740	2954	3141	---	
						Xt	0.534	0.702	0.687	0.682	0.685	0.695	0.711	0.731	0.755	0.781	0.809	---	
24x20	464	18.25	276	10.88	SNC	Cv	86.5	286	595	900	1200	1493	1779	2056	2322	2578	2823	---	
						Xt	0.534	0.710	0.695	0.683	0.673	0.665	0.659	0.656	0.654	0.653	0.654	---	
			378	14.88	LNC	Cv	86.5	400	820	1231	1630	2012	2376	2720	3043	3343	3622	---	
						Xt	0.534	0.704	0.686	0.672	0.662	0.656	0.653	0.653	0.655	0.659	0.665	---	

1. At 100% travel.
2. Clearance flow only

WhisperFlo Trim - Level Y - Flow Up																		Linear Characteristic
Valve Size, NPS	Port Diameter		Maximum Travel		Constr uction	Flow Coeffi- cient	Valve Opening—Percent of Total Travel											F _L ⁽¹⁾
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90	100	
12	279.4	11	140	5.5	SNC	Cv	35	55	109	168	225	282	338	392	445	496	546	0.89
						Xt	0.53	0.56	0.55	0.55	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.55
			203	8	LNC	Cv	35	90	180	270	360	450	540	630	720	810	900	0.89
						Xt	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532
14	279.4	11	140	5.5	SNC	Cv	35	55	109	168	226	284	340	396	452	505	558	---
						Xt	0.53	0.56	0.56	0.55	0.54	0.54	0.54	0.53	0.53	0.53	0.54	---
			203	8	LNC	Cv	35	90	180	270	360	450	540	630	720	810	900	---
						Xt	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53
16x12	279.4	11	140	5.5	SNC	Cv	35	55	109	168	227	285	342	399	456	511	566	---
						Xt	0.53	0.56	0.56	0.55	0.54	0.54	0.54	0.53	0.53	0.53	0.53	---
			203	8	LNC	Cv	35	90	180	270	360	450	540	630	720	810	900	---
						Xt	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532
16	374.7	14.75	203	8.00	LNC	Cv	53.4	124	258	392	525	654	779	901	1018	1130	1238	---
						Xt	0.534	0.616	0.607	0.600	0.596	0.594	0.593	0.594	0.598	0.602	0.608	---
18	374.7	14.75	203	8.00	SNC	Cv	53.4	113	239	365	491	617	744	870	998	1113	1223	---
						Xt	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58
			276	10.88	LNC	Cv	53.4	164	342	519	697	875	1053	1213	1360	1494	1614	---
						Xt	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58
			378	14.88	LNC	Cv	53.4	229	473	716	957	1188	1389	1565	1715	1840	1941	---
						Xt	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58
20x16	374.7	14.75	203	8.00	SNC	Cv	53.4	124	259	394	529	662	794	923	1051	1176	1298	---
						Xt	0.534	0.617	0.608	0.601	0.594	0.588	0.584	0.580	0.577	0.575	0.573	---
			276	10.88	LNC	Cv	53.4	171	356	539	720	897	1070	1239	1402	1560	1712	---
						Xt	0.534	0.614	0.603	0.594	0.586	0.581	0.577	0.574	0.573	0.573	0.574	---
			378	14.88	LNC	Cv	53.4	239	491	738	979	1212	1435	1648	1849	2038	2216	---
						Xt	0.534	0.609	0.596	0.586	0.579	0.574	0.573	0.573	0.575	0.579	0.585	---
24x16	374.7	14.75	203	8.00	SNC	Cv	53.4	125	259	395	531	666	800	933	1065	1195	1324	---
						Xt	0.534	0.619	0.611	0.604	0.598	0.592	0.587	0.582	0.578	0.574	0.570	---
			276	10.88	LNC	Cv	53.4	171	357	541	724	906	1085	1262	1436	1607	1774	---
						Xt	0.534	0.616	0.606	0.597	0.590	0.583	0.577	0.572	0.568	0.564	0.561	---
			378	14.88	LNC	Cv	53.4	240	492	743	991	1234	1472	1703	1928	2146	2356	---
						Xt	0.534	0.612	0.600	0.589	0.580	0.573	0.567	0.562	0.559	0.556	0.555	---
20	464	18.25	276	10.88	SNC	Cv	77.3	198	405	612	816	1016	1210	1397	1577	1750	1915	---
						Xt	0.534	0.576	0.568	0.562	0.559	0.557	0.557	0.559	0.562	0.567	0.574	---
			378	14.88	LNC	Cv	77.3	272	558	837	1108	1367	1614	1849	2063	2265	2452	---
						Xt	0.534	0.573	0.564	0.558	0.557	0.559	0.563	0.571	0.581	0.593	0.607	---
24x20	464	18.25	276	10.88	SNC	Cv	77.3	198	406	615	823	1029	1232	1433	1629	1822	2010	---
						Xt	0.534	0.577	0.569	0.562	0.556	0.552	0.548	0.544	0.542	0.540	0.539	---
			378	14.88	LNC	Cv	77.3	272	560	845	1125	1401	1669	1931	2183	2427	2662	---
						Xt	0.534	0.574	0.564	0.556	0.550	0.545	0.542	0.540	0.539	0.540	0.541	---

1. At 100% travel.
2. Clearance flow only

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WhisperFlo Trim - Level Z - Flow Up																		Linear Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Constr uction	Flow Coeffi- cient	Valve Opening—Percent of Total Travel											F _L ⁽¹⁾	
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90	100		
12	279.4	11	140	5.5	SNC	Cv	21	42	80	119	160	202	242	282	322	361	399		
						Xt	0.53	0.44	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43
			203	8	LNC	Cv	21	55	110	165	220	275	330	385	440	495	550	550	0.89
						Xt	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532
14	279.4	11	140	5.5	SNC	Cv	21	42	80	119	161	202	243	284	324	364	404		
						Xt	0.53	0.44	0.44	0.43	0.43	0.43	0.43	0.43	0.42	0.42	0.42	0.42	0.42
			203	8	LNC	Cv	21	55	110	165	220	275	330	385	440	495	550	550	
						Xt	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53
16x12	279.4	11	140	5.5	SNC	Cv	21	42	80	119	161	202	244	285	326	366	407		
						Xt	0.53	0.44	0.44	0.43	0.43	0.43	0.43	0.43	0.42	0.42	0.42	0.42	0.42
			203	8	LNC	Cv	21	55	110	165	220	275	330	385	440	495	550	550	
						Xt	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532	0.532
16	374.7	14.75	203	8.00	LNC	Cv	48.1	91	179	273	366	458	548	638	725	811	895	---	
						Xt	0.534	0.466	0.462	0.459	0.456	0.454	0.453	0.453	0.453	0.453	0.454	0.454	0.456
18	374.7	14.75	203	8.00	SNC	Cv	48.1	68	143	219	295	370	446	522	598	673	749	---	
						Xt	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46
			276	10.88	LNC	Cv	48.1	103	206	312	419	526	633	740	846	951	1059	1059	---
						Xt	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46
			378	14.88	LNC	Cv	48.1	137	281	429	576	721	868	1012	1150	1276	1394	1394	---
						Xt	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46
20x16	374.7	14.75	203	8.00	SNC	Cv	48.1	91	179	273	367	460	553	645	737	827	917	---	
						Xt	0.534	0.467	0.463	0.459	0.456	0.453	0.450	0.448	0.446	0.445	0.444	0.444	---
			276	10.88	LNC	Cv	48.1	121	247	374	501	627	751	874	994	1113	1229	1229	---
						Xt	0.534	0.465	0.460	0.456	0.452	0.449	0.446	0.444	0.444	0.443	0.442	0.442	0.442
			378	14.88	LNC	Cv	48.1	166	341	514	685	854	1019	1180	1336	1488	1634	1634	---
						Xt	0.534	0.463	0.457	0.451	0.447	0.444	0.443	0.442	0.442	0.442	0.443	0.445	0.445
24x16	374.7	14.75	203	8.00	SNC	Cv	48.1	91	179	273	368	462	555	649	742	834	926	---	
						Xt	0.534	0.468	0.464	0.461	0.458	0.455	0.453	0.450	0.448	0.446	0.444	0.444	---
			276	10.88	LNC	Cv	48.1	121	267	375	503	630	756	881	1006	1129	1251	1251	---
						Xt	0.534	0.466	0.462	0.458	0.454	0.451	0.447	0.445	0.445	0.442	0.440	0.438	---
			378	14.88	LNC	Cv	48.1	166	341	516	689	861	1032	1200	1365	1528	1688	1688	---
						Xt	0.534	0.465	0.459	0.454	0.449	0.445	0.442	0.439	0.437	0.435	0.434	0.434	---
20	464	18.25	276	10.88	SNC	Cv	71.8	148	288	437	585	731	875	1016	1155	1290	1422	---	
						Xt	0.534	0.453	0.448	0.445	0.443	0.441	0.440	0.440	0.441	0.442	0.445	0.445	---
			378	14.88	LNC	Cv	71.8	200	403	607	808	1005	1196	1381	1560	1730	1894	1894	---
						Xt	0.534	0.451	0.446	0.446	0.441	0.440	0.441	0.441	0.444	0.448	0.453	0.459	0.459
24x20	464	18.25	276	10.88	SNC	Cv	71.8	149	292	444	595	745	894	1042	1188	1333	1476	---	
						Xt	0.534	0.453	0.449	0.446	0.442	0.440	0.437	0.435	0.433	0.432	0.431	0.431	---
			378	14.88	LNC	Cv	71.8	200	404	610	815	1018	1218	1416	1609	1800	1986	1986	---
						Xt	0.534	0.452	0.442	0.442	0.438	0.435	0.433	0.431	0.430	0.430	0.430	0.430	0.430

1. At 100% travel.
2. Clearance flow only

Cavitrol III Trim - One Stage - Flow Down																		Linear Characteristic
Valve Size, NPS	Port Diameter		Maximum Travel		Constr uction	Flow Coeffi- cient	Valve Opening—Percent of Total Travel											F _L ⁽¹⁾
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90	100	
12	279.4	11	203	8	LNC	Cv	40	132	302	462	607	736	849	946	1030	1100	1160	0.91
						Kv	34.6	114	261	400	525	637	734	818	891	952	1003	---
14	279.4	11	203	8	LNC	Cv	40	132	303	467	620	759	886	996	1096	1184	1262	0.91
						Kv	34.6	114	262	404	536	657	766	862	948	1024	1092	---
16x12	279.4	11	203	8	LNC	Cv	40	132	304	471	628	775	910	1030	1140	1240	1330	0.91
						Kv	34.6	114	263	407	543	670	787	891	986	1073	1150	---
16	374.7	14.75	203	8.00	LNC	Cv	46	177	408	632	844	1040	1230	1390	1540	1670	1790	0.91
						Xt	39.8	153	353	547	730	900	1064	1202	1332	1445	1548	---
18	374.7	14.75	276	10.88	LNC	Cv	46	256	556	844	1115	1363	1590	1793	1973	2132	2268	0.91
						Xt	39.8	222	482	731	964	1180	1375	1550	1707	1844	1962	---
			378	14.88	LNC	Cv	46	357	748	1110	1436	1721	1966	2174	2349	2495	2610	0.91
						Xt	39.8	309	647	960	1242	1489	1701	1880	2032	2158	2258	---
20x16	374.7	14.75	276	10.88	LNC	Cv	46	262	576	877	1160	1420	1660	1880	2070	2240	2390	0.91
						Xt	39.8	227	498	759	1003	1228	1436	1626	1791	1938	2067	---
			378	14.88	LNC	Cv	46	379	800	1190	1540	1850	2110	2330	2510	2670	2800	0.91
						Xt	39.8	328	692	1029	1332	1600	1825	2015	2171	2310	2422	---
24x16	374.7	14.75	276	10.88	LNC	Cv	46	262	576	878	1160	1420	1160	1880	2070	2240	2390	0.91
						Xt	39.8	227	498	759	1003	1228	1003	1626	1791	1938	2067	---
			378	14.88	LNC	Cv	46	379	800	1190	1540	1850	2110	2330	2520	2670	2800	0.91
						Xt	39.8	328	692	1029	1332	1600	1825	2015	2180	2310	2422	---
20	464	18.25	276	10.88	SNC	Cv	56	323	710	1080	1430	1750	2030	2290	2520	2720	2890	0.91
						Kv	48.4	279	614	934	1237	1514	1756	1981	2180	2353	2500	---
			378	14.88	LNC	Cv	56	467	985	1460	1890	2260	2570	2830	3040	3220	3370	0.91
						Kv	48.4	404	852	1263	1635	1955	2223	2448	2630	2785	2915	---
24x20	464	18.25	276	10.88	SNC	Cv	56	329	701	1066	1421	1764	2092	2404	2698	2975	3157	0.91
						Kv	48.4	285	606	922	1229	1525	1809	2079	2334	2573	2731	---
			378	14.88	LNC	Cv	56	468	995	1490	1960	2370	2750	3070	3360	3600	3810	0.91
						Kv	48.4	405	861	1289	1695	2050	2379	2656	2906	3114	3296	---

1. At 100% travel.
2. Clearance flow only

**The Fisher Large ET-C/EWT-C flow coefficients are identical to the Fisher Large ET/EWT and ED/EWD. However, some port diameters are not applicable to the Fisher Large ET-C/EWT-C.
For additional information, refer to Bulletin 51.1:ET/ED (Large).**

The Fisher ET-C valve has flow coefficients identical to the NPS 3 through 8 Fisher ED valve with full-sized port. Please refer to those coefficients. For additional ET-C valve information, refer to Bulletin 51.1:easy-e™ Cryogenic.

The Fisher ETR valve has flow coefficients identical to the NPS 1 to 4, CL125-600 ED valve. Please refer to those coefficients. For additional ETR valve body information, refer to Bulletin 51.1:ET.

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Linear																	Linear Characteristic		
Valve Type	Valve Size, NPS	Port Diameter		Total Travel		Con-struction ⁽¹⁾	Flow Coeffi-cient	Valve Opening—Percent of Total Travel										F _L	
		mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100
EUT-2, EUD, EUT	16	374.7	14.75	102	4.00	SNC	C _v	46	270	520	790	1080	1380	1690	1980	2240	2450	2630	0.88
							K _v	39.8	234	450	683	934	1194	1462	1713	1938	2119	2275	---
							X _T	0.391	0.643	0.684	0.667	0.645	0.650	0.664	0.694	0.721	0.749	0.755	---
		374.7	14.75	127	5.00	SNC	C _v	46	335	650	1000	1380	1770	2120	2410	2630	2780	2860	0.88
							K _v	39.8	290	562	865	1194	1531	1834	2085	2275	2405	2474	---
							X _T	0.391	0.650	0.677	0.652	0.650	0.666	0.709	0.745	0.755	0.739	0.763	---
EUD, EUT	20	436.6	18.25	203	8.00	SND	C _v	56	315	625	920	1230	1570	1920	2260	2530	2800	3010	0.89
							K _v	48.4	272	541	796	1064	1358	1661	1955	2188	2422	2604	---
							X _T	0.391	0.655	0.653	0.673	0.671	0.649	0.650	0.650	0.663	0.667	0.684	---
		463.6	18.25	276	10.88	SND	C _v	56	255	670	1030	1460	1930	2370	2780	3100	3390	3650	0.89
							K _v	48.4	221	580	891	1263	1669	2050	2405	2682	2932	3157	---
							X _T	0.391	0.648	0.656	0.681	0.656	0.649	0.653	0.667	0.690	0.719	0.733	---
		463.6	18.25	378	14.88	LND	C _v	56	375	865	1370	1940	2460	2910	3330	3614	3811	3920	0.89
							K _v	48.4	324	748	1185	1678	2128	2517	2880	3126	3296	3391	---
							X _T	0.391	0.651	0.674	0.668	0.651	0.661	0.676	0.707	0.736	0.755	0.748	---
EUT-2	20	501.7	19.75	203	8.00	SND	C _v	60	340	675	990	1340	1710	2110	2420	2720	2960	3180	0.89
							K _v	51.9	294	584	856	1159	1479	1825	2093	2353	2560	2751	---
							X _T	0.391	0.654	0.664	0.682	0.668	0.656	0.647	0.659	0.665	0.681	0.694	---
		501.7	19.75	276	10.88	SND	C _v	60	465	905	1370	1880	2360	2760	3080	3350	3610	3830	0.89
							K _v	51.9	402	783	1185	1626	2041	2387	2664	2898	3123	3313	---
							X _T	0.391	0.650	0.673	0.665	0.654	0.657	0.669	0.685	0.711	0.726	0.742	---
		501.7	19.75	378	14.88	LND	C _v	60	410	935	1500	2130	2650	3070	3510	3870	4150	4340	0.89
							K _v	51.9	355	809	1298	1842	2292	2656	3036	3348	3590	3754	---
							X _T	0.391	0.648	0.678	0.659	0.648	0.661	0.690	0.718	0.749	0.753	0.737	---



Equal Percentage																	Equal Percentage Characteristic			
Valve Type	Valve Size, NPS	Port Diameter		Total Travel		Construction ⁽¹⁾	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L		
		mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100	
EUT-2, EUD, EUT	16	374.7	14.75	102	4.00	SNC	C _v	23	49.0	87.0	130	188	274	426	640	915	1250	1630	0.78	
							K _v	19.9	42.4	75.3	112	163	237	368	554	791	1081	1410	---	
							X _T	0.391	0.625	0.634	0.668	0.673	0.643	0.591	0.574	0.577	0.593	0.621	---	
		374.7	14.75	127	5.00	SNC	C _v	23	58.1	106	166	274	464	758	1150	1630	2210	2540	0.78	
							K _v	19.9	50.3	91.7	144	237	401	656	995	1410	1912	2197	---	
							X _T	0.391	0.613	0.647	0.689	0.643	0.585	0.565	0.589	0.621	0.623	0.685	---	
EUD, EUT	20	463.6	18.25	203	8.00	SND	C _v	25	67.5	113	174	282	439	726	1170	1700	2200	2680	0.80	
							K _v	21.6	58.4	97.7	151	244	380	628	1012	1471	1903	2318	---	
							X _T	0.391	0.677	0.624	0.647	0.681	0.645	0.584	0.566	0.585	0.602	0.621	---	
		463.6	18.25	276	10.88	SND	C _v	25	76.8	132	204	333	535	880	1390	2000	2570	3250	0.80	
							K _v	21.6	66.4	114	176	288	463	761	1202	1730	2223	2811	---	
							X _T	0.391	0.657	0.633	0.666	0.670	0.616	0.580	0.573	0.597	0.622	0.628	---	
	463.6	18.25	378	14.88	LND	C _v	25	86.4	154	241	396	658	1080	1660	2360	3140	3760	0.80		
						K _v	21.6	74.7	133	208	343	569	934	1436	2041	2716	3252	---		
						X _T	0.391	0.629	0.643	0.678	0.653	0.595	0.566	0.581	0.613	0.624	0.658	---		
	EUT-2	20	501.7	19.75	203	8.00	SND	C _v	30	69.8	117	180	293	460	759	1220	1760	2280	2800	0.80
								K _v	25.9	60.4	101	156	253	398	657	1055	1522	1972	2422	---
								X _T	0.391	0.673	0.628	0.656	0.681	0.638	0.584	0.566	0.591	0.608	0.623	---
501.7			19.75	276	10.88	SND	C _v	30	79.3	137	213	348	562	924	1450	2080	2700	3410	0.80	
							K _v	25.9	68.6	119	184	301	486	799	1254	1799	2336	2950	---	
							X _T	0.391	0.651	0.636	0.665	0.659	0.613	0.578	0.576	0.603	0.621	0.627	---	
501.7		19.75	378	14.88	LND	C _v	30	88.6	160	250	412	693	1130	1730	2460	3300	3860	0.80		
						K _v	25.9	76.6	138	216	356	599	977	1496	2128	2855	3339	---		
						X _T	0.391	0.620	0.645	0.686	0.651	0.590	0.569	0.587	0.616	0.621	0.677	---		

1. Construction—SNC = short neck, cast windows; SND = short neck, drilled windows; LND = long neck, drilled windows.
2. Do not allow the valve to throttle at less than the minimum coefficient shown for an extended time, or erosion damage to the valve seat might result.

**EUT-2, EUD, and EUT
Whisper Trim III Trim—Level A1
Flow Up**

Linear
Characteristic

Valve Type	Valve Size, NPS	Port Diameter		Total Travel		Construction ⁽¹⁾	Flow Coefficient	Valve Opening—Percent of Total Travel											F _L
		mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90	100	
EUD, EUT	16	374.7	14.75	203	8.00	LN	C _v	38	335	677	1019	1298	1529	1721	1871	1985	2059	2095	0.89
							K _v		290	585	882	1123	1322	1488	1618	1717	1781	1812	---
							X _T		0.436	0.433	0.432	0.471	0.533	0.589	0.616	0.647	0.686	0.732	---
		374.7	14.75	226	8.88	LN	C _v	38	361	734	1115	1395	1629	1819	1957	2050	2095	2099	0.89
							K _v		312	635	964	1207	1409	1573	1693	1773	1812	1816	---
							X _T		0.435	0.433	0.437	0.497	0.572	0.606	0.640	0.681	0.731	0.789	---
EUT-2	16	412.8	16.25	203	8.00	LN	C _v	42	353	732	1104	1389	1628	1817	1960	2057	2106	2113	0.89
							K _v		305	633	955	1201	1408	1572	1695	1779	1822	1828	---
							X _T		0.436	0.433	0.432	0.490	0.563	0.603	0.635	0.674	0.722	0.780	---
		412.8	16.25	226	8.88	LN	C _v	42	398	810	1205	1500	1737	1918	2039	2104	2115	2115	0.89
							K _v		344	701	1042	1298	1503	1659	1764	1820	1829	1829	---
							X _T		0.435	0.433	0.450	0.520	0.590	0.623	0.664	0.715	0.779	0.825	---
EUD, EUT	16	374.7	14.75	251	9.88	LN-S	C _v	38	402	824	1212	1506	1743	1919	2036	2093	2100	2100	0.89
							K _v		348	713	1048	1303	1508	1660	1761	1810	1817	1817	---
							X _T		0.435	0.433	0.456	0.529	0.594	0.628	0.671	0.725	0.790	0.834	---
		412.8	16.25	251	9.88	LN-S	C _v	42	444	909	1310	1614	1847	2008	2096	2116	2116	2116	0.89
							K _v		384	786	1133	1396	1598	1737	1813	1830	1830	1830	---
							X _T		0.435	0.433	0.472	0.557	0.608	0.650	0.703	0.773	0.827	0.851	---
EUD, EUT	20	463.6	18.25	276	10.88	SN	C _v	47	547	1123	1699	2128	2489	2776	2992	3135	3205	3214	0.89
							K _v		473	972	1470	1841	2153	2402	2588	2711	2773	2780	---
							X _T		0.434	0.433	0.432	0.494	0.567	0.604	0.637	0.677	0.726	0.784	---
		501.7	19.75	276	10.88	SN	C _v	50	593	1217	1841	2351	2767	3111	3382	3580	3706	3760	0.89
							K _v		513	1053	1593	2034	2394	2691	2925	3097	3206	3252	---
							X _T		0.434	0.433	0.432	0.475	0.538	0.592	0.619	0.652	0.692	0.741	---
EUD, EUT	20	463.6	18.25	353	13.88	LN	C _v	47	709	1441	2058	2523	2866	3096	3205	3217	3217	3217	0.89
							K _v		614	1247	1780	2182	2479	2678	2773	2782	2782	2782	---
							X _T		0.434	0.432	0.482	0.575	0.616	0.662	0.722	0.795	0.840	0.852	---
		501.7	19.75	327	12.88	LN	C _v	50	707	1451	2143	2664	3087	3409	3626	3743	3765	3765	0.89
							K _v		612	1255	1853	2304	2670	2948	3137	3238	3257	3257	---
							X _T		0.434	0.432	0.450	0.520	0.590	0.623	0.663	0.714	0.777	0.826	---

1. Construction—LN = long-neck valve; LN-S = long neck valve with bonnet spacer; SN = short-neck valve.
2. Do not allow the valve to throttle at less than the minimum coefficient shown for an extended time, or erosion damage to the valve seat might occur.



EUT-2, EUD, and EUT Whisper Trim III Trim—Level A3 Flow Up																	Linear Characteristic		
Valve Type	Valve Size, NPS	Port Diameter		Total Travel		Con- struc- tion ⁽¹⁾	Flow Coeffi- cient	Valve Opening—Percent of Total Travel											F _L
		mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90	100	
EUD, EUT	16	374.7	14.75	203	8.00	LN	C _v	25	290	593	892	1178	1396	1590	1749	1880	1980	2049	0.89
							K _v		251	513	772	1019	1208	1375	1513	1626	1713	1772	---
							X _T		0.436	0.433	0.433	0.447	0.495	0.554	0.594	0.618	0.646	0.679	---
		374.7	14.75	226	8.88	LN	C _v	25	326	658	991	1280	1507	1698	1854	1971	2049	2091	0.89
							K _v		282	569	857	1107	1304	1469	1604	1705	1772	1809	---
							X _T		0.436	0.433	0.432	0.467	0.526	0.586	0.612	0.643	0.678	0.723	---
EUT-2	16	412.8	16.25	203	8.00	LN	C _v	28	317	652	979	1270	1497	1693	1849	1970	2054	2100	0.89
							K _v		274	564	847	1099	1295	1464	1599	1704	1777	1817	---
							X _T		0.436	0.433	0.433	0.463	0.520	0.584	0.609	0.638	0.673	0.714	---
		412.8	16.25	226	8.88	LN	C _v	28	356	721	1088	1376	1609	1799	1947	2046	2101	2113	0.89
							K _v		308	624	941	1190	1392	1556	1684	1770	1817	1828	---
							X _T		0.436	0.433	0.432	0.487	0.556	0.600	0.631	0.668	0.714	0.771	---
EUD, EUT	16	374.7	14.75	251	9.88	LN-S	C _v	25	359	732	1106	1387	1622	1809	1950	2044	2092	2099	0.89
							K _v		310	634	957	1200	1403	1565	1687	1768	1810	1816	---
							X _T		0.435	0.433	0.432	0.492	0.565	0.604	0.636	0.675	0.723	0.781	---
		412.8	16.25	251	9.88	LN-S	C _v	28	393	803	1192	1486	1724	1905	2030	2099	2115	2115	0.89
							K _v		340	695	1031	1285	1491	1648	1756	1816	1829	1829	---
							X _T		0.435	0.433	0.448	0.516	0.588	0.620	0.660	0.709	0.771	0.821	---
EUD, EUT	20	463.6	18.25	276	10.88	SN	C _v	31	470	976	1471	1912	2259	2555	2795	2980	3112	3189	0.89
							K _v		407	844	1272	1654	1954	2210	2418	2578	2692	2758	---
							X _T		0.435	0.433	0.432	0.461	0.517	0.583	0.607	0.635	0.669	0.710	---
		501.7	19.75	276	10.88	SN	C _v	33	509	1056	1592	2103	2498	2843	3132	3365	3547	3671	0.89
							K _v		440	914	1377	1819	2161	2459	2709	2911	3068	3175	---
							X _T		0.435	0.433	0.432	0.446	0.495	0.553	0.594	0.618	0.646	0.678	---
EUD, EUT	20	463.6	18.25	353	13.88	LN	C _v	31	612	1248	1843	2293	2655	2926	3108	3201	3215	3215	0.89
							K _v		529	1079	1594	1984	2297	2531	2688	2769	2781	2781	---
							X _T		0.434	0.433	0.452	0.523	0.591	0.625	0.667	0.719	0.783	0.830	---
		501.7	19.75	327	12.88	LN	C _v	33	609	1253	1896	2398	2820	3159	3426	3615	3726	3763	0.89
							K _v		527	1083	1640	2075	2439	2732	2963	3127	3223	3255	---
							X _T		0.434	0.433	0.432	0.481	0.548	0.596	0.625	0.661	0.703	0.757	---

1. Construction—LN = long-neck valve; LN-S = long neck valve with bonnet spacer; SN = short-neck valve.
2. Do not allow the valve to throttle at less than the minimum coefficient shown for an extended time, or erosion damage to the valve seat might occur.

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**EUT-2, EUD, and EUT
Whisper Trim III Trim—Level B1
Flow Up**

Linear
Characteristic

Valve Type	Valve Size, NPS	Port Diameter		Total Travel		Construction ⁽¹⁾	Flow Coefficient	Valve Opening—Percent of Total Travel											F _L
		mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90	100	
EUD, EUT	16	374.7	14.75	203	8.00	LN	C _v	32	197	374	554	746	933	1111	1248	1385	1509	1603	0.89
							K _v		170	324	479	645	807	961	1080	1198	1305	1387	---
							X _T		0.438	0.435	0.433	0.433	0.432	0.432	0.461	0.493	0.528	0.56	---
		374.7	14.75	226	8.88	LN	C _v	32	207	416	627	824	1025	1207	1359	1488	1614	1726	0.89
							K _v		179	360	542	713	887	1044	1176	1287	1396	1493	---
							X _T		0.438	0.434	0.433	0.432	0.432	0.453	0.486	0.521	0.564	0.591	---
EUT-2	16	412.8	16.25	203	8.00	LN	C _v	35	215	408	605	814	1018	1190	1337	1477	1604	1699	0.89
							K _v		186	353	523	704	881	1029	1157	1278	1387	1470	---
							X _T		0.438	0.435	0.433	0.433	0.432	0.448	0.479	0.515	0.556	0.586	---
		412.8	16.25	226	8.88	LN	C _v	35	226	454	683	899	1118	1294	1451	1583	1709	1802	0.89
							K _v		195	393	591	778	967	1119	1255	1369	1478	1559	---
							X _T		0.438	0.434	0.433	0.432	0.432	0.469	0.507	0.548	0.587	0.601	---
EUD, EUT	16	374.7	14.75	251	9.88	LN-S	C _v	32	242	467	691	915	1132	1305	1464	1606	1728	1818	0.89
							K _v		209	404	598	791	979	1129	1266	1389	1495	1573	---
							X _T		0.437	0.434	0.433	0.432	0.438	0.473	0.514	0.56	0.591	0.606	---
		412.8	16.25	251	9.88	LN-S	C _v	35	264	510	754	999	1215	1396	1559	1701	1821	1907	0.89
							K _v		228	441	652	864	1051	1208	1349	1471	1575	1650	---
							X _T		0.437	0.434	0.433	0.432	0.452	0.493	0.54	0.586	0.604	0.622	---
EUD, EUT	20	463.6	18.25	276	10.88	SN	C _v	39	314	632	928	1247	1542	1824	2043	2260	2440	2614	0.89
							K _v		292	587	862	1159	1432	1724	1937	2151	2331	2508	---
							X _T		0.437	0.434	0.433	0.432	0.432	0.450	0.481	0.518	0.556	0.588	---
		501.7	19.75	276	10.88	SN	C _v	42	337	679	996	1340	1656	1993	2239	2487	2695	2899	0.89
							K _v		292	587	862	1159	1432	1724	1937	2151	2331	2508	---
							X _T		0.437	0.434	0.433	0.432	0.432	0.435	0.462	0.494	0.526	0.565	---
EUD, EUT	20	463.6	18.25	353	13.88	LN	C _v	39	396	793	1194	1583	1905	2189	2438	2646	2821	2968	0.89
							K _v		343	686	1033	1370	1648	1893	2109	2289	2440	2567	---
							X _T		0.436	0.433	0.432	0.432	0.460	0.504	0.555	0.591	0.611	0.634	---
		501.7	19.75	327	12.88	LN	C _v	42	405	786	1190	1579	1960	2276	2551	2793	3019	3209	0.89
							K _v		350	680	1029	1366	1696	1968	2206	2416	2612	2776	---
							X _T		0.436	0.433	0.432	0.432	0.432	0.466	0.503	0.543	0.585	0.601	---

1. Construction—LN = long-neck valve; LN-S = long neck valve with bonnet spacer; SN = short-neck valve.
2. Do not allow the valve to throttle at less than the minimum coefficient shown for an extended time, or erosion damage to the valve seat might occur.



**EUT-2, EUD, and EUT
Whisper Trim III Trim—Level B3
Flow Up**

**Linear
Characteristic**

Valve Type	Valve Size, NPS	Port Diameter		Total Travel		Construction ⁽¹⁾	Flow Coefficient	Valve Opening—Percent of Total Travel											F _L
		mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90	100	
EUD, EUT	16	374.7	14.75	203	8.00	LN	C _v	21	178	349	528	700	878	1052	1201	1331	1451	1555	0.89
							K _v		154	302	457	606	759	910	1039	1151	1255	1345	---
							X _T		0.439	0.435	0.433	0.433	0.432	0.432	0.452	0.48	0.511	0.543	---
		374.7	14.75	226	8.88	LN	C _v	21	197	388	584	780	971	1156	1300	1439	1559	1660	0.89
							K _v		170	336	505	675	840	1000	1125	1245	1349	1436	---
							X _T		0.438	0.435	0.433	0.432	0.432	0.443	0.473	0.507	0.544	0.582	---
EUT-2	16	412.8	16.25	203	8.00	LN	C _v	24	195	382	578	767	962	1143	1291	1426	1549	1654	0.89
							K _v		169	330	500	663	832	989	1117	1233	1340	1431	---
							X _T		0.439	0.435	0.433	0.433	0.432	0.439	0.469	0.501	0.537	0.575	---
		412.8	16.25	226	8.88	LN	C _v	24	215	425	639	854	1063	1244	1395	1538	1659	1759	0.89
							K _v		186	368	553	739	919	1076	1207	1330	1435	1522	---
							X _T		0.439	0.435	0.433	0.432	0.432	0.458	0.493	0.533	0.577	0.594	---
EUD, EUT	16	374.7	14.75	251	9.88	LN-S	C _v	21	215	436	651	865	1082	1258	1412	1549	1672	1772	0.89
							K _v		186	377	563	748	936	1088	1221	1340	1446	1533	---
							X _T		0.438	0.434	0.433	0.432	0.432	0.463	0.5	0.54	0.583	0.598	---
		412.8	16.25	251	9.88	LN-S	C _v	24	236	478	713	947	1170	1351	1510	1648	1770	1867	0.89
							K _v		204	413	617	819	1012	1169	1306	1426	1531	1615	---
							X _T		0.438	0.434	0.433	0.432	0.444	0.482	0.524	0.572	0.596	0.613	---
EUD, EUT	20	463.6	18.25	276	10.88	SN	C _v	26	292	588	884	1181	1478	1756	1982	2190	2378	2547	0.89
							K _v		252	508	765	1021	1278	1519	1715	1894	2057	2203	---
							X _T		0.437	0.434	0.433	0.432	0.432	0.441	0.471	0.505	0.542	0.582	---
		501.7	19.75	276	10.88	SN	C _v	28	314	633	952	1271	1591	1911	2175	2411	2628	2825	0.89
							K _v		272	548	823	1100	1377	1653	1882	2086	2273	2444	---
							X _T		0.437	0.434	0.433	0.432	0.432	0.432	0.454	0.483	0.515	0.550	---
EUD, EUT	20	463.6	18.25	353	13.88	LN	C _v	26	380	753	1136	1510	1847	2121	2367	2580	2762	2914	0.89
							K _v		329	651	983	1306	1598	1835	2048	2232	2390	2521	---
							X _T		0.436	0.433	0.432	0.432	0.453	0.493	0.539	0.585	0.603	0.624	---
		501.7	19.75	327	12.88	LN	C _v	28	379	755	1129	1512	1888	2199	2477	2724	2943	3140	0.89
							K _v		328	653	977	1308	1633	1902	2143	2356	2545	2716	---
							X _T		0.436	0.433	0.433	0.432	0.432	0.457	0.492	0.531	0.574	0.595	---

1. Construction—LN = long-neck valve; LN-S = long neck valve with bonnet spacer; SN = short-neck valve.
2. Do not allow the valve to throttle at less than the minimum coefficient shown for an extended time, or erosion damage to the valve seat might occur.

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**EUT-2, EUD, and EUT
Whisper Trim III Trim—Level C1
Flow Up** Linear
Characteristic

Valve Type	Valve Size, NPS	Port Diameter		Total Travel		Construction ⁽¹⁾	Flow Coefficient	Valve Opening—Percent of Total Travel											F _L
		mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90	100	
EUD, EUT	16	374.7	14.75	203	8.00	LN	C _v	27	131	244	351	460	577	696	811	919	1026	1132	0.89
							K _v		113	211	304	398	499	602	702	795	887	979	---
							X _T		0.442	0.436	0.434	0.433	0.433	0.432	0.432	0.432	0.431	0.439	---
		374.7	14.75	226	8.88	LN	C _v	27	132	264	396	518	637	763	897	1024	1133	1226	0.89
							K _v		114	228	343	448	551	660	776	886	980	1060	---
							X _T		0.442	0.436	0.434	0.433	0.433	0.432	0.432	0.432	0.439	0.457	---
EUT-2	16	412.8	16.25	203	8.00	LN	C _v	30	146	272	392	513	645	778	906	1027	1138	1238	0.89
							K _v		126	235	339	444	558	673	784	888	984	1071	---
							X _T		0.442	0.436	0.434	0.433	0.432	0.432	0.432	0.438	0.458	0.458	---
		412.8	16.25	226	8.88	LN	C _v	30	148	294	442	579	712	853	1002	1136	1240	1337	0.89
							K _v		128	254	382	501	616	738	867	983	1073	1157	---
							X _T		0.442	0.436	0.434	0.433	0.432	0.432	0.432	0.438	0.458	0.480	---
EUD, EUT	16	374.7	14.75	251	9.88	LN-S	C _v	27	159	291	429	578	714	847	995	1129	1231	1336	0.89
							K _v		138	252	371	500	618	733	861	977	1065	1156	---
							X _T		0.440	0.436	0.434	0.433	0.432	0.432	0.432	0.438	0.458	0.481	---
		412.8	16.25	251	9.88	LN-S	C _v	30	178	325	479	646	798	946	1112	1236	1343	1453	0.89
							K _v		154	281	414	559	690	818	962	1069	1162	1257	---
							X _T		0.440	0.436	0.434	0.433	0.432	0.432	0.432	0.457	0.481	0.509	---
EUD, EUT	20	463.6	18.25	276	10.88	SN	C _v	33	199	393	591	787	972	1156	1344	1541	1726	1875	0.89
							K _v		172	340	511	680	841	1000	1162	1333	1493	1622	---
							X _T		0.440	0.435	0.434	0.433	0.432	0.432	0.432	0.432	0.438	0.457	---
		501.7	19.75	276	10.88	SN	C _v	36	218	430	647	861	1065	1266	1472	1688	1904	2082	0.89
							K _v		188	372	560	745	921	1095	1273	1460	1647	1801	---
							X _T		0.440	0.435	0.433	0.433	0.432	0.432	0.432	0.432	0.431	0.444	---
EUD, EUT	20	463.6	18.25	353	13.88	LN	C _v	33	265	495	752	989	1232	1485	1707	1906	2081	2242	0.89
							K _v		229	428	651	856	1066	1285	1477	1649	1800	1939	---
							X _T		0.438	0.434	0.433	0.432	0.432	0.432	0.436	0.461	0.487	0.515	---
		501.7	19.75	327	12.88	LN	C _v	36	258	504	757	1010	1263	1510	1752	1988	2179	2365	0.89
							K _v		223	436	654	874	1092	1306	1516	1719	1885	2045	---
							X _T		0.438	0.435	0.433	0.432	0.432	0.432	0.432	0.434	0.455	0.477	---

1. Construction—LN = long-neck valve; LN-S = long neck valve with bonnet spacer; SN = short-neck valve.
2. Do not allow the valve to throttle at less than the minimum coefficient shown for an extended time, or erosion damage to the valve seat might occur.



EUT-2, EUD, and EUT Whisper Trim III Trim—Level C3 Flow Up																		Linear Characteristic	
Valve Type	Valve Size, NPS	Port Diameter		Total Travel		Con- struc- tion ⁽¹⁾	Flow Coeffi- cient	Valve Opening—Percent of Total Travel											F _L
		mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90	100	
EUD, EUT	16	374.7	14.75	203	8.00	LN	C _v	20	116	226	339	456	564	681	794	904	1023	1120	0.89
							K _v		100	195	293	394	488	589	687	782	885	969	---
							X _T		0.444	0.437	0.435	0.433	0.433	0.432	0.432	0.432	0.431	0.437	---
		374.7	14.75	226	8.88	LN	C _v	20	129	250	379	503	629	756	879	1009	1122	1225	0.89
							K _v		112	216	328	435	544	654	760	873	971	1060	---
							X _T		0.442	0.436	0.434	0.433	0.433	0.432	0.432	0.432	0.437	0.457	---
EUT-2	16	412.8	16.25	203	8.00	LN	C _v	22	127	246	369	497	614	741	864	983	1113	1200	0.89
							K _v		109	213	319	430	531	641	747	851	963	1038	---
							X _T		0.444	0.437	0.435	0.433	0.433	0.432	0.432	0.432	0.431	0.450	---
		412.8	16.25	226	8.88	LN	C _v	22	141	272	413	548	685	823	958	1098	1203	1311	0.89
							K _v		122	236	357	474	593	712	828	950	1041	1134	---
							X _T		0.442	0.436	0.434	0.433	0.433	0.432	0.432	0.432	0.451	0.473	---
EUD, EUT	16	374.7	14.75	251	9.88	LN-S	C _v	20	146	284	429	563	707	846	984	1122	1227	1326	0.89
							K _v		126	246	371	487	612	732	851	971	1061	1147	---
							X _T		0.441	0.436	0.434	0.433	0.432	0.432	0.432	0.437	0.457	0.479	---
		412.8	16.25	251	9.88	LN-S	C _v	22	156	305	457	613	760	918	1067	1196	1312	1414	0.89
							K _v		135	264	396	530	657	794	923	1035	1135	1223	---
							X _T		0.441	0.436	0.434	0.433	0.432	0.432	0.432	0.449	0.473	0.498	---
EUD, EUT	20	463.6	18.25	276	10.88	SN	C _v	24	194	375	568	752	935	1127	1309	1495	1686	1826	0.89
							K _v		168	325	491	650	809	975	1132	1293	1458	1579	---
							X _T		0.440	0.435	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.450	---
		501.7	19.75	276	10.88	SN	C _v	26	213	412	623	825	1026	1237	1436	1641	1850	2030	0.89
							K _v		184	356	539	713	888	1070	1242	1419	1601	1756	---
							X _T		0.440	0.435	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.439	---
EUD, EUT	20	463.6	18.25	353	13.88	LN	C _v	24	248	483	717	957	1199	1437	1671	1858	2037	2203	0.89
							K _v		215	418	620	828	1037	1243	1445	1607	1762	1905	---
							X _T		0.438	0.434	0.433	0.432	0.432	0.432	0.432	0.454	0.480	0.508	---
		501.7	19.75	327	12.88	LN	C _v	26	253	490	731	979	1221	1458	1701	1949	2141	2319	0.89
							K _v		219	424	632	846	1056	1261	1471	1686	1852	2006	---
							X _T		0.439	0.435	0.433	0.433	0.432	0.432	0.432	0.431	0.451	0.472	---

1. Construction—LN = long-neck valve; LN-S = long neck valve with bonnet spacer; SN = short-neck valve.
2. Do not allow the valve to throttle at less than the minimum coefficient shown for an extended time, or erosion damage to the valve seat might occur.

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**EUT-2, EUD, and EUT
Whisper Trim III Trim—Level D1
Flow Up**

Linear
Characteristic

Valve Size, NPS	Port Diameter		Total Travel		Construction ⁽¹⁾	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L	
	mm	Inches	mm	Inches			Min. ⁽²⁾	10	20	30	40	50	60	70	80	90		100
16	356	14.00	203	8.00	LN	C _v	26	119	220	322	431	543	653	754	855	963	1056	0.89
						K _v		103	190	279	373	470	565	652	740	833	913	---
						X _T		0.443	0.443	0.437	0.433	0.433	0.432	0.432	0.432	0.431	0.446	---
	356	14.00	226	8.88	LN	C _v	26	124	239	364	487	600	712	834	959	1057	1142	0.89
						K _v		107	207	315	421	519	616	721	830	914	988	---
						X _T		0.442	0.436	0.434	0.433	0.433	0.432	0.432	0.432	0.447	0.466	---
	356	14.00	251	9.88	LN-S	C _v	26	141	265	404	540	663	796	936	1046	1144	1244	0.89
						K _v		122	229	349	467	573	689	810	905	990	1076	---
						X _T		0.441	0.436	0.434	0.433	0.432	0.432	0.444	0.466	0.492	---	
20	432	17.00	276	10.88	LN	C _v	31	189	374	562	749	926	1101	1280	1462	1610	1745	0.89
						K _v		164	323	486	648	801	953	1107	1265	1393	1509	---
						X _T		0.440	0.435	0.433	0.433	0.432	0.432	0.432	0.435	0.456	0.478	---
	432	17.00	378	14.88	LN	C _v	31	260	506	755	1006	1258	1498	1691	1868	2028	2170	0.89
						K _v		225	438	653	870	1088	1295	1463	1616	1754	1877	---
						X _T		0.437	0.434	0.433	0.432	0.432	0.439	0.469	0.501	0.537	0.577	---

1. Construction—LN = long-neck valve; LN-S = long neck valve with bonnet spacer; SN = short-neck valve.
2. Do not allow the valve to throttle at less than the minimum coefficient shown for an extended time, or erosion damage to the valve seat might occur.



EUT-2, EUD, and EUT Whisper Trim III Trim—Level D3 Flow Up																	Linear Characteristic	
Valve Size, NPS	Port Diameter		Total Travel		Con- struc- tion ⁽¹⁾	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L	
	mm	Inches	mm	Inches			Min. ⁽²⁾	10	20	30	40	50	60	70	80	90		100
16	356	14.00	203	8.00	LN	C _v	19	108	209	319	425	529	641	743	850	959	1034	0.89
						K _v		93	181	276	368	458	554	643	735	830	894	---
						X _T		0.444	0.437	0.435	0.433	0.433	0.432	0.432	0.432	0.431	0.442	---
	356	14.00	226	8.88	LN	C _v	19	117	236	352	474	588	711	824	948	1046	1139	0.89
						K _v		101	204	304	410	509	615	713	820	905	985	---
						X _T		0.443	0.436	0.434	0.433	0.433	0.432	0.432	0.432	0.444	0.465	---
	356	14.00	251	9.88	LN-S	C _v	19	130	264	391	528	656	789	922	1037	1143	1234	0.89
						K _v		112	228	338	457	567	682	798	897	989	1067	---
						X _T		0.442	0.436	0.434	0.433	0.432	0.432	0.432	0.442	0.466	0.490	---
20	432	17.00	276	10.88	LN	C _v	22	185	357	540	715	889	1072	1245	1422	1570	1699	0.89
						K _v		160	309	467	618	769	928	1077	1230	1358	1470	---
						X _T		0.440	0.435	0.434	0.433	0.432	0.432	0.432	0.432	0.450	0.470	---
	432	17.00	378	14.88	LN	C _v	22	252	493	733	973	1218	1464	1652	1825	1982	2126	0.89
						K _v		218	427	634	842	1054	1266	1429	1578	1715	1839	---
						X _T		0.438	0.434	0.433	0.432	0.432	0.432	0.462	0.493	0.526	0.563	---

1. Construction—LN = long-neck valve; LN-S = long neck valve with bonnet spacer; SN = short-neck valve.
2. Do not allow the valve to throttle at less than the minimum coefficient shown for an extended time, or erosion damage to the valve seat might occur.

EUT-2
Cavitrol III Trim—One Stage
Flow Down

Linear
 Characteristic

Valve Size, NPS	Port Diameter		Total Travel		Construction ⁽¹⁾	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L	
	mm	Inches	mm	Inches			Min ⁽²⁾	10	20	30	40	50	60	70	80	90		100
16	374.7	14.75	203	8.00	SND	C _v	46	177	408	632	844	1040	1230	1390	1540	1670	1790	0.91
						K _v	39.8	153	353	547	730	900	1064	1202	1332	1445	1548	---
	374.7	14.75	276	10.88	LND	C _v	46	261	571	862	1130	1360	1560	1740	1890	2010	2120	0.91
						K _v	39.8	226	494	746	977	1176	1349	1505	1635	1739	1834	---
20	436.6	18.25	276	10.88	SND	C _v	56	323	710	1080	1430	1750	2030	2290	2520	2720	2890	0.91
						K _v	48.4	279	614	934	1237	1514	1756	1981	2180	2353	2500	---
	436.6	18.25	378	14.88	LND	C _v	56	467	985	1460	1890	2260	2570	2830	3040	3220	3370	0.91
						K _v	48.4	404	852	1263	1635	1955	2223	2448	2630	2785	2915	---

1. Construction—SND = short-neck valve, drilled windows; LND = long-neck valve, drilled windows.
 2. Do not allow the valve to throttle at less than the minimum coefficient shown for an extended time, or erosion damage to the valve seat might occur.



WhisperFlo Level X															Linear Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Construction	Flow Coefficient	Valve Opening—Percent of Total Travel										
	mm	Inches	mm	Inches			Min	10	20	30	40	50	60	70	80	90	100
16	374.7	14.75	203	8	SN	C _v	60.2	170	358	541	720	890	1052	1205	1348	1481	1604
						X _T	0.534	0.711	0.697	0.688	0.684	0.684	0.687	0.694	0.703	0.715	0.729
20	463.6	18.25	203	8	SN	C _v	86.5	207	431	655	834	1087	1294	1493	1683	1865	2036
						X _T	0.534	0.713	0.701	0.692	0.686	0.683	0.682	0.683	0.687	0.693	0.700
20	463.6	18.25	276	10.875	SN	C _v	86.5	286	592	891	1179	1453	1712	1954	2179	2386	2576
						X _T	0.534	0.708	0.694	0.685	0.682	0.683	0.688	0.696	0.708	0.722	0.738
20	463.6	18.25	378	14.875	LN	C _v	86.5	399	813	1208	1577	1917	2223	2497	2740	2954	3141
						X _T	0.534	0.702	0.687	0.682	0.685	0.695	0.711	0.731	0.755	0.781	0.809

WhisperFlo Level Y															Linear Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Construction	Flow Coefficient	Valve Opening—Percent of Total Travel										
	mm	Inches	mm	Inches			Min	10	20	30	40	50	60	70	80	90	100
16	374.7	14.75	203	8	SN	C _v	53.4	124.3	258	392	525	654	779	901	1018	1130	1238
						X _T	0.534	0.616	0.607	0.600	0.596	0.594	0.593	0.594	0.598	0.602	0.608
20	463.6	18.25	203	8	SN	C _v	77.3	148	294	448	601	751	899	1045	1188	1267	1462
						X _T	0.534	0.578	0.572	0.567	0.563	0.560	0.558	0.557	0.557	0.558	0.560
20	463.6	18.25	276	10.875	SN	C _v	77.3	198	405	612	816	1016	1210	1397	1577	1750	1915
						X _T	0.534	0.576	0.568	0.562	0.559	0.557	0.559	0.559	0.562	0.567	0.574
20	463.6	18.25	378	14.875	LN	C _v	77.3	272	558	837	1108	1367	1614	1849	2063	2265	2452
						X _T	0.534	0.573	0.564	0.558	0.557	0.559	0.563	0.571	0.581	0.593	0.607

WhisperFlo Level Z															Linear Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Construction	Flow Coefficient	Valve Opening—Percent of Total Travel										
	mm	Inches	mm	Inches			Min	10	20	30	40	50	60	70	80	90	100
16	374.7	14.75	203	8	SN	C _v	48.1	91	179	273	366	458	548	638	725	811	895
						X _T	0.534	0.466	0.462	0.459	0.456	0.454	0.453	0.453	0.453	0.454	0.456
20	463.6	18.25	203	8	SN	C _v	71.8	113	214	323	434	544	653	761	868	974	1078
						X _T	0.534	0.454	0.450	0.448	0.445	0.443	0.442	0.441	0.440	0.440	0.441
20	463.6	18.25	276	10.875	SN	C _v	71.8	148	288	437	585	731	875	1016	1155	1290	1422
						X _T	0.534	0.453	0.448	0.445	0.443	0.441	0.440	0.440	0.441	0.442	0.445
20	463.6	18.25	378	14.875	LN	C _v	71.8	200	403	607	808	1005	1196	1381	1560	1730	1894
						X _T	0.534	0.451	0.446	0.446	0.441	0.440	0.441	0.444	0.448	0.453	0.459

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The EUT-C has flow coefficients identical to the NPS 12 through 20 CL150 - 600 EUD. Please refer to those coefficients.
For additional EUT-C valve information, please refer to PS Sheet 51.1:Cryogenic (A).



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Quick Opening																Quick Opening Characteristic	
Valve Size, NPS ⁽¹⁾	Port Diameter		Coeffs. for 6 mm (0.25 in.) Travel ⁽²⁾	Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽³⁾
	mm	Inches		mm	Inches		10	20	30	40	50	60	70	80	90	100	
4 x 2	58.7	2.3125	29.8	29	1.125	C _V	13.8	26.5	42.7	61.8	78.1	93.3	105	114	119	124	0.82
						K _V	11.9	22.9	36.9	53.5	67.6	80.7	90.8	98.6	103	107	---
						X _T	0.571	0.651	0.662	0.648	0.687	0.708	0.714	0.709	0.713	0.693	---
6 x 4	111.1	4.375	49.3	51	2	C _V	40.8	85.3	140	196	242	277	306	326	340	340	0.88
						K _V	35.3	73.8	121	170	209	240	265	282	294	294	---
						X _T	0.577	0.594	0.612	0.656	0.732	0.779	0.793	0.791	0.804	0.818	---
8 x 4	111.1	4.375	52.7	51	2	C _V	43.2	88.7	147	202	252	294	328	354	371	379	0.89
						K _V	37.4	76.7	127	175	218	254	284	306	321	328	---
						X _T	0.629	0.650	0.631	0.677	0.726	0.797	0.809	0.817	0.815	0.817	---
8 x 6 10 x 6 ⁽⁴⁾	177.8	7	96.2	51	2	C _V	79.0	158	247	338	413	471	531	569	610	637	0.89
						K _V	68.3	137	214	292	357	407	459	492	528	551	---
						X _T	0.544	0.574	0.578	0.626	0.678	0.758	0.759	0.749	0.727	0.705	---
12 x 6	177.8	7	98.0	51	2	C _V	80.1	156	250	348	449	539	621	683	743	817	0.82
						K _V	69.3	135	216	301	388	466	537	591	643	707	---
						X _T	0.515	0.627	0.613	0.624	0.642	0.689	0.715	0.765	0.789	0.782	---
10 x 8	203.2	8	---	76	3	C _V	138	306	468	607	725	824	903	960	998	1040	0.88
						K _V	119	265	405	525	627	713	781	830	863	900	---
						X _T	0.665	0.632	0.651	0.685	0.708	0.722	0.741	0.761	0.791	0.787	---
12 x 8	203.2	8	---	76	3	C _V	149	315	481	640	780	898	1000	1100	1180	1260	0.79
						K _V	129	272	416	554	675	777	865	952	1021	1090	---
						X _T	0.687	0.735	0.727	0.745	0.754	0.784	0.744	0.754	0.711	0.636	---
Linear																Linear Characteristic	
4 x 2	58.7	2.3125	---	29	1.125	C _V	6.80	14.6	23.0	32.7	43.9	56.6	70.8	85.0	97.2	107	0.79
						K _V	5.88	12.6	19.9	28.3	38.0	49.0	61.2	73.5	84.1	92.6	---
						X _T	0.625	0.659	0.691	0.682	0.645	0.604	0.582	0.603	0.632	0.654	---
6 x 4	111.1	4.375	---	51	2	C _V	21.4	49.0	78.7	109	137	166	201	245	286	320	0.86
						K _V	18.5	42.4	68.1	94.3	119	144	174	212	247	277	---
						X _T	0.686	0.717	0.651	0.648	0.654	0.661	0.672	0.670	0.695	0.725	---
8 x 4	111.1	4.375	---	51	2	C _V	23.2	51.0	80.6	111	141	173	211	254	299	340	0.82
						K _V	20.1	44.1	69.7	96.0	122	150	183	220	259	294	---
						X _T	0.694	0.711	0.691	0.661	0.668	0.669	0.676	0.688	0.727	0.753	---
8 x 6 10 x 6 ⁽⁴⁾	177.8	7	---	51	2	C _V	44.0	108	170	234	293	354	405	474	552	617	0.88
						K _V	38.1	93.4	147.1	202	253	306	350	410	477	534	---
						X _T	0.796	0.726	0.758	0.742	0.772	0.767	0.801	0.748	0.702	0.656	---
12 x 6	177.8	7	---	51	2	C _V	51.7	111	176	249	319	391	458	540	632	729	0.81
						K _V	44.7	96.0	152	215	276	338	396	467	547	631	---
						X _T	0.716	0.710	0.691	0.656	0.639	0.639	0.661	0.649	0.639	0.633	---
10 x 8	203.2	8	---	76	3	C _V	95.9	212	336	459	586	696	798	876	928	975	0.91
						K _V	83.0	183	291	397	507	602	690	758	803	843	---
						X _T	0.683	0.617	0.610	0.641	0.657	0.694	0.715	0.748	0.795	0.843	---
12 x 8	203.2	8	---	76	3	C _V	104	223	348	490	638	781	907	999	1080	1160	0.80
						K _V	90.0	193	301	424	552	676	785	864	934	1003	---
						X _T	0.700	0.694	0.647	0.692	0.697	0.693	0.711	0.741	0.738	0.696	---

1. The first number indicates both body inlet and outlet sizes. The second number indicates effective trim size.
 2. When sizing self-operated regulators, use coefficients listed for 6 mm (0.25 inch) travel.
 3. At 100% travel.
 4. NPS 10x6 has a valve outlet area identical to the NPS 8x6.

Notes: The coefficients shown on this page are also appropriate for the EWT.
 The linear trim coefficients shown on this page for NPS 6 x 4 through 10 x 8 apply to EWT-C valves.

Equal Percentage (Flow Down)															Equal Percentage Characteristic	
Valve Size, NPS ⁽¹⁾	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽²⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
4 x 2	58.7	2.3125	29	1.125	C _v	2.53	4.52	6.66	9.29	13.6	19.9	29.4	45.2	65.8	82.2	0.82
					K _v	2.79	3.91	5.76	8.04	11.8	17.2	25.4	39.1	56.9	71.1	---
					X _T	0.626	0.652	0.664	0.683	0.657	0.66	0.646	0.591	0.560	0.587	---
6 x 4	111.1	4.375	51	2	C _v	7.34	13.1	19.8	30.6	46.6	69.1	108	168	225	271	0.87
					K _v	6.35	11.3	17.1	26.5	40.3	59.8	93.4	145	195	234	---
					X _T	0.996	0.808	0.711	0.640	0.605	0.605	0.630	0.613	0.662	0.712	---
8 x 4	111.1	4.375	51	2	C _v	8.01	14.1	21.1	31.7	47.2	73.5	118	180	240	286	0.85
					K _v	6.93	12.2	18.3	27.4	40.8	63.6	102	156	208	247	---
					X _T	0.684	0.671	0.643	0.617	0.566	0.591	0.566	0.573	0.645	0.675	---
8 x 6 10 x 6 ⁽¹⁾	177.8	7	51	2	C _v	13.2	26.4	45.4	71.1	112	178	256	342	431	508	0.91
					K _v	11.4	22.8	39.3	61.5	96.9	154	221	296	373	439	---
					X _T	0.837	0.837	0.719	0.683	0.596	0.573	0.626	0.682	0.688	0.684	---
12 x 6	177.8	7	51	2	C _v	23.6	36.2	52.8	76.3	110	164	248	348	453	565	0.79
					K _v	20.4	31.3	45.7	66.0	95.2	142	215	301	392	489	---
					X _T	0.628	0.664	0.694	0.714	0.703	0.739	0.695	0.683	0.658	0.627	---
10 x 8	203.2	8	76	3	C _v	32.3	65.7	111	184	303	462	635	778	876	924	0.89
					K _v	27.9	56.8	96.0	159	262	400	549	673	758	799	---
					X _T	0.725	0.720	0.687	0.634	0.585	0.582	0.595	0.615	0.652	0.802	---
12 x 8	203.2	8	76	3	C _v	28.4	61.0	112	196	311	481	687	839	992	1090	0.81
					K _v	24.6	52.8	96.9	170	269	416	594	726	858	943	---
					X _T	0.666	0.665	0.667	0.664	0.659	0.667	0.664	0.662	0.663	0.663	---

1. NPS 10x6 has a valve outlet area identical to the NPS 8x6.



Whisper Trim I (Flow Up)															Linear Characteristic	
Valve Size, NPS ⁽¹⁾	Port Diameter		Maximum Travel		Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽²⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
4 x 2	58.7	2.3125	29	1.125	C _v	14.8	28.9	40.8	52.9	65.1	77.2	89.0	100	111	118	---
					K _v	12.8	25.0	35.3	45.8	56.3	66.8	77.0	86.5	96.0	102	---
					X _T	0.320	0.323	0.323	0.322	0.323	0.321	0.322	0.325	0.324	0.322	---
6 x 4	111.1	4.375	51	2	C _v	30.9	69.9	110	149	187	223	253	281	307	325	---
					K _v	26.7	60.5	95.2	129	162	193	219	243	266	281	---
					X _T	0.668	0.476	0.382	0.351	0.349	0.358	0.367	0.382	0.401	0.416	---
8 x 4	111.1	4.375	51	2	C _v	36.2	77.6	116	155	193	231	266	298	326	345	---
					K _v	31.3	67.1	100	134	167	200	230	258	282	298	---
					X _T	0.447	0.403	0.356	0.333	0.331	0.329	0.334	0.341	0.350	0.368	---
8 x 6 10 x 6 ⁽⁴⁾	177.8	7	51	2	C _v	42.8	99.7	164	224	290	352	422	473	523	545	---
					K _v	37.0	86.2	142	194	251	304	365	409	452	471	---
					X _T	0.550	0.409	0.364	0.350	0.334	0.326	0.310	0.326	0.329	0.350	---
			102	4 ⁽³⁾	C _v	113	266	355	475	522	522	522	522	519	522	---
					K _v	97.7	230	307	411	452	452	452	452	449	452	---
					X _T	0.412	0.285	0.357	0.354	0.469	0.632	0.777	0.854	0.919	0.917	---
12 x 6	177.8	7	51	2	C _v	49.0	126	196	269	340	406	476	540	598	641	---
					K _v	42.4	109	170	233	294	351	412	467	517	554	---
102	4 ⁽³⁾	X _T			0.547	0.300	0.286	0.270	0.264	0.267	0.263	0.264	0.273	0.273	---	
		C _v	113	258	343	469	572	641	755	828	884	953	---			
		K _v	97.7	223	297	406	495	554	653	716	765	824	---			
10 x 8	203.2	8	76	3	C _v	82	186	297	414	486	580	673	743	803	851	---
					K _v	70.6	160	257	358	420	501	582	643	695	736	---
					X _T	0.619	0.475	0.410	0.408	0.425	0.423	0.427	0.464	0.487	0.538	---
			102	4	C _v	113	258	414	510	649	743	823	878	895	921	---
					K _v	97.7	223	358	441	561	643	712	759	774	797	---
					X _T	0.538	0.411	0.408	0.431	0.415	0.464	0.495	0.580	0.661	0.713	---
12 x 8	203.2	8	76	3	C _v	147	268	358	445	537	624	702	772	842	900	---
					K _v	127	232	310	385	465	540	607	668	728	779	---
					X _T	0.256	0.272	0.390	0.422	0.406	0.411	0.439	0.473	0.480	0.508	---
			102	4	C _v	181	329	449	563	674	778	866	931	972	1000	---
					K _v	157	285	388	487	583	673	749	805	841	865	---
					X _T	0.329	0.350	0.408	0.425	0.431	0.452	0.494	0.540	0.583	0.644	---

1. The first number indicates both body inlet and outlet size. The second number indicates effective trim size.
 2. At 100% travel.
 3. Travel limited to 3.5 inches when optional multiple piston ring is used. Reduce printed capacities accordingly.
 4. NPS 10x6 has a valve outlet area identical to the NPS 8x6.

Notes: The coefficients shown on this page are also appropriate for the EWT.
 The coefficients shown on this page for NPS 6 x 4 through 10 x 8 also apply to EWT-C valves.

Whisper Trim III																	Linear Characteristic	
Valve Size, NPS ⁽²⁾	Port Diameter		Maximum Travel		Cage Level	Flow Coefficient	Valve Opening—Percent of Total Travel										X _T ⁽¹⁾	
	mm	Inches	mm	Inches			Min.	10	20	30	40	50	60	70	80	90		100
4x2	58.7	2.312	34.9	1.38	A1	Cv	7.4	8.7	18.7	28.7	36.7	41.6	45.3	47.4	48.4	48.9	49.4	0.890
						Kv	6.4	7.5	16.2	24.8	31.7	36.0	39.2	41.0	41.9	42.34	42.7	
	33.3	1.312	31.8	1.25	A3	Cv	2.2	0.4	3.1	7.7	12.8	17.1	21.6	24.5	27.3	28.5	29.7	0.880
						Kv	1.9	0.3	2.7	6.7	11.1	14.8	18.7	21.2	23.6	24.7	25.7	
	33.3	1.312	31.8	1.25	B1	Cv	2.8	2.2	6.2	9.2	12.0	14.7	17.3	19.9	22.3	24.6	26.0	0.750
						Kv	2.4	1.9	5.4	8.0	10.4	12.7	15.0	17.2	19.3	21.3	22.5	
	33.3	1.312	31.8	1.25	B3	Cv	1.5	0.5	1.3	4.4	7.0	9.5	11.8	14.1	16.3	18.5	19.8	0.750
						Kv	1.3	0.4	1.1	3.8	6.1	8.2	10.2	12.2	14.1	16.0	17.1	
	33.3	1.313	31.8	1.25	C1	Cv	2.2	0.5	3.0	4.6	5.9	7.5	9.1	10.7	12.3	13.9	14.0	0.780
						Kv	1.9	0.4	2.6	4.0	5.1	6.5	7.9	9.3	10.6	12.0	12.1	
	33.3	1.313	28.6	1.13	C3	Cv	1.2	0.4	0.7	2.1	3.9	5.5	7.2	9.0	10.7	12.4	13.8	0.780
						Kv	1.1	0.3	0.6	1.8	3.4	4.8	6.2	7.8	9.3	10.7	11.9	
	33.3	1.313	31.8	1.25	D1	Cv	2.2	0.5	3.0	4.6	5.9	7.5	9.1	10.7	12.3	13.9	14.0	0.780
						Kv	1.9	0.4	2.6	4.0	5.1	6.5	7.9	9.3	10.6	12.0	12.1	
33.3	1.313	28.6	1.13	D3	Cv	1.2	0.4	0.7	2.1	3.9	5.5	7.2	9.0	10.7	12.4	13.8	0.780	
					Kv	1.1	0.3	0.6	1.8	3.4	4.8	6.2	7.8	9.3	10.7	11.9		
6x4	111.1	4.375	50.8	2.00	A1	Cv	10.9	28.0	49.0	78.0	96.4	116.0	126.0	137.0	142.0	148.0	158.0	0.810
						Kv	9.4	24.2	42.4	67.5	83.4	100.3	109.0	118.5	122.8	128.0	136.7	
	111.1	4.375	50.8	2.00	A3	Cv	6.8	20.0	41.0	60.0	81.0	101.0	120.0	135.0	147.0	158.0	164.8	0.810
						Kv	5.8	17.3	35.5	51.9	70.1	87.4	103.8	116.8	127.2	136.7	142.6	
	111.1	4.375	50.8	2.00	B1	Cv	4.6	6.7	19.5	31.7	43.3	56.0	68.3	80.2	92.8	105.0	115.0	0.492
						Kv	3.9	5.8	16.9	27.4	37.5	48.4	59.1	69.4	80.3	90.8	99.5	
	111.1	4.375	50.8	2.00	B3	Cv	5.9	7.0	19.0	32.0	44.0	55.0	68.0	79.0	91.0	104.0	109.6	0.492
						Kv	5.1	6.1	16.4	27.7	38.1	47.6	58.8	68.3	78.7	90.0	94.8	
	87.3	3.438	50.8	2.00	C1	Cv	4.6	6.5	15.3	23.7	31.9	39.8	47.6	55.2	62.8	70.3	76.6	0.523
						Kv	4.0	5.6	13.2	20.5	27.6	34.4	41.2	47.8	54.3	60.8	66.3	
	87.3	3.438	76.2	3.00	C3	Cv	4.0	9.3	19.2	28.0	37.4	46.6	56.2	65.3	73.8	83.5	89.3	0.467
						Kv	3.5	8.0	16.6	24.2	32.4	40.3	48.6	56.5	63.8	72.2	77.2	
	87.3	3.438	50.8	2.00	D1	Cv	4.6	6.5	15.3	23.7	31.9	39.8	47.6	55.2	62.8	70.3	76.6	0.523
						Kv	4.0	5.6	13.2	20.5	27.6	34.4	41.2	47.8	54.3	60.8	66.3	
87.3	3.438	76.2	3.00	D3	Cv	4.0	9.3	19.2	28.0	37.4	46.6	56.2	65.3	73.8	83.5	89.3	0.467	
					Kv	3.5	8.0	16.6	24.2	32.4	40.3	48.6	56.5	63.8	72.2	77.2		
8x4	111.1	4.375	50.8	2.00	A1	Cv	10.9	28.0	49.0	78.0	96.4	116.0	126.0	137.0	142.0	148.0	158.0	0.770
						Kv	9.4	24.2	42.4	67.5	83.4	100.3	109.0	118.5	122.8	128.0	136.7	
	87.3	3.438	50.8	2.00	A3	Cv	5.9	11.2	27.4	49.4	70.0	90.6	110.0	125.0	135.0	139.0	137.0	0.492
						Kv	5.1	9.7	23.7	42.7	60.6	78.4	95.2	108.1	116.8	120.2	118.5	
	111.1	4.375	50.8	2.00	B1	Cv	4.6	6.7	19.5	31.7	43.3	56.0	68.3	80.2	92.8	105.0	115.0	0.770
						Kv	3.9	5.8	16.9	27.4	37.5	48.4	59.1	69.4	80.3	90.8	99.5	
	87.3	3.438	50.8	2.00	B3	Cv	4.4	8.4	21.2	32.9	43.7	54.2	64.5	74.8	85.1	95.5	102.0	0.492
						Kv	3.8	7.3	18.3	28.5	37.8	46.9	55.8	64.7	73.6	82.6	88.2	
	87.3	3.438	50.8	2.00	C1	Cv	4.6	6.5	15.3	23.7	31.9	39.8	47.6	55.2	62.8	70.3	76.6	0.523
						Kv	4.0	5.6	13.2	20.5	27.6	34.4	41.2	47.8	54.3	60.8	66.3	
	87.3	3.438	50.8	2.00	C3	Cv	4.0	10.1	18.4	26.2	33.5	40.5	47.3	54.0	60.6	67.2	73.8	0.523
						Kv	3.5	8.7	15.9	22.7	29.0	35.0	40.9	46.7	52.4	58.1	63.8	
	87.3	3.438	76.2	3.00	C3 ⁽²⁾	Cv	4.0	9.2	18.7	28.0	37.7	46.6	56.3	63.2	74.2	83.6	89.3	0.523
						Kv	3.5	8.0	16.2	24.2	32.6	40.3	48.7	54.7	64.2	72.3	77.2	
87.3	3.438	50.8	2.00	D1	Cv	4.6	6.5	15.3	23.7	31.9	39.8	47.6	55.2	62.8	70.3	76.6	0.523	
					Kv	4.0	5.6	13.2	20.5	27.6	34.4	41.2	47.8	54.3	60.8	66.3		
87.3	3.438	50.8	2.00	D3	Cv	4.0	10.1	18.4	26.2	33.5	40.5	47.3	54.0	60.6	67.2	73.8	0.467	
					Kv	3.5	8.7	15.9	22.7	29.0	35.0	40.9	46.7	52.4	58.1	63.8		
87.3	3.438	76.2	3.00	D3 ⁽²⁾	Cv	4.0	9.2	18.7	28.0	37.7	46.6	56.3	63.2	74.2	83.6	89.3	0.467	
					Kv	3.5	8.0	16.2	24.2	32.6	40.3	48.7	54.7	64.2	72.3	77.2		

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Valve Size, NPS ⁽²⁾	Port Diameter		Maximum Travel		Cage Level	Flow Coefficient	Valve Opening—Percent of Total Travel										X _T ⁽¹⁾		
	mm	Inches	mm	Inches			Min.	10	20	30	40	50	60	70	80	90		100	
8x6 10x6	136.5	5.375	127.0	5.00	A1	Cv	14.2	50.0	97.6	156.0	215.0	270.0	326.0	383.0	427.0	457.0	459.9	0.710	
						Kv	12.3	43.3	84.4	134.9	186.0	233.6	282.0	331.3	369.4	395.3	397.8		
	177.8	7.000	76.2	3.00	A1	Cv	19.2	56.8	98.9	141.0	183.1	225.2	267.3	309.4	354.5	393.6	416.1	0.608	
						Kv	16.6	49.1	85.6	122.0	158.4	194.8	231.2	267.6	306.7	340.5	359.9		
	177.8	7.000	101.6	4.00	A1 ⁽³⁾	Cv	18.4	99.2	166.8	229.4	287.5	340.9	389.4	431.5	465.7	489.9	494.0	0.775	
						Kv	15.9	85.8	144.3	198.4	248.7	294.9	336.9	373.3	402.9	423.8	427.3		
	136.5	5.375	127.0	5.00	A3	Cv	4.0	50.0	97.6	159.0	215.0	270.0	326.0	383.0	427.0	457.0	460.0	0.710	
						Kv	3.5	43.3	84.4	137.5	186.0	233.6	282.0	331.3	369.4	395.3	397.9		
	177.8	7.000	101.6	4.00	A3 ⁽³⁾	Cv	13.4	47.5	112.1	171.0	226.6	285.7	337.9	393.5	442.0	487.4	520.4	0.740	
						Kv	11.6	41.1	97.0	147.9	196.0	247.1	292.3	340.4	382.4	421.6	450.2		
	136.5	5.375	127.0	5.00	B1	Cv	11.1	38.2	76.2	11.2	144.2	176.1	207.7	239.1	270.7	302.2	330.9	0.563	
						Kv	9.6	33.0	65.9	9.7	124.7	152.3	179.7	206.8	234.2	261.4	286.2		
	136.5	5.375	127.0	5.00	B3	Cv	4.7	40.0	72.3	108.0	143.0	178.0	213.0	248.0	280.0	314.0	347.0	0.563	
						Kv	4.0	34.6	62.5	93.4	123.7	154.0	184.3	214.5	242.2	271.6	300.2		
	136.5	5.375	127.0	5.00	C1	Cv	10.2	30.5	57.9	83.5	107.8	131.0	153.6	175.7	197.7	219.6	236.1	0.563	
						Kv	8.8	26.4	50.1	72.2	93.3	113.3	132.9	152.0	171.0	190.0	204.2		
	136.5	5.375	127.0	5.00	C3	Cv	4.7	28.0	50.0	74.7	99.3	124.0	149.0	173.0	197.0	221.0	245.0	0.563	
						Kv	4.0	24.2	43.3	64.6	85.9	107.3	128.9	149.7	170.4	191.2	211.9		
136.5	5.375	127.0	5.00	D1	Cv	10.2	30.5	57.9	83.5	107.8	131.0	153.6	175.7	197.7	219.6	236.1	0.563		
					Kv	8.8	26.4	50.1	72.2	93.3	113.3	132.9	152.0	171.0	190.0	204.2			
136.5	5.375	127.0	5.00	D3	Cv	4.7	28.0	50.0	74.7	99.3	124.0	149.0	173.0	197.0	221.0	245.3	0.563		
					Kv	4.0	24.2	43.3	64.6	85.9	107.3	128.9	149.7	170.4	191.2	212.2			
12x6	136.5	5.375	165.1	6.50	A1	Cv	15.2	62.0	151.0	238.0	324.0	407.0	492.0	573.0	651.0	697.0	698.0	0.589	
						Kv	13.1	53.6	130.6	205.9	280.3	352.1	425.6	495.7	563.1	602.9	603.8		
	136.5	5.375	165.1	6.50	A3	Cv	4.0	62.0	151.0	238.0	324.0	407.0	492.0	573.0	651.0	697.0	698.0	0.589	
						Kv	3.5	53.6	130.6	205.9	280.3	352.1	425.6	495.7	563.1	602.9	603.8		
	136.5	5.375	165.1	6.50	B1	Cv	4.7	51.0	94.0	141.0	187.0	233.0	278.0	324.0	370.0	413.0	457.0	0.563	
						Kv	4.0	44.1	81.3	122.0	161.8	201.6	240.5	280.3	320.1	357.3	395.3		
	136.5	5.375	165.1	6.50	B3	Cv	4.7	51.0	94.0	141.0	187.0	233.0	278.0	324.0	370.0	413.0	457.0	0.563	
						Kv	4.0	44.1	81.3	122.0	161.8	201.6	240.5	280.3	320.1	357.3	395.3		
	136.5	5.375	165.1	6.50	C1	Cv	10.2	39.1	73.7	105.7	136.0	165.2	194.0	222.6	251.2	280.0	301.8	0.563	
						Kv	8.8	33.8	63.8	91.4	117.6	142.9	167.8	192.6	217.3	242.2	261.1		
	136.5	5.375	165.1	6.50	C3	Cv	4.7	4.0	64.0	96.0	127.0	160.0	191.0	222.0	254.0	284.0	315.0	0.563	
						Kv	4.0	3.5	55.4	83.0	109.9	138.4	165.2	192.0	219.7	245.7	272.5		
	136.5	5.375	165.1	6.50	D1	Cv	10.2	39.1	73.7	105.7	136.0	165.2	194.0	222.6	251.2	280.0	301.8	0.563	
						Kv	8.8	33.8	63.8	91.4	117.6	142.9	167.8	192.6	217.3	242.2	261.1		
	136.5	5.375	165.1	6.50	D3	Cv	4.7	4.0	64.0	96.0	127.0	160.0	191.0	222.0	254.0	284.0	315.3	0.563	
						Kv	4.0	3.5	55.4	83.0	109.9	138.4	165.2	192.0	219.7	245.7	272.8		
	10x8	203.2	8.000	152.4	6.00	A1	Cv	21.6	130.0	266.0	391.0	508.0	616.0	712.0	793.0	854.0	882.0	882.3	0.731
							Kv	18.7	112.5	230.1	338.2	439.4	532.9	615.9	686.0	738.8	763.0	763.2	
203.2		8.000	152.4	6.00	A3	Cv	14.4	135.0	270.0	396.0	512.0	620.0	715.0	796.0	855.0	882.0	882.3	0.731	
						Kv	12.5	116.8	233.6	342.6	442.9	536.3	618.5	688.6	739.6	763.0	763.2		
203.2		8.000	152.4	6.00	B1	Cv	18.0	60.0	117.0	174.0	230.0	287.0	344.0	400.0	457.0	514.0	578.0	0.648	
						Kv	15.6	51.9	101.2	150.5	199.0	248.3	297.6	346.0	395.3	444.6	500.0		
203.2		8.000	152.4	6.00	B3	Cv	12.8	57.0	113.0	169.0	225.0	281.0	336.0	392.0	448.0	504.0	553.1	0.648	
						Kv	11.1	49.3	97.8	146.2	194.6	243.1	290.7	339.1	387.5	436.0	478.5		
203.2		8.000	152.4	6.00	C1	Cv	11.6	44.0	83.0	122.0	162.0	205.0	240.0	290.0	319.0	358.0	392.0	0.569	
						Kv	10.0	38.1	71.8	105.5	140.1	177.3	207.6	250.9	276.0	309.7	339.1		
203.2		8.000	152.4	6.00	C3	Cv	11.6	44.0	83.0	122.0	162.0	205.0	240.0	290.0	319.0	358.0	391.6	0.569	
						Kv	10.0	38.1	71.8	105.5	140.1	177.3	207.6	250.9	276.0	309.7	338.8		
177.8		7.000	152.4	6.00	D1	Cv	11.6	44.0	83.0	122.0	162.0	205.0	240.0	290.0	319.0	358.0	392.0	0.569	
						Kv	10.0	38.1	71.8	105.5	140.1	177.3	207.6	250.9	276.0	309.7	339.1		
177.8		7.000	152.4	6.00	D3	Cv	9.8	39.0	75.0	110.0	145.0	180.0	216.0	251.0	286.0	321.0	347.5	0.569	
						Kv	8.4	33.7	64.9	95.2	125.4	155.7	186.9	217.1	247.4	277.7	300.6		

Valve Size, NPS ⁽²⁾	Port Diameter		Maximum Travel		Cage Level	Flow Coefficient	Valve Opening—Percent of Total Travel										X _T ⁽¹⁾	
	mm	Inches	mm	Inches			Min.	10	20	30	40	50	60	70	80	90		100
12x8	203.2	8.000	152.4	6.00	A1	Cv	21.6	130.0	266.0	391.0	508.0	616.0	712.0	793.0	854.0	882.0	882.3	0.731
						Kv	18.7	112.5	230.1	338.2	439.4	532.9	615.9	686.0	738.8	763.0	763.2	
	203.2	8.000	152.4	6.00	A3	Cv	14.4	135.0	270.0	396.0	512.0	620.0	715.0	796.0	855.0	882.0	882.3	0.731
						Kv	12.5	116.8	233.6	342.6	442.9	536.3	618.5	688.6	739.6	763.0	763.2	
	203.2	8.000	152.4	6.00	B1	Cv	18.0	60.0	117.0	174.0	230.0	287.0	344.0	400.0	457.0	514.0	578.0	0.648
						Kv	15.6	51.9	101.2	150.5	199.0	248.3	297.6	346.0	395.3	444.6	500.0	
	203.2	8.000	152.4	6.00	B3	Cv	12.8	57.0	113.0	169.0	225.0	281.0	336.0	392.0	448.0	504.0	553.1	0.648
						Kv	11.1	49.3	97.8	146.2	194.6	243.1	290.7	339.1	387.5	436.0	478.5	
	203.2	8.000	152.4	6.00	C1	Cv	11.6	44.0	83.0	122.0	162.0	205.0	240.0	290.0	319.0	358.0	392.0	0.569
						Kv	10.0	38.1	71.8	105.5	140.1	177.3	207.6	250.9	276.0	309.7	339.1	
	203.2	8.000	152.4	6.00	C3	Cv	11.6	44.0	83.0	122.0	162.0	205.0	240.0	290.0	319.0	358.0	391.6	0.569
						Kv	10.0	38.1	71.8	105.5	140.1	177.3	207.6	250.9	276.0	309.7	338.8	
	177.8	7.000	152.4	6.00	D1	Cv	11.6	44.0	83.0	122.0	162.0	205.0	240.0	290.0	319.0	358.0	392.0	0.569
						Kv	10.0	38.1	71.8	105.5	140.1	177.3	207.6	250.9	276.0	309.7	339.1	
	177.8	7.000	152.4	6.00	D3	Cv	9.8	39.0	75.0	110.0	145.0	180.0	216.0	251.0	286.0	321.0	347.5	0.569
						Kv	8.4	33.7	64.9	95.2	125.4	155.7	186.9	217.1	247.4	277.7	300.6	

1. This column lists XT factors for Whisper Trim III cages at 100% travel
 2. Not applicable for NPS 8x4 EWD with Class IV multiple piston ring
 3. Travel limited to 3.75" for EWD valves with Class IV multiple piston rings and EWT with PEEK anti-extrusion seal ring

Notes: The coefficients shown on this page are also appropriate for Fisher EWT valves and coefficients for NPS 4x2 and 6x4 apply to Fisher EWS Valves. The coefficients for NPS 6x4 through 10x8 also apply to Fisher EWT-C valves.



Quick Opening - Flow Down															Quick Opening Characteristic	
Valve Size, NPS ⁽¹⁾	Port Diameter		Maximum Travel		Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽²⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
8 x 6	177.8	7	51	2	C _V	83	166	259	355	434	495	558	597	641	670	0.89
					K _V	71.8	144	224	307	375	428	483	516	554	580	---
					X _T	0.501	0.569	0.607	0.633	0.688	0.772	0.787	0.811	0.798	0.809	---
12 x 8	203.2	8	76	3	C _V	149	315	481	640	780	898	1000	1100	1180	1260	0.79
					K _V	129	272	416	554	675	777	865	952	1021	1090	---
					X _T	0.687	0.735	0.727	0.745	0.754	0.784	0.744	0.754	0.711	0.636	---
Linear - Flow Down															Linear Characteristic	
8 x 6	177.8	7	51	2	C _V	46	112	177	243	305	368	421	493	574	644	0.89
					K _V	39.8	96.9	153	210	264	318	364	426	497	557	---
					X _T	0.884	0.746	0.747	0.743	0.755	0.756	0.783	0.788	0.759	0.729	---
12 x 8	203.2	8	76	3	C _V	104	223	348	490	638	781	907	999	1080	1160	0.80
					K _V	90.0	193	301	424	552	676	785	864	934	1003	---
					X _T	0.700	0.694	0.647	0.692	0.697	0.693	0.711	0.741	0.738	0.696	---
Equal Percentage - Flow Down															Equal Percentage Characteristic	
8 x 6	177.8	7	51	2	C _V	12.2	24.4	42.4	67.1	105	167	241	321	405	477	0.92
					K _V	10.6	21.1	36.7	58.0	90.8	144	208	278	350	413	---
					X _T	0.715	0.614	0.526	0.506	0.507	0.529	0.609	0.669	0.704	0.757	---
12 x 8	203.2	8	76	3	C _V	28.4	61.0	112	196	311	481	687	839	992	1090	0.81
					K _V	24.6	52.8	96.9	170	269	416	594	726	858	943	---
					X _T	0.666	0.665	0.667	0.664	0.659	0.666	0.664	0.662	0.663	0.663	---
Whisper Trim I - Flow Up															Linear Characteristic	
8 x 6	177.8	7	51	2	C _V	44.8	104	171	233	302	366	439	492	544	568	---
					K _V	38.8	90.0	148	202	261	317	380	426	471	491	---
					X _T	0.516	0.384	0.342	0.330	0.315	0.308	0.292	0.307	0.309	0.327	---

1. The first number indicates both body inlet and outlet size. The second number indicates effective trim size.
2. At 100% travel.

Notes: The coefficients shown on this page are also appropriate for the EWT and EWT-1. EWD-1 and EWT-1 are available only in NPS 12 x 8 body size.

Whisper Trim III - Flow Up																Linear Characteristic	
Valve Size, NPS ⁽¹⁾	Port Diameter		Maximum Travel		Flow Coeffi- cient	Valve Opening—Percent of Total Travel											X _T at Max. Travel
	mm	Inches	mm	Inches		Minimum ⁽²⁾	10	20	30	40	50	60	70	80	90	100	
A1 & A3																	
12 x 8	196.8	7.75	146	5.75	C _v	25	84	168	253	337	422	506	590	675	759	843	0.563
					K _v	22	73	145	219	292	365	438	511	584	657	729	---
B1 & B3																	
12 x 8	196.8	7.75	146	5.75	C _v	21	55	111	177	227	277	326	422	443	498	554	0.563
					K _v	18	48	96	153	196	240	282	365	383	431	479	---
C1 & C3																	
12 x 8	196.8	7.75	146	5.75	C _v	18	39	78	117	156	195	235	273	312	352	391	0.563
					K _v	16	34	68	101	135	169	203	236	270	304	338	---
D1 & D3																	
12 x 8	171.5	6.75	146	5.75	C _v	16	33	67	100	133	167	201	233	266	301	332	0.563
					K _v	14	29	58	86	115	144	173	201	230	260	287	---
1. The first number indicates both inlet and outlet size. The second number indicates effective trim size. 2. Valve should not be required to throttle at less than the specified minimum coefficient for an extended period of time or erosion damage to the valve seat may result.																	

Notes: The coefficients shown on this page are also appropriate for the EWT-1.

Linear Cast-Window Cage																Linear Characteristic		
Valve Size, NPS ⁽¹⁾	Port Diameter		Maximum Travel		Con-Struc-tion ⁽²⁾	Flow Coeffi-cient	Valve Opening—Percent of Total Travel										F _L	
	mm	Inches	mm	Inches			Min ⁽³⁾	10	20	30	40	50	60	70	80	90		100
20 x 16	374.7	14.75	102	4.00	SNC	C _v	46	269	524	814	1100	1390	1730	2070	2380	2670	2960	0.88
						K _v	39.8	233	453	704	952	1202	1496	1791	2059	2310	2560	---
						X _T	0.391	0.989	0.901	0.804	0.750	0.742	0.742	0.748	0.755	0.759	0.767	---
20 x 16	374.7	14.75	127	5.00	SNC	C _v	46	321	670	1030	1390	1810	2230	2590	2960	3300	3580	0.88
						K _v	39.8	278	580	891	1202	1566	1929	2240	2560	2855	3097	---
						X _T	0.391	0.994	0.843	0.759	0.742	0.738	0.751	0.761	0.772	0.759	0.750	---
24 x 16	374.7	14.75	102	4.00	SNC	C _v	46	351	604	900	1183	1470	1770	2090	2450	2820	3190	0.88
						K _v	39.8	304	522	779	1023	1272	1531	1808	2119	2439	2759	---
						X _T	0.391	0.994	0.914	0.808	0.751	0.738	0.742	0.744	0.758	0.766	0.757	---
24 x 16	374.7	14.75	140	5.50	SNC	C _v	46	418	817	1220	1600	2040	2540	3050	3530	3850	4060	0.88
						K _v	39.8	362	707	1055	1384	1765	2197	2638	3053	3330	3512	---
						X _T	0.391	0.986	0.820	0.744	0.739	0.744	0.759	0.769	0.759	0.746	0.765	---

1. The first number indicates both inlet and outlet size. The second number indicates effective trim size.
2. Construction—SNC = short-neck, cast windows.
3. Do not allow the valve to throttle at less than the minimum coefficient shown for an extended time, or erosion damage to the valve seat might result.

Linear Drilled-Window Cage															Linear Characteristic				
Valve Type	Valve Size, NPS(1)	Port Diameter		Maximum Travel		Con-Struc-tion(2)	Flow Coeffi-cient	Valve Opening—Percent of Total Travel										F _L	
		mm	Inches	mm	Inches			Min(3)	10	20	30	40	50	60	70	80	90		100
EWD, EWT	20 x 16	374.7	14.75	276	10.88	LND	C _v	46	262	550	874	1200	1560	1850	2190	2470	2760	3040	0.89
							K _v	39.8	227	476	756	1038	1349	1600	1894	2137	2387	2630	---
							X _T	0.391	0.985	0.894	0.791	0.740	0.738	0.743	0.745	0.758	0.762	0.760	---
	20 x 16	374.7	14.75	378	14.88	LN-SD	C _v	46	330	742	1160	1570	1970	2370	2740	3110	3430	3660	0.89
							K _v	39.8	285	642	1003	1358	1704	2050	2370	2690	2967	3166	---
							X _T	0.391	0.985	0.815	0.739	0.739	0.740	0.754	0.764	0.768	0.752	0.753	---
EWT-2	20 x 16	412.8	16.25	276	10.88	LND	C _v	52	322	679	1080	1480	1880	2210	2570	2880	3180	3480	0.89
							K _v	45.0	279	587	934	1280	1626	1912	2223	2491	2751	3010	---
							X _T	0.391	0.988	0.888	0.786	0.742	0.738	0.759	0.744	0.754	0.762	0.768	---
	20 x 16	412.8	16.25	378	14.88	LN-SD	C _v	52	390	868	1350	1850	2340	2810	3240	3670	4060	4370	0.89
							K _v	45.0	337	751	1168	1600	2024	2431	2803	3175	3512	3780	---
							X _T	0.391	0.990	0.823	0.751	0.736	0.742	0.754	0.760	0.760	0.754	0.746	---
EWD, EWT	24 x 16	374.7	14.75	378	14.88	LND	C _v	46	328	701	1140	1610	2060	2480	2860	3140	3340	3490	0.89
							K _v	39.8	284	606	986	1393	1782	2145	2474	2716	2889	3019	---
							X _T	0.391	0.997	0.934	0.828	0.767	0.745	0.734	0.743	0.753	0.767	0.764	---
	24 x 16	374.7	14.75	429	16.88	LN-SD	C _v	46	356	764	1240	1750	2210	2620	3030	3300	3500	3670	0.89
							K _v	39.8	308	661	1073	1514	1912	2266	2621	2855	3028	3175	---
							X _T	0.391	0.994	0.919	0.816	0.757	0.743	0.741	0.751	0.759	0.759	0.748	---
EWT-2	24 x 16	412.8	16.25	378	14.88	LND	C _v	52	363	765	1240	1750	2280	2740	3260	3670	3960	4150	0.89
							K _v	45.0	314	662	1073	1514	1972	2370	2820	3175	3425	3590	---
							X _T	0.391	0.997	0.955	0.853	0.787	0.745	0.739	0.738	0.748	0.759	0.763	---
	24 x 16	412.8	16.25	429	16.88	LN-SD	C _v	52	393	832	1350	1900	2440	2940	3480	3850	4110	4310	0.89
							K _v	45.0	340	720	1168	1644	2111	2543	3010	3330	3555	3728	---
							X _T	0.391	0.997	0.942	0.834	0.775	0.746	0.738	0.743	0.757	0.767	0.757	---
EWD, EWT	24 x 20	463.6	18.25	378	14.88	LND	C _v	56	457	995	1560	2130	2640	3310	3451	3650	3885	4115	0.89
							K _v	48.4	395	861	1349	1842	2284	2863	2985	3157	3361	3559	---
							X _T	0.391	0.991	0.850	0.763	0.738	0.739	0.743	0.753	0.757	0.769	0.766	---
	24 x 20	463.6	18.25	429	16.88	LN-SD	C _v	56	490	1080	1680	2300	2920	3420	3637	3903	4160	4357	0.89
							K _v	48.4	424	934	1453	1990	2526	2958	3146	3376	3598	3769	---
							X _T	0.391	0.990	0.832	0.753	0.735	0.733	0.748	0.755	0.767	0.766	0.754	---
EWT-2	24 x 20	501.7	19.75	378	14.88	LND	C _v	60	490	1163	1898	2561	3152	3672	4119	4494	4797	5028	0.89
							K _v	51.9	434	1006	1642	2216	2727	3176	3563	3887	4149	4349	---
							X _T	0.391	0.992	0.873	0.775	0.743	0.736	0.735	0.747	0.758	0.760	0.768	---
	24 x 20	501.7	19.75	429	16.88	LN-SD	C _v	60	591	1320	2050	2790	3470	4250	4530	4810	5010	5210	0.89
							K _v	51.9	511	1142	1773	2413	3002	3676	3918	4161	4334	4507	---
							X _T	0.391	0.988	0.816	0.741	0.735	0.747	0.748	0.765	0.770	0.758	0.749	---

1. The first number indicates both inlet and outlet size. The second number indicates effective trim size.
2. Construction—LND - long neck, drilled windows; LN-SD = long neck with bonnet spacer, drilled windows.
3. Do not allow the valve to throttle at less than the minimum coefficient shown for an extended time, or erosion damage to the valve seat might result.

Equal Percentage Cast-Window Cage																	Equal Percentage Characteristic	
Valve Size, NPS ⁽¹⁾	Port Diameter		Maximum Travel		Construction ⁽²⁾	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L	
	mm	Inches	mm	Inches			Min ⁽³⁾	10	20	30	40	50	60	70	80	90		100
20 x 16	374.7	14.75	102	4.00	SNC	C _v	23	29.8	61.3	99.1	152	233	355	544	818	1180	1630	0.88
						K _v	19.9	25.8	53.0	85.7	131	202	307	471	708	1021	1410	---
						X _T	0.391	0.997	0.990	0.993	0.990	0.987	0.986	0.896	0.802	0.744	0.735	---
20 x 16	374.7	14.75	127	5.00	SNC	C _v	23	37.2	77.4	132	233	388	652	1070	1630	2080	2460	0.88
						K _v	19.9	32.2	67.0	114	202	336	564	926	1410	1799	2128	---
						X _T	0.391	0.989	0.990	0.989	0.987	0.959	0.847	0.751	0.735	0.747	0.755	---
20 x 16	374.7	14.75	140	5.50	SNC	C _v	23	41.2	88.2	162	293	517	900	1470	2000	2420	2830	0.88
						K _v	19.9	35.6	76.3	140	253	447	779	1272	1730	2093	2448	---
						X _T	0.391	0.990	0.990	0.991	0.987	0.907	0.785	0.741	0.742	0.757	0.762	---
24 x 16	374.7	14.75	102	4.00	SNC	C _v	23	38.9	79.8	128	195	296	444	646	922	1290	1700	0.88
						K _v	19.9	33.6	69.0	111	169	256	384	559	798	1116	1471	---
						X _T	0.391	0.992	0.992	0.996	0.995	0.993	0.982	0.899	0.801	0.744	0.735	---
24 x 16	374.7	14.75	127	5.00	SNC	C _v	23	48.6	100	170	296	480	753	1180	1700	2130	2580	0.88
						K _v	19.9	42.0	86.5	147	256	415	651	1021	1471	1842	2232	---
						X _T	0.391	0.986	0.990	0.991	0.993	0.969	0.852	0.751	0.735	0.742	0.757	---
24 x 16	374.7	14.75	140	5.50	SNC	C _v	23	53.8	114	208	371	619	1010	1560	2030	2530	3040	0.88
						K _v	19.9	46.5	98.6	180	321	535	874	1349	1756	2188	2630	---
						X _T	0.391	0.989	0.990	0.993	0.995	0.908	0.781	0.732	0.745	0.758	0.774	---

1. The first number indicates both inlet and outlet size. The second number indicates effective trim size.
2. Construction—SNC = short-neck, cast windows.
3. Do not allow the valve to throttle at less than the minimum coefficient shown for an extended time, or erosion damage to the valve seat might result.

Equal Percentage Drilled-Window Cage																	Equal Percentage Characteristic		
Valve Type	Valve Size, NPS(1)	Port Diameter		Maximum Travel		Construction(2)	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L	
		mm	Inches	mm	Inches			Min(3)	10	20	30	40	50	60	70	80	90		100
EWD, EWT	20 x 16	374.7	14.75	276	10.88	LND	C _v	23	42.8	93.5	170	278	445	750	1220	1810	2290	2700	0.89
							K _v	19.9	37.0	80.9	147	240	385	649	1055	1566	1981	2336	---
							X _T	0.391	0.986	0.995	0.991	0.996	0.934	0.816	0.741	0.743	0.751	0.764	---
	20 x 16	374.7	14.75	378	14.88	LN-SD	C _v	23	55.7	123	213	340	584	974	1580	2210	2750	3260	0.89
							K _v	19.9	48.2	106	184	294	505	843	1367	1912	2379	2820	---
							X _T	0.391	0.993	0.995	0.995	0.985	0.879	0.771	0.735	0.751	0.762	0.764	---
EWT-2	20 x 16	412.8	16.25	276	10.88	LND	C _v	25	48.1	105	189	318	500	841	1370	2070	2640	3100	0.89
							K _v	21.6	41.6	90.8	163	275	433	727	1185	1791	2284	2682	---
							X _T	0.391	0.996	0.990	0.995	0.997	0.951	0.833	0.748	0.739	0.744	0.759	---
	20 x 16	412.8	16.25	378	14.88	LN-SD	C _v	25	65.9	146	253	403	691	1150	1880	2640	3280	3890	0.89
							K _v	21.6	57.0	126	219	349	598	995	1626	2284	2837	3365	---
							X _T	0.391	0.995	0.990	0.996	0.985	0.885	0.783	0.736	0.746	0.737	0.754	---
EWD, EWT	24 x 16	374.7	14.75	378	14.88	LND	C _v	23	42.4	88.1	150	265	438	732	1250	2000	2650	3110	0.89
							K _v	19.9	36.7	76.2	130	229	379	633	1081	1730	2292	2690	---
							X _T	0.391	0.993	0.998	0.997	0.995	0.998	0.928	0.814	0.746	0.755	0.764	---
	24 x 16	374.7	14.75	429	16.88	LN-SD	C _v	23	46.8	97.4	166	293	484	820	1400	2210	2860	3270	0.89
							K _v	19.9	40.5	84.3	144	253	419	709	1211	1912	2474	2829	---
							X _T	0.391	0.998	0.992	0.991	0.997	0.994	0.905	0.797	0.739	0.743	0.760	---
EWT-2	24 x 16	412.8	16.25	378	14.88	LND	C _v	25	49.6	103	176	311	513	853	1460	2350	3120	3700	0.89
							K _v	21.6	42.9	89.1	152	269	444	738	1263	2033	2699	3201	---
							X _T	0.391	0.996	0.995	0.991	0.994	0.988	0.935	0.814	0.743	0.735	0.748	---
	24 x 16	412.8	16.25	429	16.88	LN-SD	C _v	25	53.1	110	188	332	549	921	1580	2510	3290	3830	0.89
							K _v	21.6	45.9	95.2	163	287	475	797	1367	2171	2846	3313	---
							X _T	0.391	0.996	0.995	0.995	0.988	0.995	0.918	0.802	0.742	0.737	0.754	---
EWD, EWT	24 x 20	463.6	18.25	378	14.88	LND	C _v	28	200	485	863	1505	2293	2900	3371	3610	3834	3839	0.89
							K _v	24.2	173	420	746	1302	1983	2509	2916	3123	3316	3321	---
							X _T	0.391	0.992	0.987	0.996	0.991	0.918	0.801	0.739	0.742	0.759	0.765	---
	24 x 20	463.6	18.25	429	16.88	LN-SD	C _v	28	227	550	979	1707	2601	3290	3824	4095	4349	4355	0.89
							K _v	24.2	196	476	847	1477	2280	2846	3308	3543	3762	3767	---
							X _T	0.391	0.994	0.994	0.984	0.986	0.889	0.776	0.735	0.742	0.761	0.762	---
EWT-2	24 x 20	501.7	19.75	378	14.88	LND	C _v	30	285	415	750	1523	2530	3174	3708	3963	4251	4608	0.89
							K _v	25.9	247	359	649	1317	2188	2746	3207	3428	3677	3986	---
							X _T	0.391	0.991	0.997	0.987	0.996	0.939	0.824	0.743	0.738	0.757	0.759	---
	24 x 20	501.7	19.75	429	16.88	LN-SD	C _v	30	310	500	924	1860	2780	3501	3948	4276	4684	5034	0.89
							K _v	25.9	268	433	799	1609	2405	3028	3415	3699	4052	4354	---
							X _T	0.391	0.992	0.991	0.997	0.985	0.882	0.776	0.735	0.748	0.758	0.763	---

1. The first number indicates both inlet and outlet size. The second number indicates effective trim size.
 2. Construction—LND - long neck, drilled windows; LN-SD = long neck with bonnet spacer, drilled windows.
 3. Do not allow the valve to throttle at less than the minimum coefficient shown for an extended time, or erosion damage to the valve seat might result.

EWT-2, EWD, and EWT Whisper Trim III—Level A1													Linear Characteristic						
Valve Size, NPS ⁽¹⁾	Valve Type	Port Diameter		Maximum Travel		Con- struc- tion ⁽²⁾	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L	
		mm	Inches	mm	Inches			Min ⁽³⁾	10	20	30	40	50	60	70	80	90		100
20x16	EWD, EWT	374.7	14.75	203	8.00	SN	C _v	38	320	663	1001	1341	1685	1977	2211	2417	2590	2736	0.89
							K _v		277	574	865	1160	1457	1710	1912	2090	2241	2367	---
		X _T		0.436	0.433		0.432	0.432	0.432	0.451	0.493	0.541	0.570	0.589	---				
		LN	C _v	38	443	907	1372	1836	2171	2449	2675	2846	2964	3029	0.89				
			K _v		383	785	1186	1588	1878	2119	2314	2462	2564	2620	---				
			X _T		0.434	0.433	0.432	0.432	0.484	0.549	0.580	0.607	0.639	0.677	---				
	LN-S	C _v	38	617	1247	1876	2309	2642	2878	3011	3046	3046	3046	0.89					
		K _v		534	1078	1622	1997	2286	2489	2605	2635	2635	2635	---					
		X _T		0.434	0.432	0.436	0.513	0.576	0.613	0.660	0.722	0.773	0.793	---					
	EWT-2	412.8	16.25	203	8.00	SN	C _v	41	353	732	1104	1480	1859	2231	2508	2757	2973	3161	0.89
							K _v		305	633	955	1280	1608	1930	2170	2385	2572	2735	---
							X _T		0.436	0.433	0.432	0.432	0.432	0.466	0.506	0.550	0.572	---	
LN		C _v	41	489	1001	1514	2026	2460	2797	3080	3309	3485	3607	0.89					
		K _v		423	866	1309	1752	2128	2420	2664	2863	3014	3120	---					
		X _T		0.434	0.433	0.432	0.432	0.459	0.513	0.565	0.587	0.612	0.642	---					
LN-S	C _v	41	681	1376	2079	2626	3038	3353	3564	3678	3696	3696	0.89						
	K _v		589	1190	1798	2272	2628	2900	3083	3181	3197	3197	---						
	X _T		0.434	0.432	0.432	0.483	0.561	0.592	0.629	0.676	0.734	0.776	---						
24X16	EWD, EWT	374.7	14.75	203	8.00	SN	C _v	38	335	676	1019	1356	1698	1982	2219	2433	2620	2749	0.89
							K _v		290	585	881	1173	1469	1714	1919	2105	2266	2378	---
							X _T		0.435	0.433	0.432	0.432	0.432	0.457	0.495	0.539	0.563	0.575	---
		LN	C _v	38	461	924	1387	1838	2176	2466	2707	2901	3045	3122	0.89				
			K _v		399	799	1200	1590	1882	2133	2342	2509	2634	2701	---				
			X _T		0.434	0.433	0.432	0.438	0.487	0.546	0.571	0.592	0.616	0.638	---				
	LN	C _v	38	628	1264	1877	2319	2676	2938	3110	3191	3198	3198	0.89					
		K _v		543	1093	1624	2006	2315	2541	2690	2760	2766	2766	---					
		X _T		0.433	0.432	0.442	0.513	0.568	0.597	0.633	0.679	0.730	0.758	---					
	EWT-2	412.8	16.25	203	8.00	SN	C _v	41	353	732	1104	1480	1859	2218	2501	2759	2986	3188	0.89
							K _v		305	633	955	1280	1608	1919	2163	2387	2583	2758	---
							X _T		0.436	0.433	0.432	0.432	0.432	0.436	0.469	0.505	0.545	0.564	---
LN		C _v	41	489	1001	1513	2025	2450	2799	3099	3350	3552	3705	0.89					
		K _v		423	866	1309	1752	2119	2421	2681	2898	3072	3205	---					
		X _T		0.434	0.433	0.432	0.432	0.462	0.511	0.558	0.576	0.595	0.618	---					
LN	C _v	41	726	1474	2208	2746	3181	3512	3737	3858	3881	3881	0.89						
	K _v		628	1275	1910	2375	2752	3038	3233	3337	3357	3357	---						
	X _T		0.433	0.432	0.435	0.503	0.563	0.590	0.624	0.665	0.717	0.754	---						

Valve Size, NPS(1)	Valve Type	Port Diameter		Maximum Travel		Con-struction(2)	Flow Coeffi-cient	Valve Opening—Percent of Total Travel											F _L
		mm	Inches	mm	Inches			Min(3)	10	20	30	40	50	60	70	80	90	100	
24x20	EWD, EWT	436.6	18.25	378	14.88	LN	C _v	43	671	1358	2028	2614	3059	3369	3552	3708	3915	4187	0.89
							K _v		580	1174	1754	2261	2646	2914	3073	3207	3386	3622	---
							X _T		0.529	0.528	0.528	0.528	0.552	0.615	0.689	0.736	0.766	0.801	---
		436.6	18.25	429	16.88	LN-S	C _v	43	761	1544	2278	2873	3275	3513	3688	3917	4224	4385	0.89
							K _v		658	1335	1970	2485	2833	3039	3190	3388	3654	3793	---
							X _T		0.529	0.528	0.528	0.528	0.593	0.674	0.735	0.769	0.809	0.858	---
	EWT-2	501.7	19.75	378	14.88	LN	C _v	46	727	1478	2197	2879	3404	3841	4020	4245	4416	4657	0.89
							K _v		629	1278	1900	2490	2944	3322	3477	3672	3820	4028	---
							X _T		0.529	0.528	0.528	0.528	0.531	0.586	0.649	0.721	0.746	0.775	---
		501.7	19.75	429	16.88	LN-S	C _v	46	825	1675	2488	3180	3687	4008	4213	4417	4706	5038	0.89
							K _v		714	1449	2152	2751	3190	3467	3645	3821	4071	4358	---
							X _T		0.529	0.528	0.528	0.528	0.567	0.636	0.719	0.748	0.781	0.821	---

1. The first number indicates both inlet and outlet size. The second number indicates effective trim size.
2. Construction—SN = short-neck valve; LN = long-neck valve; LN-S = long-neck valve with bonnet spacer.
3. Do not allow the valve to throttle at less than the minimum coefficient shown for an extended time, or erosion damage to the valve seat might result.

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EWT-2, EWD, and EWT Whisper Trim III—Level A3													Linear Characteristic						
Valve Size, NPS ⁽¹⁾	Valve Type	Port Diameter		Maximum Travel		Con- struc- tion ⁽²⁾	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L	
		mm	Inches	mm	Inches			Min ⁽³⁾	10	20	30	40	50	60	70	80	90		100
20x16	EWD, EWT	374.7	14.75	203	8.00	SN	C _v	25	290	593	892	1198	1495	1800	2032	2236	2416	2571	0.89
							K _v		251	513	772	1036	1293	1557	1758	1934	2089	2224	---
							X _T		0.436	0.433	0.432	0.432	0.432	0.432	0.460	0.498	0.541	0.569	---
		374.7	14.75	276	10.88	LN	C _v	25	400	807	1223	1629	1994	2267	2503	2694	2844	2952	0.89
							K _v		346	698	1058	1409	1725	1961	2165	2330	2460	2554	---
							X _T		0.435	0.433	0.432	0.432	0.454	0.504	0.562	0.582	0.607	0.635	---
		374.7	14.75	378	14.88	LN-S	C _v	25	549	1114	1677	2128	2469	2732	2915	3018	3045	3045	0.89
							K _v		475	964	1451	1840	2135	2363	2521	2611	2634	2634	---
							X _T		0.434	0.432	0.432	0.476	0.554	0.587	0.622	0.666	0.721	0.765	---
	EWT-2	412.8	16.25	203	8.00	SN	C _v	28	317	651	979	1315	1642	1978	2291	2531	2750	2938	0.89
							K _v		274	563	847	1138	1420	1711	1981	2189	2379	2541	---
							X _T		0.436	0.433	0.432	0.432	0.432	0.432	0.438	0.469	0.505	0.542	---
		412.8	16.25	276	10.88	LN	C _v	28	438	886	1343	1790	2245	2569	2857	3099	3302	3461	0.89
							K _v		379	767	1161	1548	1942	2222	2472	2680	2856	2993	---
							X _T		0.435	0.433	0.432	0.432	0.432	0.475	0.525	0.566	0.586	0.608	---
		412.8	16.25	378	14.88	LN-S	C _v	28	601	1223	1843	2403	2814	3148	3402	3576	3674	3695	0.89
							K _v		520	1058	1594	2079	2434	2723	2943	3093	3178	3196	---
							X _T		0.434	0.432	0.432	0.451	0.516	0.570	0.599	0.632	0.674	0.725	---
24X16	EWD, EWT	374.7	14.75	203	8.00	SN	C _v	18	163	451	735	1025	1307	1597	1861	2075	2270	2425	0.89
							K _v		141	390	636	887	1131	1381	1610	1795	1964	2098	---
							X _T		0.440	0.434	0.433	0.432	0.432	0.432	0.441	0.471	0.505	0.537	---
		374.7	14.75	276	10.88	LN	C _v	19	281	688	1103	1509	1895	2188	2449	2666	2849	2918	0.89
							K _v		243	595	954	1305	1639	1893	2118	2306	2464	2524	---
							X _T		0.437	0.433	0.432	0.432	0.445	0.489	0.542	0.567	0.585	0.594	---
		374.7	14.75	378	14.88	LN	C _v	19	430	994	1558	2038	2410	2711	2939	3095	3180	3196	0.89
							K _v		372	860	1348	1763	2085	2345	2542	2677	2751	2765	---
							X _T		0.435	0.433	0.432	0.465	0.533	0.571	0.597	0.628	0.667	0.709	---
	EWT-2	412.8	16.25	203	8.00	SN	C _v	28	304	635	970	1297	1634	1961	2269	2515	2740	2914	0.89
							K _v		263	549	839	1122	1413	1696	1963	2175	2370	2521	---
							X _T		0.436	0.433	0.433	0.432	0.432	0.432	0.442	0.471	0.503	0.532	---
		412.8	16.25	276	10.88	LN	C _v	28	421	877	1324	1781	2216	2557	2852	3114	3334	3519	0.89
							K _v		364	759	1145	1541	1917	2212	2467	2694	2884	3044	---
							X _T		0.435	0.433	0.432	0.432	0.436	0.476	0.520	0.559	0.574	0.592	---
		412.8	16.25	403	15.88	LN	C _v	28	620	1274	1924	2476	2908	3261	3533	3727	3843	3879	0.89
							K _v		536	1102	1664	2142	2515	2821	3056	3224	3324	3355	---
							X _T		0.434	0.432	0.432	0.465	0.530	0.569	0.593	0.622	0.658	0.701	---

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Valve Size, NPS(1)	Valve Type	Port Diameter		Maximum Travel		Con-struction(2)	Flow Coeffi-cient	Valve Opening—Percent of Total Travel											F _L
		mm	Inches	mm	Inches			Min(3)	10	20	30	40	50	60	70	80	90	100	
24x20	EWD, EWT	436.6	18.25	378	14.88	LN	C _v	29	579	1177	1772	2323	2785	3135	3376	3537	3670	3830	0.89
							K _v		501	1018	1532	2010	2409	2711	2920	3060	3175	3313	---
							X _T		0.529	0.528	0.528	0.528	0.528	0.564	0.621	0.686	0.732	0.756	---
		436.6	18.25	429	16.88	LN-S	C _v	29	662	1343	2000	2581	3032	3337	3528	3681	3873	4134	0.89
							K _v		573	1162	1730	2233	2623	2886	3052	3184	3350	3576	---
							X _T		0.529	0.528	0.528	0.528	0.548	0.609	0.682	0.733	0.762	0.796	---
	EWT-2	501.7	19.75	378	14.88	LN	C _v	31	628	1275	1923	2537	3072	3502	3820	4037	4192	4338	0.89
							K _v		543	1103	1663	2194	2658	3029	3304	3492	3626	3753	---
							X _T		0.529	0.528	0.528	0.528	0.528	0.541	0.590	0.646	0.709	0.737	---
		501.7	19.75	429	16.88	LN-S	C _v	31	718	1455	2175	2833	3373	3767	4026	4203	4374	4604	0.89
							K _v		621	1258	1881	2450	2918	3258	3482	3636	3784	3982	---
							X _T		0.529	0.528	0.528	0.528	0.528	0.580	0.642	0.714	0.742	0.770	---

1. The first number indicates both inlet and outlet size. The second number indicates effective trim size.
2. Construction—SN = short-neck valve; LN = long-neck valve; LN-S = long-neck valve with bonnet spacer.
3. Do not allow the valve to throttle at less than the minimum coefficient shown for an extended time, or erosion damage to the valve seat might result.

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EWT-2, EWD, and EWT Whisper Trim III—Level B1														Linear Characteristic					
Valve Size, NPS ⁽¹⁾	Valve Type	Port Diameter		Maximum Travel		Con- struc- tion ⁽²⁾	Flow Coeffi- cient	Valve Opening—Percent of Total Travel											F _L
		mm	Inches	mm	Inches			Min ⁽³⁾	10	20	30	40	50	60	70	80	90	100	
20x16	EWD, EWT	374.7	14.75	203	8.00	SN	C _v	31	196	374	554	746	933	1111	1290	1480	1669	1827	0.89
							K _v		170	324	479	645	807	961	1116	1280	1444	1581	---
							X _T		0.438	0.435	0.433	0.433	0.432	0.432	0.432	0.431	0.431	0.431	---
		374.7	14.75	276	10.88	LN	C _v	31	256	515	756	1016	1256	1517	1757	1974	2141	2307	0.89
							K _v		221	445	654	879	1087	1313	1520	1707	1852	1995	---
							X _T		0.437	0.434	0.433	0.432	0.432	0.432	0.451	0.480	0.514	---	
		374.7	14.75	378	14.88	LN-S	C _v	31	357	698	1037	1377	1718	2009	2243	2446	2617	2758	0.89
							K _v		309	603	897	1191	1486	1738	1941	2116	2263	2386	---
							X _T		0.435	0.433	0.432	0.432	0.432	0.456	0.500	0.549	0.573	0.592	---
	EWT-2	412.8	16.25	203	8.00	SN	C _v	34	214	408	605	814	1018	1212	1407	1614	1821	1993	0.89
							K _v		185	353	523	704	880	1049	1217	1396	1575	1724	---
							X _T		0.438	0.435	0.433	0.433	0.432	0.432	0.432	0.431	0.431	0.431	---
		412.8	16.25	276	10.88	LN	C _v	34	279	562	825	1109	1370	1655	1916	2201	2405	2603	0.89
							K _v		241	486	713	959	1185	1432	1658	1904	2081	2251	---
							X _T		0.437	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.452	0.480	---
		412.8	16.25	378	14.88	LN-S	C _v	34	390	761	1131	1502	1874	2249	2527	2772	2986	3170	0.89
							K _v		337	658	979	1299	1621	1946	2186	2398	2583	2742	---
							X _T		0.435	0.433	0.432	0.432	0.432	0.433	0.469	0.509	0.553	0.573	---
24X16	EWD, EWT	374.7	14.75	203	8.00	SN	C _v	31	196	374	554	746	933	1111	1290	1480	1669	1818	0.89
							K _v		170	324	479	645	807	961	1116	1280	1444	1573	---
							X _T		0.438	0.435	0.433	0.433	0.432	0.432	0.432	0.431	0.431	0.436	---
		374.7	14.75	276	10.88	LN	C _v	31	255	515	755	1016	1255	1516	1756	1964	2137	2290	0.89
							K _v		221	445	653	879	1086	1311	1519	1699	1849	1981	---
							X _T		0.437	0.434	0.433	0.432	0.432	0.432	0.432	0.455	0.481	0.509	---
		374.7	14.75	378	14.88	LN	C _v	31	357	697	1036	1376	1718	2001	2243	2456	2639	2789	0.89
							K _v		309	603	896	1190	1486	1731	1940	2124	2283	2412	---
							X _T		0.435	0.433	0.432	0.432	0.432	0.460	0.500	0.544	0.565	0.579	---
	EWT-2	412.8	16.25	203	8.00	SN	C _v	34	214	408	605	814	1018	1212	1407	1614	1821	1993	0.89
							K _v		185	353	523	704	881	1048	1217	1396	1575	1724	---
							X _T		0.438	0.435	0.433	0.433	0.432	0.432	0.432	0.431	0.431	0.431	---
		412.8	16.25	276	10.88	LN	C _v	34	279	561	824	1108	1369	1654	1915	2193	2394	2576	0.89
							K _v		241	485	713	958	1184	1431	1656	1897	2071	2228	---
							X _T		0.437	0.434	0.433	0.432	0.432	0.432	0.432	0.434	0.456	0.479	---
		412.8	16.25	403	15.88	LN	C _v	34	404	814	1201	1612	2000	2355	2638	2896	3123	3311	0.89
							K _v		349	704	1039	1394	1730	2037	2282	2505	2701	2864	---
							X _T		0.435	0.433	0.432	0.432	0.432	0.451	0.487	0.528	0.560	0.573	---

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Valve Size, NPS(1)	Valve Type	Port Diameter		Maximum Travel		Con-struction(2)	Flow Coeffi-cient	Valve Opening—Percent of Total Travel											F _L
		mm	Inches	mm	Inches			Min(3)	10	20	30	40	50	60	70	80	90	100	
24x20	EWD, EWT	436.6	18.25	378	14.88	LN	C _v	36	385	754	1121	1486	1844	2191	2508	2783	3011	3196	0.89
							K _v		333	652	969	1285	1595	1895	2169	2407	2605	2765	---
							X _T		0.529	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.545	0.576	---
		436.6	18.25	429	16.88	LN-S	C _v	36	431	851	1269	1682	2078	2441	2759	3022	3229	3384	0.89
							K _v		373	736	1098	1455	1797	2112	2387	2614	2793	2927	---
							X _T		0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.546	0.583	0.623	---
	EWT-2	501.7	19.75	378	14.88	LN	C _v	38	414	811	1205	1598	1988	2371	2730	3051	3330	3565	0.89
							K _v		358	702	1042	1382	1720	2051	2361	2639	2880	3084	---
							X _T		0.529	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.549	---
		501.7	19.75	429	16.88	LN-S	C _v	38	464	915	1365	1811	2245	2654	3023	3344	3608	3817	0.89
							K _v		401	792	1181	1567	1942	2295	2615	2892	3121	3302	---
							X _T		0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.555	0.590	---

1. The first number indicates both inlet and outlet size. The second number indicates effective trim size.
2. Construction—SN = short-neck valve; LN = long-neck valve; LN-S = long-neck valve with bonnet spacer.
3. Do not allow the valve to throttle at less than the minimum coefficient shown for an extended time, or erosion damage to the valve seat might result.

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EWT-2, EWD, and EWT Whisper Trim III—Level B3													Linear Characteristic						
Valve Size, NPS ⁽¹⁾	Valve Type	Port Diameter		Maximum Travel		Con- struc- tion ⁽²⁾	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L	
		mm	Inches	mm	Inches			Min ⁽³⁾	10	20	30	40	50	60	70	80	90		100
20x16	EWD, EWT	374.7	14.75	203	8.00	SN	C _v	21	178	349	528	701	878	1052	1228	1404	1578	1756	0.89
							K _v		154	302	457	606	760	910	1062	1215	1365	1519	---
							X _T		0.439	0.435	0.433	0.433	0.432	0.432	0.432	0.431	0.431	0.431	---
		374.7	14.75	276	10.88	LN	C _v	21	236	475	714	954	1194	1434	1674	1896	2070	2229	0.89
							K _v		204	411	618	825	1032	1240	1448	1640	1791	1928	---
							X _T		0.437	0.434	0.433	0.432	0.432	0.432	0.432	0.439	0.467	0.497	---
	374.7	14.75	378	14.88	LN-S	C _v	21	326	657	982	1307	1639	1936	2163	2367	2545	2689	0.89	
						K _v		282	569	849	1130	1418	1675	1871	2047	2201	2326	---	
						X _T		0.436	0.433	0.432	0.432	0.432	0.445	0.483	0.528	0.566	0.582	---	
	EWT-2	412.8	16.25	203	8.00	SN	C _v	23	194	382	578	767	962	1152	1345	1537	1729	1922	0.89
							K _v		168	330	500	663	832	996	1164	1329	1495	1663	---
							X _T		0.439	0.435	0.433	0.433	0.432	0.432	0.432	0.432	0.431	0.431	---
412.8		16.25	276	10.88	LN	C _v	23	258	520	782	1044	1307	1570	1833	2096	2328	2517	0.89	
						K _v		223	450	676	903	1131	1358	1586	1813	2014	2177	---	
						X _T		0.437	0.434	0.433	0.432	0.432	0.432	0.431	0.443	0.468	---		
412.8	16.25	378	14.88	LN-S	C _v	23	357	719	1074	1431	1795	2153	2438	2683	2902	3086	0.89		
					K _v		309	622	929	1238	1553	1862	2109	2321	2510	2670	---		
					X _T		0.436	0.433	0.432	0.432	0.432	0.432	0.456	0.493	0.534	0.566	---		
24X16	EWD, EWT	374.7	14.75	203	8.00	SN	C _v	21	178	349	528	701	878	1052	1228	1404	1578	1744	0.89
							K _v		154	302	457	606	759	910	1062	1214	1365	1509	---
							X _T		0.439	0.435	0.433	0.433	0.432	0.432	0.432	0.431	0.431	0.431	---
		374.7	14.75	276	10.88	LN	C _v	21	236	475	714	953	1193	1433	1673	1886	2064	2217	0.89
							K _v		204	411	618	824	1032	1240	1447	1631	1785	1918	---
							X _T		0.437	0.434	0.433	0.432	0.432	0.432	0.432	0.444	0.470	0.495	---
	374.7	14.75	378	14.88	LN	C _v	21	326	657	981	1306	1639	1926	2159	2373	2561	2711	0.89	
						K _v		282	568	849	1130	1418	1666	1868	2053	2215	2345	---	
						X _T		0.436	0.433	0.432	0.432	0.432	0.449	0.485	0.525	0.559	0.571	---	
	EWT-2	412.8	16.25	203	8.00	SN	C _v	23	194	382	578	767	962	1152	1345	1537	1729	1910	0.89
							K _v		168	330	500	663	832	996	1163	1330	1496	1652	---
							X _T		0.439	0.435	0.433	0.433	0.432	0.432	0.432	0.431	0.431	0.431	---
412.8		16.25	276	10.88	LN	C _v	23	258	520	782	1044	1307	1570	1833	2096	2316	2496	0.89	
						K _v		223	450	676	903	1131	1358	1586	1813	2003	2159	---	
						X _T		0.437	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.447	0.469	---	
412.8	16.25	403	15.88	LN	C _v	23	379	762	1147	1532	1916	2271	2553	2807	3034	3222	0.89		
					K _v		328	659	992	1325	1657	1964	2208	2428	2624	2787	---		
					X _T		0.435	0.433	0.432	0.432	0.432	0.442	0.476	0.513	0.550	0.566	---		

Valve Size, NPS(1)	Valve Type	Port Diameter		Maximum Travel		Construction(2)	Flow Coefficient	Valve Opening—Percent of Total Travel											F _L
		mm	Inches	mm	Inches			Min(3)	10	20	30	40	50	60	70	80	90	100	
24x20	EWD, EWT	436.6	18.25	378	14.88	LN	C _v	25	354	716	1070	1423	1778	2110	2416	2695	2933	3127	0.89
							K _v		307	620	925	1231	1538	1825	2090	2331	2537	2705	---
							X _T		0.529	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.534	0.562	---
		436.6	18.25	429	16.88	LN-S	C _v	25	402	809	1215	1618	2005	2363	2680	2948	3163	3329	0.89
							K _v		348	700	1051	1399	1734	2044	2318	2550	2736	2879	---
							X _T		0.529	0.529	0.528	0.528	0.528	0.528	0.528	0.535	0.569	0.607	---
	EWT-2	501.7	19.75	378	14.88	LN	C _v	27	382	773	1153	1535	1921	2286	2631	2954	3239	3482	0.89
							K _v		331	668	997	1328	1661	1978	2276	2555	2802	3012	---
							X _T		0.529	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.539	---
		501.7	19.75	429	16.88	LN-S	C _v	27	433	873	1310	1745	2170	2571	2936	3257	3528	3747	0.89
							K _v		375	755	1133	1510	1877	2224	2540	2818	3052	3241	---
							X _T		0.529	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.545	0.576	---

1. The first number indicates both inlet and outlet size. The second number indicates effective trim size.
2. Construction—SN = short-neck valve; LN = long-neck valve; LN-S = long-neck valve with bonnet spacer.
3. Do not allow the valve to throttle at less than the minimum coefficient shown for an extended time, or erosion damage to the valve seat might result.

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EWT-2, EWD, and EWT Whisper Trim III—Level C1													Linear Characteristic						
Valve Size, NPS ⁽¹⁾	Valve Type	Port Diameter		Maximum Travel		Con- struc- tion ⁽²⁾	Flow Coeffi- cient	Valve Opening—Percent of Total Travel											F _L
		mm	Inches	mm	Inches			Min ⁽³⁾	10	20	30	40	50	60	70	80	90	100	
20x16	EWD, EWT	374.7	14.75	203	8.00	SN	C _v	27	131	244	351	459	577	696	811	919	1026	1142	0.89
							K _v		113	211	303	397	499	602	701	795	888	987	---
							X _T		0.442	0.436	0.434	0.433	0.433	0.432	0.432	0.432	0.431	0.431	---
		374.7	14.75	276	10.88	LN	C _v	27	161	318	478	637	787	936	1088	1247	1407	1562	0.89
							K _v		139	275	414	551	681	810	941	1079	1217	1351	---
							X _T		0.440	0.435	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.431	---
		374.7	14.75	276	14.88	LN-S	C _v	27	221	430	642	855	1069	1284	1498	1712	1904	2055	0.89
							K _v		191	372	555	740	925	1111	1296	1481	1647	1778	---
							X _T		0.438	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.440	0.464	---
	EWT-2	412.8	16.25	203	8.00	SN	C _v	30	146	272	392	513	645	777	906	1027	1147	1276	0.89
							K _v		126	235	339	444	558	672	784	888	992	1104	---
							X _T		0.442	0.436	0.434	0.433	0.433	0.432	0.432	0.432	0.431	0.431	---
		412.8	16.25	276	10.88	LN	C _v	30	180	355	534	712	880	1046	1216	1394	1573	1746	0.89
							K _v		156	307	462	616	761	905	1052	1206	1361	1510	---
							X _T		0.440	0.435	0.433	0.433	0.432	0.432	0.432	0.432	0.431	0.431	---
		412.8	16.25	276	14.88	LN-S	C _v	30	247	481	717	956	1195	1435	1675	1913	2150	2347	0.89
							K _v		214	416	620	827	1034	1241	1448	1655	1860	2030	---
							X _T		0.437	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.431	0.445	---
24X16	EWD, EWT	374.7	14.75	203	8.00	SN	C _v	27	131	244	351	459	577	696	811	919	1026	1142	0.89
							K _v		113	211	304	397	499	602	702	795	887	988	---
							X _T		0.442	0.436	0.434	0.433	0.433	0.432	0.432	0.432	0.431	0.431	---
		374.7	14.75	276	10.88	LN	C _v	27	161	318	478	636	787	936	1087	1246	1406	1562	0.89
							K _v		139	275	413	550	681	810	940	1078	1216	1351	---
							X _T		0.440	0.435	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.431	---
		374.7	14.75	378	14.88	LN	C _v	27	221	430	641	855	1069	1283	1497	1711	1893	2049	0.89
							K _v		191	372	554	740	925	1110	1295	1480	1637	1772	---
							X _T		0.438	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.445	0.467	---
	EWT-2	412.8	16.25	203	8.00	SN	C _v	30	146	272	392	513	645	777	906	1027	1147	1276	0.89
							K _v		126	235	339	444	558	672	784	888	992	1104	---
							X _T		0.442	0.436	0.434	0.433	0.433	0.432	0.432	0.432	0.431	0.431	---
		412.8	16.25	276	10.88	LN	C _v	30	180	355	534	711	880	1046	1215	1393	1572	1746	0.89
							K _v		156	307	462	615	761	905	1051	1205	1360	1510	---
							X _T		0.440	0.435	0.433	0.433	0.432	0.432	0.432	0.432	0.431	0.431	---
		412.8	16.25	403	15.88	LN	C _v	30	270	514	778	1017	1282	1525	1783	2034	2259	2454	0.89
							K _v		234	445	673	880	1109	1319	1542	1759	1954	2123	---
							X _T		0.437	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.441	0.463	---

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Valve Size, NPS(1)	Valve Type	Port Diameter		Maximum Travel		Con-struction(2)	Flow Coeffi-ent	Valve Opening—Percent of Total Travel											F _L
		mm	Inches	mm	Inches			Min(3)	10	20	30	40	50	60	70	80	90	100	
24x20	EWD, EWT	436.6	18.25	378	14.88	LN	C _v	31	238	469	700	932	1165	1398	1628	1853	2069	2272	0.89
							K _v		206	405	605	806	1008	1209	1409	1603	1790	1965	---
							X _T		0.530	0.529	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528
		436.6	18.25	429	16.88	LN-S	C _v	31	271	534	795	1056	1316	1574	1828	2073	2305	2522	0.89
							K _v		234	462	688	913	1138	1362	1581	1793	1994	2181	---
							X _T		0.530	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528	---
	EWT-2	501.7	19.75	378	14.88	LN	C _v	34	260	514	767	1022	1278	1533	1786	2036	2277	2506	0.89
							K _v		225	445	664	884	1105	1326	1545	1761	1969	2168	---
							X _T		0.530	0.529	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528
		501.7	19.75	429	16.88	LN-S	C _v	34	297	586	872	1157	1442	1727	2007	2281	2544	2792	0.89
							K _v		257	507	754	1001	1248	1494	1736	1973	2201	2415	---
							X _T		0.530	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528	---

1. The first number indicates both inlet and outlet size. The second number indicates effective trim size.
2. Construction—SN = short-neck valve; LN = long-neck valve; LN-S = long-neck valve with bonnet spacer.
3. Do not allow the valve to throttle at less than the minimum coefficient shown for an extended time, or erosion damage to the valve seat might result.

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EWT-2, EWD, and EWT Whisper Trim III—Level C3													Linear Characteristic						
Valve Size, NPS ⁽¹⁾	Valve Type	Port Diameter		Maximum Travel		Con- struc- tion ⁽²⁾	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L	
		mm	Inches	mm	Inches			Min ⁽³⁾	10	20	30	40	50	60	70	80	90		100
20x16	EWD, EWT	374.7	14.75	203	8.00	SN	C _v	19	116	235	344	458	574	682	800	912	1023	1141	0.89
							K _v		100	203	298	396	497	590	692	789	885	987	---
							X _T		0.443	0.437	0.434	0.433	0.433	0.432	0.432	0.432	0.431	0.431	---
		374.7	14.75	276	10.88	LN	C _v	19	161	311	471	623	776	935	1085	1240	1398	1547	0.89
							K _v		139	269	408	539	671	809	939	1073	1209	1338	---
							X _T		0.440	0.435	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.431	---
		374.7	14.75	276	14.88	LN-S	C _v	19	220	430	639	849	1063	1277	1490	1700	1893	2046	0.89
							K _v		191	372	553	734	919	1105	1289	1470	1637	1769	---
							X _T		0.438	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.431	0.431	---
	EWT-2	412.8	16.25	203	8.00	SN	C _v	21	126	246	369	497	614	741	864	983	1113	1226	0.89
							K _v		109	213	319	430	531	641	747	851	963	1060	---
							X _T		0.443	0.437	0.435	0.433	0.433	0.432	0.432	0.432	0.431	0.431	---
		412.8	16.25	276	10.88	LN	C _v	21	170	338	502	676	840	1007	1180	1343	1513	1684	0.89
							K _v		147	292	434	584	727	871	1021	1162	1308	1456	---
							X _T		0.440	0.435	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.431	---
		412.8	16.25	276	14.88	LN-S	C _v	21	229	462	695	923	1151	1379	1611	1845	2077	2288	0.89
							K _v		198	400	601	799	995	1193	1394	1596	1797	1979	---
							X _T		0.438	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.431	0.431	---
24X16	EWD, EWT	374.7	14.75	203	8.00	SN	C _v	19	116	235	344	458	574	682	800	912	1023	1127	0.89
							K _v		100	203	298	396	497	590	692	789	885	975	---
							X _T		0.443	0.437	0.434	0.433	0.433	0.432	0.432	0.432	0.431	0.431	---
		374.7	14.75	276	10.88	LN	C _v	19	161	311	471	623	775	935	1085	1239	1398	1532	0.89
							K _v		139	269	407	539	670	809	939	1072	1209	1325	---
							X _T		0.440	0.435	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.431	---
		374.7	14.75	378	14.88	LN	C _v	19	220	430	639	849	1062	1276	1490	1700	1882	2027	0.89
							K _v		190	372	553	734	919	1104	1289	1471	1628	1753	---
							X _T		0.438	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.444	0.464	---
	EWT-2	412.8	16.25	203	8.00	SN	C _v	21	109	217	325	423	531	639	737	845	953	1034	0.89
							K _v		94	188	281	366	459	553	638	731	824	894	---
							X _T		0.445	0.438	0.435	0.434	0.433	0.432	0.432	0.432	0.431	0.431	---
		412.8	16.25	276	10.88	LN	C _v	21	155	297	439	580	722	864	1006	1148	1290	1431	0.89
							K _v		134	257	380	502	625	747	870	993	1116	1238	---
							X _T		0.441	0.436	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.431	---
		412.8	16.25	403	15.88	LN	C _v	21	219	424	632	846	1056	1262	1467	1680	1893	2083	0.89
							K _v		189	367	547	732	913	1092	1269	1453	1637	1802	---
							X _T		0.438	0.434	0.433	0.432	0.432	0.432	0.432	0.431	0.431	0.431	---

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Valve Size, NPS(1)	Valve Type	Port Diameter		Maximum Travel		Con-struction(2)	Flow Coeffi-cient	Valve Opening—Percent of Total Travel											F _L
		mm	Inches	mm	Inches			Min(3)	10	20	30	40	50	60	70	80	90	100	
24x20	EWD, EWT	436.6	18.25	378	14.88	LN	C _v	23	231	458	681	904	1130	1358	1582	1800	2009	2210	0.89
							K _v		199	396	589	782	978	1174	1369	1557	1738	1912	---
							X _T		0.530	0.529	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528
		436.6	18.25	429	16.88	LN-S	C _v	23	260	520	776	1031	1285	1537	1784	2024	2252	2466	0.89
							K _v		225	450	671	892	1111	1329	1543	1750	1948	3122	---
							X _T		0.530	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528	---
	EWT-2	501.7	19.75	378	14.88	LN	C _v	25	253	503	748	993	1241	1491	1739	1980	2214	2441	0.89
							K _v		219	435	647	859	1074	1290	1504	1713	1915	2111	---
							X _T		0.530	0.529	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.528	---
		501.7	19.75	429	16.88	LN-S	C _v	25	286	571	853	1132	1411	1689	1963	2231	2488	2733	0.89
							K _v		248	494	737	979	1221	1461	1698	1929	2152	2364	---
							X _T		0.530	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528	---

1. The first number indicates both inlet and outlet size. The second number indicates effective trim size.
2. Construction—SN = short-neck valve; LN = long-neck valve; LN-S = long-neck valve with bonnet spacer.
3. Do not allow the valve to throttle at less than the minimum coefficient shown for an extended time, or erosion damage to the valve seat might result.

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**EWT-2, EWD, and EWT
Whisper Trim III—Level D1**

**Linear
Characteristic**

Valve Size, NPS ⁽¹⁾	Valve Type	Port Diameter		Maximum Travel		Construction ⁽²⁾	Flow Coefficient	Valve Opening—Percent of Total Travel											F _L
		mm	Inches	mm	Inches			Min ⁽³⁾	10	20	30	40	50	60	70	80	90	100	
20x16	EWT-2, EWD, EWT	355.6	14	203	8.00	SN	C _v	25	119	220	322	431	543	653	754	855	963	1074	0.89
							K _v		103	190	278	373	470	564	653	740	833	929	---
							X _T		0.442	0.437	0.434	0.433	0.433	0.432	0.432	0.432	0.431	0.431	---
		355.6	14	276	10.88	LN	C _v	25	152	292	441	592	740	881	1021	1165	1315	1466	0.89
							K _v		131	253	381	512	640	762	883	1008	1138	1268	---
							X _T		0.440	0.435	0.434	0.433	0.432	0.432	0.432	0.431	0.431	---	
		355.6	14	276	14.88	LN-S	C _v	25	208	405	602	799	998	1199	1401	1603	1768	1909	0.89
							K _v		180	350	521	691	863	1037	1212	1386	1529	1651	---
							X _T		0.438	0.434	0.433	0.432	0.432	0.432	0.431	0.449	0.476	---	
24x16	EWT-2, EWD, EWT	355.6	14	203	8.00	SN	C _v	25	123	230	331	433	543	655	764	865	966	1074	0.89
							K _v		106	199	286	375	470	567	661	748	836	929	---
							X _T		0.442	0.436	0.434	0.433	0.433	0.432	0.432	0.432	0.431	0.431	---
		355.6	14	276	10.88	LN	C _v	25	152	300	450	599	741	881	1023	1173	1324	1470	0.89
							K _v		131	260	389	518	641	762	885	1015	1145	1272	---
							X _T		0.440	0.435	0.434	0.433	0.432	0.432	0.432	0.431	0.431	---	
		355.6	14	378	14.88	LN	C _v	25	208	405	604	805	1006	1208	1410	1610	1765	1907	0.89
							K _v		180	350	522	696	870	1045	1220	1393	1527	1650	---
							X _T		0.438	0.434	0.433	0.432	0.432	0.432	0.432	0.432	0.454	0.474	---
24x20	EWT-2, EWD, EWT	431.8	17	378	14.88	LN	C _v	29	229	444	661	881	1102	1322	1543	1763	1981	2196	0.89
							K _v		198	384	572	762	953	1144	1335	1525	1713	1899	---
							X _T		0.530	0.529	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.528	---
		431.8	17	429	16.88	LN-S	C _v	29	260	506	752	998	1244	1491	1739	1987	2235	2483	0.89
							K _v		225	437	650	863	1076	1290	1504	1719	1933	2148	---
							X _T		0.530	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528	---

1. The first number indicates both inlet and outlet size. The second number indicates effective trim size.
 2. Construction—SN = short-neck valve; LN = long-neck valve; LN-S = long-neck valve with bonnet spacer.
 3. Do not allow the valve to throttle at less than the minimum coefficient shown for an extended time, or erosion damage to the valve seat might result.

EWT-2, EWD, and EWT Whisper Trim III—Level D3														Linear Characteristic					
Valve Size, NPS ⁽¹⁾	Valve Type	Port Diameter		Maximum Travel		Con- struc- tion ⁽²⁾	Flow Coeffi- cient	Valve Opening—Percent of Total Travel											F _L
		mm	Inches	mm	Inches			Min ⁽³⁾	10	20	30	40	50	60	70	80	90	100	
20x16	EWT-2, EWD, EWT	355.6	14	203	8.00	SN	C _v	18	108	209	319	425	529	641	743	850	959	1060	0.89
							K _v		93	181	276	368	457	554	643	736	830	917	---
							X _T		0.444	0.437	0.435	0.433	0.433	0.432	0.432	0.432	0.431	0.431	---
		355.6	14	276	10.88	LN	C _v	18	143	292	432	580	727	867	1017	1161	1304	1442	0.89
							K _v		123	252	374	502	629	750	880	1005	1128	1247	---
							X _T		0.441	0.435	0.434	0.433	0.432	0.432	0.432	0.431	0.431	---	
		355.6	14	276	14.88	LN-S	C _v	18	194	395	597	798	995	1192	1390	1591	1760	1901	0.89
							K _v		168	342	517	690	861	1031	1202	1376	1522	1644	---
							X _T		0.438	0.434	0.433	0.432	0.432	0.432	0.431	0.431	0.428	0.428	---
24X16	EWT-2, EWD, EWT	355.6	14	203	8.00	SN	C _v	18	109	216	319	431	534	641	750	852	962	1068	0.89
							K _v		94	187	276	373	462	554	649	737	832	924	---
							X _T		0.443	0.437	0.435	0.433	0.433	0.432	0.432	0.432	0.431	0.431	---
		355.6	14	276	10.88	LN	C _v	18	150	292	437	586	727	873	1021	1162	1310	1442	0.89
							K _v		130	253	378	507	629	755	883	1005	1133	1247	---
							X _T		0.440	0.435	0.434	0.433	0.432	0.432	0.432	0.431	0.431	---	
		355.6	14	378	14.88	LN	C _v	18	194	395	597	798	995	1192	1390	1591	1751	1897	0.89
							K _v		168	342	517	690	861	1031	1202	1376	1515	1641	---
							X _T		0.438	0.434	0.433	0.432	0.432	0.432	0.431	0.431	0.428	0.428	---
24x20	EWT-2, EWD, EWT	431.8	17	378	14.88	LN	C _v	21	222	433	643	853	1067	1282	1496	1706	1916	2126	0.89
							K _v		192	375	556	738	923	1109	1294	1476	1657	1839	---
							X _T		0.530	0.529	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.528	---
		431.8	17	429	16.88	LN-S	C _v	21	250	492	733	973	1213	1453	1693	1932	2173	2414	0.89
							K _v		216	425	634	842	1049	1257	1464	1672	1879	2088	---
							X _T		0.530	0.529	0.528	0.528	0.528	0.528	0.528	0.528	0.528	0.528	---

1. The first number indicates both inlet and outlet size. The second number indicates effective trim size.
 2. Construction—SN = short-neck valve; LN = long-neck valve; LN-S = long-neck valve with bonnet spacer.
 3. Do not allow the valve to throttle at less than the minimum coefficient shown for an extended time, or erosion damage to the valve seat might result.

WhisperFlo Level X																Linear Characteristic
Valve Size, NPS ⁽¹⁾	Port Diameter		Maximum Travel		Flow Coeffi- cient	Valve Opening—Percent of Total Travel										
	mm	Inches	mm	Inches		Min	10	20	30	40	50	60	70	80	90	100
6x4	87.3	3.4375	102	4	C _v	6.4	16.7	35.3	52.5	69.5	87.6	105	121	136	154	164
					X _T	0.763	0.763	0.783	0.751	0.726	0.696	0.691	0.699	0.738	0.719	0.72
8x4	87.3	3.4375	102	4	C _v	6.4	17.8	35.8	52.5	69.7	86.9	104	121	137	153	165
					X _T	0.705	0.705	0.79	0.763	0.747	0.72	0.722	0.717	0.701	0.691	0.676
8x6 10 x 6 ⁽²⁾	136.5	5.375	127	5	C _v	10.4	45.7	92	138	181	223	265	299	331	350	365
					X _T	0.64	0.64	0.648	0.633	0.617	0.624	0.642	0.682	0.71	0.769	0.803
12x6	136.5	5.375	165	6.5	C _v	10.4	56.9	114	170	224	288	328	377	425	472	510
					X _T	0.735	0.735	0.759	0.741	0.726	0.661	0.699	0.707	0.706	0.718	0.724
10x8	177.8	7	152	6	C _v	30.4	61.4	120	179	238	296	352	408	459	508	550
					X _T	0.694	0.694	0.713	0.662	0.641	0.629	0.637	0.632	0.64	0.667	0.673
12x8	177.8	7	203	8	C _v	30.4	103	188	277	353	432	515	583	652	703	736
					X _T	0.656	0.656	0.678	0.627	0.656	0.666	0.657	0.667	0.684	0.709	0.749

WhisperFlo Level Y																Linear Characteristic
Valve Size, NPS ⁽¹⁾	Port Diameter		Maximum Travel		Flow Coeffi- cient	Valve Opening—Percent of Total Travel										
	mm	Inches	mm	Inches		Min	10	20	30	40	50	60	70	80	90	100
6x4	87.3	3.4375	102	4	C _v	6	16	31	47	63	79	94	110	126	141	157
					X _T	0.536	0.536	0.532	0.525	0.51	0.503	0.507	0.514	0.528	0.532	0.575
8x4	87.3	3.4375	102	4	C _v	6	16	31	47	63	79	94	110	126	141	157
					X _T	0.536	0.536	0.532	0.525	0.51	0.503	0.507	0.514	0.528	0.532	0.575
8x6 10 x 6 ⁽²⁾	136.5	5.375	127	5	C _v	10	31	61	92	123	154	184	215	246	276	307
					X _T	0.536	0.536	0.532	0.525	0.51	0.503	0.507	0.514	0.528	0.532	0.575
12x6	136.5	5.375	165	6.5	C _v	9	39	78	116	155	194	233	272	310	349	388
					X _T	0.536	0.536	0.532	0.525	0.51	0.503	0.507	0.514	0.528	0.532	0.575
10x8	177.8	7	152	6	C _v	11	42	84	125	167	209	251	293	334	376	418
					X _T	0.51	0.51	0.543	0.547	0.536	0.46	0.496	0.496	0.514	0.547	0.609
12x8	177.8	7	203	8	C _v	12	59	118	177	236	295	354	413	472	531	590
					X _T	0.562	0.562	0.573	0.543	0.525	0.539	0.558	0.558	0.577	0.577	0.577

WhisperFlo Level Z																Linear Characteristic
Valve Size, NPS ⁽¹⁾	Port Diameter		Maximum Travel		Flow Coeffi- cient	Valve Opening—Percent of Total Travel										
	mm	Inches	mm	Inches		Min	10	20	30	40	50	60	70	80	90	100
6x4	87.3	3.4375	102	4	C _v	3	9	17	26	34	43	52	60	69	77	86
					X _T	0.600	0.600	0.539	0.521	0.528	0.528	0.547	0.539	0.525	0.507	0.525
8x4	87.3	3.4375	102	4	C _v	3	9	17	26	34	43	52	60	69	77	86
					X _T	0.600	0.600	0.539	0.521	0.528	0.528	0.547	0.539	0.525	0.507	0.525
8x6 10 x 6 ⁽²⁾	136.5	5.375	127	5	C _v	5	17	35	52	69	87	104	121	138	156	173
					X _T	0.600	0.600	0.539	0.521	0.528	0.528	0.547	0.539	0.525	0.507	0.525
12x6	136.5	5.375	165	6.5	C _v	5	23	45	68	90	113	135	158	180	203	225
					X _T	0.600	0.600	0.539	0.521	0.528	0.528	0.547	0.539	0.525	0.507	0.525
10x8	177.8	7	152	6	C _v	7	26	52	78	104	130	156	182	208	234	260
					X _T	0.600	0.600	0.539	0.521	0.528	0.528	0.547	0.539	0.525	0.507	0.525
12x8	177.8	7	203	8	C _v	7	35	71	106	141	177	212	247	282	318	353
					X _T	0.600	0.600	0.539	0.521	0.528	0.528	0.547	0.539	0.525	0.507	0.525

1. The first number indicates both inlet and outlet size. The second number indicates effective trim size.
2. NPS 10x6 has a valve outlet area identical to the NPS 8x6.

WhisperFlo Level X																Linear Characteristic	
Valve Size, NPS ⁽¹⁾	Port Diameter		Maximum Travel		Construction	Flow Coefficient	Valve Opening—Percent of Total Travel										
	mm	Inches	mm	Inches			Min	10	20	30	40	50	60	70	80	90	100
20x16	374.7	14.75	203	8	SN	C _v	60.2	170	359	546	731	912	1089	1260	1427	1587	1741
						X _T	0.534	0.713	0.699	0.687	0.677	0.669	0.663	0.659	0.656	0.655	0.654
20x16	374.7	14.75	276	10.875	LN	C _v	60.2	238	494	745	990	1226	1452	1667	1870	2061	2240
						X _T	0.534	0.708	0.690	0.676	0.666	0.659	0.656	0.654	0.655	0.658	0.662
20x16	374.7	14.75	378	14.875	LN	C _v	60.2	332	679	1015	1339	1633	1911	2165	2397	2606	2793
						X _T	0.534	0.701	0.679	0.665	0.657	0.654	0.656	0.660	0.667	0.676	0.686
24x16	374.7	14.75	203	8	SN	C _v	60.2	170	360	548	735	921	1104	1285	1462	1636	1807
						X _T	0.534	0.716	0.703	0.692	0.682	0.673	0.665	0.658	0.652	0.647	0.642
24x16	374.7	14.75	276	10.875	LN	C _v	60.2	238	495	750	1001	1248	1490	1725	1953	2173	2385
						X _T	0.534	0.711	0.695	0.681	0.669	0.659	0.651	0.644	0.639	0.635	0.632
24x16	374.7	14.75	378	14.875	LN	C _v	60.2	333	683	1027	1363	1687	1999	2296	2578	2843	3092
						X _T	0.534	0.705	0.685	0.668	0.655	0.645	0.638	0.633	0.630	0.628	0.628
24x20	463.6	18.25	203	8	SN	C _v	86.5	207	431	658	882	1104	1322	1537	1747	1952	2152
						X _T	0.534	0.714	0.703	0.692	0.683	0.676	0.669	0.664	0.660	0.657	0.655
24x20	463.6	18.25	276	10.875	LN	C _v	86.5	286	595	900	1200	1493	1779	2056	2322	2578	2823
						X _T	0.534	0.710	0.695	0.683	0.673	0.665	0.659	0.656	0.654	0.653	0.654
24x20	463.6	18.25	378	14.875	LN	C _v	86.5	400	820	1231	1630	2012	2376	2720	3043	3343	3622
						X _T	0.534	0.704	0.686	0.672	0.662	0.656	0.653	0.653	0.655	0.659	0.665

WhisperFlo Level Y																Linear Characteristic	
Valve Size, NPS ⁽¹⁾	Port Diameter		Maximum Travel		Construction	Flow Coefficient	Valve Opening—Percent of Total Travel										
	mm	Inches	mm	Inches			Min	10	20	30	40	50	60	70	80	90	100
20x16	374.7	14.75	203	8	SN	C _v	53.4	124	259	394	529	662	794	923	1051	1176	1298
						X _T	0.534	0.617	0.608	0.601	0.594	0.588	0.584	0.580	0.577	0.575	0.573
20x16	374.7	14.75	276	10.875	LN	C _v	53.4	171	356	539	720	897	1070	1239	1402	1560	1712
						X _T	0.534	0.614	0.603	0.594	0.586	0.581	0.577	0.574	0.573	0.573	0.574
20x16	374.7	14.75	378	14.875	LN	C _v	53.4	239	491	738	979	1212	1435	1648	1849	2038	2216
						X _T	0.534	0.609	0.596	0.586	0.579	0.574	0.573	0.573	0.575	0.579	0.585
24x16	374.7	14.75	203	8	SN	C _v	53.4	125	259	395	531	666	800	933	1065	1195	1324
						X _T	0.534	0.619	0.611	0.604	0.598	0.592	0.587	0.582	0.578	0.574	0.570
24x16	374.7	14.75	276	10.875	LN	C _v	53.4	171	357	541	724	906	1085	1262	1436	1607	1774
						X _T	0.534	0.616	0.606	0.597	0.590	0.583	0.577	0.572	0.568	0.564	0.561
24x16	374.7	14.75	378	14.875	LN	C _v	53.4	240	492	743	991	1234	1472	1703	1928	2146	2356
						X _T	0.534	0.612	0.600	0.589	0.580	0.573	0.567	0.562	0.559	0.556	0.555
24x20	463.6	18.25	203	8	SN	C _v	77.3	148	294	449	603	757	909	1060	1209	1357	1503
						X _T	0.534	0.579	0.573	0.568	0.563	0.558	0.554	0.551	0.548	0.545	0.543
24x20	463.6	18.25	276	10.875	LN	C _v	77.3	198	406	615	823	1029	1232	1433	1629	1822	2010
						X _T	0.534	0.577	0.569	0.562	0.556	0.552	0.548	0.544	0.542	0.540	0.539
24x20	463.6	18.25	378	14.875	LN	C _v	77.3	272	560	845	1125	1401	1669	1931	2183	2427	2662
						X _T	0.534	0.574	0.564	0.556	0.550	0.545	0.542	0.540	0.539	0.540	0.541

1. The first number indicates both inlet and outlet size. The second number indicates effective trim size.



**EWT-2, EWD, and EWT
CL150, 300, and 600**

WhisperFlo™ Trim
Flow Up through the Port

WhisperFlo Level Z																Linear Characteristic	
Valve Size, NPS ⁽¹⁾	Port Diameter		Maximum Travel		Con- struction	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										
	mm	Inches	mm	Inches			Min	10	20	30	40	50	60	70	80	90	100
20x16	374.7	14.75	203	8	SN	C _v	48.1	91	179	273	367	460	553	645	737	827	917
						X _T	0.534	0.467	0.463	0.459	0.456	0.453	0.450	0.448	0.446	0.445	0.444
20x16	374.7	14.75	276	10.875	LN	C _v	48.1	121	247	374	501	627	751	874	994	1113	1229
						X _T	0.534	0.465	0.460	0.456	0.452	0.449	0.446	0.444	0.443	0.442	0.442
20x16	374.7	14.75	378	14.875	LN	C _v	48.1	166	341	514	685	854	1019	1180	1336	1488	1634
						X _T	0.534	0.463	0.457	0.451	0.447	0.444	0.443	0.442	0.442	0.443	0.445
24x16	374.7	14.75	203	8	SN	C _v	48.1	91	179	273	368	462	555	649	742	834	926
						X _T	0.534	0.468	0.464	0.461	0.458	0.455	0.453	0.450	0.448	0.446	0.444
24x16	374.7	14.75	276	10.875	LN	C _v	48.1	121	267	375	503	630	756	881	1006	1129	1251
						X _T	0.534	0.466	0.462	0.458	0.454	0.451	0.447	0.445	0.442	0.440	0.438
24x16	374.7	14.75	378	14.875	LN	C _v	48.1	166	341	516	689	861	1032	1200	1365	1528	1688
						X _T	0.534	0.465	0.459	0.454	0.449	0.445	0.442	0.439	0.437	0.435	0.434
24x20	463.6	18.25	203	8	SN	C _v	71.8	113	214	324	435	546	657	767	877	986	1094
						X _T	0.534	0.454	0.451	0.448	0.446	0.443	0.441	0.439	0.437	0.436	0.434
24x20	463.6	18.25	276	10.875	LN	C _v	71.8	149	292	444	595	745	894	1042	1188	1333	1476
						X _T	0.534	0.453	0.449	0.446	0.442	0.440	0.437	0.435	0.433	0.432	0.431
24x20	463.6	18.25	378	14.875	LN	C _v	71.8	200	404	610	815	1018	1218	1416	1609	1800	1986
						X _T	0.534	0.452	0.442	0.442	0.438	0.435	0.433	0.431	0.430	0.430	0.430

1. The first number indicates both inlet and outlet size. The second number indicates effective trim size.

EWT-2, EWD, and EWT Cavitrol III Trim—One Stage																	Linear Characteristic	
Valve Size, NPS ⁽¹⁾	Port Diameter		Maximum Travel		Con- struc- tion ⁽²⁾	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L	
	mm	Inches	mm	Inches			Min ⁽³⁾	10	20	30	40	50	60	70	80	90		100
16 x 12	279.4	11.00	203	8.00	LND	C _v	40	132	304	471	628	775	910	1030	1140	1240	1330	0.91
						K _v	34.6	114	263	407	543	670	787	891	986	1073	1150	---
20 x 16	374.7	14.75	276	10.88	LND	C _v	46	262	576	877	1160	1420	1660	1880	2070	2240	2390	0.91
						K _v	39.8	227	498	759	1003	1228	1436	1626	1791	1938	2067	---
	374.7	14.75	378	14.88	LN-SD	C _v	46	379	800	1190	1540	1850	2110	2330	2510	2670	2800	0.91
						K _v	39.8	328	692	1029	1332	1600	1825	2015	2171	2310	2422	---
24 x 16	374.7	14.75	276	10.88	LND	C _v	46	262	576	878	1160	1420	1160	1880	2070	2240	2390	0.91
						K _v	39.8	227	498	759	1003	1228	1003	1626	1791	1938	2067	---
	374.7	14.75	378	14.88	LND	C _v	46	379	800	1190	1540	1850	2110	2330	2520	2670	2800	0.91
						K _v	39.8	328	692	1029	1332	1600	1825	2015	2180	2310	2422	---
	374.7	14.75	429	16.88	LN-SD	C _v	46	437	909	1340	1710	2030	2290	2510	2680	2830	2940	0.91
						K _v	39.8	378	786	1159	1479	1756	1981	2171	2318	2448	2543	---
24 x 20	463.6	18.25	378	14.88	LND	C _v	56	468	995	1490	1960	2370	2750	3070	3360	3600	3810	0.91
						K _v	48.4	405	861	1289	1695	2050	2379	2656	2906	3114	3296	---
	463.6	18.25	429	16.88	LN-SD	C _v	56	540	1130	1690	2190	2630	3010	3340	3620	3860	4050	0.91
						K _v	48.4	467	977	1462	1894	2275	2604	2889	3131	3339	3503	---

1. The first number indicates both inlet and outlet size. The second number indicates effective trim size.
2. Construction—SND = short-neck valve, drilled windows; LND - long-neck valve, drilled windows; LN-SD = long-neck valve with bonnet spacer, drilled windows.
3. Do not allow the valve to throttle at less than the minimum coefficient shown for an extended time, or erosion damage to the valve seat might occur.

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Quick Opening																Quick Opening Characteristic	
Valve Size, NPS ⁽¹⁾	Port Diameter		Maximum Travel		Flow Coefficient	Coeffs. for 6 mm (0.25 in) Travel ⁽²⁾	Valve Opening—Percent of Total Travel										F _L ⁽³⁾
	mm	Inches	mm	Inches			10	20	30	40	50	60	70	80	90	100	
4 x 2	58.7	2.3125	29	1.125	C _V	29.9	13.7	26.9	42.1	60.0	76.8	90.2	101	110	117	123	0.89
					K _V		11.9	23.3	36.4	51.9	66.4	78.0	87.4	95.2	101	106	---
					X _T		0.660	0.639	0.663	0.652	0.660	0.705	0.777	0.843	0.868	0.860	0.793
6 x 4	111.1	4.375	51	2	C _V	48.1	39.4	85.2	147	208	268	321	355	373	379	382	0.88
					K _V		34.1	73.7	127	180	232	278	307	323	328	330	---
					X _T		0.600	0.619	0.587	0.591	0.633	0.662	0.682	0.726	0.748	0.770	0.781
8 x 4	111.1	4.375	51	2	C _V	51.3	42.1	88.2	149	212	269	314	365	405	437	450	0.85
					K _V		36.4	76.3	129	183	233	272	316	350	378	389	---
					X _T		0.585	0.578	0.573	0.560	0.579	0.640	0.726	0.733	0.726	0.727	0.704
8 x 6 and 10x6 ⁽⁴⁾	177.8	7	51	2	C _V	97.8	79.3	152	249	346	442	533	606	650	683	714	0.86
					K _V		68.6	131	215	299	382	461	524	562	591	618	---
					X _T		0.661	0.682	0.671	0.634	0.655	0.663	0.681	0.688	0.709	0.715	0.671
12 x 6	177.8	7	51	2	C _V	109	86.1	168	261	359	460	554	641	720	799	874	0.79
					K _V		74.5	145	226	311	398	479	554	623	691	756	---
					X _T		0.594	0.614	0.563	0.571	0.608	0.630	0.660	0.677	0.706	0.735	0.736
10 x 8	203.2	8	76	3	C _V	---	151	313	471	617	748	848	918	956	971	1000	0.93
					K _V		131	271	407	534	647	734	794	827	840	865	---
					X _T		---	0.632	0.606	0.625	0.663	0.698	0.751	0.798	0.838	0.864	0.842
12 x 8	203.2	8	76	3	C _V	---	157	322	480	632	760	860	957	1030	1080	1110	0.89
					K _V		136	279	415	547	657	744	828	891	934	960	---
					X _T		---	0.718	0.716	0.712	0.730	0.789	0.844	0.855	0.873	0.866	0.836
Linear																Linear Characteristic	
4 x 2	58.7	2.3125	29	1.125	C _V	---	6.88	13.7	21.5	29.9	39.1	49.0	60.0	72.2	84.5	96.2	0.89
					K _V		5.95	11.9	18.6	25.9	33.8	42.4	51.9	62.5	73.1	83.2	---
					X _T		0.599	0.662	0.728	0.742	0.745	0.743	0.744	0.761	0.777	0.794	---
6 x 4	111.1	4.375	51	2	C _V	---	26.2	52.5	78.4	105	133	162	197	236	281	320	0.89
					K _V		22.7	45.4	67.8	90.8	115	140	170	204	243	277	---
					X _T		0.713	0.640	0.661	0.667	0.659	0.666	0.666	0.676	0.690	0.725	---
8 x 4	111.1	4.375	51	2	C _V	---	25.1	51.5	78.1	104	130	157	192	234	281	328	0.89
					K _V		21.7	44.5	67.6	90.0	112	136	166	202	243	284	---
					X _T		0.610	0.657	0.682	0.688	0.700	0.715	0.716	0.711	0.716	0.729	---
8 x 6 and 10x6 ⁽⁴⁾	177.8	7	51	2	C _V	---	52.5	116	182	246	311	375	435	495	554	607	0.88
					K _V		45.4	100	157	213	269	324	376	428	479	525	---
					X _T		0.655	0.678	0.688	0.708	0.726	0.728	0.723	0.729	0.720	0.679	---
12 x 6	177.8	7	51	2	C _V	---	57.4	122	186	248	311	375	441	510	591	675	0.84
					K _V		49.7	106	161	215	269	324	381	441	511	584	---
					X _T		0.523	0.572	0.612	0.654	0.659	0.683	0.704	0.719	0.723	0.719	---
10 x 8	203.2	8	76	3	C _V	---	106	210	315	427	546	661	766	848	905	958	0.92
					K _V		91.7	182	272	369	472	572	663	734	783	829	---
					X _T		0.677	0.677	0.708	0.711	0.702	0.705	0.731	0.777	0.831	0.820	---
12 x 8	203.2	8	76	3	C _V	---	119	218	336	447	564	680	795	895	981	1050	0.89
					K _V		103	189	291	387	488	588	688	774	849	908	---
					X _T		0.678	0.768	0.811	0.791	0.802	0.811	0.809	0.819	0.837	0.836	---

1. The first number indicates both inlet and outlet sizes. The second number indicates effective trim size.
 2. When sizing self-operated regulators, use coefficients listed for 6 mm (0.25 inch) travel.
 3. At 100% travel.
 4. NPS 10x6 has a valve outlet area identical to the NPS 8x6.

Equal Percentage															Equal Percentage Characteristic	
Valve Size, NPS ⁽¹⁾	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽²⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
4 x 2	58.7	2.3125	29	1.125	C _V	2.40	4.16	5.97	8.37	12.2	17.6	26.3	38.1	52.7	67.5	0.90
					K _V	2.08	3.60	5.16	7.24	10.6	15.2	22.7	33.0	45.6	58.4	---
					X _T	0.751	0.770	0.781	0.776	0.769	0.773	0.732	0.739	0.754	0.777	---
6 x 4	111.1	4.375	51	2	C _V	7.18	12.3	18.2	26.7	39.8	61.0	100	158	217	271	0.88
					K _V	6.21	10.6	15.7	23.1	34.4	52.8	86.5	137	188	234	---
					X _T	0.794	0.778	0.775	0.773	0.773	0.776	0.718	0.687	0.707	0.694	---
8 x 4	111.1	4.375	51	2	C _V	8.37	12.8	20.0	28.5	42.2	64.6	102	156	214	269	0.90
					K _V	7.24	11.1	17.3	24.7	36.5	55.9	88.2	135	185	233	---
					X _T	0.761	0.731	0.716	0.745	0.758	0.724	0.701	0.684	0.709	0.704	---
8 x 6 and 10x6 ⁽¹⁾	177.8	7	51	2	C _V	12.0	22.8	36.9	58.8	91.3	149	226	311	397	478	0.92
					K _V	10.4	19.7	31.9	50.9	79.0	129	195	269	343	413	---
					X _T	0.733	0.783	0.874	0.859	0.836	0.791	0.773	0.782	0.755	0.727	---
12 x 6	177.8	7	51	2	C _V	18.6	30.0	43.8	65.7	97.1	153	231	312	395	476	0.88
					K _V	16.1	25.9	37.9	56.8	84.0	132	200	270	342	412	---
					X _T	0.661	0.694	0.824	0.813	0.812	0.802	0.764	0.777	0.774	0.788	---
10 x 8	203.2	8	76	3	C _V	33.9	61.2	97.7	162	269	417	568	705	840	932	0.90
					K _V	29.3	52.9	84.5	140	233	361	491	610	727	806	---
					X _T	0.836	0.867	0.894	0.796	0.744	0.704	0.699	0.712	0.725	0.760	---
12 x 8	203.2	8	76	3	C _V	28.8	58.1	102	175	294	452	654	859	989	1020	0.88
					K _V	24.9	50.3	88.2	151	254	391	566	743	855	882	---
					X _T	0.769	0.832	0.928	0.930	0.797	0.744	0.651	0.581	0.646	0.766	---

1. NPS 10x6 has a valve outlet area identical to the NPS 8x6.



Whisper Trim I															Linear Characteristic	
Valve Size, NPS ⁽¹⁾	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽²⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
4 x 2	58.7	2.3125	29	1.125	C _V	14.2	27.7	39.8	51.7	63.8	76.2	88.3	99.9	111	118	---
					K _V	12.3	24.0	34.4	44.7	55.2	65.9	76.4	86.4	96.0	102	---
					X _T	0.321	0.323	0.322	0.320	0.323	0.322	0.324	0.323	0.320	0.322	---
6 x 4	111.1	4.375	51	2	C _V	30.9	71.5	110	150	185	221	252	280	302	325	---
					K _V	26.7	61.8	95	130	160	191	218	242	261	281	---
					X _T	0.689	0.456	0.386	0.350	0.362	0.368	0.409	0.390	0.413	0.418	---
8 x 4	111.1	4.375	51	2	C _V	34.3	75.5	115	153	190	226	261	295	322	343	---
					K _V	29.7	65.3	99	132	164	195	226	255	279	297	---
					X _T	0.486	0.310	0.274	0.263	0.260	0.258	0.262	0.266	0.274	0.279	---
8 x 6 and 10x6 ⁽²⁾	177.8	7	51	2	C _V	42.0	95.5	157	223	282	346	411	474	528	575	---
					K _V	36.3	82.6	136	193	244	299	356	410	457	497	---
					X _T	0.571	0.460	0.386	0.358	0.358	0.345	0.331	0.324	0.334	0.319	---
			102	4	C _V	100	257	360	443	498	531	558	582	604	626	---
					K _V	86.5	222	311	383	431	459	483	503	522	541	---
					X _T	0.308	0.228	0.305	0.351	0.432	0.566	0.652	0.710	0.748	0.744	---
12 x 6	177.8	7	51	2	C _V	49.6	123	193	262	331	401	466	532	592	639	---
					K _V	42.9	106	167	227	286	347	403	460	512	553	---
					X _T	0.572	0.345	0.310	0.296	0.289	0.280	0.282	0.277	0.279	0.274	---
			102	4	C _V	94.0	229	345	450	544	650	765	835	855	940	---
					K _V	81.3	198	298	389	471	562	662	722	740	813	---
					X _T	0.357	0.292	0.336	0.334	0.363	0.384	0.369	0.410	0.490	0.462	---
10 x 8	203.2	8	76	3	C _V	88.1	230	361	469	559	654	739	808	851	881	---
					K _V	76.2	199	312	406	484	566	639	699	736	762	---
					X _T	0.507	0.393	0.348	0.338	0.359	0.379	0.409	0.434	0.469	0.536	---
			102	4	C _V	136	315	471	600	713	802	868	895	894	942	---
					K _V	118	272	407	519	617	694	751	774	773	815	---
					X _T	0.453	0.358	0.347	0.365	0.390	0.433	0.490	0.582	0.690	0.694	---

1. The first number indicates both body inlet and outlet size. The second number indicates effective trim size.
 2. NPS 10x6 has a valve outlet area identical to the NPS 8x6.

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Quick Opening - Flow Up															Quick Opening Characteristic	
Valve Size, NPS ⁽¹⁾	Port Diameter		Maximum Travel		Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽²⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
8 x 6	177.8	7	51	2	C _V	78.3	150	247	343	438	528	600	643	676	706	0.87
					K _V	67.7	130	214	297	379	457	519	556	585	611	---
					X _T	0.760	0.745	0.697	0.715	0.733	0.751	0.758	0.786	0.787	0.747	---
12 x 8	203.8	8	76	3	C _V	157	322	480	632	760	860	957	1030	1080	1110	0.89
					K _V	136	279	415	547	657	744	828	891	934	960	---
					X _T	0.718	0.716	0.712	0.730	0.789	0.844	0.855	0.873	0.866	0.836	---
Linear - Flow Up															Linear Characteristic	
8 x 6	177.8	7	51	2	C _V	51.5	115	181	245	310	374	434	494	553	606	0.89
					K _V	44.5	99	157	212	268	324	375	427	478	524	---
					X _T	0.764	0.775	0.781	0.803	0.830	0.826	0.818	0.821	0.809	0.772	---
12 x 8	203.8	8	76	3	C _V	119	218	336	447	564	680	795	895	981	1050	0.89
					K _V	103	189	291	387	488	588	688	774	849	908	---
					X _T	0.678	0.768	0.811	0.791	0.802	0.811	0.809	0.819	0.837	0.836	---
Equal Percentage - Flow Up															Equal Percentage Characteristic	
8 x 6	177.8	7	51	2	C _V	11.0	21.8	34.9	54.8	86.3	140	212	292	373	447	0.92
					K _V	9.5	18.9	30.2	47.4	74.6	121	183	253	323	387	---
					X _T	0.839	0.823	0.935	0.953	0.897	0.859	0.844	0.855	0.819	0.791	---
12 x 8	203.8	8	76	3	C _V	28.8	58.1	102	175	294	452	654	859	989	1020	0.88
					K _V	24.9	50.3	88	151	254	391	566	743	855	882	---
					X _T	0.769	0.832	0.928	0.930	0.797	0.744	0.651	0.581	0.646	0.766	---

1. The first number indicates both body inlet and outlet size. The second number indicates effective trim size.
2. At 100% travel.

CL150, 300, and 600 - Flow Down																	Linear Characteristic
Valve Size, NPS ⁽¹⁾	Port Diameter		Maximum Travel		Minimum Throttling $C_v^{(2)}$	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										$F_L^{(3)}$
	mm	Inches	mm	Inches			10	20	30	40	50	60	70	80	90	100	
One Stage																	
4 x 2	58.7	2.3125	29	1.125	3.90	C_v	0.52	1.87	5.71	11.7	17.4	23.0	28.9	35.1	41.1	43.6	0.91
						K_v	0.450	1.62	4.94	10.1	15.1	19.9	25.0	30.4	35.6	37.7	---
6 x 4	111.1	4.375	54	2.125	5.20	C_v	2.03	20.3	41.1	61.5	81.5	101	121	140	158	169	0.95
						K_v	1.76	17.6	35.6	53.2	70.5	87.4	105	121	137	146	---
8 x 4	111.1	4.375	54	2.125	5.20	C_v	2.57	21	42	62.6	82.9	103	124	143	161	171	0.95
						K_v	2.22	18.2	36.3	54.1	71.7	89.1	107.3	124	139	148	---
8 x 6 10 x 6(1)	177.8	7	57	2.25	10.0	C_v	4.40	29	63.9	99.9	136	171	205	237	269	293	0.93
						K_v	3.81	25.1	55.3	86.4	118	148	177	205	233	253	---
12 x 6	177.8	7	57	2.25	10.0	C_v	5.49	34.5	71.1	106	143	179	216	250	283	305	0.93
						K_v	4.75	29.8	61.5	91.7	124	155	187	216	245	264	---
12 x 8(4)	203.2	8	86	3.375	15.0	C_v	13.6	62.3	117	171	225	278	331	385	438	487	0.90
						K_v	11.8	53.9	101	148	195	240	286	333	379	421	---
12 x 8(5)	203.2	8	152	6	15.0	C_v	82.0	163	245	327	408	490	572	653	735	816	0.92
						K_v	70.9	141	212	283	353	424	495	565	636	706	---
Two Stage																	
4 x 2	4736	1.875	51	2	0.92	C_v	0.84	3.19	5.54	7.92	10.3	12.5	15.4	17.3	19.7	22.0	0.98
						K_v	0.73	2.76	4.79	6.85	8.91	10.8	13.3	15.0	17.0	19.0	---
6 x 4	73.0	2.875	102	4	1.90	C_v	3.48	11.0	18.5	26.0	33.4	41.0	48.5	56.0	63.2	71.0	0.98
						K_v	3.01	9.52	16.0	22.5	28.9	35.5	42.0	48.4	54.7	61.4	---
8 x 6 10 x 6(1)	136.5	5.375	127	5	3.00	C_v	10.9	29.4	47.9	66.6	85.1	104	122	140	160	178	0.98
						K_v	9.43	25.4	41.4	57.6	73.6	90.0	106	121	138	154	---
12 x 6	136.5	5.375	152	6	3.00	C_v	14.1	35.6	57.0	78.6	100	121	143	165	186	208	0.98
						K_v	12.2	30.8	49.3	68.0	86.5	105	124	143	161	180	---
12 x 8	177.8	7	152	6	7	C_v	27.7	54.7	81.6	109	137	163	190	218	245	272	0.98
						K_v	24.0	47.3	70.6	94.3	119	141	164	189	212	235	---

1. NPS 10x6 has a valve outlet area identical to the NPS 8x6.



CL900 - Flow Down																Linear Characteristic	
Valve Size, NPS ⁽¹⁾	Port Diameter		Maximum Travel		Minimum Throttling $C_v^{(2)}$	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										$F_L^{(3)}$
	mm	Inches	mm	Inches			10	20	30	40	50	60	70	80	90	100	
One Stage																	
8 x 6	177.8	7	51	2	10.0	C_v	3.96	26.0	51.9	77.9	104	130	156	181	207	236	0.93
						K_v	3.43	22.5	44.9	67.4	90.0	112	135	157	179	204	---
			127	5	10.0	C_v	24.8	79.2	131	183	238	292	344	396	451	495	0.93
						K_v	21.5	68.5	113	158	206	253	298	343	390	428	---
12 x 8 ⁽⁴⁾	203.3	8	60	3.375	15.0	C_v	13.6	62.3	117	171	225	278	331	385	438	487	0.90
						K_v	11.8	53.9	101	148	195	240	286	333	379	421	---
12 x 8 ⁽⁵⁾	203.3	8	152	6	15.0	C_v	69.0	138	207	276	345	414	483	552	622	690	0.92
						K_v	59.7	119	179	239	298	358	418	477	538	597	---
Two Stage																	
8 x 6	136.5	5.375	127	5	3.00	C_v	11.8	32.0	52.2	72.5	92.7	113	133	153	174	175	0.98
						K_v	10.2	27.7	45.2	62.7	80.2	97.7	115	132	151	151	---
12 x 8	177.8	7	152	6	7.0	C_v	27.2	54.4	81.6	109	136	163	190	218	245	272	0.98
						K_v	23.5	47.1	70.6	94.3	118	141	164	189	212	235	---
<p>1. The first number indicates both body inlet and outlet size. The second number indicates effective trim size. 2. Valves should not be required to throttle at a C_v less than the specified minimum C_v for an extended period of time. Erosion damage to the valve seats may result. 3. At 100% travel. 4. This construction has an internal cage spacer and load ring. 5. This construction has a load ring.</p>																	

Notes: All other EWT flow coefficients are identical to the EWD. Refer to the EWD information. For additional EWT valve body, information refer to Bulletin 51.1:EW.

The EWT-C has flow coefficients identical to the NPS 6 x 4 through 12 x 6 CL150 - 600 EWD. Please refer to those coefficients. For additional EWT-C valve information, please refer to Bulletin 51.1:easy-e™ Cryogenic.

The EWT-1 valve has flow coefficients identical to the EWD-1 valve. Refer to the EWD-1 information. For additional EWT-1 valve body information refer to Bulletin 51.1:EW.

CL300, 600, & 900--Flow Up																Linear Characteristic	
Valve Size, NPS ⁽¹⁾	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel											X _T at Max. Travel
	mm	Inches	mm	Inches		Minimum ⁽²⁾	10	20	30	40	50	60	70	80	90	100	
A1 & A3																	
12 x 8	196.8	7.75	203	8	C _v	22.4	138	315	523	665	801	897	962	1001	1008	1013	0.690
					K _v	19.4	119	272	452	575	693	776	832	866	872	876	---
					X _T	---	0.564	0.453	0.377	0.411	0.424	0.464	0.535	0.621	0.713	0.690	---
B1 & B3																	
12 x 8	196.8	7.75	203	8	C _v	16.6	77.0	154	231	308	385	462	539	616	693	770	0.563
					K _v	14.4	66.6	133	200	266	333	400	466	533	599	666	---
C1 & C3																	
12 x 8	196.8	7.75	203	8	C _v	15.4	54.3	109	163	217	272	326	380	435	489	543	0.563
					K _v	13.3	47.0	94.3	141	188	235	282	329	376	423	470	---
D1 & D3																	
12 x 8	196.8	6.75	203	8	C _v	13.6	46.3	92.7	139	185	232	278	324	371	417	463	0.563
					K _v	11.8	40.0	80.2	120.2	160	201	240	280	321	361	400	---
CL900 - Flow Up																Linear Characteristic	
A1																	
8 x 6	136.5	5.375	127	5	C _v	2.43	49.1	110	171	232	294	346	391	423	449	469	0.766
					K _v	2.10	42.5	95.2	148	201	254	299	338	366	388	406	---
A3																	
8 x 6	136.5	5.375	127	5	C _v	2.44	37.6	85.6	134	181	230	277	319	359	394	420	0.757
					K _v	2.11	32.5	74.0	116	157	199	240	276	311	341	363	---
B3⁽³⁾																	
8 x 6	136.5	5.375	127	5	C _v	2.83	33.0	69.3	106	142	178	215	251	288	324	353	0.563
					K _v	2.45	28.5	59.9	91.7	123	154	186	217	249	280	305	---
C3⁽³⁾																	
8 x 6	136.5	5.375	127	5	C _v	2.98	19.1	43.9	67.0	93.0	118	143	167	190	220	239	0.508
					K _v	2.58	16.5	38.0	58.0	80.4	102	124	144	164	190	207	---
D3^(3,4)																	
8 x 6	136.5	5.375	127	5	C _v	3.04	10.5	21.7	46.8	71.4	95.4	120	144	169	194	215	0.490
					K _v	2.63	9.08	18.8	40.5	61.8	82.5	104	125	146	168	186	---
1. The first number indicates both inlet and outlet size. The second number indicates nominal port size. 2. Valves should not be required to throttle at less than the specified minimum coefficient for an extended period of time or erosion damage to the valve seat may result. 3. Levels B1, C1, and D1 are not available in CL900 NPS 8 x 6 EWND valve body. 4. Equal percentage for first 1.5 inch of travel, then linear.																	

The coefficients shown on this page are also appropriate for CL300, 600, and 900 Fisher EWNT-2 and CL900 EWNT-1.

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Quick Opening -- Flow Up															Quick Opening Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel ⁽¹⁾		Flow Coefficient	Coeffs. for 6 mm (0.25 inch) Travel ⁽²⁾	Valve Opening—Percent of Total Travel										F _L ⁽³⁾
	mm	Inches	mm	Inches			10	20	30	40	50	60	70	80	90	100	
1/2	25.4	1	19	0.75	C _v	---	1.76	3.29	4.29	4.44	4.44	4.44	4.44	4.44	4.44	0.83	
					K _v	---	1.52	2.85	3.71	3.84	3.84	3.84	3.84	3.84	3.84	3.84	---
					X _T	---	0.364	0.649	0.764	0.863	0.894	0.894	0.894	0.894	0.894	0.894	0.894
3/4	25.4	1	19	0.75	C _v	---	3.85	7.19	9.40	9.72	9.72	9.72	9.72	9.72	9.72	0.88	
					K _v	---	3.33	6.22	8.13	8.41	8.41	8.41	8.41	8.41	8.41	8.41	---
					X _T	---	0.314	0.559	0.654	0.742	0.769	0.769	0.769	0.769	0.769	0.769	0.769
1	25.4	1	19	0.75	C _v	14.7	4.39	10.3	14.0	15.5	16.2	16.6	16.8	16.8	16.9	0.94	
					K _v	12.7	3.80	8.91	12.1	13.4	14.0	14.4	14.5	14.5	14.6	14.6	---
					X _T	14.7	0.400	0.449	0.523	0.539	0.535	0.512	0.500	0.500	0.494	0.494	---
					F _d	---	0.20	0.29	0.39	0.48	0.50	0.50	0.50	0.50	0.50	0.50	---
1-1/2	38.1	1.5	19	0.75	C _v	22.6	5.64	11.9	20.6	27.4	30.5	32.4	33.4	33.7	34.1	0.96	
					K _v	19.5	4.88	10.3	17.8	23.7	26.4	28.0	28.9	29.2	29.5	29.6	---
					X _T	22.6	0.623	0.734	0.726	0.814	0.843	0.857	0.861	0.860	0.853	0.848	---
	25.4 ⁽⁴⁾	1 ⁽⁴⁾	19	0.75	F _d	---	0.16	0.24	0.32	0.39	0.45	0.50	0.50	0.50	0.50	---	
					C _v	15.7	4.17	8.94	14.6	17.4	18.3	18.8	18.9	19.0	19.1	19.4	0.90
					K _v	13.6	3.61	7.73	12.6	15.1	15.8	16.3	16.3	16.4	16.5	16.8	---
2	50.8	2	29	1.125	X _T	15.7	0.617	0.791	0.793	0.904	0.925	0.924	0.922	0.915	0.905	0.878	---
					C _v	34.0	13.0	30.1	44.3	52.4	56.4	57.8	58.4	58.5	58.6	58.6	0.94
					K _v	29.4	11.2	26.0	38.3	45.3	48.8	50.0	50.5	50.6	50.7	50.7	---
	25.4 ⁽⁴⁾	1 ⁽⁴⁾	19	0.75	X _T	34.0	0.548	0.663	0.765	0.813	0.818	0.833	0.831	0.836	0.834	0.834	---
					F _d	---	0.17	0.28	0.36	0.43	0.49	0.50	0.50	0.50	0.50	0.50	---
					C _v	15.8	4.35	9.79	14.9	16.6	17.3	17.5	17.5	17.6	17.7	17.9	0.86
3	76.2	3	38	1.5	K _v	13.7	3.76	8.47	12.9	14.4	15.0	15.1	15.1	15.2	15.3	15.5	---
					X _T	15.8	0.524	0.594	0.695	0.877	0.937	0.944	0.958	0.952	0.942	0.921	---
					F _d	---	0.17	0.27	0.35	0.42	0.47	0.50	0.50	0.50	0.50	0.50	---
	50.8 ⁽⁴⁾	2 ⁽⁴⁾	29	1.125	C _v	53.8	30.8	65.1	92.4	110	118	123	126	128	129	129	0.91
					K _v	46.5	26.6	56.3	79.9	95.2	102	106	109	111	112	112	---
					X _T	53.8	0.672	0.714	0.713	0.742	0.784	0.785	0.783	0.776	0.774	0.774	---
4	101.6	4	51	2	F _d	---	0.17	0.27	0.35	0.42	0.47	0.50	0.50	0.50	0.50	---	
					C _v	32.2	9.99	27.6	44.9	61.0	71.9	78.4	83.1	86.2	87.5	88.4	0.95
					K _v	27.9	8.64	23.9	38.8	52.8	62.2	67.8	71.9	74.6	75.7	76.5	---
	50.8 ⁽⁴⁾	2 ⁽⁴⁾	29	1.125	X _T	32.2	0.527	0.511	0.652	0.720	0.780	0.820	0.814	0.798	0.790	0.779	---
					C _v	68.2	50.8	116	159	185	201	212	219	222	223	223	0.88
					K _v	59.0	43.9	100	138	160	174	183	189	192	193	193	---
50.8 ⁽⁴⁾	2 ⁽⁴⁾	29	1.125	X _T	68.2	0.733	0.653	0.724	0.805	0.809	0.816	0.809	0.812	0.831	0.835	---	
				F _d	---	0.18	0.28	0.36	0.42	0.48	0.50	0.50	0.50	0.50	0.50	---	
				C _v	37.4	13.5	32.3	52.2	66.2	74.4	81.1	85.0	85.8	86.3	86.7	0.85	
50.8 ⁽⁴⁾	2 ⁽⁴⁾	29	1.125	K _v	32.4	11.7	27.9	45.2	57.3	64.4	70.2	73.5	74.2	74.6	75.0	---	
				X _T	37.4	0.490	0.556	0.609	0.672	0.793	0.772	0.728	0.714	0.711	0.704	---	
				F _d	---	0.18	0.28	0.36	0.42	0.48	0.50	0.50	0.50	0.50	0.50	---	

1. When using 655-EZ as a control valve for on-off service, the maximum travel for sizing purposes is 19 mm (0.75 inch).
 2. When sizing self-operated regulators, use coefficients listed for 6 mm (0.25 inch) travel.
 3. At 100% travel.
 4. Restricted trim.

The flow coefficients shown on this page are appropriate for EZ-C valves.



Catalog 12

Page EZ-2
June 2014Linear Valve Plug
Flow Up through the Port

Linear -- Flow Up															Linear Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1	25.4	1	19	0.75	C _V	2.21	3.87	5.29	6.56	8.2	9.82	11.1	12.1	13.0	13.6	0.96
					K _V	1.91	3.35	4.58	5.67	7.09	8.49	9.60	10.5	11.2	11.8	---
					X _T	0.638	0.601	0.638	0.634	0.638	0.629	0.636	0.680	0.769	0.834	---
1-1/2	38.1	1.5	19	0.75	C _V	3.99	7.53	11.1	14.8	18.7	22.5	25.8	29.2	31.2	31.9	0.96
					K _V	3.45	6.51	9.6	12.8	16.2	19.5	22.3	25.3	27.0	27.6	---
					X _T	0.633	0.651	0.657	0.691	0.674	0.674	0.696	0.704	0.757	0.818	---
	25.4 ⁽²⁾	1 ⁽²⁾	19	0.75	C _V	1.96	3.42	4.94	6.11	7.8	9.3	10.9	13	15.1	16.7	0.96
					K _V	1.70	2.96	4.27	5.29	6.75	8.04	9.43	11.2	13.1	14.4	---
					X _T	0.469	0.578	0.600	0.690	0.652	0.655	0.637	0.625	0.719	0.796	---
2	50.8	2	29	1.125	C _V	6.08	11.9	18.0	24.1	30.1	36.4	42.8	49.9	52.0	52.4	0.95
					K _V	5.26	10.3	15.6	20.8	26.0	31.5	37.0	43.2	45.0	45.3	---
					X _T	0.560	0.644	0.655	0.675	0.701	0.724	0.779	0.773	0.862	0.924	---
	25.4 ⁽²⁾	1 ⁽²⁾	19	0.75	C _V	1.88	3.41	4.95	6.49	8.06	9.67	11.23	12.79	14.35	15.7	0.94
					K _V	1.63	2.95	4.28	5.61	6.97	8.36	9.71	11.1	12.4	13.6	---
					X _T	0.609	0.593	0.597	0.624	0.621	0.626	0.642	0.633	0.750	0.910	---
3	76.2	3	38	1.5	C _V	15.4	29.6	43.4	58.3	71.8	83.9	93.8	103	108	110.4	0.92
					K _V	13.3	25.6	37.5	50.4	62.1	72.6	81.1	89.1	93.4	95.5	---
					X _T	0.622	0.642	0.692	0.691	0.690	0.721	0.759	0.788	0.839	0.888	---
	50.8 ⁽²⁾	2 ⁽²⁾	29	1.125	C _V	6.59	13.3	20.7	28.1	36.0	44.0	55.6	67.5	76.2	80.4	0.94
					K _V	5.70	11.5	17.9	24.3	31.1	38.1	48.1	58.4	65.9	69.5	---
					X _T	0.564	0.500	0.522	0.609	0.577	0.594	0.563	0.582	0.677	0.749	---
4	101.6	4	51	2	C _V	21.3	39.7	57.5	75.8	100	129	157	180	199	209	0.89
					K _V	18.4	34.3	49.7	65.6	86.5	112	136	156	172	181	---
					X _T	0.554	0.628	0.684	0.723	0.665	0.608	0.677	0.826	0.862	0.866	---
	50.8 ⁽²⁾	2 ⁽²⁾	29	1.125	C _V	6.16	12.8	20.0	27.8	36.1	45.1	58.8	67.5	78.8	86.8	0.90
					K _V	5.33	11.1	17.3	24.0	31.2	39.0	50.9	58.4	68.2	75.1	---
					X _T	0.740	0.644	0.642	0.619	0.602	0.605	0.552	0.614	0.644	0.736	---

1. At 100% travel.
2. Restricted trim.

Notes: The coefficients shown on this page are also appropriate for EZ-C valves.

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Equal Percentage -- Flow Up															Equal Percentage Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1	25.4	1	19	0.75	C _v	0.79	1.25	1.80	2.53	3.63	5.28	7.59	10.7	12.7	13.2	0.96
					K _v	0.683	1.08	1.56	2.19	3.14	4.57	6.57	9.26	11.0	11.4	---
					X _T	0.641	0.634	0.598	0.586	0.584	0.596	0.646	0.680	0.757	0.886	---
					F _d	0.091	0.11	0.13	0.16	0.19	0.24	0.30	0.37	0.43	0.50	---
1-1/2	38.1	1.5	19	0.75	C _v	0.795	1.23	1.91	2.95	4.30	6.46	9.84	16.4	22.2	28.1	0.97
					K _v	0.688	1.06	1.65	2.55	3.72	5.59	8.51	14.2	19.2	24.3	---
					X _T	0.726	0.676	0.733	0.645	0.589	0.558	0.597	0.653	0.777	0.840	---
					F _d	0.077	0.086	0.10	0.12	0.15	0.17	0.22	0.27	0.34	0.40	---
	25.4 ⁽²⁾	1 ⁽²⁾	19	0.75	C _v	0.770	1.23	1.78	2.58	3.67	5.54	8.30	12.0	15.1	17.3	0.98
					K _v	0.666	1.06	1.54	2.23	3.17	4.79	7.18	10.4	13.1	15.0	---
					X _T	0.654	0.619	0.601	0.605	0.561	0.534	0.518	0.575	0.704	0.861	---
					F _d	0.069	0.085	0.11	0.13	0.18	0.23	0.30	0.37	0.44	0.50	---
2	50.8	2	29	1.125	C _v	1.65	2.61	4.30	6.62	11.1	20.7	32.8	44.7	50.0	53.8	0.95
					K _v	1.43	2.26	3.72	5.73	9.60	17.9	28.4	38.7	43.3	46.5	---
					X _T	0.655	0.581	0.520	0.559	0.552	0.529	0.653	0.801	0.903	0.899	---
					F _d	0.069	0.085	0.11	0.13	0.18	0.23	0.30	0.37	0.44	0.50	---
	25.4 ⁽²⁾	1 ⁽²⁾	19	0.75	C _v	1.02	1.50	2.05	2.78	3.90	5.57	8.16	11.8	14.5	15.9	0.92
					K _v	0.882	1.30	1.77	2.40	3.37	4.82	7.06	10.2	12.5	13.8	---
					X _T	0.596	0.616	0.600	0.580	0.572	0.555	0.523	0.547	0.671	0.905	---
					F _d	0.062	0.081	0.10	0.12	0.16	0.20	0.26	0.33	0.40	0.46	---
3	76.2	3	38	1.5	C _v	3.11	5.77	9.12	13.7	21.7	36.0	60.4	86.4	104	114	0.92
					K _v	2.69	4.99	7.89	11.9	18.8	31.1	52.2	74.7	90.0	98.6	---
					X _T	0.619	0.595	0.598	0.619	0.594	0.563	0.586	0.729	0.778	0.781	---
					F _d	0.062	0.081	0.10	0.12	0.16	0.20	0.26	0.33	0.40	0.46	---
	50.8 ⁽²⁾	2 ⁽²⁾	29	1.125	C _v	2.11	3.11	4.58	6.76	10.7	20.7	34.3	48.3	61.5	71.6	0.92
					K _v	1.83	2.69	3.96	5.85	9.26	17.9	29.7	41.8	53.2	61.9	---
					X _T	0.874	0.699	0.643	0.626	0.587	0.451	0.493	0.587	0.648	0.734	---
					F _d	0.052	0.065	0.080	0.10	0.13	0.17	0.23	0.31	0.38	0.44	---
4	101.6	4	51	2	C _v	4.90	8.19	13.5	20.1	31.2	52.6	96.7	140	170	190	0.90
					K _v	4.24	7.08	11.7	17.4	27.0	45.5	83.6	121	147	164	---
					X _T	0.594	0.573	0.560	0.568	0.572	0.564	0.532	0.707	0.807	0.834	---
					F _d	0.052	0.065	0.080	0.10	0.13	0.17	0.23	0.31	0.38	0.44	---
	50.8 ⁽²⁾	2 ⁽²⁾	29	1.125	C _v	1.96	3.05	4.43	6.98	11.9	22.3	36.7	50.9	61.8	72.7	0.92
					K _v	1.70	2.64	3.83	6.04	10.3	19.3	31.7	44.0	53.5	62.9	---
					X _T	0.619	0.575	0.624	0.610	0.678	0.639	0.646	0.673	0.778	0.781	---
					F _d	0.052	0.065	0.080	0.10	0.13	0.17	0.23	0.31	0.38	0.44	---

1. At 100% travel.
2. Restricted trim.

Notes: The coefficients shown on this page are appropriate for EZ-C valves.



Catalog 12

Page EZ-4
June 2014Micro-Form Valve Plug
Flow Up through the Port

Micro-Form--Flow Up																Equal Percentage Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L (1)	
	mm	Inches	mm	Inches		5	10	20	30	40	50	60	70	80	90		100
All Sizes 1/2 - 2	6.4	0.25	19	0.75	C _v	0.075	0.088	0.124	0.175	0.236	0.327	0.464	0.641	0.881	1.22	1.52	0.88
					K _v	0.065	0.076	0.107	0.151	0.204	0.283	0.401	0.554	0.762	1.06	1.31	---
					X _T	0.804	0.771	0.717	0.658	0.645	0.620	0.585	0.596	0.596	0.603	0.647	---
1/2	9.5	0.375	19	0.75	C _v	0.102	0.134	0.202	0.313	0.448	0.613	0.879	1.27	1.77	2.47	3.00	0.93
					K _v	0.088	0.116	0.175	0.271	0.388	0.530	0.760	1.10	1.53	2.14	2.59	---
					X _T	0.766	0.711	0.679	0.618	0.602	0.588	0.564	0.580	0.599	0.593	0.723	---
	12.7	0.5	19	0.75	C _v	0.137	0.193	0.324	0.496	0.737	1.07	1.52	2.13	2.93	3.89	4.52	0.94
					K _v	0.119	0.167	0.280	0.429	0.638	0.926	1.31	1.84	2.53	3.36	3.91	---
					X _T	0.739	0.689	0.631	0.595	0.603	0.602	0.592	0.604	0.636	0.687	0.754	---
3/4	9.5	0.375	19	0.75	C _v	0.101	0.131	0.205	0.312	0.446	0.618	0.882	1.28	1.80	2.45	3.03	0.93
					K _v	0.087	0.113	0.177	0.270	0.386	0.535	0.763	1.11	1.56	2.12	2.62	---
					X _T	0.807	0.751	0.642	0.655	0.616	0.597	0.603	0.601	0.607	0.650	0.736	---
	12.7	0.5	19	0.75	C _v	0.133	0.190	0.318	0.486	0.732	1.07	1.52	2.15	3.07	4.20	5.06	0.94
					K _v	0.115	0.164	0.275	0.420	0.633	0.926	1.31	1.86	2.66	3.63	4.38	---
					X _T	0.780	0.720	0.655	0.628	0.606	0.598	0.598	0.596	0.596	0.636	0.722	---
	19.1	0.75	19	0.75	C _v	0.276	0.373	0.617	0.948	1.44	2.14	3.10	4.43	6.14	7.58	8.35	0.87
					K _v	0.239	0.323	0.534	0.820	1.25	1.85	2.68	3.83	5.31	6.56	7.22	---
					X _T	0.734	0.702	0.618	0.634	0.605	0.607	0.646	0.670	0.699	0.730	0.693	---
1	9.5	0.375	19	0.75	C _v	0.099	0.129	0.199	0.308	0.448	0.620	0.882	1.29	1.80	2.43	3.07	0.89
					K _v	0.086	0.112	0.172	0.266	0.388	0.536	0.763	1.12	1.56	2.10	2.66	---
					X _T	0.795	0.747	0.663	0.641	0.593	0.569	0.568	0.560	0.571	0.624	0.662	---
	12.7	0.5	19	0.75	C _v	0.133	0.189	0.319	0.492	0.735	1.08	1.53	2.12	2.99	4.17	4.91	0.93
					K _v	0.115	0.163	0.276	0.426	0.636	0.934	1.32	1.83	2.59	3.61	4.25	---
					X _T	0.787	0.728	0.639	0.628	0.591	0.573	0.585	0.600	0.618	0.645	0.803	---
	19.1	0.75	19	0.75	C _v	0.276	0.374	0.622	0.965	1.47	2.17	3.15	4.57	6.52	8.17	8.84	0.97
					K _v	0.239	0.324	0.538	0.835	1.27	1.88	2.72	3.95	5.64	7.07	7.65	---
					X _T	0.723	0.687	0.614	0.588	0.560	0.571	0.596	0.603	0.624	0.750	0.919	---
1-1/2 and 2	9.5	0.375	19	0.75	C _v	0.096	0.121	0.190	0.302	0.435	0.600	0.864	1.26	1.80	2.56	3.20	0.84
					K _v	0.083	0.105	0.164	0.261	0.376	0.519	0.747	1.09	1.56	2.21	2.77	---
					X _T	0.923	0.915	0.763	0.699	0.657	0.640	0.624	0.608	0.596	0.594	0.648	---
	12.7	0.5	19	0.75	C _v	0.145	0.199	0.323	0.503	0.735	1.07	1.54	2.14	3.08	4.36	5.18	0.91
					K _v	0.125	0.172	0.279	0.435	0.636	0.926	1.33	1.85	2.66	3.77	4.48	---
					X _T	0.851	0.748	0.686	0.640	0.617	0.627	0.602	0.607	0.607	0.573	0.705	---
	19.1	0.75	19	0.75	C _v	0.336	0.434	0.683	1.00	1.49	2.21	3.18	4.61	6.73	8.88	10.2	0.92
					K _v	0.291	0.375	0.591	0.865	1.29	1.91	2.75	3.99	5.82	7.68	8.82	---
					X _T	0.784	0.747	0.625	0.636	0.596	0.578	0.603	0.593	0.591	0.680	0.796	---

1. At 100% travel.

Notes: The coefficients on this page are also appropriate for EZ-C valves.

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Micro-Flute--Flow Up															Equal Percentage Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L (1)
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
All Sizes 1/2 - 2	6.4 1 Flute	0.25 1 Flute	19	0.75	C _V	0.0385	0.0455	0.0560	0.0719	0.0942	0.124	0.162	0.212	0.278	0.354	0.87
					K _V	0.033	0.039	0.048	0.062	0.081	0.107	0.140	0.183	0.240	0.306	---
					X _T	0.778	0.734	0.690	0.653	0.642	0.635	0.637	0.634	0.632	0.656	---
	6.4 3 Flutes	0.25 3 Flutes	19	0.75	C _V	0.0562	0.0725	0.101	0.146	0.216	0.312	0.433	0.588	0.802	1.07	0.90
					K _V	0.049	0.063	0.087	0.126	0.187	0.270	0.375	0.509	0.694	0.926	---
					X _T	0.692	0.648	0.639	0.625	0.600	0.586	0.597	0.613	0.620	0.624	---

1. At 100% travel.

Micro-Flow--Flow Up															Equal Percentage Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Angle "A" of Flat	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L (1)
	mm	Inches	mm	Inches			10	20	30	40	50	60	70	80	90	100	
All Sizes 1/2 - 2	4.8	0.187 5	19	0.75	1°55'	C _V	0.015	0.020	0.024	0.028	0.034	0.041	0.048	0.056	0.066	0.075	0.89
						K _V	0.013	0.017	0.021	0.024	0.029	0.035	0.042	0.048	0.057	0.065	---
						X _T	0.964	0.888	0.906	0.947	0.942	0.928	0.949	0.947	0.918	0.934	---
					3°25'	C _V	0.016	0.026	0.038	0.052	0.070	0.088	0.107	0.127	0.153	0.181	0.84
						K _V	0.014	0.022	0.033	0.045	0.061	0.076	0.093	0.110	0.132	0.157	---
						X _T	0.707	0.697	0.687	0.700	0.675	0.679	0.680	0.680	0.681	0.681	---

1. At 100% travel.



The EZ-C has flow coefficients identical to the EZ. Please refer to those coefficients. For additional EZ-C valve information, please refer to Bulletin 51.1:easy-e™ Cryogenic.

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Level A

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Valve Size, NPS		8 x 12	10 x 16	12 x 18	12 x 20	16 x 24	20 x 30	24 x 36	X _T at Max. Travel	
Nominal Inlet Size, Inches		8	10	12	12	16	20	24		
Nominal Outlet Size, Inches		12	16	18	20	24	30	36		
Port Diameter	mm	171	197	252	275	352	430	506		
	Inches	6.75	7.75	9.9375	10.8125	13.875	16.9375	19.9375		
Recommended Actuator	Plug Travel		Whisper III Level A1, Linear Characteristic, C _v Flow Coefficients							
	mm	Inches								
667/657	102	4	522	600	*	*	*	*	0.647	
585C	127	5	653	759	972	*	*	*	0.647	
	152	6	756	888	1150	1270	*	*	0.647	
	178	7	853	1000	1310	1450	*	*	0.647	
	203	8	938	1110	1470	1630	*	*	0.647	
585C Long Stroke	225	8.875	981	1170	1590	1770	2340	*	0.647	
	251	9.875	1070	1280	1730	1930	2560	*	0.647	
	276	10.875	-----	1375	1880	2100	2810	3500	4220	0.647
	302	11.875	-----	1440	1990	2240	3020	3780	4530	0.647
	327	12.875	-----	1500	2100	2370	3220	4030	4880	0.647
	352	13.875	-----	-----	2200	2490	3410	4310	5190	0.647
	378	14.875	-----	-----	2300	2600	3560	4530	5500	0.647
	403	15.875	-----	-----	-----	-----	3750	4780	5810	0.647
	429	16.875	-----	-----	-----	-----	3910	5000	6090	0.647
	454	17.875	-----	-----	-----	-----	4090	5250	6410	0.647
	479	18.875	-----	-----	-----	-----	4220	5470	6690	0.647
	505	19.875	-----	-----	-----	-----	-----	5660	6970	0.647
	530	20.875	-----	-----	-----	-----	-----	5840	7220	0.647
	556	21.875	-----	-----	-----	-----	-----	6030	7470	0.647
581	22.875	-----	-----	-----	-----	-----	6190	7690	0.647	
606	23.875	-----	-----	-----	-----	-----	6375	7940	0.647	
Min Throttling, Bevel Seat Plug			57.8	81.4	125	141	229	346	431	0.550
Min Throttling, Radius Plug			26.1	29.7	37	40.4	51.2	62.0	72.8	0.550

(*) Consult factory for flow at lower travels.

Valve Size, NPS		8 x 12	10 x 16	12 x 18	12 x 20	16 x 24	20 x 30	24 x 36	X _T at Max. Travel	
Nominal Inlet Size, Inches		8	10	12	12	16	20	24		
Nominal Outlet Size, Inches		12	16	18	20	24	30	36		
Port Diameter	mm	171	197	252	275	352	430	506		
	Inches	6.75	7.75	9.9375	10.8125	13.875	16.9375	19.9375		
Recommended Actuator	Plug Travel		Whisper III Level A3, Linear Characteristic, C _v Flow Coefficients							
	mm	Inches								
667/657	102	4	528	613	*	*	*	(1)	(1)	0.647
585C	127	5	644	750	981	*	*	(1)	(1)	0.647
	152	6	750	878	1160	1260	*	(1)	(1)	0.647
	178	7	847	997	1330	1440	*	(1)	(1)	0.647
	203	8	931	1100	1480	1620	*	(1)	(1)	0.647
585C Long Stroke	225	8.875	981	1200	1620	1770	2340	(1)	(1)	0.647
	251	9.875	1070	1280	1760	1930	2560	(1)	(1)	0.647
	276	10.875	-----	1370	1900	2090	2790	(1)	(1)	0.647
	302	11.875	-----	1440	2020	2230	3000	(1)	(1)	0.647
	327	12.875	-----	1500	2130	2360	3190	(1)	(1)	0.647
	352	13.875	-----	-----	2230	2480	3380	(1)	(1)	0.647
	378	14.875	-----	-----	2320	2590	3560	(1)	(1)	0.647
	403	15.875	-----	-----	-----	-----	3750	(1)	(1)	0.647
	429	16.875	-----	-----	-----	-----	3910	(1)	(1)	0.647
	454	17.875	-----	-----	-----	-----	4060	(1)	(1)	0.647
	479	18.875	-----	-----	-----	-----	4220	(1)	(1)	0.647
	505	19.875	-----	-----	-----	-----	-----	(1)	(1)	0.647
	530	20.875	-----	-----	-----	-----	-----	(1)	(1)	0.647
556	21.875	-----	-----	-----	-----	-----	(1)	(1)	0.647	
581	22.875	-----	-----	-----	-----	-----	(1)	(1)	0.647	
606	23.875	-----	-----	-----	-----	-----	(1)	(1)	0.647	
Min Throttling, Beveled Seat Plug			57.8	81.4	125	141	229	(1)	(1)	0.550
Min Throttling, Radius Plug			20.5	23.3	29.2	31.8	40.4	(1)	(1)	0.550

1. Whisper A3 is not available in these sizes. Whisper A2 is available, consult your Emerson Process Management sales office for details.
(*) Consult factory for flow at lower travels.

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Level B

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Valve Size, NPS		8 x 12	10 x 16	12 x 18	12 x 20	16 x 24	20 x 30	24 x 36	X _T at Max. Travel	
Nominal Inlet Size, Inches		8	10	12	12	16	20	24		
Nominal Outlet Size, Inches		12	16	18	20	24	30	36		
Port Diameter	mm	171	197	252	275	352	430	506		
	Inches	6.75	7.75	9.9375	10.8125	13.875	16.9375	19.9375		
Recommended Actuator	Plug Travel		Whisper III Level B1, Linear Characteristic, C _v Flow Coefficients							
	mm	Inches								
667/657	102	4	334	366	*	*	*	*	0.647	
585C	127	5	422	463	581	*	*	*	0.647	
	152	6	503	559	703	*	*	*	0.647	
	178	7	578	647	828	*	*	*	0.647	
	203	8	650	731	944	1050	*	*	0.647	
585C Long Stroke	225	8.875	706	897	1030	1150	1410	*	*	0.647
	251	9.875	769	1000	1140	1270	1575	*	*	0.647
	276	10.875	-----	1090	1240	1380	1730	2180	2520	0.647
	302	11.875	-----	1160	1340	1490	1880	2380	2760	0.647
	327	12.875	-----	1230	1430	1600	2030	2580	3000	0.647
	352	13.875	-----	-----	1530	1700	2170	2770	3250	0.647
	378	14.875	-----	-----	1620	1810	2310	2950	3470	0.647
	403	15.875	-----	-----	-----	-----	2440	3120	3690	0.647
	429	16.875	-----	-----	-----	-----	2570	3310	3910	0.647
	454	17.875	-----	-----	-----	-----	2700	3470	4130	0.647
	479	18.875	-----	-----	-----	-----	2830	3660	4340	0.647
	505	19.875	-----	-----	-----	-----	-----	3810	4530	0.647
	530	20.875	-----	-----	-----	-----	-----	3970	4720	0.647
	556	21.875	-----	-----	-----	-----	-----	4090	4910	0.647
581	22.875	-----	-----	-----	-----	-----	4250	5090	0.647	
606	23.875	-----	-----	-----	-----	-----	4410	5280	0.647	
Min Throttling, Bevel Seat Plug			57.8	81.4	125	141	229	346	431	0.550
Min Throttling, Radius Plug			23.1	25.9	32.4	35.6	44.5	50.8	63.8	0.550

(*) Consult factory for flow at lower travels.

Valve Size, NPS		8 x 12	10 x 16	12 x 18	12 x 20	16 x 24	20 x 30	24 x 36	X _T at Max. Travel	
Nominal Inlet Size, In		8	10	12	12	16	20	24		
Nominal Outlet Size, In		12	16	18	20	24	30	36		
Port Diameter	mm	171	197	252	275	352	430	506		
	Inches	6.75	7.75	9.9375	10.8125	13.875	16.9375	19.9375		
Recommended Actuator	Plug Travel		Whisper III Level B3, Linear Characteristic, C _v Flow Coefficients							
	mm	Inches								
667/657	102	4	334	366	*	*	*	*	0.647	
585C	127	5	422	463	581	*	*	*	0.647	
	152	6	497	553	694	*	*	*	0.647	
	178	7	572	641	819	*	*	*	0.647	
	203	8	644	722	934	1040	*	*	0.647	
585C Long Stroke	225	8.875	706	797	1030	1150	1440	*	*	0.647
	251	9.875	769	872	1140	1270	1610	*	*	0.647
	276	10.875	-----	947	1240	1380	1780	2180	2520	0.647
	302	11.875	-----	1010	1330	1480	1910	2370	2740	0.647
	327	12.875	-----	1080	1430	1590	2060	2570	2980	0.647
	352	13.875	-----	-----	1520	1700	2200	2750	3220	0.647
	378	14.875	-----	-----	1610	1800	2340	2930	3470	0.647
	403	15.875	-----	-----	-----	-----	2480	3130	3690	0.647
	429	16.875	-----	-----	-----	-----	2620	3280	3910	0.647
	454	17.875	-----	-----	-----	-----	2740	3470	4090	0.647
	479	18.875	-----	-----	-----	-----	2870	3625	4310	0.647
	505	19.875	-----	-----	-----	-----	-----	3780	4500	0.647
	530	20.875	-----	-----	-----	-----	-----	3970	4720	0.647
	556	21.875	-----	-----	-----	-----	-----	4090	4910	0.647
581	22.875	-----	-----	-----	-----	-----	4250	5090	0.647	
606	23.875	-----	-----	-----	-----	-----	4410	5280	0.647	
Min Throttling, Bevel Seat Plug			57.8	81.4	125	141	229	346	431	0.550
Min Throttling, Radius Plug			19.0	21.4	26.7	29.4	37.2	43.5	52.9	0.550

(*) Consult factory for flow at lower travels.

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Level C

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Valve Size, NPS		8 x 12	10 x 16	12 x 18	12 x 20	16 x 24	20 x 30	24 x 36	X _T at Max. Travel	
Nominal Inlet Size, Inches		8	10	12	12	16	20	24		
Nominal Outlet Size, Inches		12	16	18	20	24	30	36		
Port Diameter	mm	171	197	252	275	352	430	506		
	Inches	6.75	7.75	9.9375	10.8125	13.875	16.9375	19.9375		
Recommended Actuator	Plug Travel		Whisper III Level C1, Linear Characteristic, C _v Flow Coefficients							
	mm	Inches								
667/657	102	4	199	224	*	*	*	*	0.647	
585C	127	5	254	286	*	*	*	*	0.647	
	152	6	298	334	447	*	*	*	0.647	
	178	7	353	397	531	*	*	*	0.647	
	203	8	409	459	613	663	*	*	0.647	
585C Long Stroke	225	8.875	447	509	678	734	953	*	*	0.647
	251	9.875	494	569	763	825	1060	*	*	0.647
	276	10.875	-----	613	828	897	1170	1460	1680	0.647
	302	11.875	-----	666	906	988	1270	1590	1830	0.647
	327	12.875	-----	716	981	1070	1380	1730	1980	0.647
	352	13.875	-----	-----	1050	1150	1490	1860	2140	0.647
	378	14.875	-----	-----	1120	1230	1590	1990	2290	0.647
	403	15.875	-----	-----	-----	-----	1700	2130	2440	0.647
	429	16.875	-----	-----	-----	-----	1790	2260	2600	0.647
	454	17.875	-----	-----	-----	-----	1890	2390	2750	0.647
	479	18.875	-----	-----	-----	-----	1960	2530	2900	0.647
	505	19.875	-----	-----	-----	-----	-----	2640	3060	0.647
	530	20.875	-----	-----	-----	-----	-----	2760	3210	0.647
	556	21.875	-----	-----	-----	-----	-----	2880	3360	0.647
581	22.875	-----	-----	-----	-----	-----	3000	3520	0.647	
606	23.875	-----	-----	-----	-----	-----	3080	3610	0.647	
Min Throttling, Bevel Seat Plug			57.8	81.4	125	141	229	346	431	0.550
Min Throttling, Radius Plug			20.8	23.7	30.1	32.9	41.5	50.8	59.3	0.550

(*) Consult factory for flow at lower travels.

Valve Size, NPS		8 x 12	10 x 16	12 x 18	12 x 20	16 x 24	20 x 30	24 x 36	X _T at Max. Travel	
Nominal Inlet Size, Inches		8	10	12	12	16	20	24		
Nominal Outlet Size, Inches		12	16	18	20	24	30	36		
Port Diameter	mm	171	197	252	275	352	430	506		
	Inches	6.75	7.75	9.9375	10.8125	13.875	16.9375	19.9375		
Recommended Actuator	Plug Travel		Whisper III Level C3, Linear Characteristic, C _v Flow Coefficients							
	mm	Inches								
667/657	102	4	205	229	*	*	*	*	0.647	
585C	127	5	264	295	*	*	*	*	0.647	
	152	6	316	353	447	*	*	*	0.647	
	178	7	375	419	531	*	*	*	0.647	
	203	8	425	478	606	656	*	*	0.647	
585C Long Stroke	225	8.875	466	531	672	728	922	*	0.647	
	251	9.875	516	591	753	816	1090	*	0.647	
	276	10.875	-----	647	838	906	1150	1390	1600	0.647
	302	11.875	-----	697	906	988	1250	1520	1750	0.647
	327	12.875	-----	750	981	1070	1370	1660	1910	0.647
	352	13.875	-----	-----	1040	1140	1470	1780	2050	0.647
	378	14.875	-----	-----	1120	1220	1590	1930	2220	0.647
	403	15.875	-----	-----	-----	-----	1700	2060	2370	0.647
	429	16.875	-----	-----	-----	-----	1800	2190	2530	0.647
	454	17.875	-----	-----	-----	-----	1890	2320	2670	0.647
	479	18.875	-----	-----	-----	-----	1990	2460	2830	0.647
	505	19.875	-----	-----	-----	-----	-----	2580	2980	0.647
	530	20.875	-----	-----	-----	-----	-----	2700	3130	0.647
556	21.875	-----	-----	-----	-----	-----	2820	3280	0.647	
581	22.875	-----	-----	-----	-----	-----	2930	3430	0.647	
606	23.875	-----	-----	-----	-----	-----	3080	3610	0.647	
Min Throttling, Bevel Seat Plug			57.8	81.4	125	141	229	346	431	0.550
Min Throttling, Radius Plug			18.0	20.5	25.6	28.1	35.7	43.3	50.7	0.550

(*) Consult factory for flow at lower travels.

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Valve Size, NPS		8 x 12	10 x 16	12 x 18	12 x 20	16 x 24	20 x 30	24 x 36	X _T at Max. Travel	
Nominal Inlet Size, Inches		8	10	12	12	16	20	24		
Nominal Outlet Size, Inches		12	16	18	20	24	30	36		
Port Diameter	mm	132	171	197	224	275	378	430		
	Inches	5.1875	6.75	7.75	8.8125	10.8125	14.875	16.9375		
Recommended Actuator	Plug Travel		Whisper III Level D1, Linear Characteristic, C _v Flow Coefficients							
	mm	Inches								
667/657	102	4	149	199	*	*	*	*	0.647	
585C	127	5	191	254	*	*	*	*	0.647	
	152	6	224	298	334	*	*	*	0.647	
	178	7	262	353	397	*	*	*	0.647	
	203	8	298	409	459	613	*	*	0.647	
585C Long Stroke	225	8.875	325	447	509	678	775	*	*	0.647
	251	9.875	359	494	569	753	863	*	*	0.647
	276	10.875	-----	531	613	813	947	1240	1460	0.647
	302	11.875	-----	578	666	881	1030	1350	1590	0.647
	327	12.875	-----	622	716	950	1110	1470	1730	0.647
	352	13.875	-----	-----	766	1020	1190	1580	1860	0.647
	378	14.875	-----	-----	816	1080	1270	1690	1990	0.647
	403	15.875	-----	-----	-----	-----	1340	1810	2130	0.647
	429	16.875	-----	-----	-----	-----	1410	1920	2260	0.647
	454	17.875	-----	-----	-----	-----	1480	2030	2390	0.647
	479	18.875	-----	-----	-----	-----	1530	2130	2530	0.647
	505	19.875	-----	-----	-----	-----	-----	2230	2640	0.647
	530	20.875	-----	-----	-----	-----	-----	2320	2760	0.647
556	21.875	-----	-----	-----	-----	-----	2420	2880	0.647	
581	22.875	-----	-----	-----	-----	-----	2520	3000	0.647	
606	23.875	-----	-----	-----	-----	-----	2580	3080	0.647	
Min Throttling, Bevel Seat Plug			57.8	81.4	125	141	229	346	431	0.550
Min Throttling, Radius Plug			14.8	20.8	23.7	28.0	32.9	44.3	50.8	0.550

(*) Consult factory for flow at lower travels.

Valve Size, NPS		8 x 12	10 x 16	12 x 18	12 x 20	16 x 24	20 x 30	24 x 36	X _T at Max. Travel	
Nominal Inlet Size, Inches		8	10	12	12	16	20	24		
Nominal Outlet Size, Inches		12	16	18	20	24	30	36		
Port Diameter	mm	132	171	197	224	275	378	430		
	Inches	5.1875	6.75	7.75	8.8125	10.8125	14.875	16.9375		
Recommended Actuator	Plug Travel		Whisper III Level D3, Linear Characteristic, C _v Flow Coefficients							
	mm	Inches								
667/657	102	4	157	205	*	*	376	*	497	0.647
585C	127	5	202	264	*	*	452	*	626	0.647
	152	6	242	316	353	*	529	*	755	0.647
	178	7	281	375	419	*	606	*	885	0.647
	203	8	316	425	478	553	682	*	1010	0.647
585C Long Stroke	225	8.875	344	466	531	616	728	*	1140	0.647
	251	9.875	381	516	591	725	863	*	1270	0.647
	276	10.875	-----	566	647	759	907	1220	1390	0.647
	302	11.875	-----	606	697	819	988	1330	1520	0.647
	327	12.875	-----	653	750	881	1070	1450	1660	0.647
	352	13.875	-----	-----	797	938	1140	1560	1780	0.647
	378	14.875	-----	-----	847	1030	1230	1690	1930	0.647
	403	15.875	-----	-----	-----	-----	1300	1800	2060	0.647
	429	16.875	-----	-----	-----	-----	1380	1920	2190	0.647
	454	17.875	-----	-----	-----	-----	1440	2020	2320	0.647
	479	18.875	-----	-----	-----	-----	1510	2130	2460	0.647
	505	19.875	-----	-----	-----	-----	-----	2230	2580	0.647
	530	20.875	-----	-----	-----	-----	-----	2330	2700	0.647
	556	21.875	-----	-----	-----	-----	-----	2430	2820	0.647
581	22.875	-----	-----	-----	-----	-----	2530	2930	0.647	
606	23.875	-----	-----	-----	-----	-----	2640	3080	0.647	
Min Throttling, Bevel Seat Plug			57.8	81.4	125	141	229	346	431	0.550
Min Throttling, Radius Plug			13.5	18.0	20.5	23.1	28.1	38.1	43.3	0.550

(*) Consult factory for flow at lower travels.

Valve Size, NPS		8 x 12	X _T at Travel for 8 x 12	10 x 16	X _T at Travel for 10 x 16	12 x 18	X _T at Travel for 12 x 18	12 x 20	X _T at Travel for 12 x 20	16 x 24	X _T at Travel for 16 x 24	20 x 30	X _T at Travel for 20 x 30	24 x 36	X _T at Travel for 24 x 36	
Nominal Inlet Size, Inches		8		10		12		12		16		20		20		30
Nominal Outlet Size, Inches		12	16	18	178	178	279	375	463	463	18.25	18.25	18.25	18.25	18.25	
Port Diameter		mm	178	178	178	178	279	375	463	463	463	463	463	463	463	
		Inches	7.00	7.00	7.00	7.00	11.00	11.00	14.75	14.75	14.75	14.75	14.75	14.75	14.75	14.75
Recommended Actuator	Plug Travel		WhisperFlo Level X, Linear Characteristic, C _v Flow Coefficients													
	mm	Inches														
667/657	102	4	450	0.69	450	0.69	450	0.69	698	0.70	930	0.71	1118	0.71	1118	0.71
585C	127	5	564	0.68	564	0.68	564	0.68	876	0.70	1168	0.71	1403	0.71	1403	0.71
	152	6	679	0.67	679	0.67	679	0.67	1054	0.69	1405	0.70	1689	0.71	1689	0.71
	178	7	794	0.66	794	0.66	794	0.66	1232	0.68	1643	0.70	1974	0.70	1974	0.70
	203	8	909	0.65	909	0.65	909	0.65	1410	0.68	1881	0.69	2260	0.70	2260	0.70
585C Long Stroke	225	8.875	1009	0.65	1009	0.65	1009	0.65	1566	0.67	2089	0.69	2510	0.69	2510	0.70
	251	9.875	1124	0.64	1124	0.64	1124	0.64	1744	0.66	2326	0.68	2795	0.69	2795	0.69
	276	10.875	-----	-----	1239	0.63	1239	0.63	1922	0.66	2564	0.68	3081	0.69	3081	0.69
	302	11.875	-----	-----	1354	0.62	1354	0.62	2101	0.65	2801	0.68	3366	0.68	3366	0.69
	327	12.875	-----	-----	1469	0.61	1469	0.61	2279	0.65	3039	0.67	3652	0.68	3652	0.68
	352	13.875	-----	-----	-----	-----	1583.3	0.60	2457	0.64	3277	0.67	3937	0.68	3937	0.68
	378	14.875	-----	-----	-----	-----	1698	0.59	2635	0.63	3514	0.66	4223	0.67	4223	0.68
	403	15.875	-----	-----	-----	-----	-----	-----	-----	-----	3752	0.66	4508	0.67	4508	0.67
	429	16.875	-----	-----	-----	-----	-----	-----	-----	-----	3989	0.65	4794	0.66	4794	0.67
	454	17.875	-----	-----	-----	-----	-----	-----	-----	-----	4227	0.65	5079	0.66	5079	0.67
	479	18.875	-----	-----	-----	-----	-----	-----	-----	-----	4465	0.65	5365	0.65	5365	0.66
	505	19.875	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	5650	0.65	5650	0.66
	530	20.875	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	5936	0.65	5936	0.65
	556	21.875	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	6221	0.65	6221	0.65
581	22.875	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	6507	0.65	6507	0.65	
606	23.875	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	6792	0.65	6792	0.64	
FB Minimum Travel, Inches		0.24	-----	0.24	-----	0.24	-----	0.42	-----	0.40	-----	0.47	-----	0.47	-----	
Min Throttling, Radius Plug		12.9	0.72	12.9	0.72	12.9	0.72	43.3	0.72	60.2	0.72	86.5	0.72	86.5	0.72	

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WhisperFlo Trim
Level Y

Valve Size, NPS		8 x 12	X _T at Travel for 8 x 12	10 x 16	X _T at Travel for 10 x 16	12 x 18	X _T at Travel for 12 x 18	12 x 20	X _T at Travel for 12 x 20	16 x 24	X _T at Travel for 16 x 24	20 x 30	X _T at Travel for 20 x 30	24 x 36	X _T at Travel for 24 x 36		
Nominal Inlet Size, Inches		8		10		12		12		16		20		20			
Nominal Outlet Size, Inches		12	16	18	18	20	20	24	24	30	30	30	30	36	36		
Port Diameter		mm	178	178	178	178	279	375	375	463	463	463	463	463	463		
		Inches	7.00	7.00	7.00	7.00	11.00	14.75	14.75	18.25	18.25	18.25	18.25	18.25	18.25	18.25	
Recommended Actuator	Plug Travel		WhisperFlo Level Y, Linear Characteristic, C _v Flow Coefficients														
	mm	Inches															
667/657		102	4	306	0.59	306	0.59	306	0.59	422	0.56	670	0.62	761	0.58	761	0.58
585C	127	5	384	0.58	384	0.58	384	0.58	529	0.55	840	0.61	955	0.58	955	0.58	
	152	6	462	0.58	462	0.58	462	0.58	637	0.55	1011	0.61	1150	0.57	1150	0.57	
	178	7	540	0.57	540	0.57	540	0.57	745	0.55	1192	0.61	1364	0.57	1364	0.57	
	203	8	618	0.57	618	0.57	618	0.57	852	0.55	1353	0.61	1538	0.57	1538	0.57	
585C Long Stroke	225	8.875	686	0.56	686	0.56	686	0.56	946	0.54	1502	0.60	1708	0.57	1708	0.57	
	251	9.875	764	0.56	764	0.56	764	0.56	1054	0.54	1673	0.60	1903	0.57	1903	0.57	
	276	10.875	-----	-----	843	0.55	843	0.55	1162	0.54	1844	0.60	2097	0.57	2097	0.57	
	302	11.875	-----	-----	921	0.55	921	0.55	1269	0.54	2015	0.60	2292	0.56	2292	0.57	
	327	12.875	-----	-----	999	0.54	999	0.54	1377	0.53	2186	0.59	2486	0.56	2486	0.56	
	352	13.875	-----	-----	-----	-----	1077	0.54	1485	0.53	2357	0.59	2680	0.56	2680	0.56	
	378	14.875	-----	-----	-----	-----	1155	0.54	1592	0.53	2527	0.59	2875	0.56	2875	0.56	
	403	15.875	-----	-----	-----	-----	-----	-----	-----	-----	2698	0.59	3069	0.56	3069	0.56	
	429	16.875	-----	-----	-----	-----	-----	-----	-----	-----	2869	0.58	3263	0.56	3263	0.56	
	454	17.875	-----	-----	-----	-----	-----	-----	-----	-----	3040	0.58	3458	0.55	3458	0.55	
	479	18.875	-----	-----	-----	-----	-----	-----	-----	-----	3211	0.58	3652	0.55	3652	0.55	
	505	19.875	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	3846	0.55	3846	0.55	
	530	20.875	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	4041	0.55	4041	0.55	
	556	21.875	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	4235	0.55	4235	0.55	
	581	22.875	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	4429	0.55	4429	0.55	
606	23.875	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	4624	0.54	4624	0.54		
FB Minimum Travel, Inches		0.24	-----	0.24	-----	0.24	-----	0.42	-----	0.40	-----	0.47	-----	0.47	-----		
Min Throttling, Radius Plug		11.7	0.63	11.7	0.63	11.7	0.63	36.2	0.56	53.4	0.62	77.3	0.58	77.3	0.58		

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Valve Size, NPS		8 x 12	X _T at Travel for 8 x 12	10 x 16	X _T at Travel for 10 x 16	12 x 18	X _T at Travel for 12 x 18	12 x 20	X _T at Travel for 12 x 20	16 x 24	X _T at Travel for 16 x 24	20 x 30	X _T at Travel for 20 x 30	24 x 36	X _T at Travel for 24 x 36	
Nominal Inlet Size, Inches		8		10		12		12		16		20		20		24
Nominal Outlet Size, Inches		12	16	18	178	178	178	279	375	463	463	463	463	463	463	
Port Diameter		mm	178	178	178	178	178	279	375	463	463	463	463	463	463	
		Inches	7.00	7.00	7.00	7.00	7.00	11.00	14.75	14.75	18.25	18.25	18.25	18.25	18.25	18.25
Recommended Actuator	Plug Travel		WhisperFlo Level Z, Linear Characteristic, C _v Flow Coefficients													
	mm	Inches														
667/657	102	4	199	0.43	199	0.43	199	0.43	299	0.44	463	0.47	548	0.45	548	0.45
585C	127	5	250	0.43	250	0.43	250	0.43	375	0.44	581	0.47	689	0.45	689	0.45
	152	6	301	0.43	301	0.43	301	0.43	451	0.43	699	0.46	828	0.45	828	0.45
	178	7	352	0.43	352	0.43	352	0.43	527	0.43	817	0.46	968	0.45	968	0.45
	203	8	402	0.43	402	0.43	402	0.43	603	0.43	935	0.46	1107	0.45	1107	0.45
585C Long Stroke	225	8.875	447	0.42	447	0.42	447	0.42	670	0.43	1039	0.46	1230	0.45	1230	0.45
	251	9.875	498	0.42	498	0.42	498	0.42	746	0.43	1157	0.46	1370	0.45	1370	0.45
	276	10.875	-----	-----	549	0.42	549	0.42	823	0.43	1275	0.46	1510	0.45	1510	0.45
	302	11.875	-----	-----	599	0.42	599	0.42	899	0.43	1393	0.46	1650	0.45	1650	0.45
	327	12.875	-----	-----	650	0.42	650	0.42	975	0.43	1512	0.46	1790	0.45	1790	0.45
	352	13.875	-----	-----	-----	-----	701	0.41	1051	0.42	1630	0.46	1929	0.45	1929	0.45
	378	14.875	-----	-----	-----	-----	752	0.41	1128	0.42	1748	0.45	2069	0.44	2069	0.44
	403	15.875	-----	-----	-----	-----	-----	-----	-----	-----	1866	0.45	2209	0.44	2209	0.44
	429	16.875	-----	-----	-----	-----	-----	-----	-----	-----	1984	0.45	2349	0.44	2349	0.44
	454	17.875	-----	-----	-----	-----	-----	-----	-----	-----	2103	0.45	2489	0.44	2489	0.44
	479	18.875	-----	-----	-----	-----	-----	-----	-----	-----	2221	0.45	2629	0.44	2629	0.44
	505	19.875	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	2769	0.44	2769	0.44
	530	20.875	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	2909	0.44	2909	0.44
	556	21.875	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	3049	0.44	3049	0.44
581	22.875	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	3189	0.44	3189	0.44	
606	23.875	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	3329	0.44	3329	0.44	
FB Minimum Travel, Inches			0.24	-----	0.24	-----	0.24	-----	0.42	-----	0.40	-----	0.47	-----	0.47	-----
Min Throttling, Radius Plug			10.7	0.44	10.7	0.44	10.7	0.44	33.0	0.44	48.1	0.47	71.8	0.46	71.8	0.46

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Equal Percentage - Flow Up													Equal Percentage Characteristic	
Valve Size	Port Diameter mm	Maximum Travel mm	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
				10	20	30	40	50	60	70	80	90	100	
DN 15 (NPS 1/2)	9.5	20	C _V	0.118	0.191	0.309	0.457	0.607	0.941	1.39	2.00	2.77	3.34	0.98
			K _V	0.102	0.166	0.267	0.396	0.525	0.814	1.20	1.73	2.40	2.89	---
			X _T	0.67	0.59	0.58	0.56	0.57	0.55	0.57	0.57	0.61	0.69	---
			F _D	0.11	0.13	0.16	0.19	0.22	0.28	0.34	0.44	0.58	0.80	---
	9.5 ⁽²⁾	20	C _V	0.089	0.109	0.153	0.213	0.289	0.393	0.552	0.754	1.03	1.43	0.99
			K _V	0.077	0.094	0.132	0.185	0.250	0.340	0.478	0.652	0.891	1.24	---
			X _T	0.72	0.65	0.61	0.59	0.57	0.54	0.53	0.55	0.55	0.59	---
			F _D	0.09	0.09	0.09	0.11	0.13	0.14	0.20	0.24	0.28	0.35	---
DN 20 (NPS 3/4)	14	20	C _V	0.154	0.192	0.311	0.505	0.763	1.18	1.91	3.05	4.93	6.41	0.98
			K _V	0.133	0.166	0.269	0.437	0.660	1.02	1.65	2.64	4.27	5.55	---
			X _T	0.62	0.60	0.58	0.59	0.52	0.54	0.54	0.62	0.71	0.77	---
			F _D	0.08	0.08	0.10	0.13	0.16	0.20	0.26	0.33	0.47	0.59	---
	9.5	20	C _V	0.128	0.206	0.325	0.479	0.629	0.984	1.46	2.14	3.06	3.75	0.95
			K _V	0.111	0.178	0.281	0.415	0.544	0.851	1.27	1.85	2.65	3.25	---
			X _T	0.65	0.66	0.62	0.61	0.62	0.65	0.64	0.63	0.65	0.62	---
			F _D	0.11	0.13	0.16	0.19	0.22	0.28	0.34	0.44	0.58	0.80	---
	9.5 ⁽²⁾	20	C _V	0.127	0.149	0.176	0.222	0.311	0.440	0.599	0.828	1.14	1.65	0.97
			K _V	0.110	0.129	0.153	0.192	0.269	0.381	0.518	0.716	0.985	1.43	---
			X _T	0.69	0.77	0.68	0.81	0.76	0.71	0.72	0.67	0.75	0.79	---
			F _D	0.09	0.09	0.09	0.11	0.13	0.14	0.20	0.24	0.28	0.35	---

1. At 100% travel.
2. Restricted trim.
3. Balanced trim.
4. Balanced, restricted trim.

-continued-



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June 2014Equal Percentage
Flow Up through the Port

Equal Percentage - Flow Up													Equal Percentage Characteristic	
Valve Size	Port Diameter mm	Maximum Travel mm	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
				10	20	30	40	50	60	70	80	90	100	
DN 25 (NPS 1)	22	20	C _V	0.673	0.937	1.32	1.89	2.25	3.13	5.05	7.39	10.5	13.7	0.93
			K _V	0.582	0.810	1.14	1.63	1.94	2.71	4.36	6.39	9.05	11.9	---
			X _T	0.61	0.59	0.58	0.57	0.74	0.82	0.64	0.58	0.68	0.77	---
			F _d	0.09	0.11	0.13	0.15	0.18	0.21	0.25	0.31	0.39	0.49	---
	14	20	C _V	0.139	0.186	0.315	0.511	0.776	1.23	1.97	3.28	5.35	6.89	0.97
			K _V	0.120	0.161	0.272	0.442	0.671	1.07	1.70	2.84	4.63	5.96	---
			X _T	0.78	0.71	0.59	0.59	0.58	0.51	0.57	0.51	0.67	0.81	---
			F _d	0.08	0.08	0.10	0.13	0.16	0.20	0.26	0.33	0.47	0.59	---
	9.5	20	C _V	0.133	0.222	0.347	0.501	0.699	1.04	1.50	2.15	2.98	3.57	0.95
			K _V	0.115	0.192	0.300	0.433	0.605	0.900	1.29	1.86	2.58	3.09	---
			X _T	0.77	0.68	0.65	0.61	0.55	0.55	0.58	0.55	0.59	0.68	---
			F _d	0.11	0.13	0.16	0.19	0.22	0.28	0.34	0.44	0.58	0.80	---
	9.5 ⁽²⁾	20	C _V	0.127	0.149	0.176	0.222	0.311	0.440	0.599	0.828	1.14	1.65	0.95
			K _V	0.110	0.129	0.152	0.192	0.269	0.381	0.518	0.716	0.986	1.43	---
			X _T	0.311	0.892	0.755	0.681	0.641	0.618	0.595	0.576	0.582	0.543	---
			F _d	0.09	0.09	0.09	0.11	0.13	0.14	0.20	0.24	0.28	0.35	---
DN 40 (NPS 1-1/2)	36	20	C _V	1.01	1.91	2.74	4.24	6.13	8.25	11.5	16.7	22.0	27.2	0.94
			K _V	0.874	1.65	2.37	3.67	5.30	7.14	9.95	14.4	19.0	23.5	---
			X _T	0.87	0.93	0.91	0.80	0.89	0.86	0.76	0.79	0.82	0.78	---
			F _d	0.64	0.80	0.87	0.54	0.55	0.50	0.41	0.40	0.43	0.45	---
	22	20	C _V	0.591	0.850	1.20	1.79	2.51	3.50	4.93	7.07	11.0	14.3	0.93
			K _V	0.511	0.735	1.04	1.55	2.17	3.03	4.26	6.12	9.52	12.4	---
			X _T	0.53	0.51	0.53	0.45	0.45	0.49	0.42	0.47	0.57	0.71	---
			F _d	0.09	0.11	0.13	0.15	0.18	0.21	0.25	0.31	0.39	0.49	---
	14	20	C _V	0.103	0.141	0.254	0.440	0.689	1.11	1.84	3.12	5.12	6.87	0.97
			K _V	0.0891	0.122	0.220	0.381	0.596	0.960	1.59	2.70	4.43	5.94	---
			X _T	1.00	0.80	0.68	0.67	0.60	0.54	0.55	0.52	0.64	0.77	---
			F _d	0.08	0.08	0.10	0.13	0.16	0.20	0.26	0.33	0.47	0.59	---
DN 50 (NPS 2)	46	20	C _V	1.08	1.75	3.75	6.04	9.5	14.9	21.8	30.9	37.7	43.7	0.91
			K _V	0.931	1.51	3.24	5.22	8.20	12.9	18.9	26.7	32.6	37.8	---
			X _T	0.73	0.70	0.79	0.81	0.78	0.81	0.76	0.71	0.82	0.85	---
			F _d	0.70	0.84	0.47	0.48	0.40	0.36	0.37	0.40	0.43	0.45	---
	36	20	C _V	1.08	2.01	2.80	4.26	6.31	8.38	11.6	17.2	23.1	28.6	0.93
			K _V	0.931	1.74	2.42	3.69	5.45	7.25	10.0	14.9	20.0	24.7	---
			X _T	0.71	0.79	0.86	0.81	0.79	0.79	0.73	0.69	0.75	0.75	---
			F _d	0.64	0.80	0.87	0.54	0.55	0.50	0.41	0.40	0.43	0.45	---
	22	20	C _V	0.591	0.850	1.20	1.79	2.51	3.50	4.93	7.07	11.0	14.3	0.96
			K _V	0.511	0.735	1.04	1.55	2.17	3.03	4.26	6.12	9.52	12.4	---
			X _T	0.71	0.68	0.61	0.62	0.60	0.60	0.57	0.45	0.60	0.71	---
			F _d	0.09	0.11	0.13	0.15	0.18	0.21	0.25	0.31	0.39	0.49	---

1. At 100% travel.
 2. Restricted trim.
 3. Balanced trim.
 4. Balanced, restricted trim.

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Equal Percentage - Flow Up													Equal Percentage Characteristic	
Valve Size	Port Diameter mm	Maximum Travel mm	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
				10	20	30	40	50	60	70	80	90	100	
DN 80 (NPS 3)	70	40	C _V	2.38	6.92	11.5	16.4	22.4	31.9	46.5	63.6	80.6	95.1	0.94
			K _V	2.06	5.99	9.95	14.2	19.4	27.6	40.2	55.0	69.7	82.3	---
			X _T	0.83	0.81	0.85	0.83	0.80	0.76	0.72	0.75	0.77	0.80	---
			F _d	0.82	0.50	0.53	0.53	0.47	0.42	0.40	0.40	0.43	0.45	---
	70 ⁽³⁾	20	C _V	2.71	4.63	7.60	11.3	17.1	23.7	35.3	50.4	61.6	75.7	0.89
			K _V	2.34	4.00	6.57	9.79	14.7	20.5	30.5	43.6	53.3	65.5	---
			X _T	0.54	0.50	0.49	0.51	0.51	0.57	0.51	0.50	0.64	0.68	---
			F _d	0.06	0.07	0.10	0.12	0.15	0.18	0.22	0.26	0.30	0.34	---
	46	20	C _V	0.873	1.66	3.41	5.66	8.75	13.8	20.7	30.5	37.1	43.7	0.97
			K _V	0.755	1.44	2.95	4.90	7.57	11.9	17.9	26.4	32.1	37.8	---
			X _T	0.75	0.82	0.75	0.82	0.77	0.73	0.78	0.70	0.85	0.88	---
			F _d	0.70	0.84	0.47	0.48	0.40	0.36	0.37	0.40	0.43	0.45	---
	36	20	C _V	1.08	2.01	2.80	4.26	6.31	8.38	11.6	17.2	23.1	28.6	0.96
			K _V	0.934	1.74	2.42	3.68	5.46	7.25	10.0	14.9	20.0	24.7	---
			X _T	0.84	0.86	0.88	0.84	0.83	0.88	0.79	0.72	0.76	0.85	---
			F _d	0.64	0.80	0.87	0.54	0.55	0.50	0.41	0.40	0.43	0.45	---
DN 100 (NPS 4)	90	40	C _V	5.56	13.6	21.1	29.1	40.8	55.8	77.5	117	145	165	0.90
			K _V	4.81	11.7	18.3	25.1	35.3	48.3	67.0	101	126	143	---
			X _T	0.93	0.93	0.94	0.90	0.85	0.82	0.82	0.75	0.78	0.80	---
			F _d	0.39	0.49	0.52	0.48	0.45	0.44	0.33	0.36	0.39	0.41	---
	90 ⁽³⁾	20	C _V	5.88	9.43	13.1	17.5	27.3	42.4	63.4	85.5	107	128	0.87
			K _V	5.09	8.16	11.3	15.1	23.6	36.7	54.8	74.0	92.6	111	---
			X _T	0.55	0.54	0.54	0.55	0.43	0.52	0.57	0.58	0.63	0.67	---
			F _d	0.07	0.08	0.10	0.11	0.13	0.18	0.22	0.26	0.30	0.34	---
	90 ⁽⁴⁾	20	C _V	2.38	3.65	5.64	8.42	12.0	17.4	24.8	36.7	53.0	68.5	0.90
			K _V	2.06	3.16	4.88	7.28	10.4	15.1	21.5	31.7	45.8	59.3	---
			X _T	0.68	0.61	0.57	0.55	0.55	0.55	0.56	0.48	0.50	0.58	---
			F _d	0.04	0.05	0.06	0.08	0.09	0.11	0.14	0.16	0.20	0.24	---
	70	40	C _V	2.04	5.78	10.6	15.3	20.8	29.8	43.3	61.9	80.6	97.7	0.92
			K _V	1.76	5.00	9.17	13.2	18.0	25.8	37.5	53.5	69.7	84.5	---
			X _T	0.79	0.83	0.85	0.85	0.82	0.77	0.73	0.73	0.75	0.76	---
			F _d	0.82	0.50	0.53	0.53	0.47	0.42	0.40	0.40	0.43	0.45	---
	46	20	C _V	1.02	1.76	3.58	5.76	8.85	14.1	21.4	30.6	37.9	44.0	0.94
			K _V	0.88	1.52	3.10	4.98	7.66	12.2	18.5	26.5	32.8	38.1	---
			X _T	0.69	0.77	0.68	0.81	0.76	0.71	0.72	0.67	0.75	0.79	---
			F _d	0.70	0.84	0.47	0.48	0.40	0.36	0.37	0.40	0.43	0.45	---

1. At 100% travel.
2. Restricted trim.
3. Balanced trim.
4. Balanced, restricted trim.

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Catalog 12

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June 2014Equal Percentage
Flow Up through the Port

Equal Percentage - Flow Up													Equal Percentage Characteristic	
Valve Size	Port Diameter mm	Maximum Travel mm	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
				10	20	30	40	50	60	70	80	90	100	
DN 150 (NPS 6)	136	60	C _V	13.8	25.0	40.0	60.0	90.0	139	201	271	344	401	0.88
			K _V	11.9	21.6	34.6	51.9	77.9	120	174	234	298	347	---
			X _T	0.73	0.82	0.82	0.81	0.79	0.70	0.67	0.67	0.54	0.71	---
			F _d	0.45	0.39	0.33	0.28	0.24	0.22	0.20	0.18	0.17	0.16	---
	136 ⁽³⁾	60	C _V	19.5	35.0	49.0	65.0	92.0	133	194	252	322	374	0.90
			K _V	16.9	30.3	42.4	56.2	79.6	115	168	218	279	324	---
			X _T	0.58	0.51	0.55	0.56	0.58	0.55	0.53	0.66	0.72	0.76	---
			F _d	0.09	0.10	0.11	0.13	0.16	0.19	0.22	0.27	0.32	0.37	---
	90 ⁽²⁾	40	C _V	7.90	16.0	23.0	33.0	45.0	60.0	81.0	126	159	192	0.95
			K _V	6.83	13.8	19.9	28.5	38.9	51.9	70.1	109	138	166	---
			X _T	0.68	0.80	0.85	0.77	0.78	0.78	0.83	0.70	0.76	0.75	---
			F _d	0.39	0.49	0.52	0.48	0.45	0.44	0.33	0.36	0.39	0.41	---

1. At 100% travel.
2. Restricted trim.
3. Balanced trim.
4. Balanced, restricted trim.

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Linear - Flow Up													Linear Characteristic	
Valve Size	Port Diameter mm	Maximum Travel mm	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
				10	20	30	40	50	60	70	80	90	100	
DN 15 (NPS 1/2)	9.5	20	C _V	0.179	0.415	0.713	1.03	1.35	1.70	2.09	2.53	3.01	3.45	0.93
			K _V	0.155	0.359	0.617	0.891	1.17	1.47	1.81	2.19	2.60	2.98	---
			X _T	0.55	0.57	0.64	0.63	0.67	0.68	0.71	0.67	0.71	0.71	---
			F _d	0.12	0.18	0.24	0.29	0.34	0.39	0.45	0.53	0.65	0.80	---
	4.8 ⁽⁴⁾ 9°30'	20	C _V	0.0360	0.0880	0.160	0.246	0.341	0.436	0.524	0.618	0.726	0.785	0.94
			K _V	0.0311	0.0761	0.138	0.213	0.295	0.377	0.453	0.535	0.628	0.679	---
			X _T	0.52	0.55	0.50	0.50	0.53	0.50	0.52	0.53	0.49	0.55	---
			F _d	0.09	0.09	0.09	0.11	0.13	0.14	0.20	0.24	0.28	0.35	---
	4.8 ⁽⁴⁾ 4°39'	20	C _V	0.0356	0.0524	0.0736	0.0984	0.127	0.158	0.191	0.224	0.257	0.294	0.93
			K _V	0.0308	0.0453	0.0637	0.0851	0.110	0.137	0.165	0.194	0.222	0.254	---
			X _T	0.55	0.54	0.57	0.58	0.57	0.55	0.55	0.56	0.57	0.55	---
			F _d	0.08	0.10	0.13	0.15	0.17	0.19	0.22	0.24	0.26	0.28	---
	4.8 ⁽⁴⁾ 2°15'	20	C _V	0.0437	0.0512	0.0597	0.0694	0.0806	0.0929	0.105	0.116	0.126	0.139	0.86
			K _V	0.0378	0.0443	0.0516	0.0600	0.0697	0.0804	0.0908	0.100	0.109	0.120	---
			X _T	0.54	0.54	0.54	0.54	0.54	0.53	0.54	0.56	0.57	0.56	---
			F _d	0.08	0.08	0.09	0.11	0.12	0.13	0.14	0.15	0.16	0.17	---
	4.8 ⁽⁴⁾ 1°8'	20	C _V	0.0037	0.0055	0.0085	0.0121	0.0163	0.0205	0.0246	0.0284	0.0326	0.0389	0.97
			K _V	0.0032	0.0047	0.0073	0.0105	0.0141	0.0177	0.0213	0.0246	0.0282	0.0336	---
			X _T	1.00	0.94	0.81	0.76	0.69	0.64	0.60	0.59	0.60	0.58	---
			F _d	0.05	0.06	0.06	0.07	0.07	0.08	0.09	0.09	0.10	0.11	---
DN 20 (NPS 3/4)	14	20	C _V	0.775	1.57	2.38	3.10	3.79	4.51	5.34	6.23	7.05	7.58	0.97
			K _V	0.670	1.36	2.06	2.68	3.28	3.90	4.62	5.39	6.10	6.55	---
			X _T	0.62	0.59	0.62	0.61	0.62	0.64	0.65	0.70	0.73	0.72	---
			F _d	0.16	0.24	0.30	0.35	0.39	0.45	0.52	0.60	0.71	0.79	---
	9.5	20	C _V	0.219	0.488	0.794	1.13	1.48	1.85	2.31	2.85	3.43	3.84	0.95
			K _V	0.190	0.422	0.687	0.981	1.28	1.60	2.00	2.47	2.96	3.33	---
			X _T	0.57	0.59	0.57	0.57	0.54	0.55	0.54	0.52	0.58	0.59	---
			F _d	0.12	0.18	0.24	0.29	0.34	0.39	0.45	0.53	0.65	0.80	---
	4.8 ⁽⁴⁾ 9°30'	20	C _V	0.0360	0.0880	0.160	0.246	0.341	0.436	0.524	0.618	0.726	0.785	0.94
			K _V	0.0311	0.0761	0.138	0.213	0.295	0.377	0.453	0.535	0.628	0.679	---
			X _T	0.52	0.55	0.50	0.50	0.53	0.50	0.52	0.53	0.49	0.55	---
			F _d	0.10	0.15	0.19	0.24	0.29	0.33	0.38	0.42	0.47	0.51	---
	4.8 ⁽⁴⁾ 4°39'	20	C _V	0.0356	0.0524	0.0736	0.0984	0.127	0.158	0.191	0.224	0.257	0.294	0.93
			K _V	0.0308	0.0453	0.0637	0.0851	0.110	0.137	0.165	0.194	0.222	0.254	---
			X _T	0.55	0.54	0.57	0.58	0.57	0.55	0.55	0.56	0.57	0.55	---
			F _d	0.08	0.10	0.13	0.15	0.17	0.19	0.22	0.24	0.26	0.28	---
	4.8 ⁽⁴⁾ 2°15'	20	C _V	0.0437	0.0512	0.0597	0.0694	0.0806	0.0929	0.105	0.116	0.126	0.139	0.86
			K _V	0.0378	0.0443	0.0516	0.0600	0.0697	0.0804	0.0908	0.100	0.109	0.120	---
			X _T	0.54	0.54	0.54	0.54	0.54	0.53	0.54	0.56	0.57	0.56	---
			F _d	0.08	0.08	0.09	0.11	0.12	0.13	0.14	0.15	0.16	0.17	---
4.8 ⁽⁴⁾ 1°8'	20	C _V	0.0037	0.0055	0.0085	0.0121	0.0163	0.0205	0.0246	0.0284	0.0326	0.0389	0.97	
		K _V	0.0032	0.0047	0.0073	0.0105	0.0141	0.0177	0.0213	0.0246	0.0282	0.0336	---	
		X _T	1.00	0.94	0.81	0.76	0.69	0.64	0.60	0.59	0.60	0.58	---	
		F _d	0.05	0.06	0.06	0.07	0.07	0.08	0.09	0.09	0.10	0.11	---	

1. At 100% travel.
2. Balanced trim.
3. Balanced, restricted trim.
4. Micro-Flow trim.

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Linear - Flow Up													Linear Characteristic	
Valve Size	Port Diameter mm	Maximum Travel mm	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
				10	20	30	40	50	60	70	80	90	100	
DN 25 (NPS 1)	22	20	C _V	1.72	3.06	4.50	7.04	8.52	9.74	11.1	12.7	14.6	15.5	0.94
			K _V	1.49	2.64	3.90	6.09	7.37	8.43	9.58	10.9	12.6	13.4	---
			X _T	0.51	0.58	0.60	0.44	0.47	0.52	0.56	0.68	0.74	0.80	---
			F _d	0.14	0.19	0.24	0.29	0.33	0.37	0.42	0.46	0.53	0.61	---
	14	20	C _V	0.685	1.46	2.28	3.05	3.81	4.56	5.42	6.34	7.21	7.80	0.96
			K _V	0.592	1.26	1.97	2.64	3.29	3.95	4.69	5.48	6.24	6.75	---
			X _T	0.73	0.64	0.62	0.60	0.59	0.59	0.60	0.63	0.67	0.66	---
			F _d	0.16	0.24	0.30	0.35	0.39	0.45	0.52	0.60	0.71	0.79	---
	9.5	20	C _V	0.187	0.453	0.769	1.10	1.42	1.79	2.22	2.73	3.29	3.70	0.94
			K _V	0.161	0.392	0.665	0.952	1.23	1.55	1.92	2.36	2.85	3.20	---
			X _T	0.59	0.56	0.55	0.53	0.58	0.57	0.60	0.58	0.63	0.63	---
			F _d	0.12	0.18	0.24	0.29	0.34	0.39	0.45	0.53	0.65	0.80	---
	4.8 ⁽⁴⁾ 9°30'	20	C _V	0.0360	0.0880	0.160	0.246	0.341	0.436	0.524	0.618	0.726	0.785	0.94
			K _V	0.0311	0.0761	0.138	0.213	0.295	0.377	0.453	0.535	0.628	0.679	---
			X _T	0.52	0.55	0.50	0.50	0.53	0.50	0.52	0.53	0.49	0.55	---
			F _d	0.10	0.15	0.19	0.24	0.29	0.33	0.38	0.42	0.47	0.51	---
	4.8 ⁽⁴⁾ 4°39'	20	C _V	0.0356	0.0524	0.0736	0.0984	0.127	0.158	0.191	0.224	0.257	0.294	0.93
			K _V	0.0308	0.0453	0.0637	0.0851	0.110	0.137	0.165	0.194	0.222	0.254	---
			X _T	0.55	0.54	0.57	0.58	0.57	0.55	0.55	0.56	0.57	0.55	---
			F _d	0.08	0.10	0.13	0.15	0.17	0.19	0.22	0.24	0.26	0.28	---
	4.8 ⁽⁴⁾ 2°15'	20	C _V	0.0437	0.0512	0.0597	0.0694	0.0806	0.0929	0.105	0.116	0.126	0.139	0.86
			K _V	0.0378	0.0443	0.0516	0.0600	0.0697	0.0804	0.0908	0.100	0.109	0.120	---
			X _T	0.54	0.54	0.54	0.54	0.54	0.53	0.54	0.56	0.57	0.56	---
			F _d	0.08	0.08	0.09	0.11	0.12	0.13	0.14	0.15	0.16	0.17	---
	4.8 ⁽⁴⁾ 1°8'	20	C _V	0.0037	0.0055	0.0085	0.0121	0.0163	0.0205	0.0246	0.0284	0.0326	0.0389	0.97
			K _V	0.0032	0.0047	0.0073	0.0105	0.0141	0.0177	0.0213	0.0246	0.0282	0.0336	---
			X _T	1.00	0.94	0.81	0.76	0.69	0.64	0.60	0.59	0.60	0.58	---
			F _d	0.05	0.06	0.06	0.07	0.07	0.08	0.09	0.09	0.10	0.11	---
DN 40 (NPS 1-1/2)	36	20	C _V	1.18	4.50	7.46	11.0	14.1	16.8	20.3	24.4	28.8	32.0	0.93
			K _V	1.02	3.89	6.45	9.5	12.2	14.5	17.6	21.1	24.9	27.7	---
			X _T	0.88	0.75	0.88	0.82	0.80	0.88	0.85	0.80	0.78	0.78	---
			F _d	0.30	0.42	0.47	0.49	0.51	0.52	0.50	0.48	0.47	0.48	---
	22	20	C _V	1.41	2.76	4.20	5.76	7.32	8.85	10.5	12.9	15.1	17.2	0.95
			K _V	1.22	2.39	3.63	4.98	6.33	7.66	9.08	11.2	13.1	14.9	---
			X _T	0.68	0.58	0.58	0.59	0.58	0.59	0.65	0.60	0.68	0.75	---
			F _d	0.08	0.10	0.13	0.15	0.17	0.19	0.22	0.24	0.26	0.28	---
	14	20	C _V	0.676	1.55	2.27	3.03	3.77	4.55	5.44	6.47	7.36	8.25	0.96
			K _V	0.585	1.34	1.96	2.62	3.26	3.94	4.71	5.60	6.37	7.14	---
			X _T	0.58	0.50	0.59	0.62	0.59	0.58	0.60	0.63	0.67	0.64	---
			F _d	0.08	0.08	0.09	0.11	0.12	0.13	0.14	0.15	0.16	0.17	---

1. At 100% travel.
 2. Balanced trim.
 3. Balanced, restricted trim.
 4. Micro-Flow trim.

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Linear - Flow Up														Linear Characteristic
Valve Size	Port Diameter mm	Maximum Travel mm	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
				10	20	30	40	50	60	70	80	90	100	
DN 50 (NPS 2)	46	20	C _v	2.90	7.53	12.6	17.5	22.1	27.8	34.1	41.6	45.7	48.6	0.91
			K _v	2.51	6.51	10.9	15.1	19.1	24.0	29.5	36.0	39.5	42.0	---
			X _T	0.71	0.87	0.81	0.87	0.85	0.82	0.79	0.82	0.85	0.84	---
			F _d	0.25	0.36	0.42	0.46	0.47	0.46	0.46	0.47	0.48	0.50	---
	36	20	C _v	1.69	5.05	8.37	11.6	14.8	17.9	20.9	24.7	29.2	33.9	0.93
			K _v	1.47	4.37	7.24	10.0	12.8	15.5	18.0	21.3	25.3	29.3	---
			X _T	0.73	0.76	0.84	0.81	0.82	0.84	0.87	0.85	0.84	0.82	---
			F _d	0.30	0.42	0.47	0.49	0.51	0.52	0.50	0.48	0.47	0.48	---
	22	20	C _v	1.58	3.01	4.51	6.02	7.63	9.10	10.9	13.1	15.1	17.2	0.93
			K _v	1.37	2.60	3.90	5.21	6.60	7.87	9.40	11.3	13.0	14.9	---
			X _T	0.66	0.62	0.62	0.61	0.61	0.60	0.58	0.55	0.62	0.68	---
			F _d	0.08	0.10	0.13	0.15	0.17	0.19	0.22	0.24	0.26	0.28	---
DN 80 (NPS 3)	70	40	C _v	9.74	20.9	32.9	46.2	59.6	74.3	87.5	97.2	109	117	0.89
			K _v	8.43	18.1	28.5	40.0	51.6	64.3	75.7	84.1	94.3	101	---
			X _T	0.62	0.85	0.83	0.81	0.81	0.81	0.81	0.85	0.80	0.77	---
			F _d	0.33	0.43	0.47	0.48	0.49	0.50	0.50	0.51	0.51	0.51	---
	70 ⁽²⁾	20	C _v	10.6	21.3	31.9	42.7	53.6	63.8	74.1	85.0	94.4	102	0.85
			K _v	9.17	18.4	27.6	36.9	46.4	55.2	64.1	73.5	81.7	88.2	---
			X _T	0.67	0.68	0.66	0.65	0.64	0.67	0.66	0.63	0.63	0.65	---
			F _d	0.12	0.17	0.21	0.25	0.28	0.31	0.34	0.36	0.39	0.41	---
	46	20	C _v	2.09	7.74	12.0	16.5	21.2	26.6	33.0	40.6	46.5	51.8	0.97
			K _v	1.81	6.70	10.4	14.3	18.3	23.0	28.5	35.1	40.2	44.8	---
			X _T	0.65	0.62	0.79	0.85	0.88	0.85	0.88	0.83	0.88	0.90	---
			F _d	0.25	0.36	0.42	0.46	0.47	0.46	0.46	0.47	0.48	0.50	---
36	20	C _v	1.17	4.87	7.76	11.1	14.3	17.3	19.3	23.2	27.8	33.3	0.97	
		K _v	1.01	4.21	6.71	9.58	12.4	14.9	16.7	20.1	24.1	28.8	---	
		X _T	0.74	0.59	0.81	0.80	0.82	0.83	0.94	0.96	0.93	0.87	---	
		F _d	0.30	0.42	0.47	0.49	0.51	0.52	0.50	0.48	0.47	0.48	---	
DN 100 (NPS 4)	90	40	C _v	18.2	39.6	59.0	82.4	104	124	141	156	171	184	0.91
			K _v	15.8	34.3	51.0	71.3	90.0	108	122	135	147	159	---
			X _T	0.78	0.84	0.90	0.85	0.86	0.91	0.91	0.90	0.85	0.82	---
			F _d	0.26	0.36	0.41	0.43	0.45	0.46	0.47	0.48	0.48	0.48	---
	90 ⁽²⁾	20	C _v	12.3	28.5	44.6	60.2	77.6	95.4	112	130	143	151	0.82
			K _v	10.6	24.7	38.6	52.1	67.1	82.5	96.9	112	124	131	---
			X _T	0.71	0.65	0.58	0.67	0.59	0.57	0.58	0.61	0.59	0.64	---
			F _d	0.11	0.16	0.20	0.23	0.27	0.29	0.31	0.34	0.36	0.39	---
	90 ⁽³⁾	20	C _v	5.99	13.6	22.3	31.5	40.4	49.6	59.2	69.0	79.6	92.3	0.82
			K _v	5.18	11.8	19.3	27.2	34.9	42.9	51.2	59.7	68.9	79.8	---
			X _T	0.60	0.59	0.61	0.58	0.59	0.62	0.59	0.58	0.57	0.52	---
			F _d	0.07	0.11	0.14	0.16	0.18	0.20	0.22	0.24	0.25	0.27	---
70	40	C _v	9.04	22.1	33.8	47.0	60.8	76.9	92.0	107	119	128	0.94	
		K _v	7.82	19.1	29.2	40.7	52.6	66.5	79.6	92.6	103	111	---	
		X _T	0.80	0.82	0.84	0.83	0.81	0.80	0.79	0.81	0.81	0.82	---	
		F _d	0.33	0.43	0.47	0.48	0.49	0.50	0.50	0.51	0.51	0.51	---	
46	20	C _v	2.37	7.98	13.1	17.3	21.9	27.1	33.2	40.3	46.8	52.2	0.96	
		K _v	2.05	6.90	11.3	15.0	19.0	23.5	28.7	34.8	40.5	45.2	---	
		X _T	0.70	0.70	0.78	0.88	0.90	0.88	0.85	0.83	0.83	0.83	---	
		F _d	0.25	0.36	0.42	0.46	0.47	0.46	0.46	0.47	0.48	0.50	---	

1. At 100% travel.
2. Balanced trim.
3. Balanced, restricted trim.
4. Micro-Flow trim.

-continued-



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June 2014Linear and Whisper Trim™ III
Flow Up through the Port

Linear - Flow Up													Linear Characteristic	
Valve Size	Port Diameter mm	Maximum Travel mm	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
				10	20	30	40	50	60	70	80	90	100	
DN 150 (NPS 6)	136	60	C _V	48.9	83.0	114	144	179	212	248	308	370	413	0.87
			K _V	42.3	71.8	98.6	125	155	183	215	266	320	357	---
			X _T	0.69	0.79	0.82	0.81	0.70	0.70	0.71	0.65	0.65	0.70	---
			F _d	0.29	0.27	0.24	0.22	0.20	0.19	0.17	0.16	0.15	0.14	---
	136 ⁽²⁾	60	C _V	59.0	105	153	203	249	301	334	362	375	391	0.90
			K _V	51.0	90.8	132	176	215	260	289	313	324	338	---
			X _T	0.55	0.64	0.63	0.63	0.65	0.66	0.72	0.72	0.78	0.80	---
			F _d	0.13	0.19	0.23	0.27	0.32	0.36	0.40	0.43	0.47	0.50	---
	90 ⁽³⁾	40	C _V	22.1	46.0	65.0	88.0	111	136	160	187	209	233	0.91
			K _V	19.1	39.8	56.2	76.1	96.0	118	138	162	181	202	---
			X _T	0.67	0.72	0.85	0.84	0.85	0.84	0.85	0.81	0.82	0.83	---
			F _d	0.26	0.36	0.41	0.43	0.45	0.46	0.47	0.48	0.48	0.48	---

1. At 100% travel.
2. Balanced trim.
3. Restricted trim.
4. Micro-Flow trim.

Whisper Trim III- Flow Up													Linear Characteristic	
Valve Size	Port Diameter mm	Maximum Travel mm	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
				10	20	30	40	50	60	70	80	90	100	
DN 80 (NPS 3) Level A1	70	40	C _V	2.2	11.2	22.4	31.6	40.4	51.2	60.2	68.5	76.9	85.5	0.818
			K _V	1.9	9.7	19.4	27.3	34.9	44.3	52.1	59.3	66.5	74.0	---
			X _T	0.861	0.714	0.584	0.600	0.589	0.572	0.590	0.616	0.637	0.646	---
			F _d	0.431	0.176	0.131	0.110	0.096	0.085	0.078	0.072	0.067	0.063	---
DN 100 (NPS 4) Level A1	90	40	C _V	2.6	14.0	29.1	41.5	53.6	67.9	81.3	93.8	107	119	0.785
			K _V	2.2	12.1	25.2	35.9	46.4	58.7	70.3	81.1	92.6	103	---
			X _T	0.870	0.726	0.573	0.561	0.558	0.533	0.537	0.548	0.581	0.602	---
			F _d	0.379	0.155	0.115	0.097	0.084	0.075	0.069	0.063	0.059	0.055	---
	70 ⁽²⁾	40	C _V	2.2	11.2	22.4	31.6	40.4	51.2	60.2	68.5	76.9	85.5	0.818
			K _V	1.9	9.7	19.4	27.3	34.9	44.3	52.1	59.3	66.5	74.0	---
			X _T	0.861	0.714	0.584	0.600	0.589	0.572	0.590	0.616	0.637	0.646	---
			F _d	0.431	0.176	0.131	0.110	0.096	0.085	0.078	0.072	0.067	0.063	---
DN 150 (NPS 6) Level A1	136	60	C _V	53.8	89	124	166	201	233	263	296	315	324	0.809
			K _V	46.5	77	107	144	174	202	227	256	272	280	---
			X _T	0.540	0.559	0.557	0.517	0.534	0.550	0.566	0.564	0.594	0.659	---
			F _d	0.134	0.087	0.070	0.060	0.053	0.048	0.044	0.041	0.039	0.037	---
	90 ⁽²⁾	40	C _V	2.6	14.0	29.1	41.5	53.6	67.9	81.3	93.8	107	119	0.785
			K _V	2.2	12.1	25.2	35.9	46.4	58.7	70.3	81.1	92.6	103	---
			X _T	0.870	0.726	0.573	0.561	0.558	0.533	0.537	0.548	0.581	0.602	---
			F _d	0.379	0.155	0.115	0.097	0.084	0.075	0.069	0.063	0.059	0.055	---

1. At 100% travel.
2. Unbalanced, restricted trim.

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Cavitrol™ III, Flow Down																Linear Characteristic
Trim Stage	Valve Size	Port Diameter mm	Maximum Travel mm	Flow Coeffi- cient	Minimum Throttling $C_V^{(1)}$	Valve Opening—Percent of Total Travel										$F_L^{(2)}$
						10	20	30	40	50	60	70	80	90	100	
One Stage	DN 25 (NPS 1)	22	20	C_V	0.4	0.4	1.1	2.0	2.9	3.7	4.6	5.2	5.9	6.5	7.1	0.97
				K_V	0.346	0.346	0.952	1.73	2.51	3.20	3.98	4.50	5.10	5.62	6.14	---
	DN 40 (NPS 1-1/2)	36	20	C_V	1.1	0.4	1.7	4.2	6.6	9.2	11.2	13.6	15.6	17.5	19.4	0.97
				K_V	0.952	0.346	1.47	3.63	5.71	7.96	9.69	11.8	13.5	15.1	16.8	---
	DN 50 (NPS 2)	46	20	C_V	2.0	0.8	3.2	5.9	9.1	12.6	15.3	17.8	20.4	22.8	25.2	0.95
				K_V	1.73	0.692	2.77	5.10	7.87	10.9	13.2	15.4	17.6	19.7	21.8	---

1. Valves should not be required to throttle at a C_V less than the specified minimum C_V for an extended period. Erosion damage to the valve seats may result.
2. At 100% travel.



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Side Port Common (SPC) Diverging														Linear Characteristic	
Valve Size	Maximum Travel	Exit Port	Flow Coefficient	Valve Opening—Percent of Total Travel											F _L ⁽¹⁾
	mm			0 (Plug Down)	10	20	30	40	50	60	70	80	90	100 (Plug Up)	
DN25/ NPS 1	19	Right	Cv	16.1	15.0	14.2	13.5	12.6	11.1	9.35	7.21	5.27	2.89	0	0.919
			Kv	14.0	13.0	12.3	11.7	10.9	9.56	8.09	6.23	4.56	2.50	0	---
			Xt	0.615	0.543	0.427	0.308	0.250	0.226	0.203	0.148	0.119	0.097	0	---
		Bottom	Cv	0	0.897	2.43	4.29	6.06	7.81	9.78	11.6	13.3	15.0	15.6	0.951
			Kv	0	0.776	2.10	3.71	5.25	6.75	8.46	10.0	11.5	13.0	13.5	---
			Xt	0	0.899	0.687	0.654	0.698	0.673	0.622	0.700	0.706	0.702	0.758	---
DN40/ NPS 1-1/2	19	Right	Cv	25.4	22.4	20.5	17.7	15.8	14.2	11.9	9.27	6.93	4.09	0	0.991
			Kv	22.0	19.4	17.7	15.3	13.7	12.3	10.3	8.01	6.00	3.54	0	---
			Xt	0.831	0.882	0.741	0.697	0.565	0.501	0.450	0.389	0.341	0.285	0	---
		Bottom	Cv	0	2.33	4.45	7.45	10.6	13.6	16.9	19.2	21.7	23.4	26.6	0.877
			Kv	0	2.01	3.84	6.45	9.18	11.8	14.6	16.6	18.8	20.2	23.0	---
			Xt	0	0.245	0.636	0.722	0.723	0.720	0.655	0.685	0.705	0.843	0.803	---
DN50/ NPS 2	19	Right	Cv	43.9	40.2	35.8	31.1	26.5	23.1	18.7	15.1	11.1	6.78	0	0.973
			Kv	38.0	34.7	30.9	26.9	22.9	20.0	16.2	13.1	9.63	5.87	0	---
			Xt	0.864	0.817	0.767	0.656	0.598	0.533	0.536	0.429	0.333	0.215	0	---
		Bottom	Cv	0	2.66	7.61	13.2	18.1	23.5	29.3	34.9	41.6	48.1	52.2	0.831
			Kv	0	2.30	6.58	11.4	15.6	20.3	25.4	30.2	36.0	41.6	45.1	---
			Xt	0	0.614	0.651	0.649	0.651	0.627	0.609	0.599	0.588	0.600	0.640	---
DN80/ NPS 3	38	Right	Cv	92.8	85.2	70.3	57.6	47.5	39.2	31.6	25.1	19.7	13.8	0	1.000
			Kv	80.3	73.7	60.8	49.8	41.1	33.9	27.3	21.8	17.0	11.9	0	---
			Xt	0.858	0.989	0.976	0.934	0.896	0.864	0.789	0.682	0.540	0.306	0	---
		Bottom	Cv	0	9.03	20.4	30.3	41.0	52.1	60.1	69.1	79.4	90.6	101.9	0.839
			Kv	0	7.81	17.7	26.2	35.4	45.1	52.0	59.8	68.7	78.3	88.1	---
			Xt	0	0.557	0.695	0.814	0.795	0.790	0.876	0.929	0.937	0.932	0.855	---
DN100/ NPS 4	38	Right	Cv	145.4	137.4	119.9	100.6	81.6	68.3	57.6	45.5	33.9	21.1	0	0.942
			Kv	125.8	118.9	103.7	87.0	70.6	59.1	49.9	39.4	29.3	18.2	0	---
			Xt	0.984	0.956	0.975	0.828	0.817	0.810	0.705	0.601	0.475	0.322	0	---
		Bottom	Cv	0	15.0	37.7	58.7	79.9	99.3	122.3	143.7	166.0	189.3	216.4	0.818
			Kv	0	13.0	32.6	50.8	69.1	85.9	105.8	124.3	143.6	163.8	187.2	---
			Xt	0	0.587	0.659	0.764	0.798	0.840	0.887	0.880	0.869	0.810	0.640	---

1. At maximum flow.



Side Port Common (SPC) Converging														Linear Characteristic	
Valve Size	Maximum Travel	Inlet Port	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾	
	mm			0 (Plug Down)	10	20	30	40	50	60	70	80	90		100 (Plug Up)
DN25/ NPS 1	19	Right	Cv	15.9	13.2	10.7	9.30	7.54	6.31	4.65	3.64	2.04	1.04	0	0.978
			Kv	13.7	11.4	9.28	8.04	6.52	5.46	4.02	3.15	1.77	0.898	0	---
			Xt	0.658	0.866	0.758	0.657	0.723	0.669	0.739	0.728	0.909	0.898	0	---
		Bottom	Cv	0	0.562	1.72	3.28	4.90	6.51	8.74	10.3	12.9	14.3	16.3	0.949
			Kv	0	0.486	1.49	2.84	4.24	5.63	7.56	8.89	11.1	12.4	14.1	---
			Xt	0	0.397	1.005	0.966	0.847	0.767	0.675	0.659	0.605	0.662	0.663	---
DN40/ NPS 1-1/2	19	Right	Cv	29.3	26.7	23.0	17.1	14.6	11.9	9.47	7.07	4.78	2.34	0	0.999
			Kv	25.3	23.1	19.9	14.8	12.6	10.3	8.19	6.12	4.13	2.03	0	---
			Xt	0.821	0.714	0.711	0.857	0.806	0.900	0.907	0.803	0.842	0.660	0	---
		Bottom	Cv	0	0.881	3.02	6.46	8.83	11.7	15.9	18.3	20.9	24.3	28.4	0.978
			Kv	0	0.762	2.61	5.58	7.64	10.1	13.7	15.8	18.1	21.1	24.5	---
			Xt	0	---	0.994	0.779	0.865	0.832	0.679	0.745	0.752	0.785	0.749	---
DN50/ NPS 2	19	Right	Cv	54.6	48.5	42.2	35.2	28.5	22.9	18.0	12.4	7.44	3.02	0	0.932
			Kv	47.2	42.0	36.5	30.4	24.6	19.8	15.6	10.7	6.43	2.61	0	---
			Xt	0.626	0.636	0.596	0.559	0.574	0.605	0.617	0.685	0.798	0.949	0	---
		Bottom	Cv	0	2.05	6.44	11.0	15.8	20.9	25.6	32.2	41.6	47.6	52.0	0.958
			Kv	0	1.78	5.57	9.50	13.7	18.1	22.2	27.9	36.0	41.2	45.0	---
			Xt	0	0.888	0.919	0.958	0.895	0.844	0.859	0.804	0.735	0.745	0.785	---
DN80/ NPS 3	38	Right	Cv	111.9	101.0	87.8	72.7	59.2	48.3	38.5	28.5	18.9	9.87	0	1.000
			Kv	96.8	87.4	75.9	62.9	51.2	41.8	33.3	24.7	16.4	8.53	0	---
			Xt	0.811	0.757	0.669	0.704	0.755	0.765	0.745	0.723	0.725	0.716	0	---
		Bottom	Cv	0	6.84	16.1	26.4	40.0	55.0	70.4	85.7	100.8	113.1	127.8	0.965
			Kv	0	5.91	13.9	22.8	34.6	47.6	60.9	74.1	87.2	97.8	110.6	---
			Xt	0	0.989	0.967	0.994	0.876	0.800	0.773	0.759	0.752	0.767	0.752	---
DN100/ NPS 4	38	Right	Cv	163.4	153.0	137.0	115.0	92.0	74.0	57.8	43.5	28.3	12.8	0	0.869
			Kv	141.4	132.3	118.5	99.4	79.6	64.0	50.0	37.7	24.5	11.1	0	---
			Xt	0.688	0.634	0.558	0.558	0.603	0.610	0.595	0.578	0.573	0.525	0	---
		Bottom	Cv	0	12.9	30.1	46.6	66.3	88.4	112.4	135.9	161.4	185.2	212.2	0.816
			Kv	0	11.2	26.0	40.3	57.3	76.4	97.2	117.5	139.7	160.2	183.6	---
			Xt	0	0.920	0.949	0.826	0.789	0.737	0.683	0.660	0.625	0.629	0.589	---

1. At maximum flow.

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Bottom Port Common (BPC) Diverging														Linear Characteristic	
Valve Size	Maximum Travel mm	Exit Port	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾	
				0 (Plug Down)	10	20	30	40	50	60	70	80	90		100 (Plug Up)
DN25/ NPS 1	19	Right	Cv	16.3	15.5	14.4	13.3	12.0	10.1	7.72	5.32	3.18	1.49	0	0.965
			Kv	14.1	13.4	12.5	11.5	10.4	8.70	6.68	4.61	2.75	1.29	0	---
			Xt	0.661	0.670	0.691	0.655	0.608	0.577	0.523	0.556	0.533	0.474	0	---
		Left	Cv	0	1.67	3.03	4.58	6.32	8.41	10.6	12.0	13.7	14.7	15.5	0.886
			Kv	0	1.45	2.62	3.96	5.46	7.27	9.18	10.4	11.9	12.8	13.4	---
			Xt	0	0.810	0.623	0.667	0.639	0.620	0.637	0.631	0.637	0.664	0.666	---
DN40/ NPS 1-1/2	19	Right	Cv	32.5	30.5	28.7	25.2	21.9	18.5	14.8	10.6	6.46	2.89	0	0.820
			Kv	28.1	26.4	24.8	21.8	18.9	16.0	12.8	9.16	5.58	2.50	0	---
			Xt	0.786	0.738	0.661	0.626	0.523	0.486	0.470	0.467	0.479	0.426	0	---
		Left	Cv	0	3.30	6.21	10.34	14.5	18.2	22.7	26.4	29.1	31.2	33.5	0.923
			Kv	0	2.85	5.37	8.94	12.56	15.7	19.7	22.9	25.1	27.0	29.0	---
			Xt	0	0.812	0.661	0.502	0.553	0.660	0.721	0.764	0.799	0.815	0.784	---
DN50/ NPS 2	19	Right	Cv	58.9	53.1	47.1	40.7	34.1	27.0	20.7	14.6	9.54	4.61	0	0.950
			Kv	50.9	45.9	40.7	35.2	29.5	23.4	17.9	12.6	8.26	3.99	0	---
			Xt	0.600	0.639	0.561	0.574	0.536	0.473	0.475	0.508	0.501	0.536	0	---
		Left	Cv	0	4.89	8.60	13.4	20.5	28.2	36.6	44.9	50.9	56.0	60.0	0.893
			Kv	0	4.23	7.43	11.6	17.8	24.4	31.7	38.8	44.0	48.4	51.9	---
			Xt	0	0.553	0.674	0.610	0.575	0.599	0.598	0.607	0.632	0.647	0.619	---
DN80/ NPS 3	38	Right	Cv	155.9	151.9	139.6	126.6	108.8	90.8	69.0	49.0	30.8	15.1	0	0.935
			Kv	134.9	131.4	120.7	109.5	94.1	78.5	59.7	42.4	26.6	13.1	0	---
			Xt	0.640	0.595	0.578	0.532	0.500	0.451	0.453	0.462	0.471	0.465	0	---
		Left	Cv	0	12.0	27.7	47.9	68.3	87.7	104.5	120.0	136.5	154.7	170.3	0.862
			Kv	0	10.4	24.0	41.4	59.1	75.8	90.4	103.8	118.1	133.8	147.3	---
			Xt	0	0.605	0.556	0.596	0.650	0.680	0.706	0.719	0.713	0.664	0.642	---
DN100/ NPS 4	38	Right	Cv	166.3	152.9	139.7	121.1	98.0	77.1	60.3	42.9	27.0	13.0	0	0.901
			Kv	143.9	132.3	120.8	104.8	84.8	66.7	52.2	37.1	23.3	11.2	0	---
			Xt	0.675	0.631	0.533	0.510	0.530	0.526	0.503	0.520	0.520	0.542	0	---
		Left	Cv	0	11.3	26.9	46.1	63.8	82.2	102.0	121.1	137.6	153.2	169.1	0.866
			Kv	0	9.8	23.2	39.9	55.2	71.1	88.2	104.8	119.0	132.5	146.3	---
			Xt	0	0.657	0.583	0.615	0.704	0.727	0.716	0.696	0.723	0.703	0.669	---

1. At maximum flow.



Bottom Port Common (BPC) Converging														Linear Characteristic	
Valve Size	Maximum Travel mm	Inlet Port	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾	
				0 (Plug Down)	10	20	30	40	50	60	70	80	90		100 (Plug Up)
DN25/ NPS 1	19	Right	Cv	16.4	14.4	12.8	11.7	10.7	9.64	8.58	6.27	3.80	1.08	0	0.973
			Kv	14.2	12.4	11.1	10.1	9.23	8.34	7.42	5.42	3.29	0.93	0	---
			Xt	0.668	0.650	0.691	0.571	0.495	0.397	0.324	0.312	0.291	0.652	0	---
		Left	Cv	0	1.45	2.56	3.93	5.46	7.08	8.83	10.9	13.3	15.3	16.5	0.935
			Kv	0	1.25	2.22	3.40	4.73	6.12	7.64	9.39	11.5	13.2	14.3	---
			Xt	0	0.702	0.784	0.725	0.720	0.710	0.722	0.717	0.678	0.609	0.597	---
DN40/ NPS 1-1/2	19	Right	Cv	36.8	32.3	25.6	21.3	17.5	12.5	10.3	8.22	4.63	2.34	0	0.804
			Kv	31.9	28.0	22.1	18.4	15.1	10.8	8.94	7.11	4.00	2.02	0	---
			Xt	0.540	0.538	0.675	0.661	0.613	0.723	0.690	0.575	0.595	0.634	0	---
		Left	Cv	0	3.36	5.99	9.42	13.3	17.4	22.4	27.4	33.8	37.5	41.5	0.878
			Kv	0	2.91	5.18	8.15	11.5	15.0	19.4	23.7	29.2	32.5	35.9	---
			Xt	0	0.625	0.659	0.593	0.598	0.645	0.637	0.695	0.643	0.641	0.603	---
DN50/ NPS 2	19	Right	Cv	59.9	50.9	42.8	35.6	29.6	23.1	17.5	13.8	9.75	6.01	0	0.882
			Kv	51.8	44.0	37.0	30.8	25.6	20.0	15.2	11.9	8.43	5.20	0	---
			Xt	0.560	0.569	0.609	0.634	0.611	0.613	0.571	0.490	0.387	0.256	0	---
		Left	Cv	0	4.84	8.90	14.2	19.2	25.4	32.8	40.0	47.1	53.4	57.8	0.935
			Kv	0	4.19	7.70	12.3	16.6	21.9	28.4	34.6	40.7	46.2	50.0	---
			Xt	0	0.504	0.575	0.549	0.641	0.692	0.696	0.693	0.707	0.722	0.723	---
DN80/ NPS 3	38	Right	Cv	158.7	142.5	125.3	102.8	80.3	61.0	45.8	33.1	20.8	10.6	0	0.813
			Kv	137.2	123.3	108.4	88.9	69.5	52.8	39.6	28.7	18.0	9.18	0	---
			Xt	0.558	0.578	0.553	0.549	0.600	0.663	0.665	0.653	0.714	0.705	0	---
		Left	Cv	0	12.1	25.7	43.8	63.1	83.1	102.7	120.4	135.7	151.1	164.9	0.931
			Kv	0	10.5	22.2	37.9	54.6	71.9	88.9	104.1	117.4	130.7	142.6	---
			Xt	0	0.525	0.579	0.619	0.660	0.658	0.676	0.685	0.701	0.691	0.670	---
DN100/ NPS 4	38	Right	Cv	155.9	145.0	127.4	107.6	85.9	66.4	49.4	35.6	23.6	12.2	0	0.810
			Kv	134.9	125.4	110.2	93.0	74.3	57.5	42.7	30.8	20.4	10.5	0	---
			Xt	0.564	0.550	0.518	0.504	0.545	0.593	0.628	0.621	0.601	0.553	0	---
		Left	Cv	0	13.5	28.9	48.9	69.5	90.6	111.1	129.2	145.4	159.9	174.4	0.830
			Kv	0	11.7	25.0	42.3	60.1	78.4	96.1	111.8	125.8	138.3	150.8	---
			Xt	0	0.427	0.477	0.525	0.553	0.564	0.590	0.637	0.667	0.686	0.676	---

1. At maximum flow.

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HPAD, CL900 and 1500, Linear, Flow Down														Linear Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
2	47.6	1.875	29	1.5	Cv	---	3.32	13.8	26.5	37.7	46.3	52.8	58.0	62	64.3	0.88
					Kv	---	2.87	11.9	22.9	32.6	40.0	45.7	50.2	53.6	55.6	---
					XT	---	0.813	0.518	0.508	0.548	0.595	0.633	0.63	0.613	0.612	---
					Fd	0.89	0.62	0.44	0.30	0.24	0.22	0.19	0.17	0.16	0.15	---
3	47.6	1.875	29	1.5	Cv	---	3.32	13.8	26.5	37.7	46.3	52.8	58.0	62	64.3	0.88
					Kv	---	2.87	11.9	22.9	32.6	40.0	45.7	50.2	53.6	55.6	---
					XT	---	0.813	0.518	0.508	0.548	0.595	0.633	0.63	0.613	0.612	---
					Fd	0.89	0.62	0.44	0.30	0.24	0.22	0.19	0.17	0.16	0.15	---
4	73.0	2.875	50	2	Cv	---	8.72	31.5	55.1	74.6	89.4	101	110	117	121	0.93
					Kv	---	7.54	27.2	47.7	64.5	77.3	87.4	95.2	101	105	---
					XT	---	0.589	0.580	0.653	0.728	0.775	0.795	0.791	0.777	0.773	---
					Fd	0.48	0.28	0.21	0.17	0.15	0.13	0.12	0.11	0.11	0.10	---
6	92.1	3.625	50	2	Cv	6.91	26.4	54.7	86.4	117	143	165	182	194	201	0.91
					Kv	5.98	22.8	47.3	74.7	101	124	143	157	168	174	---
					XT	0.327	0.581	0.576	0.509	0.525	0.602	0.673	0.708	0.714	0.726	---
					Fd	0.28	0.21	0.15	0.13	0.11	0.098	0.090	0.082	0.077	0.073	---
8	136.5	5.375	76	3	Cv	8.78	63.3	149	231	298	350	385	408	424	425	0.91
					Kv	7.59	54.8	129	200	258	303	333	353	367	368	---
					XT	0.763	0.613	0.544	0.574	0.621	0.671	0.721	0.745	0.709	0.726	---
					Fd	0.24	0.12	0.094	0.076	0.067	0.058	0.054	0.050	0.047	0.046	---

HPAD, CL900 and 1500, Equal Percentage, Flow Down														Equal Percentage Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
2	47.6	1.875	29	1.125	Cv	---	1.13	3.51	7.94	13.8	20.7	29.0	37.3	42.6	48.8	0.87
					Kv	---	0.977	3.04	6.87	11.9	17.9	25.1	32.3	36.8	42.2	---
					XT	---	0.579	0.566	0.573	0.526	0.495	0.513	0.57	0.598	0.638	---
					Fd	1.00	0.76	0.50	0.40	0.31	0.28	0.24	0.22	0.20	0.19	---
3	47.6	1.875	29	1.125	Cv	---	1.13	3.51	7.94	13.8	20.7	29.0	37.3	42.6	48.8	0.87
					Kv	---	0.977	3.04	6.87	11.9	17.9	25.1	32.3	36.8	42.2	---
					XT	---	0.579	0.566	0.573	0.526	0.495	0.513	0.57	0.598	0.638	---
					Fd	1.00	0.76	0.50	0.40	0.31	0.28	0.24	0.22	0.20	0.19	---
4	73.0	2.875	38	1.5	Cv	---	1.21	4.21	11.3	23.0	37.6	53.2	69.5	85.3	92.7	0.92
					Kv	---	1.05	3.64	9.77	19.9	32.5	46.0	60.1	73.8	80.2	---
					XT	---	0.954	0.761	0.600	0.558	0.592	0.661	0.705	0.706	0.768	---
					Fd	1.00	0.54	0.44	0.31	0.23	0.19	0.17	0.15	0.14	0.13	---
6	92.1	3.625	38	1.5	Cv	3.12	7.35	13.9	23.4	37.9	60.1	90.6	123	147	165	0.85
					Kv	2.70	6.36	12.0	20.2	32.8	52.0	78.4	106	127	143	---
					XT	0.676	0.551	0.524	0.488	0.449	0.443	0.463	0.509	0.569	0.683	---
					Fd	---	0.43	0.33	0.24	0.18	0.15	0.13	0.11	0.096	0.088	---
8	136.5	5.375	63.5	2.5	Cv	3.90	13.3	23.1	36.2	63.0	105	156	217	280	319	0.82
					Kv	3.37	11.5	20.0	31.3	54.5	90.8	135	188	242	276	---
					XT	0.961	0.686	0.615	0.584	0.540	0.513	0.496	0.480	0.513	0.593	---
					Fd	0.38	0.34	0.25	0.20	0.15	0.12	0.098	0.084	0.073	0.066	---

1. At 100% travel.

Notes: The coefficients on this page are also appropriate for the HPAT.

HPAD CL900 & 1500

Modified Equal Percentage Cages With or Without Liner
Flow Down through the Port

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HPAD, CL900 and 1500, Modified Equal Percentage, Flow Down														Modified Equal Percentage Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
2	47.6	1.875	38	1.5	Cv	---	2.45	7.82	16.5	26.2	35.8	45.1	52.8	57.1	61.1	0.90
					Kv	---	2.12	6.76	14.3	22.7	31.0	39.0	45.7	49.4	52.9	---
					XT	---	0.572	0.533	0.522	0.531	0.555	0.610	0.656	0.657	0.586	---
					Fd	0.99	0.49	0.40	0.30	0.26	0.22	0.20	0.18	0.16	0.16	---
3	47.6	1.875	38	1.5	Cv	---	2.45	7.82	16.5	26.2	35.8	45.1	52.8	57.1	61.1	0.90
					Kv	---	2.12	6.76	14.3	22.7	31.0	39.0	45.7	49.4	52.9	---
					XT	---	0.572	0.533	0.522	0.531	0.555	0.610	0.656	0.657	0.586	---
					Fd	0.99	0.49	0.40	0.30	0.26	0.22	0.20	0.18	0.16	0.16	---
4	73.0	2.875	50	2	Cv	0.475	3.07	11.8	26.8	46.6	69.3	89.5	100	103	114	0.95
					Kv	0.411	2.66	10.2	23.2	40.3	59.9	77.4	86.5	89.1	98.6	---
					XT	0.949	0.712	0.550	0.604	0.682	0.697	0.706	0.762	0.856	0.783	---
					Fd	0.78	0.49	0.31	0.22	0.18	0.15	0.14	0.12	0.11	0.11	---
6	92.1	3.625	50	2	Cv	4.33	11.3	23.3	45	79.6	121	155	176	192	203	0.99
					Kv	3.75	9.77	20.2	38.9	68.9	105.0	134	152	166	176	---
					XT	0.624	0.523	0.482	0.450	0.453	0.502	0.599	0.696	0.723	0.735	---
					Fd	0.29	0.34	0.24	0.18	0.13	0.11	0.094	0.084	0.077	0.073	---
8	136.5	5.375	76	3	Cv	5.22	16.6	30.8	55	100.0	168	241	299	351	378	0.89
					Kv	4.52	14.4	26.6	47.6	86.5	145.0	208	259	304	327	---
					XT	0.883	0.725	0.571	0.597	0.592	0.514	0.526	0.623	0.667	0.725	---
					Fd	0.43	0.28	0.22	0.16	0.12	0.095	0.079	0.068	0.060	0.057	---

1. At 100% travel.

Notes: The coefficients on this page are also appropriate for the HPAT.

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HPAD, CL2500, Linear, Flow Down														Linear Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
2	47.6	1.875	38	1.5	Cv	---	3.32	13.8	24.2	32.1	37.6	41.5	44.2	46.0	47.4	0.88
					Kv	---	2.87	11.9	20.9	27.8	32.5	35.9	38.2	39.8	41.0	---
					XT	---	0.813	0.518	0.672	0.716	0.766	0.816	0.851	0.862	0.832	---
					Fd	0.89	0.62	0.44	0.30	0.24	0.22	0.19	0.17	0.16	0.15	---
HPAD, CL2500, Equal Percentage, Flow Down														Equal Percentage Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
2	47.6	1.875	29	1.125	Cv	---	1.13	3.51	7.94	13.8	20.7	26.4	31.7	35.5	38.2	0.87
					Kv	---	0.977	3.04	6.87	11.9	17.9	22.8	27.4	30.7	33.0	---
					XT	---	0.579	0.566	0.573	0.526	0.495	0.589	0.669	0.747	0.848	---
					Fd	1.00	0.76	0.50	0.40	0.31	0.28	0.24	0.22	0.20	0.19	---
HPAD, CL2500, Modified Equal Percentage, Flow Down														Modified Equal Percentage Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
2	47.6	1.875	38	1.5	Cv	---	2.45	7.82	16.5	24.9	32.2	37.3	40.6	42.8	44.3	0.90
					Kv	---	2.12	6.76	14.3	21.5	27.9	32.3	35.1	37.0	38.3	---
					XT	---	0.572	0.533	0.522	0.559	0.648	0.745	0.828	0.833	0.876	---
					Fd	0.99	0.49	0.40	0.30	0.26	0.22	0.20	0.18	0.16	0.16	---

1. At 100% travel.

Notes: The coefficients on this page are also appropriate for the HPAT.

**HPAD
CL900, 1500, & 2500**

Whisper Trim™ III and Linear Cages
Flow Up through the Port

HPAD, CL900 and 1500, Whisper Trim, Flow Up																	Linear Characteristic
Cage Level	Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coeffi- cient	Valve Opening—Percent of Total Travel										
		mm	Inches	mm	Inches		Mini- mum ⁽¹⁾	10	20	30	40	50	60	70	80	90	100
A1 ⁽²⁾	2	47.6	1.875	38	1.5	Cv	1.20	3.00	7.70	13.0	17.8	22.3	26.4	31.0	35.3	39.0	42.0
						Kv	1.04	2.59	6.66	11.2	15.4	19.3	22.8	26.8	30.5	33.7	36.3
						XT	0.576	0.522	0.609	0.611	0.617	0.614	0.625	0.616	0.614	0.619	0.615
	3	47.6	1.875	38	1.5	Cv	1.20	3.00	7.70	13.0	17.8	22.3	26.4	31.0	35.3	39.0	42.0
						Kv	1.04	2.59	6.66	11.2	15.4	19.3	22.8	26.8	30.5	33.7	36.3
						XT	0.576	0.522	0.609	0.611	0.617	0.614	0.625	0.616	0.614	0.619	0.615
	4	73	2.875	50	2	Cv	1.26	6.57	24.1	42.1	58.9	74.0	86.8	97.4	105	110	111
						Kv	1.09	5.68	20.8	36.4	50.9	64.0	75.1	84.3	90.8	95.2	96.0
						XT	0.826	0.727	0.610	0.560	0.558	0.588	0.641	0.687	0.723	0.738	0.772
	6	92.1	3.625	50	2	Cv	1.88	7.56	27.3	50.1	71.5	90.8	109	126	142	155	162
						Kv	1.63	6.54	23.6	43.3	61.8	78.5	94.3	109	123	134	140
						XT	0.538	0.625	0.586	0.545	0.519	0.520	0.542	0.577	0.614	0.640	0.674
8	136.5	5.375	76	3	Cv	13.80	28.60	66.40	103.0	142	180	220	253.0	284.0	308.0	324.0	
					Kv	11.9	24.7	57.4	89.1	123	156.0	190	219	246	266.0	280.0	
					XT	0.478	0.423	0.513	0.533	0.525	0.557	0.535	0.543	0.560	0.598	0.627	
HPAD, CL2500, Whisper Trim, Flow Up																	Linear Characteristic
A1 ⁽²⁾	2	47.6	1.875	38	1.5	Cv	1.20	3.00	7.70	13.0	17.8	22.3	26.4	28.7	31.4	34.0	36.2
						Kv	1.04	2.59	6.66	11.2	15.4	19.3	22.8	24.8	27.2	29.4	31.3
						XT	0.576	0.522	0.609	0.611	0.586	0.576	0.562	0.597	0.595	0.592	0.584
HPAD, CL900 and 1500, Whisper Trim, Flow Up																	Linear Characteristic
B1	4	73.0	2.875	50	2	Cv	4.1	3.00	9.00	14.4	18.6	23.4	28.5	34.6	40.2	45.0	48.8
						Kv	0.689	2.59	7.79	12.5	16.1	20.2	24.7	29.9	34.8	38.9	42.2
						XT	0.796	0.615	0.618	0.592	0.622	0.622	0.633	0.620	0.624	0.622	0.622
B3	6	92.1	3.625	50	2	Cv	3.50	8.00	20.0	30.0	40.0	52.0	62.0	73.0	82.0	88.9	88.9
						Kv	3.03	6.92	17.3	25.9	34.6	45.0	53.6	63.1	70.9	76.9	76.9
						XT	0.617	0.591	0.531	0.524	0.517	0.513	0.509	0.517	0.527	0.522	0.522
B3	8	136.5	5.375	76	3	Cv	8.00	13	30	50	69	87	107	125	143	160	166
						Kv	6.92	11.2	25.9	43.3	59.7	75.3	92.6	108	124	138	144
						XT	0.610	0.577	0.580	0.548	0.552	0.563	0.545	0.554	0.552	0.555	0.554
C3	6	92.1	3.625	50	2	Cv	3.50	8.00	15.0	21.5	28.0	34.4	41.0	47.3	53.5	56.5	56.8
						Kv	3.03	6.92	13.0	18.6	24.2	29.8	35.5	40.9	46.3	48.9	49.1
						XT	0.617	0.526	0.516	0.530	0.530	0.539	0.535	0.540	0.538	0.540	0.540
C3	8	136.5	5.375	76	3	Cv	8.00	8.30	20.5	33.0	44.3	57.0	69.0	83.0	96.5	108	112
						Kv	6.92	7.18	17.7	28.5	38.3	49.3	59.7	71.8	83.5	93.4	96.9
						XT	0.563	0.567	0.575	0.572	0.572	0.556	0.568	0.563	0.561	0.559	0.563
D3	6	73.0	2.875	50	2	Cv	2.30	4.00	7.90	11.5	15.2	18.8	22.8	27.0	30.8	33.7	37.1
						Kv	1.99	3.46	6.83	9.95	13.1	16.3	19.7	23.4	26.6	29.2	32.1
						XT	0.554	0.517	0.525	0.540	0.526	0.533	0.536	0.534	0.530	0.533	0.530
D3	8	111.1	4.375	76	3	Cv	2.30	7.00	14.0	20.7	28.0	34.8	41.6	48.5	55.7	62.5	69.6
						Kv	1.99	6.05	12.1	17.9	24.2	30.1	36	42.0	48.2	54.1	60.2
						XT	0.579	0.563	0.557	0.572	0.557	0.569	0.564	0.566	0.562	0.566	0.564

1. Valve should not be required to throttle at less than the minimum coefficient for an extended time, or erosion damage to the valve seat may result.
2. Larger capacities may be available with level A1 cages depending on service conditions.

Notes: The coefficients in this table are also appropriate for the HPAT.

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HPAS, CL900 and 1500, Linear, Flow Up														Linear Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
2	47.6	1.875	38	1.5	C _v	---	3.61	11.8	23.3	35.2	45.7	54.2	61.7	68.8	73.6	0.97
					K _v	---	3.12	10.2	20.2	30.4	39.5	46.9	53.4	59.5	63.7	---
					X _T	---	0.722	0.663	0.657	0.663	0.663	0.659	0.638	0.606	0.586	---
					F _d	0.89	0.62	0.44	0.30	0.24	0.22	0.19	0.17	0.16	0.15	---
HPAS, CL900 and 1500, Equal Percentage, Flow Up														Equal Percentage Characteristic		
2	47.6	1.875	29	1.125	C _v	---	1.01	2.91	6.71	12.1	18.4	25.7	33.6	41.0	48.6	0.94
					K _v	---	0.874	2.52	5.8	10.5	15.9	22.2	29.1	35.5	42.0	---
					X _T	---	0.948	0.808	0.73	0.705	0.679	0.642	0.641	0.686	0.652	---
					F _d	1.00	0.76	0.50	0.40	0.31	0.28	0.24	0.22	0.20	0.19	---
HPAS, CL900 and 1500, Modified Equal Percentage, Flow Up														Modified Equal Percentage Characteristic		
2	47.6	1.875	38	1.5	C _v	---	2.07	6.6	14.3	23.4	32.9	43.5	53.7	60.4	67.9	0.96
					K _v	---	1.79	5.71	12.4	20.2	28.5	37.6	46.5	52.2	58.7	---
					X _T	---	0.853	0.742	0.68	0.653	0.657	0.665	0.657	0.639	0.594	---
					F _d	0.99	0.49	0.40	0.30	0.26	0.22	0.20	0.18	0.16	0.16	---
HPAS, CL2500, Linear, Flow Up														Linear Characteristic		
2	47.6	1.875	38	1.5	C _v	---	3.61	11.8	23.3	33.8	41.0	46.5	50.7	53.8	56.2	0.97
					K _v	---	3.12	10.2	20.2	29.2	35.5	40.2	43.9	46.5	48.6	---
					X _T	---	0.722	0.663	0.657	0.623	0.607	0.589	0.576	0.573	0.565	---
					F _d	0.89	0.62	0.44	0.30	0.24	0.22	0.19	0.17	0.16	0.15	---
HPAS, CL2500, Equal Percentage, Flow Up														Equal Percentage Characteristic		
2	47.6	1.875	29	1.125	C _v	---	1.01	2.91	6.71	12.1	18.4	24.5	30.6	35.5	39.4	0.95
					K _v	---	0.874	2.52	5.8	10.5	15.9	21.2	26.5	30.7	34.1	---
					X _T	---	0.948	0.808	0.73	0.705	0.679	0.706	0.719	0.748	0.789	---
					F _d	1.00	0.76	0.50	0.40	0.31	0.28	0.24	0.22	0.20	0.19	---
HPAS, CL2500, Modified Equal Percentage, Flow Up														Modified Equal Percentage Characteristic		
2	47.6	1.875	38	1.5	C _v	---	2.07	6.6	14.3	22.8	30.4	38.4	45.2	48.5	52.4	0.97
					K _v	---	1.79	5.71	12.4	19.7	26.3	33.2	39.1	42.0	45.4	---
					X _T	---	0.853	0.742	0.68	0.65	0.659	0.66	0.660	0.638	0.595	---
					F _d	0.99	.049	.040	.030	0.26	.022	0.20	0.18	0.16	0.16	---

1. At 100% travel.

HPAS
CL900 and 1500

Equal Percentage Cages Without Liner
Flow Down through the Port

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HPAS, Equal Percentage, Flow Down														Equal Percentage Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1	19.1	0.75	19	0.75	C _V	---	0.296	0.955	1.47	1.98	2.62	3.06	3.72	4.46	5.58	0.87
					K _V	---	0.256	0.826	1.27	1.71	2.27	2.65	3.22	3.86	4.83	---
					X _T	---	0.722	0.711	0.649	0.685	0.664	0.677	0.657	0.668	0.658	---
2	19.1	0.75	19	0.75	C _V	---	0.296	0.955	1.47	1.98	2.62	3.06	3.72	4.46	5.58	0.87
					K _V	---	0.256	0.826	1.27	1.71	2.27	2.65	3.22	3.86	4.83	---
					X _T	---	0.722	0.711	0.649	0.685	0.664	0.677	0.657	0.668	0.658	---
HPAS, Modified Equal Percentage ⁽²⁾ , Flow Down														Modified Equal Percentage Characteristic		
1	19.1	0.75	29	1.125	C _V	0.269	1.07	1.67	2.30	3.28	4.51	5.73	7.07	9.11	10.7	0.70
					K _V	0.233	0.926	1.44	1.99	2.84	3.90	4.96	6.12	7.88	9.26	---
					X _T	0.964	0.688	0.709	0.715	0.699	0.690	0.688	0.641	0.531	0.455	---
2	19.1	0.75	29	1.125	C _V	0.269	1.07	1.67	2.30	3.28	4.51	5.73	7.07	9.11	10.7	0.70
					K _V	0.233	0.926	1.44	1.99	2.84	3.90	4.96	6.12	7.88	9.26	---
					X _T	0.964	0.688	0.709	0.715	0.699	0.690	0.688	0.641	0.531	0.455	---
	25.4	1	29	1.125	C _V	---	0.100	0.890	1.90	3.50	6.50	11.0	15.0	19.0	21.0	0.81
					K _V	---	0.087	0.770	1.64	3.03	5.62	9.52	13.0	16.4	18.2	---
					X _T	---	0.689	0.666	0.691	0.692	0.667	0.646	0.686	0.646	0.690	---
	31.8	1.25	29	1.125	C _V	---	0.220	1.20	2.70	5.00	9.00	15.0	22.0	27.0	31.0	0.81
					K _V	---	0.190	1.04	2.34	4.33	7.79	13.0	19.0	23.4	26.8	---
					X _T	---	0.668	0.685	0.683	0.666	0.694	0.692	0.648	0.667	0.671	---
	38.1	1.5	38	1.5	C _V	---	0.880	2.80	6.30	13.5	22.5	31.0	38.0	43.5	48.0	0.81
					K _V	---	0.761	2.42	5.45	11.7	19.5	26.8	32.9	37.6	41.5	---
					X _T	---	0.682	0.670	0.677	0.678	0.703	0.698	0.684	0.703	0.703	---

1. At 100% travel.
2. Characteristic is equal percentage through 75% of travel.

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HPAS, Equal Percentage, Flow Down														Equal Percentage Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1	19.1	0.75	19	0.75	C _V	---	0.296	0.955	1.47	1.98	2.62	3.02	3.66	4.36	5.38	0.87
					K _V	---	0.256	0.826	1.27	1.71	2.27	2.61	3.17	3.77	4.65	---
					X _T	---	0.722	0.711	0.649	0.685	0.664	0.662	0.658	0.653	0.648	---
2	19.1	0.75	19	0.75	C _V	---	0.296	0.955	1.47	1.98	2.62	3.06	3.72	4.46	5.58	0.87
					K _V	---	0.256	0.826	1.27	1.71	2.27	2.65	3.22	3.86	4.83	---
					X _T	---	0.722	0.711	0.649	0.685	0.664	0.677	0.657	0.668	0.658	---
HPAS, Modified Equal Percentage ⁽²⁾ , Flow Down														Modified Equal Percentage Characteristic		
1	19.1	0.75	29	1.125	C _V	0.269	1.07	1.67	2.30	3.28	4.51	5.73	6.93	8.06	9.73	0.70
					K _V	0.233	0.926	1.44	1.99	2.84	3.90	4.96	5.99	6.97	8.42	---
					X _T	0.964	0.688	0.709	0.715	0.600	0.542	0.574	0.580	0.584	0.469	---
2	19.1	0.75	29	1.125	C _V	0.269	1.07	1.67	2.30	3.28	4.51	5.73	7.07	9.11	10.7	0.70
					K _V	0.233	0.926	1.44	1.99	2.84	3.90	4.96	6.12	7.88	9.26	---
					X _T	0.964	0.688	0.709	0.715	0.699	0.690	0.688	0.641	0.531	0.455	---
	25.4	1	29	1.125	C _V	---	0.100	0.890	1.90	3.50	6.50	11.0	15.0	19.0	21.0	0.81
					K _V	---	0.087	0.770	1.64	3.03	5.62	9.52	13.0	16.4	18.2	---
					X _T	---	0.689	0.666	0.691	0.692	0.667	0.646	0.686	0.646	0.690	---
	31.8	1.25	29	1.125	C _V	---	0.220	1.20	2.70	5.00	9.00	15.0	22.0	27.0	31.0	0.81
					K _V	---	0.190	1.04	2.34	4.33	7.79	13.0	19.0	23.4	26.8	---
					X _T	---	0.668	0.685	0.683	0.666	0.694	0.692	0.648	0.667	0.671	---
	38.1	1.5	38	1.5	C _V	---	0.880	2.80	6.30	12.9	21.0	27.2	31.6	34.7	36.8	0.81
					K _V	---	0.761	2.42	5.45	11.2	18.2	23.5	27.3	30.0	31.8	---
					X _T	---	0.682	0.670	0.677	0.740	0.709	0.713	0.717	0.720	0.722	---

1. At 100% travel.
2. Characteristic is equal percentage through 75% of travel.

HPAS
CL900 and 1500

Equal Percentage Cages With Liner
Flow Down through the Port

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HPAS, Equal Percentage, Flow Down														Equal Percentage Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1	19.1	0.75	19	0.75	C _V	0.200	0.296	0.955	1.47	1.98	2.62	3.02	3.66	4.36	5.37	0.87
					K _V	0.173	0.256	0.826	1.27	1.71	2.27	2.61	3.17	3.77	4.65	---
					X _T	0.563	0.714	0.702	0.642	0.677	0.657	0.658	0.650	0.644	0.641	---
2	19.1	0.75	19	0.75	C _V	0.200	0.296	0.955	1.47	1.98	2.62	3.06	3.72	4.46	5.58	0.87
					K _V	0.173	0.256	0.826	1.27	1.71	2.27	2.65	3.22	3.86	4.83	---
					X _T	0.563	0.714	0.702	0.642	0.677	0.657	0.669	0.649	0.660	0.651	---
HPAS, Modified Equal Percentage⁽²⁾, Flow Down														Modified Equal Percentage Characteristic		
1	19.1	0.75	29	1.125	C _V	0.269	1.07	1.67	2.30	3.28	4.51	5.73	6.93	8.06	9.73	0.70
					K _V	0.233	0.926	1.44	1.99	2.84	3.90	4.96	5.99	6.97	8.42	---
					X _T	0.952	0.680	0.700	0.706	0.593	0.535	0.570	0.574	0.577	0.464	---
2	19.1	0.75	29	1.125	C _V	0.269	1.07	1.67	2.30	3.28	4.51	5.73	7.07	9.11	10.7	0.70
					K _V	0.233	0.926	1.44	1.99	2.84	3.90	4.96	6.12	7.88	9.26	---
					X _T	0.952	0.680	0.700	0.706	0.690	0.682	0.680	0.633	0.525	0.450	---
	25.4	1	29	1.125	C _V	---	0.100	0.890	1.90	3.50	6.50	11.0	15.0	19.0	20.0	0.81
					K _V	---	0.087	0.770	1.64	3.03	5.62	9.52	13.0	16.4	17.3	---
					X _T	---	0.681	0.658	0.682	0.684	0.659	0.639	0.678	0.638	0.682	---
	31.8	1.25	29	1.125	C _V	---	0.220	1.20	2.70	5.00	9.00	15.0	22.0	25.7	27.9	0.81
					K _V	---	0.190	1.04	2.34	4.33	7.79	13.0	19.0	22.2	24.1	---
					X _T	---	0.660	0.676	0.675	0.658	0.686	0.684	0.640	0.659	0.663	---
	38.1	1.5	38	1.5	C _V	---	0.880	2.80	6.30	13.2	21.2	27.6	33.1	37.4	40.8	0.81
					K _V	---	0.761	2.42	5.45	11.4	18.3	23.9	28.6	32.4	35.3	---
					X _T	---	0.674	0.662	0.669	0.670	0.695	0.690	0.691	0.689	0.694	---

1. At 100% travel.
2. Characteristic is equal percentage through 75% of travel.



HPAS, Equal Percentage, Flow Down														Equal Percentage Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1	19.1	0.75	19	0.75	C _v	0.200	0.296	0.955	1.47	1.98	2.62	3.02	3.66	4.36	5.37	0.87
					K _v	0.173	0.256	0.826	1.27	1.71	2.27	2.61	3.17	3.77	4.65	---
					X _T	0.569	0.722	0.711	0.649	0.685	0.664	0.665	0.658	0.653	0.648	---
2	19.1	0.75	19	0.75	C _v	0.200	0.296	0.955	1.47	1.98	2.62	3.06	3.72	4.46	5.58	0.87
					K _v	0.173	0.256	0.826	1.27	1.71	2.27	2.65	3.22	3.86	4.83	---
					X _T	0.569	0.722	0.711	0.649	0.685	0.664	0.677	0.657	0.668	0.658	---
HPAS, Modified Equal Percentage ⁽²⁾ , Flow Down														Modified Equal Percentage Characteristic		
1	19.1	0.75	29	1.125	C _v	0.269	1.07	1.67	2.30	3.28	4.51	5.73	6.93	8.06	9.73	0.70
					K _v	0.233	0.926	1.44	1.99	2.84	3.90	4.96	5.99	6.97	8.42	---
					X _T	0.964	0.688	0.709	0.715	0.600	0.542	0.574	0.580	0.584	0.469	---
2	19.1	0.75	29	1.125	C _v	0.269	1.07	1.67	2.30	3.28	4.51	5.73	7.07	9.11	10.7	0.70
					K _v	0.233	0.926	1.44	1.99	2.84	3.90	4.96	6.12	7.88	9.26	---
					X _T	0.964	0.688	0.709	0.715	0.699	0.690	0.688	0.641	0.531	0.455	---
	25.4	1	29	1.125	C _v	---	0.100	0.890	1.90	3.50	6.50	11.0	15.0	19.0	20.0	0.81
					K _v	---	0.087	0.770	1.64	3.03	5.62	9.52	13.0	16.4	17.3	---
					X _T	---	0.689	0.666	0.691	0.692	0.667	0.646	0.686	0.646	0.690	---
	31.8	1.25	29	1.125	C _v	---	0.220	1.20	2.70	5.00	9.00	15.0	22.0	25.7	27.9	0.81
					K _v	---	0.190	1.04	2.34	4.33	7.79	13.0	19.0	22.2	24.1	---
					X _T	---	0.668	0.685	0.683	0.666	0.694	0.692	0.648	0.667	0.671	---
	38.1	1.5	38	1.5	C _v	---	0.880	2.80	6.30	12.9	21.0	27.2	30.0	31.2	31.3	0.81
					K _v	---	0.761	2.42	5.45	11.2	18.2	23.5	25.9	27.0	27.1	---
					X _T	---	0.682	0.670	0.677	0.743	0.707	0.714	0.716	0.716	0.726	---

1. At 100% travel.
2. Characteristic is equal percentage through 75% of travel.

HPAS, CL900, 1500, and 2500 Micro-Flute, Flow Up														Equal Percentage Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1	9.5	0.375	19	0.75	C _v	0.066	0.121	0.200	0.314	0.470	0.674	0.945	1.30	1.74	2.24	0.81
					K _v	0.057	0.105	0.173	0.272	0.407	0.583	0.817	1.12	1.51	1.94	---
					X _T	0.944	0.744	0.652	0.600	0.586	0.585	0.583	0.584	0.582	0.585	---
	12.7	0.5	19	0.75	C _v	0.105	0.184	0.314	0.488	0.716	1.04	1.53	2.30	3.20	4.21	0.84
					K _v	0.091	0.159	0.272	0.422	0.619	0.900	1.32	1.99	2.77	3.64	---
					X _T	0.974	0.792	0.654	0.638	0.630	0.580	0.547	0.497	0.523	0.549	---

HPAS, CL900, 1500, and 2500 Micro-Flute, Flow Down With or Without Liner														Equal Percentage Characteristic		
1 and 2	6.4 1 Flute	0.25 1 Flute	19	0.75	C _v	0.0290	0.0377	0.0470	0.0624	0.0874	0.124	0.175	0.243	0.330	0.407	0.62
					K _v	0.025	0.033	0.041	0.054	0.076	0.107	0.151	0.210	0.285	0.352	---
					X _T	0.990	0.975	0.867	0.765	0.659	0.569	0.494	0.450	0.450	0.550	---
	9.5 1 Flute	0.375 1 Flute	19	0.75	C _v	0.054	0.06	0.073	0.097	0.13	0.174	0.238	0.340	0.503	0.746	0.75
					K _v	0.047	0.052	0.063	0.084	0.112	0.151	0.206	0.294	0.435	0.645	---
					X _T	0.984	0.979	0.978	0.896	0.820	0.760	0.706	0.638	0.570	0.511	---
	12.7 1 Flute	0.5 1 Flute	19	0.75	C _v	0.078	0.090	0.116	0.161	0.228	0.320	0.445	0.641	0.950	1.40	0.72
					K _v	0.067	0.078	0.100	0.139	0.197	0.277	0.385	0.554	0.822	1.211	---
					X _T	0.995	0.990	0.986	0.932	0.846	0.775	0.719	0.653	0.581	0.537	---
	12.7 2 Flutes	0.5 2 Flutes	19	0.75	C _v	0.128	0.161	0.257	0.394	0.539	0.700	0.947	1.38	2.07	2.93	0.71
					K _v	0.111	0.139	0.222	0.341	0.466	0.605	0.819	1.19	1.79	2.53	---
					X _T	0.678	0.736	0.552	0.484	0.516	0.586	0.610	0.556	0.490	0.488	---

1. At 100% travel.

HPAS, CL900, 1500, and 2500, Micro-Flat Anti-Cavitation, Flow Down With or Without Liner														Linear Characteristic		
Valve Size, NPS	Port Diameter ⁽²⁾		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1	9.5 2 Flats	0.375 2 Flats	19	0.75	C _v	0.010	0.017	0.077	0.162	0.264	0.381	0.510	0.651	0.801	0.961	0.82
					K _v	0.009	0.015	0.067	0.140	0.228	0.330	0.441	0.563	0.693	0.831	---
					X _T	0.648	0.678	0.678	0.678	0.678	0.678	0.678	0.678	0.678	0.678	0.678
	12.7 2 Flats	0.5 2 Flats	19	0.75	C _v	0.027	0.031	0.144	0.301	0.491	0.708	0.947	1.21	1.48	1.71	0.82
					K _v	0.023	0.027	0.125	0.260	0.425	0.612	0.819	1.05	1.28	1.48	---
					X _T	0.703	0.678	0.678	0.678	0.678	0.678	0.678	0.678	0.678	0.678	0.678
	19.1 2 Flats	0.75 2 Flats	19	0.75	C _v	0.067	0.095	0.224	0.452	0.770	1.14	1.51	2.00	2.50	2.92	0.82
					K _v	0.058	0.082	0.194	0.391	0.666	0.986	1.31	1.73	2.16	2.53	---
					X _T	0.931	0.929	0.919	0.905	0.830	0.783	0.800	0.751	0.726	0.681	---
2	25.4 2 Flats	1 2 Flats	29	1.125	C _v	0.018	0.237	0.728	1.40	2.18	3.05	4.06	5.26	6.58	7.61	0.81
					K _v	0.016	0.205	0.630	1.21	1.89	2.64	3.51	4.55	5.69	6.58	---
					X _T	0.911	0.763	0.676	0.671	0.680	0.679	0.659	0.615	0.579	0.588	---

1. At 100% travel.
 2. Micro-Flat Anti-Cavitation trims use a shutoff port diameter which is 0.125 inch larger than the flowing port diameter. Use the shutoff port diameter for actuator sizing.

Note: If ΔP exceeds 1000 psig, the life span of the Micro-Flat trim may be shortened.

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HPAS, Micro-Form, Flow Up														Equal Percentage Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1	6.4	0.25	19	0.75	C _v	0.089	0.123	0.175	0.242	0.331	0.456	0.643	0.910	1.24	1.58	0.93
					K _v	0.077	0.106	0.151	0.209	0.286	0.394	0.556	0.787	1.07	1.37	---
					X _T	0.658	0.666	0.611	0.603	0.613	0.613	0.588	0.578	0.616	0.651	---
	12.7	0.5	19	0.75	C _v	0.259	0.391	0.570	0.815	1.15	1.59	2.22	3.13	4.39	5.75	0.98
					K _v	0.224	0.338	0.493	0.705	0.995	1.38	1.92	2.71	3.80	4.97	---
					X _T	0.633	0.606	0.576	0.572	0.576	0.593	0.604	0.624	0.662	0.691	---
	19.1	0.75	19	0.75	C _v	0.464	0.695	0.987	1.43	2.12	3.16	4.71	6.89	9.56	11.4	0.97
					K _v	0.401	0.601	0.854	1.24	1.83	2.73	4.07	5.96	8.27	9.86	---
					X _T	0.670	0.628	0.624	0.615	0.600	0.594	0.600	0.622	0.669	0.729	---
2	6.4	0.25	19	0.75	C _v	0.089	0.123	0.175	0.242	0.331	0.456	0.643	0.910	1.24	1.58	0.93
					K _v	0.077	0.106	0.151	0.209	0.286	0.394	0.556	0.787	1.07	1.37	---
					X _T	0.658	0.666	0.611	0.603	0.613	0.613	0.588	0.578	0.616	0.651	---
	12.7	0.5	19	0.75	C _v	0.259	0.391	0.570	0.815	1.15	1.59	2.22	3.13	4.39	5.75	0.98
					K _v	0.224	0.338	0.493	0.705	0.995	1.38	1.92	2.71	3.80	4.97	---
					X _T	0.633	0.606	0.576	0.572	0.576	0.593	0.604	0.624	0.662	0.691	---
	19.1	0.75	19	0.75	C _v	0.464	0.695	0.987	1.43	2.12	3.16	4.71	6.89	9.56	11.4	0.97
					K _v	0.401	0.601	0.854	1.24	1.83	2.73	4.07	5.96	8.27	9.86	---
					X _T	0.670	0.628	0.624	0.615	0.600	0.594	0.600	0.622	0.669	0.729	---

1. At 100% travel.

HPAS, Micro-Form, Flow Up														Modified Equal Percentage Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1	19.1	0.75	29	1.125	C _v	0.610	1.10	1.79	3.01	5.75	9.07	11.2	12.1	13.4	14.5	0.95
					K _v	0.528	0.952	1.55	2.60	4.97	9.07	9.69	10.5	11.6	12.5	---
					X _T	0.563	0.559	0.567	0.567	0.567	0.567	0.567	0.567	0.555	0.567	---
	25.4	1	29	1.125	C _v	0.973	1.86	3.18	5.86	9.22	12.4	14.6	16.1	18.2	19.5	0.89
					K _v	0.842	1.61	2.75	5.07	7.98	10.7	12.6	13.9	15.7	16.9	---
					X _T	0.680	0.634	0.568	0.571	0.571	0.571	0.571	0.571	0.567	0.571	---
2	25.4	1	29	1.125	C _v	0.973	1.86	3.18	5.86	10.5	16.6	21.8	24.8	26.3	27.5	0.89
					K _v	0.842	1.61	2.75	5.07	9.08	14.4	18.9	21.5	22.7	23.8	---
					X _T	0.680	0.634	0.568	0.571	0.591	0.635	0.667	0.660	0.602	0.553	---
	38.1	1.25	29	1.125	C _v	1.09	1.87	3.89	8.77	17.4	26.4	31.6	34.6	40.6	47.6	0.98
					K _v	0.943	1.62	3.36	7.59	15.1	22.8	27.3	29.9	35.1	41.2	---
					X _T	0.702	0.630	0.524	0.547	0.653	0.729	0.753	0.761	0.659	0.479	---
31.8	1.5	38	1.5	C _v	2.43	4.43	9.01	17.2	27.9	37.5	44.2	50.0	56.9	58.3	0.97	
				K _v	2.10	3.83	7.79	14.9	24.1	32.4	38.2	43.3	49.2	50.4	---	
				X _T	0.619	0.520	0.499	0.583	0.691	0.749	0.758	0.723	0.640	0.623	---	

1. At 100% travel.

**HPAS
CL2500**

Micro-Form Valve Plug
Flow Up through the Port

HPAS, Micro-Form, Flow Up														Equal Percentage Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1	6.4	0.25	19	0.75	C _v	0.089	0.123	0.175	0.242	0.331	0.456	0.643	0.910	1.24	1.58	0.93
					K _v	0.077	0.106	0.151	0.209	0.286	0.394	0.556	0.787	1.07	1.37	---
					X _T	0.658	0.666	0.611	0.603	0.613	0.613	0.588	0.578	0.616	0.651	---
	12.7	0.5	19	0.75	C _v	0.259	0.391	0.570	0.815	1.15	1.59	2.22	3.13	4.39	5.75	0.98
					K _v	0.224	0.338	0.493	0.705	0.995	1.38	1.92	2.71	3.80	4.97	---
					X _T	0.633	0.606	0.576	0.572	0.576	0.593	0.604	0.624	0.662	0.691	---
	19.1	0.75	19	0.75	C _v	0.464	0.695	0.987	1.43	2.12	3.16	4.71	6.89	9.37	10.9	0.97
					K _v	0.401	0.601	0.854	1.24	1.83	2.73	4.07	5.96	8.11	9.43	---
					X _T	0.670	0.628	0.624	0.615	0.600	0.594	0.600	0.622	0.670	0.737	---
2	6.4	0.25	19	0.75	C _v	0.089	0.123	0.175	0.242	0.331	0.456	0.643	0.910	1.24	1.58	0.93
					K _v	0.077	0.106	0.151	0.209	0.286	0.394	0.556	0.787	1.07	1.37	---
					X _T	0.658	0.666	0.611	0.603	0.613	0.613	0.588	0.578	0.616	0.651	---
	12.7	0.5	19	0.75	C _v	0.259	0.391	0.570	0.815	1.15	1.59	2.22	3.13	4.39	5.75	0.98
					K _v	0.224	0.338	0.493	0.705	0.995	1.38	1.92	2.71	3.80	4.97	---
					X _T	0.633	0.606	0.576	0.572	0.576	0.593	0.604	0.624	0.662	0.691	---
	19.1	0.75	19	0.75	C _v	0.464	0.695	0.987	1.43	2.12	3.16	4.71	6.89	9.56	11.4	0.97
					K _v	0.401	0.601	0.854	1.24	1.83	2.73	4.07	5.96	8.27	9.86	---
					X _T	0.670	0.628	0.624	0.615	0.600	0.594	0.600	0.622	0.669	0.729	---
25.4	1	19	0.75	C _v	0.927	1.35	1.87	2.64	3.88	5.81	8.66	12.6	16.6	18.9	0.91	
				K _v	0.802	1.17	1.62	2.28	3.36	5.03	7.49	10.9	14.4	16.3	---	
				X _T	0.431	0.636	0.594	0.603	0.615	0.600	0.566	0.540	0.581	0.676	---	

1. At 100% travel.

HPAS, Micro-Form, Flow Up														Modified Equal Percentage Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1	25.4	1	29	1.125	C _v	0.973	1.86	3.18	5.86	8.94	11.9	13.9	14.1	14.2	14.3	0.89
					K _v	0.842	1.61	2.75	5.07	7.73	10.3	12.0	12.2	12.3	12.4	---
					X _T	0.680	0.634	0.568	0.571	0.568	0.569	0.569	0.569	0.569	0.569	---
2	25.4	1	29	1.125	C _v	0.973	1.86	3.18	5.86	10.5	16.1	20.7	23.3	24.6	25.6	0.89
					K _v	0.842	1.61	2.75	5.07	9.08	13.9	17.9	20.2	21.3	22.1	---
					X _T	0.680	0.634	0.568	0.571	0.591	0.635	0.669	0.661	0.601	0.559	---
	31.8	1.25	29	1.125	C _v	1.09	1.87	3.89	8.77	16.9	24.6	29.1	31.1	34.5	36.6	0.98
					K _v	0.943	1.62	3.36	7.59	14.6	21.3	25.2	26.9	29.8	31.7	---
					X _T	0.702	0.630	0.524	0.547	0.651	0.734	0.747	0.763	0.655	0.614	---
38.1	1.5	38	1.5	C _v	2.43	4.43	9.01	16.7	25.9	32.6	35.4	38.5	41.0	43.0	0.97	
				K _v	2.10	3.83	7.79	14.4	22.4	28.2	30.6	33.3	35.5	37.2	---	
				X _T	0.619	0.520	0.499	0.581	0.693	0.747	0.751	0.721	0.646	0.587	---	

1. At 100% travel.

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HPAS, CL900 and 1500, Whisper Trim III, Flow Up																	Linear Characteristic
Cage Level	Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										
		mm	Inches	mm	Inches		Minimum ⁽¹⁾	10	20	30	40	50	60	70	80	90	100
A1 ⁽²⁾	2	47.6	1.875	38	1.5	C _V	1.00	2.50	7.50	12.8	17.7	22.3	26.6	31.2	35.5	39.5	42.6
						K _V	0.865	2.16	6.49	11.1	15.3	19.3	23.0	27.0	30.7	34.2	36.8
						X _T	0.727	0.686	0.605	0.609	0.613	0.607	0.613	0.606	0.607	0.603	0.607

HPAS, CL2500, Whisper Trim III, Flow Up																	Linear Characteristic
Cage Level	Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										
		mm	Inches	mm	Inches		Minimum ⁽¹⁾	10	20	30	40	50	60	70	80	90	100
A1 ⁽²⁾	2	47.6	1.875	38	1.5	C _V	1.00	2.50	7.50	12.8	17.7	22.3	26.6	28.7	31.4	34.0	36.2
						K _V	0.865	2.16	6.49	11.1	15.3	19.3	23.0	24.8	27.2	29.4	31.3
						X _T	0.727	0.686	0.605	0.609	0.593	0.576	0.554	0.597	0.595	0.592	0.595

1. Valve should not be required to throttle at less than the minimum coefficient for an extended time, or erosion damage to the valve seat may result.
2. Larger capacities may be available with level A1 cages depending on service conditions.

HPAS, CL900 and 1500, Cavitrol III, Flow Down																	Linear Characteristic		
Trim Stage	Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Minimum Throttling C _V ⁽¹⁾	Valve Opening—Percent of Total Travel											F _L ⁽²⁾
		mm	Inches	mm	Inches			10	20	30	40	50	60	70	80	90	100		
Two Stage	1	22.2	0.875	38	1.5	C _V	0.360	---	0.836	1.80	2.74	3.64	4.51	5.36	6.18	6.91	7.39	0.98	
						K _V	0.311	---	0.723	1.56	2.37	3.15	3.90	4.64	5.35	5.98	6.39	---	
Three Stage	2	25.4	1	50	2	C _V	0.590	0.272	1.10	1.98	2.82	3.63	4.46	5.30	6.07	6.61	6.73	0.99	
						K _V	0.510	0.235	0.952	1.71	2.44	3.14	3.86	4.58	5.25	5.72	5.82	---	

HPAS, CL2500, Cavitrol III, Flow Down																	Linear Characteristic		
Trim Stage	Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Minimum Throttling C _V ⁽¹⁾	Valve Opening—Percent of Total Travel											F _L ⁽²⁾
		mm	Inches	mm	Inches			10	20	30	40	50	60	70	80	90	100		
Two Stage	1	22.2	0.875	38	1.5	C _V	0.360	---	0.836	1.80	2.74	3.64	4.51	5.36	5.87	6.53	6.91	0.98	
						K _V	0.311	---	0.723	1.56	2.37	3.15	3.90	4.64	5.08	5.65	5.98	---	
Three Stage	2	25.4	1	50	2	C _V	0.590	0.272	1.10	1.98	2.82	3.63	4.46	5.30	6.07	6.61	6.73	0.99	
						K _V	0.510	0.235	0.952	1.71	2.44	3.14	3.86	4.58	5.25	5.72	5.82	---	

1. Valves should not be required to throttle at a C_V less than the specified minimum C_V for an extended period. Erosion damage to the valve seats may result.
2. At 100% travel.

HPAT CL900, CL1500, and CL2500

Linear Cages
Flow Down through the Port

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HPAT, CL900 and 1500, Cavitrol™ III, Flow Down																	Linear Characteristic	
Trim Stage	Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Minimum Throttling $C_v^{(1)}$	Valve Opening—Percent of Total Travel										$F_L^{(2)}$
		mm	Inches	mm	Inches			10	20	30	40	50	60	70	80	90	100	
Two Stage	2	44.4	1.75	50	2	C_v	0.580	1.07	1.97	3.29	4.86	6.58	8.36	10.0	11.7	13.0	14.0	0.98
						K_v	0.502	0.926	1.70	2.85	4.20	5.69	7.23	8.74	10.1	11.2	12.1	---
	3	44.4	1.75	50	2	C_v	0.580	1.07	1.97	3.29	4.86	6.58	8.36	10.1	11.7	13.0	14.0	0.98
						K_v	0.502	0.926	1.70	2.85	4.20	5.69	7.23	8.74	10.1	11.2	12.1	---
	4	63.5	2.5	64	2.5	C_v	0.720	1.46	4.98	9.24	13.2	17.0	20.7	24.7	28.5	31.9	34.4	0.98
						K_v	0.623	1.26	4.31	7.99	11.4	14.7	17.9	21.4	24.7	27.6	29.8	---
	6	87.3	3.4375	76	3	C_v	0.900	2.61	9.01	15.6	21.8	28.3	34.8	40.4	46.4	52.2	58.1	0.98
						K_v	0.778	2.26	7.79	13.5	18.9	24.5	30.1	34.9	40.1	45.2	50.3	---
	8	133.3	5.25	102	4	C_v	1.72	7.50	20.7	33.8	47.0	60.1	73.3	87.0	100	112	123	0.98
						K_v	1.49	6.49	17.9	29.2	40.7	52.0	63.4	75.3	86.5	96.9	106	---
Three Stage	4	47.6	1.875	64	2.5	C_v	1.20	0.747	2.02	3.92	6.15	8.01	9.5	11.0	12.8	14.9	16.5	0.99
						K_v	1.04	0.646	1.75	3.39	5.32	6.93	8.2	9.52	11.1	12.9	14.3	---
	6	73.0	2.875	76	3	C_v	1.70	2.80	5.50	8.30	11.0	13.9	16.7	19.4	22.2	25.0	27.8	0.99
						K_v	1.47	2.42	4.76	7.18	9.52	12.0	14.4	16.8	19.2	21.6	24.0	---
	8	115.9	4.5625	102	4	C_v	3.10	6.10	13.2	19.8	26.1	34.1	41.5	48.2	54.5	60.9	65.0	0.99
						K_v	2.68	5.28	11.4	17.1	22.6	29.5	35.9	41.7	47.1	52.7	56.2	---

HPAT, CL2500, Cavitrol III, Flow Down																	Linear Characteristic	
Two Stage	2	44.4	1.75	50	2	C_v	0.580	1.07	1.97	3.29	4.86	6.58	8.36	10.1	11.7	13.0	14.0	0.98
						K_v	0.502	0.926	1.70	2.85	4.20	5.69	7.23	8.74	10.1	11.2	12.1	---

1. Valves should not be required to throttle at a C_v less than the specified minimum C_v for an extended period. Erosion damage to the valve seats may result.
2. At 100% travel.

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HPD, CL900 and 1500, Linear															Linear Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
2	47.6	1.875	38	1.5	C _v	---	3.49	12.5	22.9	31.8	38.4	43.0	46.7	49.9	52.2	0.91
					K _v	---	3.02	10.8	19.8	27.5	33.2	37.2	40.4	43.2	45.2	---
					X _T	---	0.811	0.632	0.682	0.743	0.829	0.780	0.743	0.726	0.695	---
					F _d	0.89	0.62	0.44	0.30	0.24	0.22	0.19	0.17	0.16	0.15	---
3	73.0	2.875	50	2	C _v	---	8.72	31.5	55.1	74.6	89.4	101	110	117	121	0.93
					K _v	---	7.54	27.2	47.7	64.5	77.3	87.4	95.2	101	105	---
					X _T	---	0.589	0.580	0.653	0.728	0.775	0.795	0.791	0.777	0.773	---
					F _d	0.48	0.28	0.21	0.17	0.15	0.13	0.12	0.11	0.11	0.10	---
4	92.1	3.625	50	2	C _v	6.91	26.4	54.7	86.4	117	143	165	182	194	201	0.91
					K _v	5.98	22.8	47.3	74.7	101	124	143	157	168	174	---
					X _T	0.327	0.581	0.576	0.509	0.525	0.602	0.673	0.708	0.714	0.726	---
					F _d	0.28	0.21	0.15	0.13	0.11	0.098	0.090	0.082	0.077	0.073	---
6	136.5	5.375	76	3	C _v	8.78	63.3	149	231	298	350	385	408	424	425	0.91
					K _v	7.59	54.8	129	200	258	303	333	353	367	368	---
					X _T	0.763	0.613	0.544	0.574	0.621	0.671	0.721	0.745	0.709	0.726	---
					F _d	0.24	0.12	0.094	0.076	0.067	0.058	0.054	0.050	0.047	0.046	---
HPD, CL900 and 1500, Equal Percentage															Equal Percentage Characteristic	
2	47.6	1.875	29	1.125	C _v	---	1.02	3.26	7.53	13.3	19.8	26.4	32.0	36.2	41.0	0.93
					K _v	---	0.882	2.82	6.51	11.5	17.1	22.8	27.7	31.3	35.5	---
					X _T	---	0.745	0.619	0.595	0.587	0.593	0.633	0.721	0.791	0.791	---
					F _d	1.00	0.76	0.50	0.40	0.31	0.28	0.24	0.22	0.20	0.19	---
3	73.0	2.875	38	1.5	C _v	---	1.21	4.21	11.3	23.0	37.6	53.2	69.5	85.3	92.7	0.92
					K _v	---	1.05	3.64	9.77	19.9	32.5	46.0	60.1	73.8	80.2	---
					X _T	---	0.954	0.761	0.600	0.558	0.592	0.661	0.705	0.706	0.768	---
					F _d	1.00	0.54	0.44	0.31	0.23	0.19	0.17	0.15	0.14	0.13	---
4	92.1	3.625	38	1.5	C _v	3.12	7.35	13.9	23.4	37.9	60.1	90.6	123	147	165	0.85
					K _v	2.70	6.36	12.0	20.2	32.8	52.0	78.4	106	127	143	---
					X _T	0.676	0.551	0.524	0.488	0.449	0.443	0.463	0.509	0.569	0.683	---
					F _d	---	0.43	0.33	0.24	0.18	0.15	0.13	0.11	0.096	0.088	---
6	136.5	5.375	63.5	2.5	C _v	3.90	13.3	23.1	36.2	63.0	105	156	217	280	319	0.82
					K _v	3.37	11.5	20.0	31.3	54.5	90.8	135	188	242	276	---
					X _T	0.961	0.686	0.615	0.584	0.540	0.513	0.496	0.480	0.513	0.593	---
					F _d	0.38	0.34	0.25	0.20	0.15	0.12	0.098	0.084	0.073	0.066	---
HPD, CL900 and 1500, Modified Equal Percentage ⁽²⁾															Modified Equal Percentage Characteristic	
2	47.6	1.875	38	1.5	C _v	---	2.28	7.52	15.7	24.1	31.6	38.2	43.5	46.7	49.0	0.93
					K _v	---	1.97	6.50	13.6	20.8	27.3	33.0	37.6	40.4	42.4	---
					X _T	---	0.641	0.571	0.584	0.634	0.698	0.778	0.803	0.771	0.770	---
					F _d	0.99	0.49	0.40	0.30	0.26	0.22	0.20	0.18	0.16	0.16	---
3	73.0	2.875	50	2	C _v	0.475	3.07	11.8	26.8	46.6	69.3	89.5	100	103	114	0.95
					K _v	0.411	2.66	10.2	23.2	40.3	59.9	77.4	86.5	89.1	98.6	---
					X _T	0.949	0.712	0.550	0.604	0.682	0.697	0.706	0.762	0.856	0.783	---
					F _d	0.78	0.49	0.31	0.22	0.18	0.15	0.14	0.12	0.11	0.11	---
4	92.1	3.625	50	2	C _v	4.33	11.3	23.3	45.0	79.6	121	155	176	192	203	0.89
					K _v	3.75	9.77	20.2	38.9	68.9	105	134	152	166	176	---
					X _T	0.624	0.523	0.482	0.450	0.453	0.502	0.599	0.696	0.723	0.735	---
					F _d	0.29	0.34	0.24	0.18	0.13	0.11	0.094	0.084	0.077	0.073	---
6	136.5	5.375	76	3	C _v	5.22	16.6	30.8	55.0	100	168	241	299	351	378	0.89
					K _v	4.52	14.4	26.6	47.6	86.5	145	208	259	304	327	---
					X _T	0.883	0.725	0.571	0.597	0.592	0.514	0.526	0.623	0.667	0.725	---
					F _d	0.43	0.28	0.22	0.16	0.12	0.095	0.079	0.068	0.060	0.057	---

1. At 100% travel.
2. Characteristic is equal percentage through 75% of travel.

HPD and HPT CL2500

Linear and Equal Percentage Cages
Flow Down through the Port

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HPD, CL2500, Linear															Linear Characteristic	
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
2	47.6	1.875	25.4	1	C _v	0.686	0.937	4.03	10.1	17.3	24.0	29.0	32.6	35.5	37.9	0.81
					K _v	0.593	0.811	3.49	8.74	15.0	20.8	25.1	28.2	30.7	32.8	---
					X _T	0.888	0.675	0.533	0.566	0.616	0.656	0.702	0.733	0.747	0.722	---
HPD, CL2500, Equal Percentage															Equal Percentage Characteristic	
2	47.6	1.875	25.4	1	C _v	0.596	1.09	2.58	5.61	10.1	15.4	20.9	26.2	30.8	34.7	0.83
					K _v	0.516	0.943	2.23	4.85	8.74	13.3	18.1	22.7	26.6	30.0	---
					X _T	0.816	0.667	0.631	0.602	0.588	0.594	0.633	0.686	0.721	0.719	---
HPD, CL2500, Modified Equal Percentage															Modified Equal Percentage Characteristic	
2	47.6	1.875	28.6	1.125	C _v	0.622	1.34	3.52	7.73	13.4	19.5	25.5	31.0	34.7	38.0	0.81
					K _v	0.538	1.16	3.04	6.69	11.6	16.9	22.1	26.8	30.0	32.9	---
					X _T	0.667	0.664	0.640	0.570	0.586	0.635	0.669	0.712	0.757	0.707	---

1. At 100% travel.

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HPD, Whisper Trim III--CL900 and 1500, Flow Up																	Linear Characteristic
Cage Level	Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										
		mm	Inches	mm	Inches		Mini- mum ⁽¹⁾	10	20	30	40	50	60	70	80	90	100
A1 ⁽²⁾	2	47.6	1.875	38	1.5	C _V	1.20	3.00	7.70	13.0	17.8	22.3	26.4	31.0	35.3	39.0	42.0
						K _V	1.04	2.59	6.66	11.2	15.4	19.3	22.8	26.8	30.5	33.7	36.3
						X _T	0.569	0.516	0.602	0.604	0.610	0.607	0.618	0.608	0.607	0.612	0.608
	3	73.0	2.875	50	2	C _V	1.26	6.57	24.1	42.1	58.9	74.0	86.8	97.4	105	110	111
						K _V	1.09	5.68	20.8	36.4	50.9	64.0	75.1	84.3	90.8	95.2	96.0
						X _T	0.826	0.727	0.610	0.560	0.558	0.588	0.641	0.687	0.723	0.738	0.772
	4	92.1	3.625	50	2	C _V	1.88	7.56	27.3	50.1	71.5	90.8	109	126	142	155	162
						K _V	1.63	6.54	23.6	43.3	61.8	78.5	94.3	109	123	134	140
						X _T	0.538	0.625	0.586	0.545	0.519	0.520	0.542	0.577	0.614	0.640	0.674
	6	136.5	5.375	76	3	C _V	13.8	28.6	66.4	103	142	180	220	253	284	308	324
						K _V	11.9	24.7	57.4	89.1	123	156	190	219	246	266	280
						X _T	0.478	0.423	0.513	0.533	0.525	0.557	0.535	0.543	0.560	0.598	0.627
HPD, Whisper Trim III--CL2500, Flow Up																	Linear Characteristic
A1 ⁽²⁾	2	47.6	1.875	38	1.5	C _V	---	3.1	8.4	13.1	17.3	21.4	25.1	28.3	30.8	32.9	34.9
						K _V	---	2.68	7.27	11.3	15.0	18.5	21.7	24.5	26.6	28.5	30.2
						X _T	0.569	0.516	0.602	0.604	0.610	0.607	0.618	0.608	0.607	0.612	0.608
HPD, Whisper Trim III--CL900 and 1500, Flow Up																	Linear Characteristic
B1	3	73.0	2.875	50	2	C _V	4.1	3.00	9.00	14.4	18.6	23.4	28.5	34.6	40.2	45.0	48.8
						K _V	0.689	2.59	7.79	12.5	16.1	20.2	24.7	29.9	34.8	38.9	42.2
						X _T	0.796	0.615	0.618	0.592	0.622	0.622	0.633	0.620	0.624	0.622	0.622
B3	4	92.1	3.625	50	2	C _V	3.50	8.00	20.0	30.0	40.0	52.0	62.0	73.0	82.0	88.9	88.9
						K _V	3.03	6.92	17.3	25.9	34.6	45.0	53.6	63.1	70.9	76.9	76.9
						X _T	0.617	0.591	0.531	0.524	0.517	0.513	0.509	0.517	0.527	0.522	0.522
						F _d	---	0.13	0.087	0.062	0.053	0.048	0.042	0.039	0.036	0.034	0.034
B3	6	136.5	5.375	76	3	C _V	8.00	13	30	50	69	87	107	125	143	160	166
						K _V	6.92	11.2	25.9	43.3	59.7	75.3	92.6	108	124	138	144
						X _T	0.610	0.577	0.580	0.548	0.552	0.563	0.545	0.554	0.552	0.555	0.554
						F _d	---	0.087	0.051	0.042	0.034	0.031	0.028	0.026	0.024	0.022	0.022
C3	4	92.1	3.625	50	2	C _V	3.50	8.00	15.0	21.5	28.0	34.4	41.0	47.3	53.5	56.5	56.8
						K _V	3.03	6.92	13.0	18.6	24.2	29.8	35.5	40.9	46.3	48.9	49.1
						X _T	0.617	0.526	0.516	0.530	0.530	0.539	0.535	0.540	0.538	0.540	0.540
						F _d	---	0.14	0.11	0.079	0.064	0.060	0.053	0.047	0.046	0.042	0.042
C3	6	136.5	5.375	76	3	C _V	8.00	8.30	20.5	33.0	44.3	57.0	69.0	83.0	96.5	108	112
						K _V	6.92	7.18	17.7	28.5	38.3	49.3	59.7	71.8	83.5	93.4	96.9
						X _T	0.563	0.567	0.575	0.572	0.572	0.556	0.568	0.563	0.561	0.559	0.563
						F _d	---	0.093	0.067	0.051	0.045	0.039	0.036	0.032	0.031	0.029	0.028
D3	4	73.0	2.875	50	2	C _V	2.30	4.00	7.90	11.5	15.2	18.8	22.8	27.0	30.8	33.7	37.1
						K _V	1.99	3.46	6.83	9.95	13.1	16.3	19.7	23.4	26.6	29.2	32.1
						X _T	0.554	0.517	0.525	0.540	0.526	0.533	0.536	0.534	0.530	0.533	0.530
	6	111.1	4.375	76	3	C _V	2.30	7.00	14.0	20.7	28.0	34.8	41.6	48.5	55.7	62.5	69.6
						K _V	1.99	6.05	12.1	17.9	24.2	30.1	36.0	42.0	48.2	54.1	60.2
						X _T	0.579	0.563	0.557	0.572	0.557	0.569	0.564	0.566	0.562	0.566	0.564

1. Valve should not be required to throttle at less than the minimum coefficient for an extended time, or erosion damage to the valve seat may result.
2. Larger capacities may be available with level A1 cages depending on service conditions.

Notes: The coefficients on this page are also appropriate for the HPT.

HPS
CL900, 1500, and 2500

Linear and Equal Percentage Valve Plug
Flow Up through the Port

HPS, CL900 and 1500, Flow Up														Linear Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
2	47.6	1.875	38	1.5	C _v	---	3.56	11.7	23.0	33.9	42.3	47.5	50.7	53.4	54.6	0.98
					K _v	---	3.08	10.1	19.9	29.3	36.6	41.1	43.9	46.2	47.2	---
					X _T	---	0.767	0.681	0.658	0.666	0.693	0.718	0.728	0.719	0.711	---
					F _d	0.89	0.62	0.44	0.30	0.24	0.22	0.19	0.17	0.16	0.15	---
3	73.0	2.875	50	2	C _v	---	9.01	30.6	55.6	78.9	97.7	111	120	125	127	0.96
					K _v	---	7.79	26.5	48.1	68.2	84.5	96.0	104	108	110	---
					X _T	---	0.660	0.636	0.663	0.687	0.713	0.734	0.742	0.742	0.739	---
					F _d	0.48	0.28	0.21	0.17	0.15	0.13	0.12	0.11	0.11	0.10	---
HPS, CL2500, Flow Up														Linear Characteristic		
2	47.6	1.875	25	1	C _v	0.645	0.996	3.51	8.74	15.9	23.5	30.0	34.3	37.0	40.9	>0.96
					K _v	0.558	0.862	3.04	7.56	13.8	20.3	26.0	29.7	32.0	35.4	---
					X _T	0.905	0.813	0.715	0.701	0.703	0.704	0.701	0.699	0.699	0.710	---
HPS, CL900 and 1500, Flow Up														Equal Percentage Characteristic		
2	47.6	1.875	29	1.125	C _v	---	1.09	3.04	6.77	12.2	18.9	26.7	34.5	40.5	45.8	0.92
					K _v	---	0.943	2.63	5.86	10.6	16.3	23.1	29.8	35.0	39.6	---
					X _T	---	0.357	0.670	0.717	0.670	0.629	0.598	0.597	0.632	0.652	---
					F _d	1.00	0.76	0.50	0.40	0.31	0.28	0.24	0.22	0.20	0.19	---
3	73.0	2.875	38	1.5	C _v	---	1.23	4.08	10.7	21.7	36.5	53.7	72.2	90.2	101	0.88
					K _v	---	1.06	3.53	9.26	18.8	31.6	46.5	62.5	78.0	87.4	---
					X _T	---	0.967	0.821	0.685	0.634	0.628	0.641	0.659	0.672	0.730	---
					F _d	1.00	0.54	0.44	0.31	0.23	0.19	0.17	0.15	0.14	0.13	---
HPS, CL2500, Flow Up														Equal Percentage Characteristic		
2	47.6	1.875	25	1	C _v	0.653	0.977	2.35	5.14	9.18	14.2	20.1	26.2	30.7	35.7	>0.96
					K _v	0.565	0.845	2.03	4.45	7.94	12.3	17.4	22.7	26.6	30.9	---
					X _T	0.997	0.912	0.785	0.708	0.680	0.690	0.733	0.763	0.768	0.751	---
HPS, CL900 and 1500, Flow Up														Modified Equal Percentage Characteristic		
2	47.6	1.875	38	1.5	C _v	---	2.19	6.69	14.5	24.1	33.7	42.4	48.9	51.9	54.4	0.95
					K _v	---	1.89	5.79	12.5	20.8	29.2	36.7	42.3	44.9	47.1	---
					X _T	---	0.594	0.741	0.648	0.592	0.602	0.641	0.660	0.663	0.670	---
					F _d	0.99	0.49	0.40	0.30	0.26	0.22	0.20	0.18	0.16	0.16	---
3	73.0	2.875	50	2	C _v	---	2.78	10.6	26.3	47.9	71.5	93.6	109	116	124	0.95
					K _v	---	2.40	9.17	22.7	41.4	61.8	81.0	94.3	100	107	---
					X _T	---	0.902	0.690	0.625	0.637	0.666	0.689	0.725	0.783	0.757	---
					F _d	0.78	0.49	0.31	0.22	0.18	0.15	0.14	0.12	0.11	0.11	---
HPS, CL2500, Flow Up														Modified Equal Percentage Characteristic		
2	47.6	1.875	29	1.125	C _v	0.654	1.21	3.18	7.07	12.4	18.4	25.1	31.5	35.6	40.0	>0.96
					K _v	0.566	1.05	2.75	6.12	10.7	15.9	21.7	27.2	30.8	34.6	---
					X _T	0.998	0.595	0.430	0.374	0.370	0.413	0.471	0.526	0.571	0.689	---

1. At 100% travel.



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Flow Up through the Port

HPS, CL900, 1500, and 2500, Micro-Flute, Flow Up														Equal Percentage Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1	6.4 1 Flute	0.25 1 Flute	19	0.75	C _v	0.039	0.046	0.056	0.072	0.094	0.124	0.162	0.212	0.278	0.354	0.87
					K _v	0.034	0.040	0.048	0.062	0.081	0.107	0.140	0.183	0.240	0.306	---
					X _T	0.778	0.734	0.690	0.653	0.642	0.635	0.637	0.634	0.632	0.656	---
	6.4 3 Flutes	0.25 3 Flutes	19	0.75	C _v	0.053	0.073	0.101	0.146	0.216	0.312	0.433	0.588	0.802	1.07	0.90
					K _v	0.046	0.063	0.087	0.126	0.187	0.270	0.375	0.509	0.694	0.926	---
					X _T	0.692	0.648	0.639	0.625	0.600	0.586	0.597	0.613	0.620	0.624	---
	12.7	0.5	19	0.75	C _v	0.105	0.184	0.314	0.488	0.716	1.04	1.53	2.30	3.20	4.21	0.84
					K _v	0.091	0.159	0.272	0.422	0.619	0.900	1.32	1.99	2.77	3.64	---
					X _T	0.974	0.792	0.654	0.638	0.630	0.580	0.547	0.497	0.523	0.549	---

1. At 100% travel.

HPS, CL900 and 1500, Micro-Form, Flow Up														Equal Percentage Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1	6.4	0.25	19	0.75	C _v	0.072	0.102	0.138	0.209	0.309	0.438	0.630	0.894	1.22	1.61	0.96
					K _v	0.062	0.088	0.119	0.181	0.267	0.379	0.545	0.773	1.06	1.39	---
					X _T	0.972	0.971	0.986	0.792	0.668	0.611	0.611	0.609	0.606	0.610	---
	12.7	0.5	19	0.75	C _v	0.269	0.404	0.555	0.738	1.03	1.52	2.18	3.10	4.23	5.39	0.97
					K _v	0.233	0.349	0.480	0.638	0.891	1.31	1.89	2.68	3.66	4.66	---
					X _T	0.789	0.708	0.702	0.650	0.626	0.572	0.583	0.606	0.646	0.713	---
	19.1	0.75	19	0.75	C _v	0.384	0.577	0.941	1.39	2.02	2.93	4.40	6.58	8.45	9.61	0.95
					K _v	0.332	0.499	0.814	1.20	1.75	2.53	3.81	5.69	7.31	8.31	---
					X _T	0.532	0.774	0.714	0.587	0.579	0.584	0.588	0.607	0.672	0.773	---
2	6.4	0.25	19	0.75	C _v	0.072	0.102	0.138	0.209	0.309	0.438	0.630	0.894	1.22	1.61	0.96
					K _v	0.062	0.088	0.119	0.181	0.267	0.379	0.545	0.773	1.06	1.39	---
					X _T	0.972	0.971	0.986	0.792	0.668	0.611	0.611	0.609	0.606	0.610	---
	12.7	0.5	19	0.75	C _v	0.269	0.404	0.555	0.738	1.03	1.52	2.18	3.10	4.23	5.39	0.97
					K _v	0.233	0.349	0.480	0.638	0.891	1.31	1.89	2.68	3.66	4.66	---
					X _T	0.789	0.708	0.702	0.650	0.626	0.572	0.583	0.606	0.646	0.713	---
	19.1	0.75	19	0.75	C _v	0.450	0.713	1.07	1.52	2.12	3.05	4.57	6.87	9.66	11.9	0.93
					K _v	0.389	0.617	0.926	1.31	1.83	2.64	3.95	5.94	8.36	10.3	---
					X _T	0.740	0.640	0.578	0.589	0.636	0.648	0.612	0.589	0.636	0.718	---

1. At 100% travel.

**HPS
CL2500 Micro-Form
and CL900 and 1500 Extended Travel Micro-Form**

Flow Up through the Port

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HPS, CL2500, Micro-Form, Flow Up														Equal Percentage Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1	6.4	0.25	19	0.75	C _v	0.072	0.102	0.138	0.209	0.309	0.438	0.630	0.894	1.22	1.61	0.96
					K _v	0.062	0.088	0.119	0.181	0.267	0.379	0.545	0.773	1.06	1.39	---
					X _T	0.972	0.971	0.986	0.792	0.668	0.611	0.611	0.609	0.606	0.610	---
	12.7	0.5	19	0.75	C _v	0.269	0.404	0.555	0.738	1.03	1.52	2.18	3.10	4.23	5.39	0.97
					K _v	0.233	0.349	0.480	0.638	0.891	1.31	1.89	2.68	3.66	4.66	---
					X _T	0.789	0.708	0.702	0.650	0.626	0.572	0.583	0.606	0.646	0.713	---
	19.1	0.75	19	0.75	C _v	0.384	0.577	0.941	1.39	2.02	2.93	4.40	6.58	8.45	9.61	0.95
					K _v	0.332	0.499	0.814	1.20	1.75	2.53	3.81	5.69	7.31	8.31	---
					X _T	0.532	0.774	0.714	0.587	0.579	0.584	0.588	0.607	0.672	0.773	---
2	6.4	0.25	19	0.75	C _v	0.062	0.095	0.137	0.209	0.309	0.438	0.630	0.894	1.22	1.61	0.96
					K _v	0.054	0.082	0.119	0.181	0.267	0.379	0.545	0.773	1.06	1.39	---
					X _T	0.972	0.971	0.986	0.792	0.668	0.611	0.611	0.609	0.606	0.610	---
	12.7	0.5	19	0.75	C _v	0.269	0.404	0.555	0.738	1.03	1.52	2.18	3.10	4.23	5.39	0.97
					K _v	0.233	0.349	0.480	0.638	0.891	1.31	1.89	2.68	3.66	4.66	---
					X _T	0.789	0.708	0.702	0.650	0.626	0.572	0.583	0.606	0.646	0.713	---
	19.1	0.75	19	0.75	C _v	0.450	0.713	1.07	1.52	2.12	3.05	4.57	6.87	9.66	11.9	0.93
					K _v	0.389	0.617	0.926	1.31	1.83	2.64	3.95	5.94	8.36	10.3	---
					X _T	0.740	0.640	0.578	0.589	0.636	0.648	0.612	0.589	0.636	0.718	---

1. At 100% travel.

HPS, CL900 and 1500, Extended Travel Micro-Form, Flow Up														Modified Equal Percentage Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1	19.1	0.75	29	1.125	C _v	0.480	0.940	1.71	2.93	5.49	8.45	10.5	11.5	12.0	12.5	0.95
					K _v	0.415	0.813	1.48	2.53	4.75	7.31	9.08	9.95	10.4	10.8	---
					X _T	0.741	0.660	0.561	0.535	0.599	0.685	0.655	0.632	0.626	0.594	---
	25.4	1	29	1.125	C _v	0.85	1.73	3.22	5.71	8.81	11.6	13.7	15.5	16.5	17.1	0.85
					K _v	0.735	1.50	2.79	4.94	7.62	10.0	11.9	13.4	14.3	14.8	---
					X _T	0.741	0.660	0.561	0.535	0.600	0.685	0.699	0.632	0.626	0.594	---
2	25.4	1	29	1.125	C _v	0.884	1.67	2.86	4.96	9.08	15.6	20.9	23.0	23.9	24.2	0.92
					K _v	0.765	1.44	2.47	4.29	7.85	13.5	18.1	19.9	20.7	20.9	---
					X _T	0.696	0.700	0.698	0.700	0.696	0.700	0.697	0.745	0.714	0.700	---
	31.8	1.25	29	1.125	C _v	1.19	1.90	3.60	8.17	16.9	23.9	29.0	31.0	32.0	33.0	0.91
					K _v	1.03	1.64	3.11	7.07	14.6	20.7	25.1	26.8	27.7	28.5	---
					X _T	0.584	0.603	0.552	0.668	0.731	0.654	0.657	0.670	0.667	0.632	---
38.1	1.5	38	1.5	C _v	1.98	3.83	7.96	16.0	27.2	37.4	43.3	46.9	51.5	52.2	0.97	
				K _v	1.71	3.31	6.89	13.8	23.5	32.4	37.5	40.6	44.5	45.2	---	
				X _T	0.584	0.603	0.554	0.668	0.731	0.654	0.682	0.691	0.634	0.632	---	

1. At 100% travel.

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HPS, CL2500, Extended Travel Micro-Form, Flow Up														Modified Equal Percentage Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾
	mm	Inches	mm	Inches		10	20	30	40	50	60	70	80	90	100	
1	19.1	0.75	29	1.125	C _V	0.480	0.940	1.71	2.93	5.49	8.45	10.5	11.5	12.0	12.5	0.95
					K _V	0.415	0.813	1.48	2.53	4.75	7.31	9.08	9.95	10.4	10.8	---
					X _T	0.741	0.660	0.561	0.535	0.599	0.685	0.655	0.632	0.626	0.594	---
	25.4	1	29	1.125	C _V	0.500	1.54	3.61	5.83	7.44	8.86	10.6	12.4	13.1	13.8	0.88
					K _V	0.433	1.33	3.12	5.04	6.44	7.66	9.17	10.7	11.3	11.9	---
					X _T	0.489	0.848	0.556	0.544	0.709	0.820	0.714	0.588	0.644	0.580	---
2	25.4	1	29	1.125	C _V	0.884	1.67	2.86	4.96	9.08	15.6	20.9	23.0	23.9	24.2	0.92
					K _V	0.765	1.44	2.47	4.29	7.85	13.5	18.1	19.9	20.7	20.9	---
					X _T	0.696	0.700	0.698	0.700	0.696	0.700	0.697	0.745	0.714	0.700	---
	31.8	1.25	29	1.125	C _V	1.19	1.90	3.60	8.17	16.9	23.9	29.0	31.0	32.0	33.0	0.91
					K _V	1.03	1.64	3.11	7.07	14.6	20.7	25.1	26.8	27.7	28.5	---
					X _T	0.584	0.603	0.552	0.668	0.731	0.654	0.657	0.670	0.667	0.632	---
	38.1	1.5	38	1.5	C _V	1.87	3.75	8.23	16.5	26.2	33.4	38.0	41.7	43.4	44.2	>0.96
					K _V	1.62	3.24	7.12	14.3	22.7	28.9	32.9	36.1	37.5	38.2	---
					X _T	0.609	0.515	0.520	0.626	0.751	0.790	0.718	0.653	0.668	0.644	---

1. At 100% travel.

HPS, Whisper Trim III--CL900 and 1500														Linear Characteristic			
Cage Level	Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										
		mm	Inches	mm	Inches		Minimum ⁽¹⁾	10	20	30	40	50	60	70	80	90	100
A1 ⁽²⁾	2	47.6	1.875	38	1.5	C _V	1.00	2.50	7.50	12.8	17.7	22.3	26.6	31.2	35.5	39.5	42.6
						K _V	0.865	2.16	6.49	11.1	15.3	19.3	23.0	27.0	30.7	34.2	36.8
						X _T	0.718	0.68	0.60	0.60	0.61	0.60	0.61	0.60	0.60	0.60	0.60
	3	73.0	2.875	50	2	C _V	1.25	6.00	21.0	34.6	49.0	62.7	77.0	89.7	98.8	105	108
						K _V	1.08	5.19	18.2	29.9	42.4	54.2	66.6	77.6	85.5	90.8	93.4
						X _T	0.839	0.87	0.80	0.83	0.81	0.82	0.82	0.81	0.82	0.81	0.81
HPS, Whisper Trim III--CL2500														Linear Characteristic			
A1 ⁽²⁾	2	47.6	1.875	38	1.5	C _V	---	3.1	8.4	13.1	17.3	21.4	25.1	28.3	30.8	32.9	34.9
						K _V	---	2.68	7.27	11.3	15.0	18.5	21.7	24.5	26.6	28.5	30.2
						X _T	0.718	0.68	0.60	0.61	0.60	0.61	0.60	0.60	0.60	0.60	0.60
HPS, Whisper Trim III--CL900 and 1500														Linear Characteristic			
B1	3	73.0	2.875	50	2	C _V	0.900	3.00	9.00	14.0	18.6	23.4	28.6	34.7	40.0	45.0	48.7
						K _V	0.778	2.59	7.79	12.1	16.1	20.2	24.7	30.0	34.6	38.9	42.1
						X _T	0.622	0.62	0.62	0.63	0.62	0.62	0.63	0.62	0.63	0.62	0.62

1. Valve should not be required to throttle at less than the minimum coefficient for an extended time, or erosion damage to the valve seat may result.
2. Larger capacities may be available with level A1 cages depending on service conditions.

HPS and HPT CL900, 1500, and 2500

Linear Cages
Flow Down through the Port

HPS and HPT, CL900, 1500, and 2500, Cavitrol™ III, Flow Down																	Linear Characteristic	
Trim Stage	Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Minimum Throttling $C_V^{(2)}$	Valve Opening—Percent of Total Travel										$F_L^{(3)}$
		mm	Inches	mm	Inches			10	20	30	40	50	60	70	80	90	100	
Two Stage	1 ⁽¹⁾	22.2	0.875 ⁽¹⁾	38	1.5	C_V	0.360	0.163	0.836	1.80	2.74	3.64	4.51	5.36	6.18	6.91	7.39	0.98
						K_V	0.311	0.141	0.723	1.56	2.37	3.15	3.90	4.64	5.35	5.98	6.39	---
	2	44.4	1.75	50	2	C_V	0.580	1.07	1.97	3.29	4.86	6.58	8.36	10.1	11.7	13.0	14.0	0.98
						K_V	0.502	0.926	1.70	2.85	4.20	5.69	7.23	8.74	10.1	11.2	12.1	---
Three Stage	2 ⁽¹⁾	25.4	1 ⁽¹⁾	50	2	C_V	0.590	0.272	1.10	1.98	2.82	3.63	4.46	5.30	6.07	6.61	6.73	0.99
						K_V	0.510	0.235	0.952	1.71	2.44	3.14	3.86	4.58	5.25	5.72	5.82	---

HPT, CL900 and 1500, Cavitrol III, Flow Down																	Linear Characteristic	
Two Stage	3	63.5	2.5	64	2.5	C_V	0.720	1.46	4.98	9.24	13.2	17.0	20.7	24.7	28.5	31.9	34.4	0.98
						K_V	0.623	1.26	4.31	7.99	11.4	14.7	17.9	21.4	24.7	27.6	29.8	---
	4	87.3	3.4375	76	3	C_V	0.900	2.61	9.01	15.6	21.8	28.3	34.8	40.4	46.4	52.2	58.1	0.98
						K_V	0.778	2.26	7.79	13.5	18.9	24.5	30.1	34.9	40.1	45.2	50.3	---
	6	133.3	5.25	102	4	C_V	1.72	7.50	20.7	33.8	47.0	60.1	73.3	87.0	100	112	123	0.98
						K_V	1.49	6.49	17.9	29.2	40.7	52.0	63.4	75.3	86.5	96.9	106	---
Three Stage	3	47.6	1.875	64	2.5	C_V	1.20	0.747	2.02	3.92	6.15	8.01	9.50	11.0	12.8	14.9	16.5	0.99
						K_V	1.04	0.646	1.75	3.39	5.32	6.93	8.22	9.52	11.1	12.9	14.3	---
	4	73.0	2.875	76	3	C_V	1.70	2.80	5.50	8.30	11.0	13.9	16.7	19.4	22.2	25.0	27.8	0.99
						K_V	1.47	2.42	4.76	7.18	9.52	12.0	14.4	16.8	19.2	21.6	24.0	---
	6	115.9	4.5625	102	4	C_V	3.10	6.10	13.2	19.8	26.1	34.1	41.5	48.2	54.5	60.9	65.0	0.99
						K_V	2.68	5.28	11.4	17.1	22.6	29.5	35.9	41.7	47.1	52.7	56.2	---

1. Cavitrol III trim in the NPS 1, two stage and the NPS 2, three stage are unbalanced valve plugs. These sizes and constructions are HPS valves; all others in this table are HPT valves.
2. Valves should not be required to throttle at a C_V less than the specified minimum C_V for an extended period. Erosion damage to the valve seats may result.
3. At 100% travel.

HPT, CL900 and 1500, Cavitrol III, Protected Inside Seat Design, Flow Down																	Linear Characteristic
Trim Stage	Valve Size, NPS	Port Diameter		Maximum Travel		Flow Coefficient	Minimum Throttling C_V	Valve Opening - Percent of Total Travel									
		mm	Inch	mm	Inch			10	20	30	40	50	60	70	80	90	100
Two Stage	2 ⁽¹⁾	29.4	1.159	50	2	C_V	0.58	0.03	1.7	3.5	5.2	6.8	8.3	9.7	10.9	12	12.9
						K_V	0.502	0.026	1.47	3	4.5	5.9	7.2	8.4	9.4	10.4	11.1
	3	48.5	1.909	64	2.5	C_V	0.72	0.05	4.4	8.3	12.2	15.9	19.4	22.8	26	28.9	31.5
						K_V	0.623	0.04	3.8	7.2	10.5	13.7	16.8	19.7	22.5	25	27.2
	4	72.3	2.847	76	3	C_V	0.9	1.6	7.9	14.1	20.3	26.3	32.3	38	43.7	49.1	54
						K_V	0.778	1.4	6.8	12.2	17.5	22.7	27.9	32.8	37.8	42.4	46.6
6	118.3	4.659	102	4	C_V	1.72	6.1	19.4	32.6	45.7	58.7	71.4	84	96.4	108.4	119.6	
					K_V	1.49	5.3	16.8	28.2	39.5	50.7	61.7	72.6	83.3	93.6	103.3	
Three Stage	3	32.6	1.284	64	2.5	C_V	1.2	0.07	3	4.7	6.1	7.5	8.9	10.2	11.8	13.5	14.8
						K_V	1.04	0.06	2.6	4.1	5.3	6.5	7.7	8.8	10.2	11.7	12.8
	4	58	2.284	76	3	C_V	1.7	2.7	5	8.2	11.9	14	17.8	20.2	22.1	25.6	27.3
						K_V	1.47	2.3	4.3	7.1	10.3	12.1	15.4	17.5	19.1	22.1	23.6
	6	100.9	3.972	102	4	C_V	3.1	4.7	12	19.3	26.6	31.8	37.4	44.5	51.5	58.5	61.9
						K_V	2.68	4.1	10.4	16.7	23	27.5	32.3	38.4	44.5	50.5	53.5

1. Also CL2500

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HPS, CL900, CL1500, CL2500, Cavitrol III 2-Stage Micro-Flat, Flow Down														Linear Characteristic			
Valve Size, NPS	Shutoff Port Diameter ⁽²⁾		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾	
	mm	Inches	mm	Inches		Min.	10	20	30	40	50	60	70	80	90		100
1 ⁽³⁾	22.2	0.875	19	0.75	C _v	0.04	0.02	0.04	0.05	0.07	0.09	0.12	0.16	0.21	0.26	0.30	0.97
					K _v	0.03	0.02	0.03	0.04	0.06	0.08	0.10	0.14	0.18	0.22	0.26	
1 ⁽³⁾	25.4	1	28.5	1.125	C _v	0.04	0.03	0.05	0.08	0.12	0.18	0.26	0.33	0.41	0.51	0.60	0.97
					K _v	0.03	0.03	0.04	0.07	0.10	0.16	0.22	0.29	0.35	0.44	0.52	
1 ⁽⁴⁾	25.4	1	38.1	1.5	C _v	0.04	0.02	0.02	0.04	0.25	0.49	0.70	0.94	1.36	1.76	2.23	0.97
					K _v	0.03	0.02	0.02	0.03	0.22	0.42	0.61	0.81	1.18	1.52	1.93	
2 ⁽⁴⁾	25.4	1	38.1	1.5	C _v	0.04	0.02	0.02	0.04	0.25	0.49	0.70	0.94	1.36	1.76	2.23	0.97
					K _v	0.03	0.02	0.02	0.03	0.22	0.42	0.61	0.81	1.18	1.52	1.93	

1. At 100% travel
2. Cavitrol III Micro-Flat trims use a shutoff port diameter which is larger than the flowing port diameter. Use the shutoff port diameter for actuator sizing.
3. Flowing port: 12.7 mm / 0.5 Inch, Unbalanced Area: 5.065 cm² / 0.785 In², 1/2" stem
4. Flowing port: 19 mm / 0.75 Inch, Unbalanced Area: 5.065 cm² / 0.785 In², 3/4" stem

HPS, CL900, CL1500, CL2500, Cavitrol III 3-Stage Micro-Flat, Flow Down														Linear Characteristic			
Valve Size, NPS	Shutoff Port Diameter ⁽²⁾		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾	
	mm	Inches	mm	Inches		Min.	10	20	30	40	50	60	70	80	90		100
2 ⁽³⁾	15.8	0.625	31.7	1.25	C _v	0.05	0.00	0.01	0.03	0.11	0.19	0.28	0.36	0.44	0.53	0.62	0.97
					K _v	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2 ⁽⁴⁾	25.4	1	38.1	1.5	C _v	0.05	0.01	0.06	0.09	0.16	0.34	0.46	0.62	0.89	1.06	1.18	0.97
					K _v	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2 ⁽⁵⁾	25.4	1	63.5	2.5	C _v	0.06	0.01	0.14	0.37	0.72	1.20	1.86	2.75	3.74	4.53	5.54	0.97
					K _v	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

1. At 100% travel
2. Cavitrol III Micro-Flat trims use a shutoff port diameter which is larger than the flowing port diameter. Use the shutoff port diameter for actuator sizing.
3. Flowing port: 9.5 mm / 0.375 Inch (Unbalanced Area: 1.96 cm² / 0.307 In², 3/4" stem
4. Flowing port: 12.7 mm / 0.5 Inch (Unbalanced Area: 5.065 cm² / 0.785 In², 3/4" stem
5. Flowing port: 19 mm / 0.75 Inch (Unbalanced Area: 5.065 cm² / 0.785 In², 3/4" stem

The Fisher™ HPT-C valve has flow coefficients identical to the NPS 4 and 6 Fisher HPD valve. Please refer to those coefficients. For additional HPT-C valve body information, refer to Bulletin 51.2:HP Cryogenic, D104174X012.

The Fisher HPS-C valve has flow coefficients identical to the NPS 1 through 3 Fisher HPS valve. Please refer to those coefficients. For additional HPS-C valve body information, refer to Bulletin 51.2:HP Cryogenic, D104174X012.

CL600 -- Globe and Angle Valves 3-Stage, Level C - Flow Up																			Linear Characteristic
Valve Size, NPS	Port Diameter		Maximum Travel		Level	Flow Coefficient	Valve Opening—Percent of Total Travel												F _L ⁽¹⁾
	mm	Inch	mm	Inch			Min	10	20	30	40	50	60	70	80	90	100		
1 Balanced	25.4	1.0	9.5	0.375	C	C _v	0.100	(2)	0.226	0.615	1.28	2.13	3.02	3.80	4.34	4.58	4.58	0.99	
2 Balanced	38.1	1.5	9.5	0.375	C	C _v	0.150	(2)	0.545	1.45	2.64	3.85	5.17	6.50	7.75	8.75	9.30	0.99	
3 Balanced	55.6	2.19	15.9	0.625	C	C _v	0.250	(2)	1.17	3.12	5.68	8.28	11.1	14.0	16.7	18.8	20.0	0.99	
4 Balanced	73.2	2.88	19.1	0.75	C	C _v	0.430	(2)	1.99	5.30	9.65	14.1	18.9	23.8	28.3	32.0	34.0	0.99	
6 Balanced	111.1	4.375	19.1	0.75	C	C _v	0.600	(2)	1.17	5.51	12.6	21.6	31.4	40.9	49.1	55.4	59.5	0.99	
8 Balanced	136.5	5.375	25.4	1	C	C _v	0.800	(2)	2.07	10.5	23.4	38.5	56.6	75.3	92.6	109	122	0.99	

1. At 100% travel.
 2. Clearance flow only.

CL900 and CL1500, Globe and Angle Valves 4-Stage, Levels A, B, and C - Flow Up																			Linear Characteristic
Valve Size, NPS	Port Diameter		Maximum Travel		Level	Flow Coefficient	Valve Opening—Percent of Total Travel												F _L ⁽¹⁾
	mm	Inch	mm	Inch			Min	10	20	30	40	50	60	70	80	90	100		
1 Unbalanced	17.8	0.7	6.4	0.25	A	C _v	0.040	(2)	0.030	0.150	0.270	0.390	0.520	0.640	0.76	0.88	1.00	0.99	
					B		0.040	(2)	0.042	0.210	0.378	0.546	0.728	0.896	1.06	1.23	1.40	0.99	
					C		0.040	(2)	0.051	0.255	0.459	0.663	0.884	1.09	1.29	1.50	1.70	0.99	
1-1/2 Unbalanced	25.4	1.0	6.4	0.25	A	C _v	0.080	(2)	0.057	0.285	0.513	0.741	0.988	1.22	1.44	1.67	1.90	0.99	
					B		0.080	(2)	0.075	0.375	0.675	0.975	1.30	1.60	1.90	2.20	2.50	0.99	
					C		0.080	(2)	0.096	0.480	0.864	1.25	1.66	2.05	2.43	2.82	3.20	0.99	
2 Balanced	38.1	1.5	9.5	0.375	A	C _v	0.120	(2)	0.400	0.960	1.54	2.20	2.86	3.42	3.92	4.32	4.55	0.99	
					B		0.120	(2)	0.460	1.10	1.85	2.63	3.39	4.26	5.19	5.99	6.63	0.99	
					C		0.120	(2)	0.570	1.53	2.62	3.85	5.00	6.16	7.29	8.19	8.85	0.99	
3 Balanced	55.6	2.19	15.9	0.625	A	C _v	0.200	(2)	0.580	1.84	3.20	4.57	6.23	7.35	8.25	8.82	8.90	0.99	
					B		0.200	(2)	0.620	2.00	3.78	5.45	7.30	9.32	11.5	13.4	14.6	0.99	
					C		0.200	(2)	0.416	2.19	4.41	6.90	9.80	12.4	14.7	16.4	16.8	0.99	
4 Balanced	73.2	2.88	19.1	0.75	A	C _v	0.350	(2)	0.462	2.31	4.16	6.01	8.01	9.86	11.7	13.6	15.4	0.99	
					B		0.350	(2)	0.723	3.62	6.51	9.40	12.5	15.4	18.3	21.2	24.1	0.99	
					C		0.350	(2)	0.879	4.40	7.91	11.4	15.2	18.8	22.3	25.8	29.3	0.99	
6 ⁽³⁾ Balanced	111.1	4.375	25.4	1.0	C	C _v	0.500	(2)	1.8	7.7	16	25	34	42	50	56	61	0.99	
8 ⁽³⁾ Balanced	136.5	5.375	31.8	1.25	C	C _v	0.700	(2)	3.5	16	32	50	67	82	96	107	117	0.99	

1. At 100% travel.
 2. Clearance flow only.
 3. NPS 6 and 8 are only available as angle valve bodies with Level C trim.



CL2500, Angle Valve, 6-Stage, Level C - Flow Up																	Linear Characteristic	
Valve Size, NPS/ Rating	Port Diameter		Maximum Travel		Level	Flow Coeffi- cient	Valve Opening—Percent of Total Travel										F _L ⁽¹⁾	
	mm	Inch	mm	Inch			Min	10	20	30	40	50	60	70	80	90		100
1 Unbalanced	17.8	0.7	6.4	0.25	C	C _v	0.035	(2)	0.052	0.26	0.48	0.69	0.85	1.07	1.27	1.37	1.43	0.99
2 Balanced	38.1	1.5	9.5	0.375	C	C _v	0.11	(2)	0.17	0.88	1.55	2.03	2.71	3.79	4.51	5.31	6.09	0.99
3 Balanced	55.6	2.19	15.9	0.625	C	C _v	0.18	(2)	0.37	1.9	3.25	4.5	6.4	8.3	1.014	11.62	13.1	0.99
4 Balanced	73.0	2.88	19.1	0.75	C	C _v	0.3	(2)	0.7	2.8	5.6	8.8	12	15	18	21	23	0.99
6 Balanced	111.1	4.38	25.4	1	C	C _v	0.4	(2)	1.4	5.9	12	19	26	33	40	45	49	0.99

1. At 100% travel.
2. Clearance flow only.

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Equal Percentage													Equal Percentage Characteristic			
Valve Size, NPS	Port Diameter ⁽¹⁾		Maximum Travel		Flow Coefficient	Valve Opening—Percent of Total Travel										
	mm	Inches	mm	Inches		5	10	20	30	40	50	60	70	80	90	100
1	8	0.3125	15	0.591	C _v	0.050	0.073	0.117	0.156	0.215	0.390	0.546	0.715	0.934	1.28	1.91
					K _v	0.043	0.063	0.101	0.135	0.186	0.337	0.472	0.618	0.808	1.11	1.65
	15	0.5	15	0.591	C _v	0.139	0.182	0.262	0.427	0.559	0.684	0.842	1.08	1.48	2.23	3.57
					K _v	0.120	0.157	0.227	0.369	0.484	0.592	0.728	0.934	1.28	1.93	3.09
	20	0.75	15	0.591	C _v	0.443	0.585	0.917	1.28	1.77	2.43	3.25	4.52	5.61	7.21	8.41
					K _v	0.383	0.506	0.793	1.11	1.53	2.10	2.81	3.91	4.85	6.24	7.27
25	1	15	0.591	C _v	0.562	0.632	0.842	1.12	1.55	2.20	2.99	4.03	5.92	8.66	11.5	
				K _v	0.486	0.547	0.728	0.969	1.34	1.90	2.59	3.49	5.12	7.49	9.95	
1-1/2	25	1	19.1	0.75	C _v	0.599	0.660	0.905	1.24	1.70	2.30	3.06	4.25	6.45	9.66	13.4
					K _v	0.518	0.571	0.783	1.07	1.47	1.99	2.65	3.68	5.58	8.36	11.6
	40	1.5	19.1	0.75	C _v	1.54	1.76	2.24	3.08	4.44	6.54	9.66	13.8	18.4	23.7	28.6
					K _v	1.33	1.52	1.94	2.66	3.84	5.66	8.36	11.9	15.9	20.5	24.7
2	30	1.1875	19.1	0.75	C _v	0.508	0.582	0.763	1.05	1.56	2.32	3.17	4.31	6.03	8.92	13.3
					K _v	0.439	0.503	0.660	0.908	1.35	2.01	2.74	3.73	5.22	7.72	11.5
	50	2	19.1	0.75	C _v	2.14	2.50	3.79	5.58	9.20	12.5	16.2	21.0	28.1	36.6	44.3
					K _v	1.85	2.16	3.28	4.83	7.96	10.8	14.0	18.2	24.3	31.7	38.3
3	50	2	28.6	1.125	C _v	1.37	2.09	3.50	5.19	7.21	9.92	13.8	19.0	26.1	34.7	43.3
					K _v	1.19	1.81	3.03	4.49	6.24	8.58	11.9	16.4	22.6	30.0	37.5
	80	3.1875	28.6	1.125	C _v	3.44	4.93	8.23	12.5	18.0	25.5	35.9	49.6	66.2	81.5	94.1
					K _v	2.98	4.26	7.12	10.8	15.6	22.1	31.1	42.9	57.3	70.5	81.4
4	65	2.5	28.6	1.125	C _v	2.07	3.12	5.17	7.99	11.3	15.5	21.4	29.3	40.9	55.8	69.3
					K _v	1.79	2.70	4.47	6.91	9.77	13.4	18.5	25.3	35.4	48.3	59.9
	96	4	28.6	1.125	C _v	7.12	10.3	16.6	25.1	35.9	51.5	71.7	94.4	116	133	145
					K _v	6.16	8.91	14.4	21.7	31.1	44.5	62.0	81.7	100	115	125

1. Inch equivalents of these metric port diameters have been rounded to common fractional diameters. Actual diameter of the 15 millimeter port is 0.591 inches, of the 40 millimeter port is 1.575 inches, and of the 96 millimeter port is 3.780 inches.



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Whisper Trim™ III - Flow Up															Linear Characteristic			
Valve Size, ⁽²⁾ and Inlet Class ⁽¹⁾	Port Diameter		Maximum Travel		Whisper III Levels	Flow Coefficient	Valve Opening—Percent of Total Travel										X _T ⁽³⁾	F _L ⁽³⁾
	mm	Inches	mm	Inches			10	20	30	40	50	60	70	80	90	100		
4 x 8 CL600 to 1500	120	4.70	197	7.75	A1 and A3	C _v	59	131	188	228	253	259	259	259	259	259	0.65	0.89
						K _v	51	114	162	197	219	224	224	224	224	224		
					A1	F _d	0.063	0.045	0.036	0.031	0.028	0.026	0.024	0.022	0.021	0.020		
							0.033	0.023	0.019	0.017	0.015	0.014	0.013	0.012	0.011	0.010		
					A3	F _d	0.033	0.023	0.019	0.017	0.015	0.014	0.013	0.012	0.011	0.010		
							0.033	0.023	0.019	0.017	0.015	0.014	0.013	0.012	0.011	0.010		
					B1 and B3	C _v	36	81	122	156	184	209	228	244	253	259		
							K _v	31	70	105	135	159	181	197	211	219		
					B1	F _d	0.089	0.063	0.051	0.045	0.040	0.036	0.034	0.031	0.030	0.028		
							0.043	0.030	0.025	0.022	0.019	0.018	0.016	0.015	0.014	0.014		
					B3	F _d	0.043	0.030	0.025	0.022	0.019	0.018	0.016	0.015	0.014	0.014		
							0.043	0.030	0.025	0.022	0.019	0.018	0.016	0.015	0.014	0.014		
C1 and C3	C _v	23	56	84	113	138	159	181	197	216	228							
		K _v	20	49	73	97	119	138	157	170	187	197						
C1	F _d	0.108	0.076	0.062	0.054	0.048	0.044	0.041	0.038	0.036	0.034							
		0.054	0.038	0.031	0.027	0.024	0.022	0.020	0.019	0.018	0.017							
C3	F _d	0.054	0.038	0.031	0.027	0.024	0.022	0.020	0.019	0.018	0.017							
		0.054	0.038	0.031	0.027	0.024	0.022	0.020	0.019	0.018	0.017							
4 x 8 CL2500	120	4.70	197	7.75	A1 and A3	C _v	59	128	178	206	216	219	219	219	219	0.65	0.89	
						K _v	51	111	154	178	187	189	189	189	189			189
					A1	F _d	0.063	0.045	0.036	0.031	0.028	0.026	0.024	0.022	0.021			0.020
							0.033	0.023	0.019	0.017	0.015	0.014	0.013	0.012	0.011			0.010
					A3	F _d	0.033	0.023	0.019	0.017	0.015	0.014	0.013	0.012	0.011			0.010
							0.033	0.023	0.019	0.017	0.015	0.014	0.013	0.012	0.011			0.010
					B1 and B3	C _v	36	78	119	150	175	194	206	216	219			209
							K _v	31	68	103	130	151	168	178	187			189
					B1	F _d	0.089	0.063	0.051	0.045	0.040	0.036	0.034	0.031	0.030			0.028
							0.043	0.030	0.025	0.022	0.019	0.018	0.016	0.015	0.014			0.014
					B3	F _d	0.043	0.030	0.025	0.022	0.019	0.018	0.016	0.015	0.014			0.014
							0.043	0.030	0.025	0.022	0.019	0.018	0.016	0.015	0.014			0.014
C1 and C3	C _v	23	56	84	109	134	153	172	184	197	206							
		K _v	20	49	73	95	116	132	149	159	170	178						
C1	F _d	0.108	0.076	0.062	0.054	0.048	0.044	0.041	0.038	0.036	0.034							
		0.054	0.038	0.031	0.027	0.024	0.022	0.020	0.019	0.018	0.017							
C3	F _d	0.054	0.038	0.031	0.027	0.024	0.022	0.020	0.019	0.018	0.017							
		0.054	0.038	0.031	0.027	0.024	0.022	0.020	0.019	0.018	0.017							
6 x 8 CL600 to 1500 and 8 x 8 through 12 x 8 CL600 to 2500	120	4.70	197	7.75	A1 and A3	C _v	60	141	222	291	356	413	463	506	544	578	0.65	0.89
						K _v	52	122	192	251	308	357	400	438	470	500		
					A1	F _d	0.063	0.045	0.036	0.031	0.028	0.026	0.024	0.022	0.021	0.020		
							0.033	0.023	0.019	0.017	0.015	0.014	0.013	0.012	0.011	0.010		
					A3	F _d	0.033	0.023	0.019	0.017	0.015	0.014	0.013	0.012	0.011	0.010		
							0.033	0.023	0.019	0.017	0.015	0.014	0.013	0.012	0.011	0.010		
					B1 and B3	C _v	37	81	128	172	219	259	294	331	366	397		
							K _v	32	70	111	149	189	224	254	287	316		
					B1	F _d	0.089	0.063	0.051	0.045	0.040	0.036	0.034	0.031	0.030	0.028		
							0.043	0.030	0.025	0.022	0.019	0.018	0.016	0.015	0.014	0.014		
					B3	F _d	0.043	0.030	0.025	0.022	0.019	0.018	0.016	0.015	0.014	0.014		
							0.043	0.030	0.025	0.022	0.019	0.018	0.016	0.015	0.014	0.014		
C1 and C3	C _v	23	56	84	119	147	178	213	238	266	291							
		K _v	20	49	73	103	127	154	184	205	230	251						
C1	F _d	0.108	0.076	0.062	0.054	0.048	0.044	0.041	0.038	0.036	0.034							
		0.054	0.038	0.031	0.027	0.024	0.022	0.020	0.019	0.018	0.017							
C3	F _d	0.054	0.038	0.031	0.027	0.024	0.022	0.020	0.019	0.018	0.017							
		0.054	0.038	0.031	0.027	0.024	0.022	0.020	0.019	0.018	0.017							
6 x 8 CL2500	120	4.70	197	7.75	A1 and A3	C _v	60	141	216	278	334	381	419	450	472	484	0.65	0.89
						K _v	52	122	187	241	289	330	362	389	408	419		
					A1	F _d	0.063	0.045	0.036	0.031	0.028	0.026	0.024	0.022	0.021	0.020		
							0.033	0.023	0.019	0.017	0.015	0.014	0.013	0.012	0.011	0.010		
					A3	F _d	0.033	0.023	0.019	0.017	0.015	0.014	0.013	0.012	0.011	0.010		
							0.033	0.023	0.019	0.017	0.015	0.014	0.013	0.012	0.011	0.010		
					B1 and B3	C _v	37	81	128	172	209	250	281	313	341	369		
							K _v	32	70	111	149	181	216	243	270	295		
					B1	F _d	0.089	0.063	0.051	0.045	0.040	0.036	0.034	0.031	0.030	0.028		
							0.043	0.030	0.025	0.022	0.019	0.018	0.016	0.015	0.014	0.014		
					B3	F _d	0.043	0.030	0.025	0.022	0.019	0.018	0.016	0.015	0.014	0.014		
							0.043	0.030	0.025	0.022	0.019	0.018	0.016	0.015	0.014	0.014		
C1 and C3	C _v	23	56	84	119	147	178	206	231	256	278							
		K _v	20	49	73	103	127	154	178	200	222	241						
C1	F _d	0.108	0.076	0.062	0.054	0.048	0.044	0.041	0.038	0.036	0.034							
		0.054	0.038	0.031	0.027	0.024	0.022	0.020	0.019	0.018	0.017							
C3	F _d	0.054	0.038	0.031	0.027	0.024	0.022	0.020	0.019	0.018	0.017							
		0.054	0.038	0.031	0.027	0.024	0.022	0.020	0.019	0.018	0.017							

1. Reduction of standard inlet size may affect capacity. Consult your Emerson Process Management sales office for additional information.
 2. Values given are Inlet versus Outlet, i.e. 6x8 is an NPS 6 inlet and an NPS 8 outlet.
 3. At 100% travel.



Whisper Trim III - Flow Up															Linear Characteristic			
Valve Size, ⁽²⁾ and Inlet Class ⁽¹⁾	Port Diameter		Maximum Travel		Whisper III Levels	Flow Coefficient	Valve Opening—Percent of Total Travel										X _T ⁽³⁾	F _L ⁽³⁾
	mm	Inches	mm	Inches			10	20	30	40	50	60	70	80	90	100		
6 x 12 CL600 to 1500	159	6.25	264	10.38	A1 and A3	C _v	112	253	369	469	553	622	672	703	722	722	0.65	0.89
						K _v	97	219	319	405	478	538	581	608	624	624		
					A1	F _d	0.048	0.034	0.027	0.024	0.021	0.019	0.018	0.017	0.016	0.015		
							0.025	0.018	0.015	0.013	0.011	0.010	0.010	0.009	0.008	0.008		
					B1 and B3	C _v	67	147	231	306	372	434	488	538	581	619		
							K _v	58	127	200	265	322	376	422	465	503		
					B1	F _d	0.064	0.045	0.037	0.032	0.029	0.026	0.024	0.023	0.021	0.020		
							0.033	0.023	0.019	0.016	0.015	0.013	0.012	0.012	0.011	0.010		
					B3	C _v	43	97	147	200	250	297	338	381	419	456		
							K _v	37	84	127	173	216	257	292	330	362		
					C1 and C3	F _d	0.080	0.056	0.046	0.040	0.036	0.033	0.030	0.028	0.027	0.025		
							0.041	0.029	0.024	0.021	0.019	0.017	0.016	0.015	0.014	0.013		
6 x 12 CL2500	159	6.25	264	10.38	A1 and A3	C _v	112	241	338	413	463	488	488	488	488	0.65	0.89	
						K _v	97	208	292	357	400	422	422	422	422			422
					A1	F _d	0.048	0.034	0.027	0.024	0.021	0.019	0.018	0.017	0.016			0.015
							0.025	0.018	0.015	0.013	0.011	0.010	0.010	0.009	0.008			0.008
					B1 and B3	C _v	67	147	222	288	341	388	425	453	475			488
							K _v	58	127	192	249	295	335	368	392			411
					B1	F _d	0.064	0.045	0.037	0.032	0.029	0.026	0.024	0.023	0.021			0.020
							0.033	0.023	0.019	0.016	0.015	0.013	0.012	0.012	0.011			0.010
					B3	C _v	43	97	147	197	238	278	313	347	375			403
							K _v	37	84	127	170	205	241	270	300			324
					C1 and C3	F _d	0.080	0.056	0.046	0.040	0.036	0.033	0.030	0.028	0.027			0.025
							0.041	0.029	0.024	0.021	0.019	0.017	0.016	0.015	0.014			0.013
8 x 12 CL600 to 1500 and 10 x 12 through 14 x 12 CL600 to 2500	159	6.25	264	10.38	A1 and A3	C _v	113	253	394	513	622	722	809	888	953	1009	0.65	0.89
						K _v	97	219	341	443	538	624	700	768	824	873		
					A1	F _d	0.048	0.034	0.027	0.024	0.021	0.019	0.018	0.017	0.016	0.015		
							0.025	0.018	0.015	0.013	0.011	0.010	0.010	0.009	0.008	0.008		
					B1 and B3	C _v	68	147	231	316	394	469	538	600	659	719		
							K _v	58	127	200	273	341	405	465	519	570		
					B1	F _d	0.064	0.045	0.037	0.032	0.029	0.026	0.024	0.023	0.021	0.020		
							0.033	0.023	0.019	0.016	0.015	0.013	0.012	0.012	0.011	0.010		
					B3	C _v	43	97	147	200	250	303	353	406	450	497		
							K _v	37	84	127	173	216	262	305	351	389		
					C1 and C3	F _d	0.080	0.056	0.046	0.040	0.036	0.033	0.030	0.028	0.027	0.025		
							0.041	0.029	0.024	0.021	0.019	0.017	0.016	0.015	0.014	0.013		
8 x 12 CL2500	159	6.25	264	10.38	A1 and A3	C _v	112	253	381	494	594	681	750	809	856	888	0.65	0.89
						K _v	97	219	330	427	514	589	649	700	741	768		
					A1	F _d	0.048	0.034	0.027	0.024	0.021	0.019	0.018	0.017	0.016	0.015		
							0.025	0.018	0.015	0.013	0.011	0.010	0.010	0.009	0.008	0.008		
					B1 and B3	C _v	67	147	231	316	384	453	516	572	628	675		
							K _v	58	127	200	273	332	392	446	495	543		
					B1	F _d	0.064	0.045	0.037	0.032	0.029	0.026	0.024	0.023	0.021	0.020		
							0.033	0.023	0.019	0.016	0.015	0.013	0.012	0.012	0.011	0.010		
					B3	C _v	43	97	147	200	250	303	350	394	438	478		
							K _v	37	84	127	173	216	262	303	341	378		
					C1 and C3	F _d	0.080	0.056	0.046	0.040	0.036	0.033	0.030	0.028	0.027	0.025		
							0.041	0.029	0.024	0.021	0.019	0.017	0.016	0.015	0.014	0.013		

1. Reduction of standard inlet size may affect capacity. Consult your Emerson Process Management sales office for additional information.
2. Values given are Inlet versus Outlet, i.e. 6x12 is an NPS 6 inlet and an NPS 12 outlet.
3. At 100% travel.

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Whisper Trim™ III - Flow Up															Linear Characteristic			
Valve Size, ⁽²⁾ and Inlet Class ⁽¹⁾	Port Diameter		Maximum Travel		Whisper III Levels	Flow Coefficient	Valve Opening—Percent of Total Travel										X _T ⁽³⁾	F _L ⁽³⁾
	mm	Inches	mm	Inches			10	20	30	40	50	60	70	80	90	100		
8 x 16 CL600 to 1500	194	7.62	321	12.62	A1 and A3	C _v	170	372	556	716	853	972	1069	1147	1206	1244	0.65	0.89
						K _v	147	322	481	619	738	841	924	992	1043	1076		
					A1	F _d	0.039	0.027	0.022	0.019	0.017	0.016	0.015	0.014	0.013	0.012		
							0.021	0.015	0.012	0.011	0.009	0.009	0.008	0.007	0.007	0.007		
					B1 and B3	C _v	102	225	347	466	569	666	753	834	909	978		
						K _v	88	195	300	403	492	576	651	722	787	846		
					B1	F _d	0.053	0.038	0.031	0.027	0.024	0.022	0.020	0.019	0.018	0.017		
							0.027	0.019	0.016	0.014	0.012	0.011	0.010	0.010	0.009	0.009		
					C1 and C3	C _v	64	141	216	294	369	444	509	575	634	691		
						K _v	56	122	187	254	319	384	441	497	549	597		
					C1	F _d	0.069	0.049	0.040	0.034	0.031	0.028	0.026	0.024	0.023	0.022		
							0.034	0.024	0.020	0.017	0.015	0.014	0.013	0.012	0.011	0.011		
8 x 16 CL2500	194	7.62	321	12.62	A1 and A3	C _v	170	366	525	656	763	841	891	913	913	913	0.65	0.89
						K _v	147	316	454	568	660	727	770	789	789	789		
					A1	F _d	0.039	0.027	0.022	0.019	0.017	0.016	0.015	0.014	0.013	0.012		
							0.021	0.015	0.012	0.011	0.009	0.009	0.008	0.007	0.007	0.007		
					B1 and B3	C _v	102	225	341	444	534	616	688	750	803	844		
						K _v	88	195	295	384	462	533	595	649	695	730		
					B1	F _d	0.053	0.038	0.031	0.027	0.024	0.022	0.020	0.019	0.018	0.017		
							0.027	0.019	0.016	0.014	0.012	0.011	0.010	0.010	0.009	0.009		
					C1 and C3	C _v	64	141	216	294	363	425	484	541	591	641		
						K _v	56	122	187	254	314	368	419	468	511	554		
					C1	F _d	0.069	0.049	0.040	0.034	0.031	0.028	0.026	0.024	0.023	0.022		
							0.034	0.024	0.020	0.017	0.015	0.014	0.013	0.012	0.011	0.011		
10 x 16 CL600 to 1500 and 12 x 16 through 16 x 16 CL600 to 2500	194	7.62	321	12.62	A1 and A3	C _v	170	372	575	750	909	1053	1184	1297	1397	1481	0.65	0.89
						K _v	147	322	497	649	787	911	1024	1122	1208	1281		
					A1	F _d	0.039	0.027	0.022	0.019	0.017	0.016	0.015	0.014	0.013	0.012		
							0.021	0.015	0.012	0.011	0.009	0.009	0.008	0.007	0.007	0.007		
					B1 and B3	C _v	103	225	347	469	588	694	794	891	978	1063		
						K _v	89	195	300	405	508	600	687	770	846	919		
					B1	F _d	0.053	0.038	0.031	0.027	0.024	0.022	0.020	0.019	0.018	0.017		
							0.027	0.019	0.016	0.014	0.012	0.011	0.010	0.010	0.009	0.009		
					C1 and C3	C _v	65	141	216	294	369	444	522	594	663	725		
						K _v	56	122	187	254	319	384	451	514	573	627		
					C1	F _d	0.069	0.049	0.040	0.034	0.031	0.028	0.026	0.024	0.023	0.022		
							0.034	0.024	0.020	0.017	0.015	0.014	0.013	0.012	0.011	0.011		
10 x 16 CL2500	194	7.62	321	12.62	A1 and A3	C _v	170	372	569	734	884	1016	1131	1231	1313	1375	0.65	0.89
						K _v	147	322	492	635	765	879	979	1065	1135	1189		
					A1	F _d	0.039	0.027	0.022	0.019	0.017	0.016	0.015	0.014	0.013	0.012		
							0.021	0.015	0.012	0.011	0.009	0.009	0.008	0.007	0.007	0.007		
					B1 and B3	C _v	102	225	347	469	578	681	775	866	947	1025		
						K _v	88	195	300	405	500	589	670	749	819	887		
					B1	F _d	0.053	0.038	0.031	0.027	0.024	0.022	0.020	0.019	0.018	0.017		
							0.027	0.019	0.016	0.014	0.012	0.011	0.010	0.010	0.009	0.009		
					C1 and C3	C _v	64	141	216	294	369	444	519	584	650	709		
						K _v	56	122	187	254	319	384	449	505	562	614		
					C1	F _d	0.069	0.049	0.040	0.034	0.031	0.028	0.026	0.024	0.023	0.022		
							0.034	0.024	0.020	0.017	0.015	0.014	0.013	0.012	0.011	0.011		

1. Reduction of standard inlet size may affect capacity. Consult your Emerson Process Management sales office for additional information.
 2. Values given are Inlet versus Outlet, i.e. 8x16 is an NPS 8 inlet and an NPS 16 outlet.
 3. At 100% travel.



Whisper Trim III - Flow Up															Linear Characteristic				
Valve Size, ⁽²⁾ and Inlet Class ⁽¹⁾	Port Diameter		Maximum Travel		Whisper III Levels	Flow Coefficient	Valve Opening—Percent of Total Travel										X _T ⁽³⁾	F _L ⁽³⁾	
	mm	Inches	mm	Inches			10	20	30	40	50	60	70	80	90	100			
10 x 18 CL600 to 1500	234	9.20	391	15.38	A1 and A3	C _v	261	563	841	1078	1288	1469	1622	1747	1844	1913	0.65	0.89	
						K _v	226	487	727	933	1114	1270	1403	1511	1595	1654			
					A1	F _d	0.032	0.023	0.019	0.016	0.014	0.013	0.012	0.011	0.011	0.010			0.010
							0.017	0.012	0.010	0.009	0.008	0.007	0.006	0.006	0.006	0.005			
					B1 and B3	C _v	153	325	497	675	825	966	1100	1222	1334	1441			
							K _v	132	281	430	584	714	835	952	1057	1154			1246
					B1	F _d	0.044	0.031	0.026	0.022	0.020	0.018	0.017	0.016	0.015	0.014			
							0.023	0.016	0.013	0.011	0.010	0.009	0.009	0.008	0.008	0.007			
					B3	C _v	101	213	325	441	550	666	769	863	956	1044			
							K _v	88	184	281	381	476	576	665	746	827			903
					C1 and C3	F _d	0.056	0.039	0.032	0.028	0.025	0.023	0.021	0.020	0.019	0.018			
							0.028	0.020	0.016	0.014	0.013	0.011	0.011	0.010	0.009	0.009			
10 x 18 CL2500	234	9.20	391	15.38	A1 and A3	C _v	261	556	800	1006	1172	1303	1394	1450	1466	1466	0.65	0.89	
						K _v	226	481	692	870	1014	1127	1206	1254	1268	1268			
					A1	F _d	0.032	0.023	0.019	0.016	0.014	0.013	0.012	0.011	0.011	0.010			
							0.017	0.012	0.010	0.009	0.008	0.007	0.006	0.006	0.006	0.005			
					B1 and B3	C _v	153	325	497	650	788	909	1022	1122	1209	1284			
							K _v	132	281	430	562	681	787	884	970	1046			1111
					B1	F _d	0.044	0.031	0.026	0.022	0.020	0.018	0.017	0.016	0.015	0.014			
							0.023	0.016	0.013	0.011	0.010	0.009	0.009	0.008	0.008	0.007			
					B3	C _v	101	213	325	441	547	644	734	819	903	975			
							K _v	88	184	281	381	473	557	635	708	781			843
					C1 and C3	F _d	0.056	0.039	0.032	0.028	0.025	0.023	0.021	0.020	0.019	0.018			
							0.028	0.020	0.016	0.014	0.013	0.011	0.011	0.010	0.009	0.009			
12 x 18 CL600 to 1500 and 14 x 18 through 18 x 18 CL600 to 2500	234	9.20	391	15.38	A1 and A3	C _v	261	563	863	1119	1353	1566	1753	1919	2063	2181	0.65	0.89	
						K _v	226	487	746	968	1170	1354	1516	1660	1784	1887			
					A1	F _d	0.032	0.023	0.019	0.016	0.014	0.013	0.012	0.011	0.011	0.010			
							0.017	0.012	0.010	0.009	0.008	0.007	0.006	0.006	0.006	0.005			
					B1 and B3	C _v	153	325	497	675	847	997	1144	1278	1406	1528			
							K _v	132	281	430	584	733	862	989	1106	1216			1322
					B1	F _d	0.044	0.031	0.026	0.022	0.020	0.018	0.017	0.016	0.015	0.014			
							0.023	0.016	0.013	0.011	0.010	0.009	0.009	0.008	0.008	0.007			
					B3	C _v	102	213	325	441	553	666	781	888	988	1081			
							K _v	88	184	281	381	478	576	676	768	854			935
					C1 and C3	F _d	0.056	0.039	0.032	0.028	0.025	0.023	0.021	0.020	0.019	0.018			
							0.028	0.020	0.016	0.014	0.013	0.011	0.011	0.010	0.009	0.009			
12 x 18 CL2500	234	9.20	391	15.38	A1 and A3	C _v	261	563	847	1091	1306	1497	1663	1797	1909	1994	0.65	0.89	
						K _v	226	487	733	943	1130	1295	1438	1554	1652	1725			
					A1	F _d	0.032	0.023	0.019	0.016	0.014	0.013	0.012	0.011	0.011	0.010			
							0.017	0.012	0.010	0.009	0.008	0.007	0.006	0.006	0.006	0.005			
					B1 and B3	C _v	153	325	497	675	831	975	1113	1241	1356	1466			
							K _v	132	281	430	584	719	843	962	1073	1173			1268
					B1	F _d	0.044	0.031	0.026	0.022	0.020	0.018	0.017	0.016	0.015	0.014			
							0.023	0.016	0.013	0.011	0.010	0.009	0.009	0.008	0.008	0.007			
					B3	C _v	101	213	325	441	550	666	772	869	966	1053			
							K _v	88	184	281	381	476	576	668	751	835			911
					C1 and C3	F _d	0.056	0.039	0.032	0.028	0.025	0.023	0.021	0.020	0.019	0.018			
							0.028	0.020	0.016	0.014	0.013	0.011	0.011	0.010	0.009	0.009			

1. Reduction of standard inlet size may affect capacity. Consult your Emerson Process Management sales office for additional information.
2. Values given are Inlet versus Outlet, i.e. 10x18 is an NPS 10 inlet and an NPS 18 outlet.
3. At 100% travel.

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TBX
CL600, 900, 1500, and 2500

Linear Cage
 Flow Up through the Port

Whisper Trim™ III - Flow Up															Linear Characteristic				
Valve Size, ⁽²⁾ and Inlet Class ⁽¹⁾	Port Diameter		Maximum Travel		Whisper III Levels	Flow Coefficient	Valve Opening—Percent of Total Travel										X _T ⁽³⁾	F _L ⁽³⁾	
	mm	Inches	mm	Inches			10	20	30	40	50	60	70	80	90	100			
12 x 20 CL600 to 1500	285	11.20	473	18.62	A1 and A3	C _v	383	813	1213	1553	1859	2125	2350	2538	2681	2791	0.65	0.89	
						K _v	331	703	1049	1343	1608	1838	2033	2195	2319	2414			
					A1	F _d	0.027	0.019	0.016	0.014	0.012	0.011	0.010	0.010	0.010	0.009			0.009
							0.014	0.010	0.008	0.007	0.006	0.006	0.005	0.005	0.005	0.005			
					B1 and B3	C _v	232	491	747	1000	1225	1434	1631	1813	1978	2128			
							K _v	201	424	646	865	1060	1241	1411	1568	1711			1841
					B1	F _d	0.037	0.026	0.021	0.018	0.016	0.015	0.014	0.013	0.012	0.012			
							0.019	0.013	0.011	0.009	0.008	0.008	0.007	0.007	0.006	0.006			
					B3	C _v	149	309	469	634	797	959	1103	1244	1378	1503			
							K _v	129	268	405	549	689	830	954	1076	1192			1300
					C1 and C3	F _d	0.047	0.033	0.027	0.023	0.021	0.019	0.018	0.017	0.016	0.015			
							0.023	0.017	0.013	0.012	0.010	0.010	0.009	0.008	0.008	0.007			
14 x 20 through 20 x 20 CL600 to 1500	285	11.20	473	18.62	A1 and A3	C _v	383	813	1247	1616	1956	2263	2538	2784	2997	3181	0.65	0.89	
						K _v	331	703	1079	1398	1692	1957	2195	2408	2592	2752			
					A1	F _d	0.027	0.019	0.016	0.014	0.012	0.011	0.010	0.010	0.009	0.009			
							0.014	0.010	0.008	0.007	0.006	0.006	0.005	0.005	0.005	0.005			
					B1 and B3	C _v	233	491	747	1003	1259	1484	1697	1900	2091	2269			
							K _v	201	424	646	868	1089	1284	1468	1644	1808			1962
					B1	F _d	0.037	0.026	0.021	0.018	0.016	0.015	0.014	0.013	0.012	0.012			
							0.019	0.013	0.011	0.009	0.008	0.008	0.007	0.007	0.006	0.006			
					B3	C _v	150	309	469	634	797	959	1119	1278	1422	1556			
							K _v	129	268	405	549	689	830	968	1106	1230			1346
					C1 and C3	F _d	0.047	0.033	0.027	0.023	0.021	0.019	0.018	0.017	0.016	0.015			
							0.023	0.017	0.013	0.012	0.010	0.010	0.009	0.008	0.008	0.007			

1. Reduction of standard inlet size may affect capacity. Consult your Emerson Process Management sales office for additional information.
 2. Values given are Inlet versus Outlet, i.e. 12x20 is an NPS 12 inlet and an NPS 20 outlet.
 3. At 100% travel.



Whisper Trim III - Flow Up															Linear Characteristic										
Valve Size, ⁽²⁾ and Inlet Class ⁽¹⁾	Port Diameter		Maximum Travel		Whisper III Levels	Flow Coefficient	Valve Opening—Percent of Total Travel										X _T ⁽³⁾	F _L ⁽³⁾							
	mm	Inches	mm	Inches			10	20	30	40	50	60	70	80	90	100									
16 x 24 CL600 to 1500	349	13.75	581	22.88	A1 and A3	C _v	648	1291	1888	2403	2859	3263	3613	3900	4134	4300	0.65	0.89							
						K _v	561	1116	1633	2079	2473	2822	3125	3374	3576	3720									
					A1	F _d	0.022	0.016	0.013	0.011	0.010	0.009	0.008	0.008	0.007	0.007									
							0.012	0.008	0.007	0.006	0.005	0.005	0.004	0.004	0.004	0.004									
					B1 and B3	C _v	386	772	1156	1538	1872	2188	2484	2756	3009	3225									
							K _v	334	668	1000	1330	1619	1892	2149	2384	2603			2790						
					B1	F _d	0.030	0.022	0.018	0.015	0.014	0.012	0.012	0.011	0.010	0.010									
							0.015	0.011	0.009	0.008	0.007	0.006	0.006	0.005	0.005	0.005									
					B3	C _v	251	497	741	984	1231	1478	1703	1913	2113	2291									
							K _v	217	430	641	851	1065	1279	1473	1654	1827			1981						
					C1 and C3	F _d	0.038	0.027	0.022	0.019	0.017	0.016	0.014	0.013	0.013	0.012									
							0.019	0.013	0.011	0.010	0.009	0.008	0.007	0.007	0.006	0.006									
					18 x 24 through 24 x 24 CL600 to 1500	349	13.75	581	22.88	A1 and A3	C _v	648	1291	1931	2481	2981			3438	3850	4213	4531	4781	0.65	0.89
											K _v	561	1116	1671	2146	2579			2973	3330	3644	3920	4136		
A1	F _d	0.022	0.016	0.013						0.011	0.010	0.009	0.008	0.008	0.007	0.007									
		0.012	0.008	0.007						0.006	0.005	0.005	0.004	0.004	0.004	0.004									
B1 and B3	C _v	386	772	1156						1538	1916	2250	2569	2869	3150	3394									
		K _v	334	668						1000	1330	1657	1946	2222	2481	2725	2936								
B1	F _d	0.030	0.022	0.018						0.015	0.014	0.012	0.012	0.011	0.010	0.010									
		0.015	0.011	0.009						0.008	0.007	0.006	0.006	0.005	0.005	0.005									
B3	C _v	252	497	741						984	1231	1478	1722	1956	2169	2359									
		K _v	218	430						641	851	1065	1279	1489	1692	1876	2041								
C1 and C3	F _d	0.038	0.027	0.022						0.019	0.017	0.016	0.014	0.013	0.013	0.012									
		0.019	0.013	0.011						0.010	0.009	0.008	0.007	0.007	0.006	0.006									

1. Reduction of standard inlet size may affect capacity. Consult your Emerson Process Management sales office for additional information.
 2. Values given are Inlet versus Outlet, i.e. 16x24 is an NPS 16 inlet and an NPS 24 outlet.
 3. At 100% travel.

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Whisper Trim™ III - Flow Up															Linear Characteristic			
Valve Size, ⁽²⁾ and Inlet Class ⁽¹⁾	Port Diameter		Maximum Travel		Whisper III Levels	Flow Coefficient	Valve Opening—Percent of Total Travel										X _T ⁽³⁾	F _L ⁽³⁾
	mm	Inches	mm	Inches			10	20	30	40	50	60	70	80	90	100		
18 x 30 CL600 to 900	424	16.70	606	23.88	A1 and A3	C _v	768	1525	2253	2878	3447	3953	4400	4788	5116	5359	0.65	0.89
						K _v	664	1319	1949	2490	2982	3419	3806	4141	4425	4636		
					A1	F _d	0.022	0.015	0.013	0.011	0.010	0.009	0.008	0.008	0.007	0.007		
							0.011	0.008	0.006	0.005	0.005	0.004	0.004	0.004	0.004	0.003		
					B1 and B3	C _v	486	969	1444	1928	2356	2756	3131	3481	3809	4088		
						K _v	420	838	1249	1668	2038	2384	2709	3011	3295	3536		
					B1	F _d	0.027	0.019	0.015	0.013	0.012	0.011	0.010	0.009	0.009	0.008		
							0.014	0.010	0.008	0.007	0.006	0.006	0.005	0.005	0.005	0.004		
					B3	F _d	0.014	0.010	0.008	0.007	0.006	0.006	0.005	0.005	0.005	0.004		
							0.014	0.010	0.008	0.007	0.006	0.006	0.005	0.005	0.005	0.004		
					C1 and C3	C _v	313	616	916	1222	1528	1831	2119	2384	2641	2866		
						K _v	271	533	792	1057	1322	1584	1833	2062	2284	2479		
C1	F _d	0.033	0.024	0.019	0.017	0.015	0.014	0.013	0.012	0.011	0.011							
		0.017	0.012	0.010	0.009	0.008	0.007	0.006	0.006	0.006	0.005							
C3	F _d	0.017	0.012	0.010	0.009	0.008	0.007	0.006	0.006	0.006	0.005							
		0.017	0.012	0.010	0.009	0.008	0.007	0.006	0.006	0.006	0.005							
20 x 30 CL600 to 900	424	16.70	606	23.88	A1 and A3	C _v	768	1525	2284	2966	3581	4147	4666	5134	5556	5891	0.65	0.89
						K _v	664	1319	1976	2565	3098	3587	4036	4441	4806	5095		
					A1	F _d	0.022	0.015	0.013	0.011	0.010	0.009	0.008	0.008	0.007	0.007		
							0.011	0.008	0.006	0.005	0.005	0.004	0.004	0.004	0.004	0.003		
					B1 and B3	C _v	487	969	1444	1928	2403	2838	3238	3619	3984	4300		
						K _v	421	838	1249	1668	2079	2454	2800	3130	3446	3720		
					B1	F _d	0.027	0.019	0.015	0.013	0.012	0.011	0.010	0.009	0.009	0.008		
							0.014	0.010	0.008	0.007	0.006	0.006	0.005	0.005	0.005	0.004		
					B3	F _d	0.014	0.010	0.008	0.007	0.006	0.006	0.005	0.005	0.005	0.004		
							0.014	0.010	0.008	0.007	0.006	0.006	0.005	0.005	0.005	0.004		
					C1 and C3	C _v	313	616	916	1222	1528	1831	2131	2438	2713	2953		
						K _v	271	533	792	1057	1322	1584	1844	2108	2346	2554		
C1	F _d	0.033	0.024	0.019	0.017	0.015	0.014	0.013	0.012	0.011	0.011							
		0.017	0.012	0.010	0.009	0.008	0.007	0.006	0.006	0.006	0.005							
C3	F _d	0.017	0.012	0.010	0.009	0.008	0.007	0.006	0.006	0.006	0.005							
		0.017	0.012	0.010	0.009	0.008	0.007	0.006	0.006	0.006	0.005							
22 x 30 through 24 x 30 CL600 to 900	424	16.70	606	23.88	A1 and A3	C _v	768	1525	2284	3009	3650	4247	4797	5306	5775	6153	0.65	0.89
						K _v	665	1319	1976	2603	3157	3674	4149	4590	4995	5322		
					A1	F _d	0.022	0.015	0.013	0.011	0.010	0.009	0.008	0.008	0.007	0.007		
							0.011	0.008	0.006	0.005	0.005	0.004	0.004	0.004	0.004	0.003		
					B1 and B3	C _v	487	969	1444	1928	2403	2875	3291	3691	4075	4406		
						K _v	421	838	1249	1668	2079	2487	2846	3192	3525	3811		
					B1	F _d	0.027	0.019	0.015	0.013	0.012	0.011	0.010	0.009	0.009	0.008		
							0.014	0.010	0.008	0.007	0.006	0.006	0.005	0.005	0.005	0.004		
					B3	F _d	0.014	0.010	0.008	0.007	0.006	0.006	0.005	0.005	0.005	0.004		
							0.014	0.010	0.008	0.007	0.006	0.006	0.005	0.005	0.005	0.004		
					C1 and C3	C _v	314	619	919	1222	1528	1831	2131	2438	2744	2997		
						K _v	271	535	795	1057	1322	1584	1844	2108	2373	2592		
C1	F _d	0.033	0.024	0.019	0.017	0.015	0.014	0.013	0.012	0.011	0.011							
		0.017	0.012	0.010	0.009	0.008	0.007	0.006	0.006	0.006	0.005							
C3	F _d	0.017	0.012	0.010	0.009	0.008	0.007	0.006	0.006	0.006	0.005							
		0.017	0.012	0.010	0.009	0.008	0.007	0.006	0.006	0.006	0.005							

1. Reduction of standard inlet size may affect capacity. Consult your Emerson Process Management sales office for additional information.
 2. Values given are Inlet versus Outlet, i.e. 18x30 is an NPS 18 inlet and an NPS 30 outlet.
 3. At 100% travel.



Whisper Trim III - Flow Up															Linear Characteristic					
Valve Size, ⁽²⁾ and Inlet Class ⁽¹⁾	Port Diameter		Maximum Travel		Whisper III Levels	Flow Coefficient	Valve Opening—Percent of Total Travel										X _T ⁽³⁾	F _L ⁽³⁾		
	mm	Inches	mm	Inches			10	20	30	40	50	60	70	80	90	100				
22 x 36 CL600 to 900	506	19.94	606	23.88	A1 and A3	C _v	964	1922	2884	3725	4494	5194	5831	6400	6903	7131	0.65	0.89		
						K _v	834	1662	2495	3222	3887	4493	5044	5536	5971	6169				
					A1	F _d	0.018	0.013	0.010	0.009	0.008	0.007	0.007	0.006	0.006	0.006			0.006	
							0.010	0.007	0.006	0.005	0.004	0.004	0.004	0.003	0.003	0.003				
					B1 and B3	C _v	577	1150	1716	2291	2853	3372	3850	4306	4744	5119			0.65	0.89
							K _v	499	995	1484	1981	2468	2917	3330	3725	4103				
					B1	F _d	0.025	0.017	0.014	0.012	0.011	0.010	0.009	0.009	0.008	0.008			0.65	0.89
							0.012	0.009	0.007	0.006	0.006	0.005	0.005	0.004	0.004	0.004				
					B3	F _d	0.012	0.009	0.007	0.006	0.006	0.005	0.005	0.004	0.004	0.004			0.65	0.89
							0.012	0.009	0.007	0.006	0.006	0.005	0.005	0.004	0.004	0.004				
					C1 and C3	C _v	371	731	1084	1447	1809	2169	2525	2884	3216	3503			0.65	0.89
							K _v	321	633	938	1252	1565	1876	2184	2495	2782				
C1	F _d	0.031	0.022	0.018	0.016	0.014	0.013	0.012	0.011	0.010	0.010	0.65	0.89							
		0.016	0.011	0.009	0.008	0.007	0.006	0.006	0.006	0.005	0.005									
C3	F _d	0.016	0.011	0.009	0.008	0.007	0.006	0.006	0.006	0.006	0.005	0.65	0.89							
		0.016	0.011	0.009	0.008	0.007	0.006	0.006	0.006	0.005	0.005									
24 x 36 CL600 to 900	506	19.94	606	23.88	A1 and A3	C _v	965	1925	2884	3847	4700	5491	6234	6928	7572	7875	0.65	0.89		
						K _v	835	1665	2495	3328	4066	4749	5393	5993	6550	6812				
					A1	F _d	0.018	0.013	0.010	0.009	0.008	0.007	0.007	0.006	0.006	0.006			0.65	0.89
							0.010	0.007	0.006	0.005	0.004	0.004	0.004	0.003	0.003	0.003				
					B1 and B3	C _v	578	1150	1716	2291	2856	3428	3994	4494	4978	5406			0.65	0.89
							K _v	500	995	1484	1981	2471	2965	3455	3887	4306				
					B1	F _d	0.025	0.017	0.014	0.012	0.011	0.010	0.009	0.009	0.008	0.008			0.65	0.89
							0.012	0.009	0.007	0.006	0.006	0.005	0.005	0.004	0.004	0.004				
					B3	F _d	0.012	0.009	0.007	0.006	0.006	0.005	0.005	0.004	0.004	0.004			0.65	0.89
							0.012	0.009	0.007	0.006	0.006	0.005	0.005	0.004	0.004	0.004				
					C1 and C3	C _v	372	731	1088	1447	1809	2169	2525	2884	3250	3581			0.65	0.89
							K _v	321	633	941	1252	1565	1876	2184	2495	2811				
C1	F _d	0.031	0.022	0.018	0.016	0.014	0.013	0.012	0.011	0.010	0.010	0.65	0.89							
		0.016	0.011	0.009	0.008	0.007	0.006	0.006	0.006	0.005	0.005									
C3	F _d	0.016	0.011	0.009	0.008	0.007	0.006	0.006	0.006	0.006	0.005	0.65	0.89							
		0.016	0.011	0.009	0.008	0.007	0.006	0.006	0.006	0.005	0.005									

1. Reduction of standard inlet size may affect capacity. Consult your Emerson Process Management sales office for additional information.
2. Values given are Inlet versus Outlet, i.e. 22x36 is an NPS 22 inlet and an NPS 36 outlet.
3. At 100% travel.

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Coefficients	Valve Size, NPS	Valve Rotation, Degrees								Equal Percentage	
		10	20	30	40	50	60	70	80	90	
Cv	1 ⁽²⁾	0.010 ⁽¹⁾	0.738	2.53	5.00	8.40	12.4	18.3	29.2	34.6	
Kv		0.009	0.638	2.19	4.33	7.27	10.7	15.8	25.3	29.9	
Fl		0.93	0.90	0.90	0.88	0.83	0.84	0.81	0.66	0.69	
Xt		0.392	0.469	0.571	0.592	0.529	0.507	0.441	0.292	0.275	
Cv	1-1/2 ⁽²⁾	0.014 ⁽¹⁾	2.07	6.15	11.9	19.2	27.8	38.8	59.2	76.0	
Kv		0.012	1.79	5.32	10.3	16.6	24.0	33.6	51.2	65.7	
Fl		0.87	0.89	0.86	0.87	0.83	0.82	0.82	0.71	0.73	
Xt		0.492	0.460	0.548	0.557	0.534	0.516	0.481	0.344	0.328	
Cv	2 ⁽²⁾	0.028 ⁽¹⁾	2.64	9.60	19.1	31.4	46.1	67.2	93.6	123	
Kv		0.024	2.28	8.30	16.5	27.2	39.9	58.1	81.0	106	
Fl		0.94	0.89	0.90	0.85	0.84	0.83	0.78	0.75	0.75	
Xt		0.386	0.490	0.585	0.628	0.597	0.559	0.474	0.409	0.366	
Cv	3	1.91	12.5	28.4	49.9	78	116	168	229	364	
Kv		1.65	10.8	24.6	43.2	67.5	100	145	198	315	
Fd		0.51	0.65	0.75	0.82	0.87	0.92	0.95	0.98	0.99	
Fl		0.90	0.90	0.89	0.87	0.83	0.78	0.75	0.75	0.65	
Xt		0.455	0.619	0.667	0.618	0.555	0.490	0.424	0.388	0.235	
Cv	4	5.21	25.4	52.6	90.4	135	189	260	352	523	
Kv		4.51	22.0	45.5	78.2	117	163	225	304	452	
Fd		0.51	0.65	0.75	0.82	0.87	0.92	0.95	0.98	0.99	
Fl		0.87	0.88	0.87	0.84	0.82	0.79	0.77	0.74	0.65	
Xt		0.546	0.677	0.684	0.603	0.561	0.516	0.446	0.371	0.255	
Cv	6	9.45	41.9	88.8	153	230	329	461	646	1080	
Kv		8.17	36.2	76.8	132	199	285	399	559	934	
Fd		0.51	0.62	0.73	0.81	0.86	0.91	0.95	0.97	0.99	
Fl		0.88	0.93	0.90	0.88	0.85	0.81	0.77	0.72	0.55	
Xt		0.633	0.737	0.761	0.665	0.599	0.521	0.436	0.346	0.194	
Cv	8	6.27	44	111	200	319	466	649	924	1750	
Kv		5.42	38.1	96.0	173	276	403	561	799	1514	
Fd		0.51	0.62	0.73	0.81	0.86	0.91	0.95	0.97	0.99	
Fl		0.93	0.94	0.93	0.90	0.86	0.83	0.79	0.74	0.51	
Xt		0.703	0.795	0.745	0.678	0.615	0.555	0.481	0.378	0.156	

1. This coefficient was measured at 12 degrees of rotation.
 2. NPS 1 through 2 are not available with Flat Metal Seals.

Coefficients	Valve Size, NPS	Valve Rotation, Degrees								Equal Percentage	
		10	20	30	40	50	60	70	80	90	
Cv	10	21.8	110	251	433	659	947	1300	1780	2710	
Kv		18.9	95.2	217	375	570	819	1125	1540	2344	
Fd		0.51	0.64	0.75	0.82	0.87	0.91	0.95	0.98	0.99	
FL		0.95	0.95	0.92	0.87	0.84	0.80	0.77	0.72	0.61	
Xt		0.733	0.759	0.697	0.661	0.594	0.499	0.433	0.367	0.233	
Cv	12	34	163	359	619	936	1340	1860	2580	4100	
Kv		29.4	141	311	535	810	1159	1609	2232	3547	
Fd		0.51	0.65	0.75	0.82	0.87	0.92	0.95	0.98	0.99	
FL		0.94	0.98	0.94	0.91	0.88	0.83	0.80	0.75	0.60	
Xt		0.766	0.819	0.795	0.723	0.653	0.559	0.471	0.389	0.233	
Cv	14 ⁽¹⁾	60.0	250	541	872	1230	1670	2290	3410	5610	
Kv		51.9	216	468	754	1064	1445	1981	2950	4853	
FL		0.89	0.96	0.79	0.78	0.79	0.80	0.74	0.54	0.37	
Xt		.999	.907	.605	.526	.563	.593	.526	.345	.198	
Cv	16 ⁽¹⁾	70.0	319	692	1150	1630	2380	3290	4680	8270	
Kv		60.6	280	599	995	1410	2059	2846	4048	7154	
F _D		0.51	0.67	0.76	0.83	0.88	0.92	0.95	0.98	1.00	
FL		0.89	0.96	0.79	0.78	0.79	0.80	0.74	0.54	0.37	
Xt		.273	.731	.566	.469	.469	.452	.384	.265	.133	
Cv	20 ⁽¹⁾	110	459	993	1600	2260	3070	4200	6260	10,300	
Kv		95.2	397	859	1384	1955	2656	3633	5415	8910	
FL		0.89	0.96	0.79	0.78	0.79	0.80	0.74	0.54	0.37	
Xt		.999	.907	.605	.526	.563	.593	.526	.345	.198	

1. NPS 14 through 20 V150 valves are not available with Flat Metal seals.

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Coefficients	Valve Size, NPS	Valve Rotation, Degrees								Equal Percentage	
		10	20	30	40	50	60	70	80	90	
Cv	1	3.48 ⁽¹⁾	3.98	5.51	7.55	10.6	14.9	20.9	34.8	38.8	
Kv		3.01	3.44	4.77	6.53	9.17	12.9	18.1	30.1	33.6	
Fl		0.94	0.93	0.95	0.93	0.90	0.85	0.81	0.62	0.64	
Xt		0.752	0.685	0.653	0.683	0.628	0.532	0.435	0.236	0.231	
Cv	1-1/2	5.17 ⁽¹⁾	6.40	9.69	14.7	21.6	30.7	41.5	61.5	81.4	
Kv		4.47	5.54	8.38	12.7	18.7	26.6	35.9	53.2	70.4	
Fl		0.95	0.96	0.95	0.93	0.90	0.87	0.85	0.76	0.74	
Xt		0.637	0.618	0.619	0.625	0.589	0.529	0.494	0.366	0.316	
Cv	2	8.00 ⁽¹⁾	9.70	15.5	24.4	36.2	51.9	71.9	96.8	138	
Kv		6.92	8.39	13.4	21.1	31.3	44.9	62.2	83.7	119	
Fl		0.95	0.94	0.93	0.92	0.89	0.85	0.83	0.81	0.73	
Xt		0.623	0.613	0.617	0.641	0.627	0.572	0.509	0.453	0.330	
Cv	3	22.4	30.4	45.2	66.5	95.3	129	178	250	422	
Kv		19.4	26.3	39.1	57.5	82.4	112	154	216	365	
Fd		0.51	0.65	0.75	0.82	0.87	0.92	0.95	0.98	0.99	
Fl		0.80	0.83	0.86	0.85	0.85	0.83	0.79	0.78	0.66	
Xt		0.427	0.503	0.548	0.544	0.519	0.518	0.46	0.374	0.208	
Cv	4	22.2	40.7	67.8	104	148	201	273	370	579	
Kv		19.2	35.2	58.6	90.0	128	174	236	320	501	
Fd		0.51	0.65	0.75	0.82	0.87	0.92	0.95	0.98	0.99	
Fl		0.87	0.87	0.87	0.85	0.83	0.81	0.78	0.75	0.63	
Xt		0.537	0.568	0.607	0.591	0.567	0.532	0.459	0.375	0.228	
Cv	6	31.5	58.6	104	163	242	346	474	658	1150	
Kv		27.2	50.7	90.0	141	209	299	410	569	995	
Fd		0.51	0.62	0.73	0.81	0.86	0.91	0.95	0.97	0.99	
Fl		0.86	0.90	0.91	0.88	0.85	0.81	0.78	0.74	0.55	
Xt		0.499	0.644	0.656	0.651	0.611	0.539	0.461	0.356	0.182	
Cv	8	47.8	83.0	144	240	358	506	693	1000	1880	
Kv		41.3	71.8	125	208	310	438	599	865	1626	
Fd		0.51	0.62	0.73	0.81	0.86	0.91	0.95	0.97	0.99	
Fl		0.84	0.87	0.92	0.89	0.86	0.82	0.79	0.72	0.50	
Xt		0.49	0.592	0.643	0.601	0.576	0.527	0.466	0.343	0.148	

1. This coefficient was measured at 12 degrees of rotation.

Coefficients	Valve Size, NPS	Valve Rotation, Degrees								Equal Percentage	
		10	20	30	40	50	60	70	80	90	
Cv	10	71.4	156	296	479	691	958	1360	1830	2820	
Kv		61.8	135	256	414	598	829	1176	1583	2439	
Fd		0.51	0.64	0.75	0.82	0.87	0.91	0.95	0.98	0.99	
FL		0.86	0.90	0.90	0.87	0.86	0.85	0.77	0.73	0.60	
Xt		0.482	0.599	0.633	0.604	0.573	0.529	0.433	0.371	0.223	
Cv	12	116	234	430	686	1000	1410	1970	2690	4400	
Kv		100	202	372	593	865	1220	1704	2327	3806	
Fd		0.51	0.65	0.75	0.82	0.87	0.92	0.95	0.98	0.99	
FL		0.84	0.88	0.88	0.86	0.84	0.81	0.76	0.72	0.57	
Xt		0.506	0.635	0.656	0.637	0.605	0.544	0.454	0.37	0.207	
Cv	14	201	357	643	966	1300	1720	2410	3530	5930	
Kv		174	309	556	835	1125	1488	2085	3053	5129	
FL		0.89	0.96	0.79	0.78	0.79	0.80	0.74	0.54	0.37	
Xt		.999	.907	.605	.526	.563	.593	.526	.345	.198	
Cv	16	234	455	822	1270	1730	2460	3460	4850	8740	
Kv		202	394	711	1099	1496	2128	2993	4195	7560	
F _D		0.51	0.67	0.76	0.83	0.88	0.92	0.95	0.98	1.00	
F _L		0.89	0.96	0.79	0.78	0.79	0.80	0.74	0.54	0.37	
X _T		.273	.731	.566	.469	.469	.452	.384	.265	.133	
Cv	20	368	655	1180	1770	2390	3170	4420	6480	10900	
Kv		318	567	1021	1531	2067	2742	3823	5605	9429	
F _L		0.89	0.96	0.79	0.78	0.79	0.80	0.74	0.54	0.37	
X _T		.999	.907	.605	.526	.563	.593	.526	.345	.198	

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Coefficients	Valve Size, NPS	Valve Rotation, Degrees								Equal Percentage	
		10	20	30	40	50	60	70	80	90	
Cv	1	2.58 ⁽¹⁾	3.16	5.05	8.13	12.4	18.1	25.7	33.4	38.1	
Kv		2.23	2.73	4.37	7.03	10.7	15.7	22.2	28.9	33.0	
Fl		0.87	0.86	0.81	0.75	0.70	0.65	0.59	0.58	0.59	
Xt		0.613	0.521	0.500	0.451	0.383	0.323	0.270	0.249	0.244	
Cv	1-1/2	3.80 ⁽¹⁾	5.11	8.82	15.1	24.1	35.3	49.9	65.5	79.3	
Kv		3.29	4.42	7.63	13.1	20.8	30.5	43.2	56.7	68.6	
Fl		0.89	0.89	0.85	0.79	0.74	0.69	0.64	0.60	0.60	
Xt		0.641	0.612	0.562	0.503	0.435	0.381	0.319	0.285	0.277	
Cv	2	5.55 ⁽¹⁾	7.35	13.9	25.2	40.1	59.5	82.4	106	126	
Kv		4.80	6.36	12.0	21.8	34.7	51.5	71.3	91.7	109	
Fl		0.89	0.88	0.86	0.79	0.76	0.72	0.68	0.65	0.64	
Xt		0.643	0.641	0.586	0.524	0.476	0.413	0.365	0.341	0.326	
Cv	3	15.3	23.7	38.6	65.2	102	155	228	313	411	
Kv		13.2	20.5	33.4	56.4	88.2	134	197	271	356	
Fl		0.81	0.83	0.84	0.80	0.74	0.66	0.59	0.54	0.51	
Xt		0.516	0.563	0.601	0.504	0.433	0.353	0.271	0.217	0.18	
Cv	4	14.8	31.2	59.6	100	157	232	327	441	542	
Kv		12.8	27.0	51.6	86.5	136	201	283	381	469	
Fl		0.87	0.91	0.88	0.85	0.79	0.72	0.65	0.60	0.58	
Xt		0.614	0.676	0.643	0.581	0.492	0.408	0.326	0.258	0.237	
Cv	6	19.8	46.3	97	172	275	409	584	764	954	
Kv		17.1	40.0	83.9	149	238	354	505	661	825	
Fl		0.82	0.90	0.88	0.86	0.81	0.72	0.66	0.62	0.59	
Xt		0.638	0.765	0.676	0.558	0.459	0.378	0.309	0.267	0.233	
Cv	8	31.2	71.4	149	265	421	625	881	1190	1340	
Kv		27.0	61.8	129	229	364	541	762	1029	1159	
Fl		0.78	0.85	0.84	0.83	0.78	0.72	0.66	0.60	0.66	
Xt		0.641	0.601	0.562	0.493	0.416	0.355	0.304	0.24	0.268	

1. This coefficient was measured at 12 degrees of rotation.

Coefficients	Valve Size, NPS	Valve Rotation, Degrees								Equal Percentage	
		10	20	30	40	50	60	70	80	90	
C _v	10	40.4	127	293	529	839	1200	1660	2060	2500	
K _v		34.9	110	253	458	726	1038	1436	1782	2163	
F _L		0.76	0.85	0.85	0.82	0.76	0.72	0.67	0.66	0.64	
X _T		0.738	0.759	0.593	0.482	0.404	0.362	0.311	0.297	0.267	
C _v	12	74	199	438	784	1250	1820	2550	3250	4000	
K _v		64.0	172	379	678	1081	1574	2206	2811	3460	
F _L		0.76	0.85	0.84	0.81	0.76	0.70	0.65	0.62	0.59	
X _T		0.650	0.723	0.599	0.490	0.406	0.35	0.295	0.268	0.237	
C _v	14	121	297	646	1090	1600	2190	3030	4120	5320	
K _v		105	257	559	943	1384	1894	2621	3564	4602	
F _L		0.89	0.96	0.79	0.78	0.79	0.80	0.74	0.54	0.37	
X _T		.999	.907	.605	.526	.563	.593	.526	.345	.198	
C _v	16	141	379	826	1430	2130	3120	4360	5660	7850	
K _v		122	328	715	1237	1842	2699	3771	4896	6790	
F _D		0.51	0.67	0.76	0.83	0.88	0.92	0.95	0.98	1.00	
F _L		0.89	0.96	0.79	0.78	0.79	0.80	0.74	0.54	0.37	
X _T		.273	.731	.566	.469	.469	.452	.384	.265	.133	
C _v	20	222	545	1190	1990	2950	4030	5560	7570	9780	
K _v		192	472	1029	1721	2552	3486	4809	6548	8460	
F _L		0.89	0.96	0.79	0.78	0.79	0.80	0.74	0.54	0.37	
X _T		.999	.907	.605	.526	.563	.593	.526	.345	.198	

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Vee-Ball™ V150, V200, and V300

Forward Flow

HD (Heavy Duty) Metal Seals
NPS 1 through 8

Catalog 12

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Coefficients	Valve Size, NPS	Valve Rotation, Degrees								Equal Percentage	
		10	20	30	40	50	60	70	80	90	
Cv	1	0.0503 ⁽¹⁾	1.01	2.53	4.68	7.60	11.3	16.5	28.0	33.1	
Kv		0.0435	0.87	2.19	4.05	6.57	9.77	14.3	24.2	28.6	
Fl		0.95	0.96	0.94	0.91	0.89	0.88	0.84	0.68	0.68	
Xt		0.829	0.713	0.687	0.650	0.600	0.553	0.473	0.263	0.243	
Cv	1-1/2	0.018 ⁽¹⁾	1.56	4.20	8.90	15.1	23.2	32.8	50.4	70.8	
Kv		0.016	1.35	3.63	7.70	13.1	20.1	28.4	43.6	61.2	
Fl		0.91	0.86	0.94	0.86	0.89	0.87	0.85	0.75	0.70	
Xt		0.591	0.622	0.683	0.540	0.549	0.561	0.531	0.347	0.265	
Cv	2	0.020 ⁽¹⁾	2.00	6.75	14.8	25.8	40.4	59.6	83.9	122	
Kv		0.017	1.73	5.84	12.8	22.3	34.9	51.6	72.6	106	
Fl		0.89	0.90	0.91	0.90	0.88	0.87	0.81	0.78	0.72	
Xt		0.749	0.612	0.589	0.633	0.624	0.558	0.485	0.427	0.314	
Cv	3	2.09	11.9	28.0	49.6	77.0	113	159	230	387	
Kv		1.81	10.3	24.2	42.9	66.6	97.7	138	199	335	
Fd		0.51	0.65	0.75	0.82	0.87	0.92	0.95	0.98	0.99	
Fl		0.91	0.93	0.92	0.89	0.86	0.81	0.79	0.76	0.63	
Xt		0.499	0.642	0.667	0.610	0.564	0.517	0.463	0.364	0.212	
Cv	4	2.53	19.9	47.7	83.1	133	186	254	352	534	
Kv		2.19	17.2	41.3	71.9	115	161	220	304	462	
Fd		0.51	0.65	0.75	0.82	0.87	0.92	0.95	0.98	0.99	
Fl		0.91	0.89	0.87	0.85	0.82	0.80	0.78	0.75	0.64	
Xt		0.776	0.658	0.642	0.614	0.530	0.493	0.440	0.354	0.240	
Cv	6	6.96	34.3	81.0	142	219	317	439	602	964	
Kv		6.02	29.7	70.1	123	189	274	380	521	834	
Fd		0.51	0.62	0.73	0.81	0.86	0.91	0.95	0.97	0.99	
Fl		0.92	0.93	0.92	0.88	0.85	0.81	0.78	0.74	0.59	
Xt		0.995	0.994	0.880	0.800	0.686	0.591	0.513	0.409	0.238	
Cv	8	4.03	35.6	96.5	181	300	440	636	951	1710	
Kv		3.49	30.8	83.5	157	260	381	550	823	1479	
Fd		0.51	0.62	0.73	0.81	0.86	0.91	0.95	0.97	0.99	
Fl		0.90	0.94	0.94	0.91	0.88	0.86	0.80	0.70	0.51	
Xt		0.997	0.743	0.762	0.711	0.608	0.552	0.463	0.335	0.160	

1. This coefficient was measured at 12 degrees of rotation.

Coefficients	Valve Size, NPS	Valve Rotation, Degrees								Equal Percentage	
		10	20	30	40	50	60	70	80	90	
Cv	10	11.9	87.6	214	388	599	875	1240	1720	2820	
Kv		10.3	75.8	185	336	518	757	1073	1488	2439	
Fd		0.51	0.64	0.75	0.82	0.87	0.91	0.95	0.98	0.99	
FL		0.95	0.97	0.94	0.90	0.86	0.80	0.76	0.70	0.54	
Xt		0.773	0.767	0.728	0.646	0.590	0.525	0.437	0.359	0.206	
Cv	12	25.0	143	343	611	943	1370	1920	2650	4290	
Kv		21.6	124	297	529	816	1185	1661	2292	3711	
Fd		0.51	0.65	0.75	0.82	0.87	0.92	0.95	0.98	0.99	
FL		0.93	0.94	0.93	0.89	0.85	0.81	0.76	0.71	0.56	
Xt		0.784	0.802	0.733	0.659	0.582	0.510	0.433	0.350	0.204	
Cv	14	56.0	232	502	809	1140	1550	2120	3160	5200	
Kv		48.4	201	434	700	986	1341	1834	2733	4498	
FL		0.89	0.96	0.79	0.78	0.79	0.80	0.74	0.54	0.37	
Xt		.999	.907	.605	.526	.563	.593	.526	.345	.198	
Cv	16	26.6	237	600	1040	1500	2040	2900	4560	7840	
Kv		22.5	177	449	778	1122	1526	2170	3411	5866	
Fd		0.51	0.67	0.76	0.83	0.88	0.92	0.95	0.98	1.00	
FL		0.89	0.96	0.79	0.78	0.79	0.80	0.74	0.54	0.37	
Xt		.965	.999	.593	.462	.487	.533	.462	.278	.135	
Cv	20	105	436	942	1520	2140	2910	3990	5940	9770	
Kv		78.6	326	705	1137	1601	2177	2985	4444	7310	
FL		0.89	0.96	0.79	0.78	0.79	0.80	0.74	0.54	0.37	
Xt		.999	.907	.605	.526	.563	.593	.526	.345	.198	

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Vee-Ball™ V150, V200, and V300

Reverse Flow

HD (Heavy Duty) Metal Seals
NPS 1 through 8

Catalog 12

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Coefficients	Valve Size, NPS	Valve Rotation, Degrees								Equal Percentage
		10	20	30	40	50	60	70	80	90
Cv	1	0.063 (1)	0.982	2.26	4.65	8.57	14.8	22.0	32.2	36.9
Kv		0.054	0.849	1.95	4.02	7.41	12.8	19.0	27.9	31.9
Fl		0.87	0.84	0.88	0.83	0.76	0.66	0.61	0.52	0.50
Xt		0.54	0.706	0.738	0.590	0.440	0.309	0.252	0.181	0.168
Cv	1-1/2	0.016 (1)	1.45	3.92	8.33	15.9	27.4	43.6	59.8	77.5
Kv		0.014	1.25	3.39	7.21	13.8	23.7	37.7	51.7	67.0
Fl		0.95	0.87	0.88	0.86	0.80	0.71	0.61	0.58	0.52
Xt		0.642	0.642	0.664	0.584	0.471	0.353	0.262	0.230	0.186
Cv	2	0.019 (1)	2.16	6.85	16.0	30.0	50.5	77.7	106	129
Kv		0.016	1.87	5.93	13.8	26.0	43.7	67.2	91.7	112
Fl		0.95	0.82	0.89	0.86	0.80	0.71	0.64	0.60	0.59
Xt		0.448	0.589	0.635	0.534	0.460	0.375	0.299	0.260	0.241
Cv	3	3.1	13.1	26.8	55.0	96.0	154	232	320	417
Kv		2.68	11.3	23.2	47.6	83.0	133	201	277	361
Fl		0.99	0.96	0.94	0.84	0.74	0.65	0.56	0.51	0.49
Xt		0.265	0.538	0.737	0.535	0.402	0.308	0.238	0.19	0.155
Cv	4	2.93	18.9	46.0	89.0	151	239	351	480	599
Kv		2.53	16.3	39.8	77.0	131	207	304	415	518
Fl		0.93	1.0	0.93	0.87	0.79	0.67	0.59	0.53	0.51
Xt		0.504	0.895	0.709	0.569	0.464	0.349	0.259	0.203	0.176
Cv	6	7.95	37.8	91.2	177	290	440	639	886	1150
Kv		6.88	32.7	78.9	153	251	381	553	766	995
Fl		0.95	0.96	0.92	0.87	0.79	0.68	0.62	0.54	0.49
Xt		0.813	0.807	0.721	0.548	0.431	0.333	0.25	0.196	0.165
Cv	8	8.76	41.4	112	223	379	590	853	1150	1480
Kv		7.58	35.8	96.9	193	328	510	738	995	1280
Fl		0.86	0.86	0.91	0.85	0.81	0.73	0.66	0.61	0.56
Xt		0.162	0.643	0.654	0.537	0.449	0.361	0.285	0.242	0.203

1. This coefficient was measured at 12 degrees of rotation.

**Vee-Ball V150, V200, and V300
Reverse Flow**

HD (Heavy Duty) Metal Seals
NPS 10 through 12

Catalog 12

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Coefficients	Valve Size, NPS	Valve Rotation, Degrees								Equal Percentage	
		10	20	30	40	50	60	70	80	90	
Cv	10	12.7	89.3	235	461	793	1170	1770	2400	2890	
Kv		11.0	77.2	203	399	686	1012	1531	2076	2500	
Fl		0.91	0.96	0.91	0.87	0.77	0.72	0.62	0.55	0.55	
Xt		0.988	0.906	0.674	0.542	0.419	0.36	0.256	0.204	0.194	
Cv	12	27.0	151	381	744	1250	1870	2770	3800	4750	
Kv		23.4	131	330	644	1081	1618	2396	3287	4109	
Fl		0.92	0.93	0.89	0.84	0.76	0.68	0.60	0.53	0.50	
Xt		0.795	0.774	0.630	0.491	0.382	0.311	0.228	0.180	0.161	

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Coefficients	Valve Rotation, Degrees								
	10	20	30	40	50	60	70	80	90
Metal Micro-Notch Ball with Fisher TCM Plus or Heavy Duty (HD) Seal									
C _V	0.014	0.130	0.360	0.660	1.03	1.43	2.00	3.25	5.23
K _V	0.012	0.112	0.311	0.571	0.89	1.24	1.73	2.81	4.52
F _L	0.95	0.90	0.93	0.93	0.91	0.90	0.93	0.93	0.88
X _T	0.551	0.581	0.660	0.628	0.589	0.593	0.620	0.605	0.578
Ceramic Micro-Notch Ball with Heavy Duty (HD) Seal									
C _V	0.018	0.148	0.415	0.786	1.28	1.78	2.34	2.86	3.64
K _V	0.016	0.128	0.359	0.680	1.11	1.54	2.02	2.47	3.15
F _L	0.90	0.93	0.94	0.93	0.89	0.90	0.88	0.89	0.92
X _T	0.581	0.697	0.693	0.601	0.593	0.612	0.533	0.537	0.612
Metal Micro-Scratch Ball with TCM Plus or Heavy Duty (HD) Seal									
C _V	0.0033	0.0109	0.0232	0.0396	0.0542	0.2032	1.136	2.672	5.155
K _V	0.0029	0.0094	0.0201	0.0343	0.0469	0.1758	0.983	2.311	4.459
F _L	0.95	0.90	0.93	0.93	0.91	0.90	0.93	0.93	0.88
X _T	0.551	0.581	0.660	0.628	0.589	0.593	0.620	0.605	0.578
Metal Macro-Notch Ball with TCM Plus or Heavy Duty (HD) Seal									
C _V	---	0.206	1.11	2.79	5.23	7.64	9.18	9.56	9.57
K _V	---	0.178	0.96	2.41	4.52	6.61	7.94	8.27	8.28
F _L	0.91	0.95	0.91	0.85	0.85	0.84	0.85	0.85	0.85
X _T	1.00	0.65	0.79	0.64	0.60	0.56	0.56	0.56	0.58
Ceramic Macro-Notch Ball with Heavy Duty (HD) Seal									
C _V	0.0124	0.782	2.040	4.280	6.13	7.55	8.03	8.03	8.03
K _V	0.0107	0.676	1.765	3.702	5.30	6.53	6.95	6.95	6.95
F _L	0.91	0.95	0.91	0.85	0.85	0.84	0.85	0.85	0.85
X _T	1.00	0.65	0.79	0.64	0.60	0.56	0.56	0.56	0.58

Valve Size, NPS	Coefficient	Valve Rotation, Degrees								
		10°	20°	30°	40°	50°	60°	70°	80°	90°
4	C _v	4.9	23.1	49.8	87.2	129	178	245	332	389
	K _v	4.2	20.0	43.1	75.4	112	154	212	287	336
	F _L	---	---	0.91	---	0.79	---	0.73	---	0.71
	X _T	0.70	0.76	0.74	0.64	0.59	0.52	0.42	0.33	0.33
6	C _v	---	36.1	77.4	131	190	266	383	544	657
	K _v	---	31.2	67.0	113	164	230	331	471	568
	F _L	---	0.92	0.88	---	0.86	0.81	0.79	0.72	0.70
	X _T	---	0.38	0.50	0.51	0.51	0.46	0.37	0.29	0.31
8	C _v	7.9	48.4	112	186	268	380	553	802	1060
	K _v	6.8	41.9	96.9	161	232	329	478	694	917
	F _L	0.88	0.80	0.80	0.75	0.79	0.78	0.74	0.64	0.66
	X _T	0.68	0.95	0.79	0.68	0.64	0.58	0.44	0.31	0.30
10	C _v	13.3	84.7	181	294	452	633	894	1190	1620
	K _v	11.5	73.3	157	254	391	548	773	1030	1400
	F _L	0.89	0.87	0.83	0.79	0.77	0.77	0.75	0.69	0.66
	X _T	0.83	0.73	0.75	0.75	0.62	0.54	0.42	0.36	0.31
12	C _v	20.3	132	269	461	687	1010	1350	1920	2830
	K _v	17.6	114	233	399	594	874	1170	1660	2450
	F _L	0.87	0.80	0.83	0.78	0.79	0.71	0.73	0.69	0.63
	X _T	0.91	0.64	0.77	0.74	0.70	0.56	0.50	0.38	0.28
14	C _v	---	229	502	769	1120	1460	2040	2670	3340
	K _v	---	198	434	665	969	1260	1760	2320	2910
	F _L	---	0.88	---	0.75	---	0.76	---	0.65	0.65
	X _T	---	0.78	0.67	0.66	0.56	0.52	0.40	0.33	0.30
16	C _v	---	234	600	989	1472	1923	2792	3865	5064
	K _v	---	202	519	855	1270	1660	2420	3340	4380
	F _L	---	0.88	---	0.75	---	0.76	---	0.66	0.65
	X _T	---	0.86	0.66	0.58	0.49	0.47	0.35	0.26	0.20
20	C _v	---	430	942	1444	2104	2742	3841	5035	6312
	K _v	---	372	815	1250	1820	2370	3320	4360	5460
	F _L	---	0.88	---	0.75	---	0.76	---	0.66	0.65
	X _T	---	0.78	0.67	0.66	0.56	0.52	0.39	0.33	0.30

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Reverse Flow		Modified Equal Percentage Characteristic								
		Valve Rotation, Degrees								
Coefficients	Valve Size, NPS	10	20	30	40	50	60	70	80	90
C _v	3	10	20	30	50	70	90	115	140	170
K _v		9	17	26	43	61	78	99	121	147
F _L		0.96	0.91	0.79	0.73	0.70	0.64	0.57	0.54	0.53
C _v	4	15	30	55	85	130	180	240	310	380
K _v		13	26	48	74	112	156	208	268	329
F _L		0.98	0.93	0.84	0.72	0.67	0.65	0.62	0.62	0.61
C _v	6	30	60	110	180	275	380	500	600	705
K _v		26	52	111	156	238	329	433	519	610
F _L		0.70	0.80	0.84	0.80	0.71	0.67	0.63	0.59	0.49
C _v	8	50	75	125	225	350	510	700	900	1150
K _v		43	65	108	195	303	441	606	779	995
F _L		0.77	0.83	0.87	0.80	0.73	0.66	0.61	0.58	0.58
C _v	10	75	150	250	475	725	1000	1350	1750	2200
K _v		65	130	216	411	627	865	1168	1514	1903
F _L		0.84	0.86	0.90	0.79	0.74	0.64	0.58	0.57	0.49
C _v	12	100	225	425	700	1050	1450	1900	2350	2850
K _v		87	195	368	606	908	1254	1644	2033	2465
F _L		0.71	0.81	0.80	0.73	0.69	0.62	0.59	0.55	0.50



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The Fisher® V200 has flow coefficients identical to the V150. Refer to the V150 information.
Reminder: The V200 is available in NPS 1 through 10 only.



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Forward or Reverse Flow											Approximately Equal Percentage Characteristic
Coefficients	Valve Size, NPS	Valve Rotation, Degrees									
		10	20	30	40	50	60	70	80	90	
C _v	4	---	6.74	19.0	39.9	68.9	114	182	335	499	
K _v		---	5.83	16.4	34.5	59.6	98.6	157	290	432	
F _d		---	0.49	0.69	0.84	0.92	0.96	0.98	1.00	1.00	
F _L		0.90	0.90	0.90	0.90	0.85	0.78	0.68	0.57	0.45	
X _T		---	0.66	0.77	0.76	0.71	0.59	0.47	0.26	0.17	
C _v	6	---	15.7	42.8	76.1	130	203	308	567	855	
K _v		---	13.6	37.0	65.8	112	176	266	490	432	
F _d		---	0.54	0.69	0.83	0.90	0.94	0.97	0.98	0.99	
F _L		0.90	0.90	0.90	0.90	0.85	0.78	0.68	0.57	0.45	
X _T		---	0.99	0.83	0.90	0.76	0.64	0.54	0.28	0.17	
C _v	8	1.48	27.9	91.8	177	308	478	720	1220	2190	
K _v		1.28	24.1	79.4	153	266	413	623	1060	1890	
F _d		---	0.59	0.75	0.85	0.92	0.96	0.98	0.99	0.99	
F _L		0.90	0.90	0.90	0.90	0.85	0.78	0.68	0.57	0.45	
X _T		0.35	0.92	0.81	0.85	0.63	0.58	0.48	0.29	0.14	
C _v	10	42.8	85.5	174	306	484	764	1150	1800	3055	
K _v		37.0	74.0	151	265	419	661	995	1560	2640	
F _d		---	0.62	0.77	0.86	0.92	0.96	0.98	0.99	1.00	
F _L		0.90	0.90	0.90	0.90	0.85	0.78	0.68	0.57	0.45	
X _T		0.33	0.59	0.75	0.72	0.68	0.57	0.43	0.29	0.15	
C _v	12	40.6	122	267	499	812	1230	1870	3060	5800	
K _v		35.1	106	231	432	702	1060	1620	2650	5020	
F _d		0.44	0.64	0.78	0.87	0.93	0.97	0.98	0.99	1.00	
F _L		0.90	0.90	0.90	0.90	0.85	0.78	0.68	0.57	0.45	
X _T		0.24	0.88	0.88	0.78	0.60	0.49	0.38	0.23	0.10	
C _v	16	68.3	203	447	813	1340	2030	3010	4630	8130	
K _v		59.1	176	387	703	1160	1760	2600	4000	7030	
F _d		0.43	0.66	0.79	0.87	0.93	0.97	0.98	0.99	1.00	
F _L		0.90	0.90	0.90	0.90	0.85	0.78	0.68	0.57	0.45	
X _T		0.46	0.71	0.87	0.83	0.66	0.51	0.42	0.27	0.13	
C _v	20	132	330	726	1320	2180	3300	4880	7520	13,200	
K _v		114	285	628	1140	1890	2850	4220	6500	11,400	
F _d		0.45	0.66	0.80	0.88	0.93	0.97	0.99	1.00	1.00	
F _L		0.90	0.90	0.90	0.90	0.85	0.78	0.68	0.57	0.45	
X _T		0.29	0.71	0.82	0.86	0.67	0.51	0.42	0.27	0.13	
C _v	24	183	458	1010	1830	3020	4580	6770	10,400	18,300	
K _v		158	396	874	1580	2610	3960	5860	9000	15,800	
F _d		0.47	0.67	0.80	0.88	0.93	0.97	0.99	1.00	1.00	
F _L		0.90	0.90	0.90	0.90	0.85	0.78	0.68	0.57	0.45	
X _T		0.29	0.71	0.82	0.86	0.67	0.51	0.42	0.27	0.13	



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Characterized⁽¹⁾ Aerodome		Modified Equal Percentage Characteristic									
Valve Size, NPS	Minimum Throttling $C_v^{(2)}$	Coefficients	Valve Rotation, Degrees								
			10	20	30	40	50	60	70	80	90
8	41.1	C_v	18.7	66.6	160	260	400	570	790	1120	1360
		K_v	16.2	57.6	138	225	346	493	683	970	1180
		Fd	---	0.10	0.060	0.046	0.038	0.032	0.032	0.035	0.039
		F_L	0.90	0.88	0.79	0.74	0.71	0.66	0.69	0.69	0.65
		X_T	0.764	0.549	0.534	0.457	0.395	0.387	0.374	0.308	0.280
10	64.8	C_v	29.4	104	251	407	618	894	1240	1750	2130
		K_v	25.4	90	217	352	535	773	1070	1510	1840
		Fd	---	0.081	0.048	0.037	0.030	0.025	0.025	0.028	0.031
		F_L	0.90	0.88	0.79	0.74	0.71	0.66	0.69	0.69	0.65
		X_T	0.764	0.548	0.534	0.462	0.408	0.387	0.373	0.309	0.280
12	93.3	C_v	42.2	150	360	584	887	1280	1780	2520	3060
		K_v	36.5	130	311	505	767	1110	1540	2180	2650
		Fd	---	0.064	0.040	0.030	0.025	0.021	0.021	0.023	0.026
		F_L	0.90	0.88	0.79	0.74	0.71	0.66	0.69	0.69	0.65
		X_T	0.758	0.548	0.538	0.457	0.411	0.388	0.373	0.308	0.279
16	167	C_v	75.5	268	647	1047	1592	2304	3201	4515	5480
		K_v	65.3	232	559	906	1380	1990	2770	3910	4740
		Fd	---	0.051	0.031	0.023	0.019	0.016	0.016	0.018	0.020
		F_L	0.90	0.88	0.79	0.74	0.71	0.66	0.69	0.69	0.65
		X_T	0.765	0.549	0.535	0.459	0.410	0.385	0.371	0.308	0.280
20	262	C_v	118	421	1010	1640	2490	3610	5020	7070	8590
		K_v	102.4	364	874	1420	2150	3120	4340	6120	7430
		Fd	---	0.041	0.026	0.019	0.016	0.014	0.014	0.015	0.016
		F_L	0.90	0.88	0.79	0.74	0.71	0.66	0.69	0.69	0.65
		X_T	0.766	0.549	0.536	0.459	0.410	0.385	0.368	0.308	0.281
24	536	C_v	241	865	1639	2585	3873	5558	7350	10449	12340
		K_v	209	748	1418	2236	3308	4808	6358	9038	10674
		Fd	---	0.041	0.026	0.019	0.016	0.014	0.014	0.015	0.016
		F_L	0.90	0.88	0.79	0.74	0.71	0.66	0.69	0.69	0.65
		X_T	0.766	0.549	0.536	0.459	0.410	0.385	0.368	0.308	0.281

1. Window starts at about 60 degrees.
 2. Valves should not be required to throttle at a C_v less than the specified minimum C_v .



High Density Aerodome		Modified Linear Characteristic									
Valve Size, NPS	Minimum Throttling $C_v^{(1)}$	Coefficients	Valve Rotation, Degrees								
			10	20	30	40	50	60	70	80	90
8	41.1	C_v	16.1	62.9	153	256	390	553	737	919	996
		K_v	13.9	54.4	133	221	337	478	638	795	861
		Fd	---	0.10	0.060	0.046	0.038	0.032	0.028	0.026	0.024
		F_L	0.91	0.88	0.79	0.73	0.69	0.66	0.66	0.66	0.66
		X_T	0.752	0.615	0.528	0.463	0.406	0.366	0.332	0.302	0.290
10	64.8	C_v	25.5	100	243	405	618	876	1170	1460	1580
		K_v	22.1	87	210	350	535	758	1010	1260	1370
		Fd	---	0.081	0.048	0.037	0.030	0.025	0.023	0.021	0.019
		F_L	0.94	0.87	0.77	0.72	0.70	0.68	0.66	0.65	0.65
		X_T	0.751	0.612	0.528	0.467	0.408	0.364	0.332	0.300	0.288
12	93.3	C_v	36.9	144	351	586	893	1270	1690	2110	2280
		K_v	31.9	125	304	507	773	1099	1460	1830	1970
		Fd	---	0.064	0.040	0.030	0.025	0.021	0.019	0.017	0.016
		F_L	0.97	0.85	0.75	0.71	0.70	0.69	0.67	0.66	0.66
		X_T	0.617	0.505	0.434	0.383	0.333	0.297	0.273	0.247	0.238
16	167	C_v	65.9	257	627	1050	1590	2260	3020	3760	4070
		K_v	57.0	222	542	908	1380	1950	2610	3250	3520
		Fd	---	0.051	0.031	0.023	0.019	0.016	0.014	0.013	0.012
		F_L	0.94	0.87	0.77	0.72	0.70	0.68	0.66	0.65	0.65
		X_T	0.751	0.614	0.527	0.460	0.408	0.364	0.330	0.301	0.289
20	262	C_v	103	403	983	1640	2500	3540	4730	5890	6380
		K_v	89	349	850	1420	2160	3060	4090	5090	5520
		Fd	---	0.041	0.026	0.019	0.016	0.014	0.012	0.011	0.011
		F_L	0.94	0.87	0.77	0.72	0.70	0.68	0.66	0.65	0.65
		X_T	0.756	0.618	0.528	0.464	0.406	0.365	0.330	0.303	0.292
24	386	C_v	126	623	1287	2118	3265	4476	5915	7394	7993
		K_v	109	539	1113	1832	2824	3872	5116	6396	6914
		Fd	---	0.041	0.026	0.019	0.016	0.014	0.012	0.011	0.011
		F_L	0.94	0.87	0.77	0.72	0.70	0.68	0.66	0.65	0.65
		X_T	0.756	0.618	0.528	0.464	0.406	0.365	0.330	0.303	0.292

1. Valves should not be required to throttle at a C_v less than the minimum throttling C_v .

Characterized⁽¹⁾ Hydrodome			Modified Equal Percentage Characteristic								
Valve Size, NPS	Minimum Throttling $C_v^{(2)}$	Coefficients	Ball Angle of Opening, Degrees								
			10	20	30	40	50	60	70	80	90
8	46.6	C_v	13.6	79.6	160	265	408	585	797	1150	1380
		K_v	11.8	68.9	138	229	353	506	689	995	1190
		F_L	0.84	0.90	0.82	0.77	0.72	0.68	0.66	0.66	0.62
10	72.1	C_v	21.1	123	248	411	632	907	1240	1780	2140
		K_v	18.2	107	215	355	547	784	1070	1540	1850
		F_L	0.84	0.90	0.82	0.77	0.72	0.68	0.66	0.66	0.62
12	105	C_v	30.7	179	361	597	920	1320	1800	2590	3110
		K_v	26.5	155	312	517	796	1140	1550	2240	2690
		F_L	0.84	0.90	0.82	0.77	0.72	0.68	0.66	0.66	0.62
16	189	C_v	55.1	322	648	1070	1650	2370	3230	4660	5590
		K_v	47.6	279	560	928	1430	2050	2790	4030	4830
		F_L	0.84	0.90	0.82	0.77	0.72	0.68	0.66	0.66	0.62
20	292	C_v	85.1	498	1000	1660	2550	3660	4990	7190	8630
		K_v	73.6	431	866	1430	2210	3170	4310	6220	7470
		F_L	0.84	0.90	0.82	0.77	0.72	0.68	0.66	0.66	0.62
24	445	C_v	123	717	1441	2387	3675	5269	7179	10359	12430
		K_v	106	620	1246	2064	3179	4644	6210	8961	10752
		F_L	0.84	0.90	0.82	0.77	0.72	0.68	0.66	0.66	0.62

1. Window starts at about 60 degrees.
 2. Valves should not be required to throttle at a C_v less than the minimum throttling C_v .

High Density Hydrodome			Modified Equal Percentage Characteristic								
Valve Size, NPS	Minimum Throttling $C_v^{(1)}$	Coefficients	Ball Angle of Opening, Degrees								
			10	20	30	40	50	60	70	80	90
8	46.6	C_v	13.3	79.9	162	268	415	593	801	1020	1060
		K_v	11.5	69.1	140	232	359	513	693	882	917
		F_L	0.84	0.90	0.82	0.77	0.72	0.68	0.66	0.66	0.62
10	71.8	C_v	20.5	123	250	413	640	914	1230	1570	1630
		K_v	17.7	106	216	357	554	791	1060	1360	1410
		F_L	0.84	0.90	0.82	0.77	0.72	0.68	0.66	0.66	0.62
12	106	C_v	30.2	181	367	608	941	1350	1820	2310	2400
		K_v	26.1	157	317	526	814	1170	1570	2000	2080
		F_L	0.84	0.90	0.82	0.77	0.72	0.68	0.66	0.66	0.62
16	186	C_v	53.0	318	645	1070	1650	2360	3190	4060	4210
		K_v	45.8	275	558	926	1430	2040	2760	3510	3640
		F_L	0.84	0.90	0.82	0.77	0.72	0.68	0.66	0.66	0.62
20	292	C_v	83.2	500	1010	1680	2600	3710	5010	6380	6620
		K_v	72.0	432	877	1450	2250	3210	4330	5520	5730
		F_L	0.84	0.90	0.82	0.77	0.72	0.68	0.66	0.66	0.62
24	446	C_v	120	720	1459	2414	3738	5341	7215	9188	9530
		K_v	104	623	1262	2088	3233	4620	6241	7948	8243
		F_L	0.84	0.89	0.82	0.78	0.72	0.69	0.65	0.60	0.60

1. Valves should not be required to throttle at a C_v less than the minimum throttling C_v .



V260B - Two Characterized Hydrodomes										Modified Equal Percentage Characteristic
Valve Size, NPS	Coefficients	Ball Angle of Opening, Degrees								
		10	20	30	40	50	60	70	80	90
8	C _v	7.9	51	106	189	298	418	589	794	938
	K _v	6.8	44.1	91.7	163	258	362	509	687	811
	F _L	0.84	0.90	0.82	0.77	0.72	0.68	0.66	0.66	0.62
10	C _v	12.2	78	163	292	460	644	916	1228	1455
	K _v	10.6	67.5	141	253	398	557	792	1062	1259
	F _L	0.84	0.90	0.82	0.77	0.72	0.68	0.66	0.66	0.62
12	C _v	18.0	115	239	429	677	952	1330	1787	2115
	K _v	15.6	99.5	207	371	586	823	1150	1546	1829
	F _L	0.84	0.90	0.82	0.77	0.72	0.68	0.66	0.66	0.62
16	C _v	36.8	205	447	794	1250	1760	2387	3215	3801
	K _v	31.8	177	387	687	1081	1522	2065	2781	3288
	F _L	0.84	0.90	0.82	0.77	0.72	0.68	0.66	0.66	0.62
20	C _v	49.7	318	658	1186	1869	2616	3687	4961	5868
	K _v	43.0	275	569	1026	1617	2263	3189	4291	5076
	F _L	0.84	0.90	0.82	0.77	0.72	0.68	0.66	0.66	0.62
24	C _v	48.0	450	880	1600	2500	3500	5331	7148	8452
	K _v	41.5	389	761	1384	2163	3028	4611	6183	7311
	F _L	0.84	0.89	0.82	0.78	0.72	0.69	0.65	0.60	0.60

V260B-One High Density/One Characterized Hydrodome										Modified Equal Percentage Characteristic
Valve Size, NPS	Coefficients	Ball Angle of Opening, Degrees								
		10	20	30	40	50	60	70	80	90
8	C _v	7.9	51	106	189	298	418	590	749	830
	K _v	6.8	44.1	91.7	163	258	362	510	648	718
	F _L	0.84	0.90	0.82	0.77	0.72	0.68	0.66	0.66	0.62
10	C _v	12.2	78	163	292	460	644	912	1156	1282
	K _v	10.6	67.5	141	253	398	557	789	1000	1109
	F _L	0.84	0.90	0.82	0.77	0.72	0.68	0.66	0.66	0.62
12	C _v	18.0	115	239	429	677	952	1337	1691	1873
	K _v	15.6	99.5	207	371	586	823	1157	1463	1620
	F _L	0.84	0.90	0.82	0.77	0.72	0.68	0.66	0.66	0.62
16	C _v	36.8	205	447	794	1250	1760	2370	3190	3590
	K _v	31.8	177	387	687	1081	1522	2050	2759	3105
	F _L	0.84	0.90	0.82	0.77	0.72	0.68	0.66	0.66	0.62
20	C _v	49.7	318	658	1186	1869	2616	3694	4682	5185
	K _v	43.0	275	569	1026	1617	2263	3195	4050	4485
	F _L	0.84	0.90	0.82	0.77	0.72	0.68	0.66	0.66	0.62
24	C _v	48.0	450	880	1600	2500	3500	4990	6479	7476
	K _v	41.5	389	761	1384	2163	3028	4316	5604	6467
	F _L	0.84	0.89	0.82	0.78	0.72	0.69	0.65	0.60	0.60

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Valve Size, NPS		Coefficients	Ball Angle of Opening, Degrees								Modified Equal Percentage Characteristic
			10	20	30	40	50	60	70	80	
8	C _v	7.9	51	106	189	298	418	592	704	721	
	K _v	6.8	44.1	91.7	163	258	362	512	609	624	
	F _L	0.84	0.90	0.82	0.77	0.72	0.68	0.66	0.66	0.62	
10	C _v	12.2	78	163	292	460	644	909	1083	1108	
	K _v	10.6	67.5	141	253	398	557	786	937	958	
	F _L	0.84	0.90	0.82	0.77	0.72	0.68	0.66	0.66	0.62	
12	C _v	18.0	115	239	429	677	952	1345	1594	1632	
	K _v	15.6	99.5	207	371	586	823	1163	1379	1412	
	F _L	0.84	0.90	0.82	0.77	0.72	0.68	0.66	0.66	0.62	
16	C _v	36.8	205	447	794	1250	1760	2357	2801	2863	
	K _v	31.8	177	387	687	1081	1522	2039	2423	2476	
	F _L	0.84	0.90	0.82	0.77	0.72	0.68	0.66	0.66	0.62	
20	C _v	49.7	318	658	1186	1869	2616	3702	4402	4502	
	K _v	43.0	275	569	1026	1617	2263	3202	3809	3894	
	F _L	0.84	0.90	0.82	0.77	0.72	0.68	0.66	0.66	0.62	
24	C _v	48.0	450	880	1600	2500	3500	4650	5810	6500	
	K _v	41.5	389	761	1384	2163	3028	4022	5026	5623	
	F _L	0.84	0.89	0.82	0.78	0.72	0.69	0.65	0.60	0.60	



V260C - Gas or Liquid Flow											Modified Equal Percentage Characteristic
Valve Size, NPS	Minimum Throttling C _v ⁽¹⁾	Coefficients ⁽²⁾	Valve Rotation, Degrees								
			10	20	30	40	50	60	70	80	90
8	86.7	C _{vnet}	47.3	126	236	383	607	986	1670	3530	10100
		K _{vnet}	40.9	109	204	331	525	853	1440	3050	8760
		F _{Lnet}	0.79	0.87	0.91	0.91	0.85	0.80	0.70	0.54	0.32
		F _d	0.37	0.64	0.78	0.88	0.94	0.97	0.98	0.99	1.00
		X _{Tnet}	0.44	0.64	0.77	0.77	0.66	0.50	0.35	0.15	0.03
10	136	C _{vnet}	74.1	197	369	599	951	1540	2610	5440	14100
		K _{vnet}	64.1	170	319	518	823	1330	2260	4710	12200
		F _{Lnet}	0.79	0.87	0.91	0.91	0.85	0.80	0.70	0.54	0.32
		F _d	0.37	0.64	0.78	0.87	0.94	0.97	0.99	0.99	1.00
		X _{Tnet}	0.44	0.64	0.77	0.77	0.66	0.50	0.35	0.15	0.03
12	196	C _{vnet}	107	284	532	863	1370	2220	3750	7840	20500
		K _{vnet}	92.6	246	460	746	1190	1920	3240	6780	17700
		F _{Lnet}	0.79	0.87	0.91	0.91	0.85	0.80	0.71	0.55	0.36
		F _d	0.39	0.67	0.79	0.87	0.93	0.97	0.99	1.00	1.00
		X _{Tnet}	0.44	0.64	0.77	0.77	0.66	0.50	0.35	0.15	0.04
16	347	C _{vnet}	189	505	946	1530	2440	3950	6690	14200	42900
		K _{vnet}	163	437	818	1320	2110	3420	5790	12300	37100
		F _{Lnet}	0.79	0.87	0.91	0.91	0.85	0.80	0.70	0.54	0.30
		F _d	0.38	0.64	0.79	0.87	0.93	0.97	0.99	0.99	1.00
		X _{Tnet}	0.44	0.64	0.77	0.77	0.66	0.50	0.35	0.14	0.03
20	542	C _{vnet}	296	788	1480	2400	3800	6170	10400	22100	62000
		K _{vnet}	256	682	1280	2070	3290	5340	9000	19100	53600
		F _{Lnet}	0.79	0.87	0.91	0.91	0.85	0.80	0.70	0.54	0.33
		F _d	0.42	0.66	0.79	0.87	0.94	0.97	0.99	1.00	1.00
		X _{Tnet}	0.44	0.63	0.76	0.76	0.65	0.49	0.35	0.15	0.03
24	704	C _{vnet}	426	1140	2130	3450	5470	8880	14900	31100	78000
		K _{vnet}	368	986	1840	2980	4730	7680	12900	26900	67500
		F _{Lnet}	0.79	0.87	0.91	0.91	0.85	0.80	0.71	0.55	0.37
		F _d	0.42	0.66	0.79	0.87	0.93	0.97	0.99	1.00	1.00
		X _{Tnet}	0.44	0.63	0.76	0.76	0.65	0.49	0.35	0.15	0.04

1. Valves should not be required to throttle at a C_v less than the minimum throttling C_v.
2. For a detailed explanation of C_{vnet}, F_{Lnet}, and X_{Tnet} please refer to Catalog 12, Section 2.

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Valve Size, NPS		Coefficients ⁽¹⁾	Valve Rotation, Degrees								Modified Equal Percentage Characteristic
			10	20	30	40	50	60	70	80	
6	CV _{net}	17.8	27.5	83.1	140	252	443	766	1590	3190	
	K _{vnet}	15.4	23.8	71.9	121	218	383	663	1370	2760	
	F _{Lnet}	0.79	0.87	0.92	0.97	0.89	0.80	0.72	0.56	0.45	
	F _d	0.21	0.62	0.77	0.87	0.93	0.97	0.99	1.00	1.00	
	X _{Tnet}	0.52	0.85	0.81	0.98	0.77	0.57	0.38	0.19	0.10	
8	CV _{net}	47.3	126	236	383	607	986	1670	3530	10100	
	K _{vnet}	40.9	109	204	331	525	853	1440	3050	8760	
	F _{Lnet}	0.79	0.87	0.91	0.91	0.85	0.80	0.70	0.54	0.32	
	F _d	0.24	0.63	0.78	0.87	0.93	0.97	0.99	1.00	1.00	
	X _{Tnet}	0.44	0.64	0.77	0.77	0.66	0.50	0.35	0.15	0.03	
10	CV _{net}	74.1	197	369	599	951	1540	2610	5440	14100	
	K _{vnet}	64.1	170	319	518	823	1330	2260	4710	12200	
	F _{Lnet}	0.79	0.87	0.91	0.91	0.85	0.80	0.70	0.54	0.32	
	F _d	0.41	0.66	0.79	0.88	0.94	0.97	0.99	1.00	1.00	
	X _{Tnet}	0.44	0.64	0.77	0.77	0.66	0.50	0.35	0.15	0.03	
12	CV _{net}	107	284	532	863	1370	2220	3750	7840	20500	
	K _{vnet}	92.6	246	460	746	1190	1920	3240	6780	17700	
	F _{Lnet}	0.79	0.87	0.91	0.91	0.85	0.80	0.71	0.55	0.36	
	F _d	0.42	0.66	0.79	0.88	0.94	0.97	0.99	1.00	1.00	
	X _{Tnet}	0.44	0.64	0.77	0.77	0.66	0.50	0.35	0.15	0.04	
14	CV _{net}	129	342	640	1040	1650	2670	4500	9380	23800	
	K _{vnet}	112	296	554	900	1430	2310	3890	8110	20600	
	F _{Lnet}	0.79	0.87	0.91	0.91	0.85	0.80	0.71	0.55	0.37	
	F _d	0.44	0.67	0.80	0.88	0.94	0.97	0.99	1.00	1.00	
	X _{Tnet}	0.44	0.64	0.77	0.77	0.66	0.50	0.35	0.15	0.04	
16	CV _{net}	189	505	946	1530	2440	3950	6690	14200	42900	
	K _{vnet}	163	437	818	1320	2110	3420	5790	12300	37100	
	F _{Lnet}	0.79	0.87	0.91	0.91	0.85	0.80	0.70	0.54	0.30	
	F _d	0.45	0.67	0.80	0.88	0.94	0.97	0.99	1.00	1.00	
	X _{Tnet}	0.44	0.64	0.77	0.77	0.66	0.50	0.35	0.14	0.03	
20	CV _{net}	296	788	1480	2400	3800	6170	10400	22100	62000	
	K _{vnet}	256	682	1280	2070	3290	5340	9000	19100	53600	
	F _{Lnet}	0.79	0.87	0.91	0.91	0.85	0.80	0.70	0.54	0.33	
	F _d	0.47	0.68	0.80	0.88	0.94	0.97	0.99	1.00	1.00	
	X _{Tnet}	0.44	0.63	0.76	0.76	0.65	0.49	0.35	0.15	0.03	
24	CV _{net}	426	1140	2130	3450	5470	8880	14900	31100	78000	
	K _{vnet}	368	986	1840	2980	4730	7680	12900	26900	67500	
	F _{Lnet}	0.79	0.87	0.91	0.91	0.85	0.80	0.71	0.55	0.37	
	F _d	0.47	0.68	0.80	0.89	0.94	0.97	0.99	1.00	1.00	
	X _{Tnet}	0.44	0.63	0.76	0.76	0.65	0.49	0.35	0.15	0.04	

1. For a detailed explanation of CV_{net}, F_{Lnet}, and X_{Tnet} please refer to Catalog 12, Section 2.

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The Fisher® V300 has flow coefficients identical to the V150. Refer to the V150 information.
Reminder: The V300 is available in NPS 1 through 16 only.
Reminder: The V300 NPS 14 and 16 are not available with Flat Metal seals.



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Coefficients	Valve Size, NPS	Valve Rotation, Degrees							Modified Linear Characteristic	
		10	20	30	40	50	60	70	80	90
C _v	1	1.22	2.89	5.05	7.63	9.94	11.3	11.8	12.0	12.2
K _v		1.06	2.50	4.37	6.60	8.60	9.77	10.2	10.4	10.6
F _d		0.49	0.64	0.73	0.81	0.87	0.92	0.96	0.99	1.00
F _L		0.89	0.89	0.88	0.85	0.85	0.85	0.85	0.85	0.85
X _T		0.480	0.497	0.508	0.548	0.597	0.632	0.636	0.612	0.593
C _v	1-1/2	2.07	6.15	11.5	16.6	20.7	23.5	25.3	26.1	26.6
K _v		1.79	5.32	9.95	14.4	17.9	20.3	21.9	22.6	23.0
F _d		0.48	0.63	0.73	0.81	0.87	0.92	0.96	0.99	1.00
F _L		0.95	0.85	0.85	0.84	0.84	0.84	0.84	0.84	0.84
X _T		0.770	0.476	0.483	0.555	0.616	0.636	0.632	0.601	0.589
C _v	2	4.11	8.73	16.7	27.0	37.2	43.4	45.8	46.2	46.2
K _v		3.56	7.55	14.4	23.4	32.2	37.5	39.6	40.0	40.0
F _d		0.49	0.63	0.73	0.81	0.87	0.92	0.96	0.99	1.00
F _L		0.97	0.92	0.84	0.79	0.77	0.75	0.75	0.74	0.74
X _T		0.439	0.442	0.442	0.422	0.422	0.462	0.452	0.442	0.442
C _v	3	8.80	22.7	43.3	71.3	96.8	116	130	138	142
K _v		7.61	19.6	37.5	61.7	83.7	100	112	119	123
F _d		0.46	0.62	0.73	0.81	0.87	0.92	0.96	0.99	1.00
F _L		0.86	0.84	0.83	0.83	0.83	0.82	0.78	0.77	0.77
X _T		0.469	0.544	0.574	0.526	0.497	0.526	0.508	0.476	0.456
C _v	4	16.6	41.3	79.1	123	166	203	230	247	255
K _v		14.3	35.7	68.4	106	144	176	199	214	221
F _d		0.45	0.61	0.72	0.81	0.87	0.92	0.96	0.99	1.00
F _L		0.85	0.82	0.81	0.81	0.80	0.79	0.77	0.76	0.76
X _T		0.439	0.555	0.501	0.466	0.473	0.490	0.480	0.459	0.442
C _v	6	17.5	79.1	155	270	363	434	492	540	565
K _v		15.1	68.4	134	234	314	375	426	467	489
F _d		0.44	0.60	0.72	0.81	0.87	0.92	0.96	0.99	1.00
F _L		0.97	0.93	0.88	0.82	0.76	0.73	0.72	0.71	0.71
X _T		0.879	0.585	0.540	0.456	0.439	0.432	0.436	0.426	0.416
C _v	8	51.5	146	298	481	646	775	879	981	1050
K _v		44.5	126	258	416	559	670	760	849	908
F _d		0.43	0.59	0.72	0.80	0.87	0.92	0.96	0.99	1.00
F _L		0.97	0.93	0.87	0.78	0.72	0.71	0.70	0.69	0.67
X _T		0.456	0.605	0.533	0.449	0.413	0.403	0.391	0.372	0.360



Coefficients	Valve Size, NPS	Valve Rotation, Degrees								Modified Linear Characteristic	
		10	20	30	40	50	60	70	80	90	
C _v	1	1.08	2.82	5.26	9.11	12.4	14.7	15.9	16.4	16.8	
K _v		0.93	2.44	4.55	7.88	10.7	12.7	13.8	14.2	14.5	
F _d		0.49	0.64	0.73	0.81	0.87	0.92	0.96	0.99	1.00	
F _L		0.80	0.79	0.73	0.63	0.58	0.55	0.56	0.51	0.48	
X _T		0.172	0.284	0.406	0.357	0.345	0.322	0.300	0.289	0.283	
C _v	1-1/2	1.71	5.33	11.3	18.4	24.7	28.6	30.1	30.7	31.0	
K _v		1.48	4.61	9.77	15.9	21.4	24.7	26.0	26.6	26.8	
F _d		0.48	0.63	0.73	0.81	0.87	0.92	0.96	0.99	1.00	
F _L		0.75	0.74	0.70	0.66	0.64	0.63	0.63	0.63	0.63	
X _T		0.357	0.442	0.432	0.397	0.369	0.360	0.360	0.357	0.357	
C _v	2	2.98	7.40	15.6	27.6	41.9	52.9	56.4	57.2	57.4	
K _v		2.58	6.40	13.5	23.9	36.2	45.8	48.8	49.5	49.7	
F _d		0.49	0.63	0.73	0.81	0.87	0.92	0.96	0.99	1.00	
F _L		0.92	0.89	0.81	0.67	0.60	0.58	0.58	0.58	0.58	
X _T		0.480	0.476	0.462	0.384	0.308	0.265	0.265	0.265	0.265	
C _v	3	7.19	21.4	47.0	75.4	105	122	132	134	141	
K _v		6.22	18.5	40.7	65.2	90.8	106	114	116	122	
F _d		0.46	0.62	0.73	0.81	0.87	0.92	0.96	0.99	1.00	
F _L		0.80	0.80	0.77	0.71	0.66	0.65	0.65	0.65	0.65	
X _T		0.357	0.476	0.487	0.436	0.372	0.378	0.384	0.376	0.357	
C _v	4	12.2	39.0	79.9	124	171	202	222	232	235	
K _v		10.6	33.7	69.1	107	148	175	192	201	203	
F _d		0.45	0.61	0.72	0.81	0.87	0.92	0.96	0.99	1.00	
F _L		0.90	0.89	0.81	0.73	0.71	0.70	0.69	0.69	0.69	
X _T		0.522	0.544	0.487	0.456	0.406	0.406	0.416	0.423	0.416	
C _v	6	15.1	72.4	156	251	351	438	534	638	717	
K _v		13.1	62.6	135	217	304	379	462	552	620	
F _d		0.44	0.60	0.72	0.81	0.87	0.92	0.96	0.99	1.00	
F _L		0.85	0.85	0.82	0.77	0.70	0.66	0.61	0.57	0.51	
X _T		0.416	0.597	0.518	0.522	0.452	0.388	0.336	0.270	0.219	
C _v	8	33.5	143	302	485	663	798	871	897	986	
K _v		29.0	124	261	420	573	690	753	776	853	
F _d		0.43	0.59	0.72	0.80	0.87	0.92	0.96	0.99	1.00	
F _L		0.81	0.81	0.79	0.76	0.68	0.66	0.66	0.66	0.66	
X _T		0.697	0.593	0.483	0.410	0.354	0.342	0.366	0.403	0.363	

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Coefficients	Valve Size, NPS	Valve Rotation, Degrees							Modified Linear Characteristic	
		10	20	30	40	50	60	70	80	90
C _v	1	0.777	2.09	3.02	3.62	4.53	4.90	4.93	4.96	5.01
K _v		0.672	1.81	2.61	3.13	3.92	4.24	4.26	4.29	4.33
F _d ⁽¹⁾		0.54	0.66	0.75	0.82	0.88	0.92	0.96	0.99	1.00
F _L		0.89	0.89	0.88	0.85	0.82	0.79	0.75	0.74	0.74
X _T		0.487	0.391	0.497	0.597	0.508	0.439	0.436	0.429	0.419
C _v	1-1/2	0.632	2.56	4.47	7.15	9.62	10.7	10.8	10.9	10.9
K _v		.547	2.21	3.87	6.18	8.32	9.26	9.34	9.43	9.43
F _d ⁽¹⁾		0.53	0.66	0.75	0.82	0.88	0.92	0.96	0.99	1.00
F _L		0.84	0.84	0.84	0.82	0.79	0.75	0.73	0.73	0.73
X _T		0.559	0.397	0.522	0.574	0.585	0.508	0.497	0.490	0.490
C _v	2	1.30	3.49	5.31	9.64	15.1	17.3	17.3	17.3	17.3
K _v		1.12	3.02	4.59	8.34	13.1	15.0	15.0	15.0	15.0
F _d ⁽¹⁾		0.54	0.66	0.75	0.82	0.88	0.92	0.96	0.99	1.00
F _L		0.85	0.85	0.84	0.84	0.82	0.79	0.79	0.79	0.79
X _T		0.391	0.336	0.452	0.563	0.529	0.462	0.462	0.462	0.462
C _v	3	6.78	11.5	16.0	26.7	40.2	47.7	48.4	48.4	48.4
K _v		5.86	9.95	13.8	23.1	34.8	41.3	41.9	41.9	41.9
F _d ⁽¹⁾		0.53	0.66	0.75	0.82	0.88	0.92	0.96	0.99	1.00
F _L		0.90	0.88	0.87	0.86	0.85	0.82	0.77	0.77	0.77
X _T		0.487	0.501	0.487	0.429	0.459	0.429	0.429	0.429	0.429
C _v	4	10.0	18.2	24.4	43.7	69.2	90.6	98.2	98.2	98.2
K _v		8.65	15.7	21.1	37.8	59.9	78.4	84.9	84.9	84.9
F _d ⁽¹⁾		0.52	0.65	0.74	0.82	0.88	0.92	0.96	0.99	1.00
F _L		0.95	0.89	0.85	0.84	0.84	0.81	0.77	0.77	0.77
X _T		0.426	0.459	0.570	0.504	0.487	0.462	0.426	0.426	0.426
C _v	6	9.50	26.6	41.8	76.0	129	170	200	200	200
K _v		8.22	23.0	36.2	65.7	112	147	173	173	173
F _d ⁽¹⁾		0.52	0.65	0.74	0.82	0.88	0.92	0.96	0.99	1.00
F _L		0.97	0.96	0.92	0.86	0.80	0.76	0.74	0.74	0.74
X _T		0.995	0.351	0.403	0.487	0.416	0.462	0.410	0.410	0.410
C _v	8	39.9	87.8	155	241	343	448	541	606	623
K _v		34.5	75.9	134	208	297	388	468	524	539
F _d ⁽²⁾		0.48	0.63	0.73	0.81	0.87	0.92	0.96	0.99	1.00
F _L		0.96	0.81	0.80	0.79	0.78	0.76	0.74	0.72	0.70
X _T		0.400	0.446	0.459	0.449	0.429	0.413	0.413	0.413	0.391

1. Measured at 60% Port.
 2. Measured at 40% Port.



Coefficients	Valve Size, NPS	Valve Rotation, Degrees								Modified Linear Characteristic	
		10	20	30	40	50	60	70	80	90	
C _V	1	.634	2.09	3.34	3.96	5.21	5.64	5.70	5.71	5.76	
K _V		.548	1.81	2.89	3.43	4.51	4.88	4.93	4.94	4.98	
F _d ⁽¹⁾		0.54	0.66	0.75	0.82	0.88	0.92	0.96	0.99	1.00	
F _L		0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	
X _T		0.230	0.216	0.207	0.406	0.366	0.348	0.339	0.345	0.342	
C _V	1-1/2	.464	1.93	4.21	7.81	11.0	12.1	12.1	12.2	12.2	
K _V		.401	1.67	3.64	6.76	9.52	10.5	10.5	10.6	10.6	
F _d ⁽¹⁾		0.53	0.66	0.75	0.82	0.88	0.92	0.96	0.99	1.00	
F _L		0.93	0.93	0.75	0.72	0.70	0.70	0.70	0.70	0.70	
X _T		0.970	0.416	0.501	0.467	0.416	0.416	0.416	0.413	0.416	
C _V	2	.965	2.68	4.82	12.0	17.7	18.7	18.8	18.9	18.9	
K _V		.835	2.31	4.17	10.4	15.3	16.2	16.3	16.3	16.3	
F _d ⁽¹⁾		0.54	0.66	0.75	0.82	0.88	0.92	0.96	0.99	1.00	
F _L		0.96	0.96	0.77	0.67	0.62	0.62	0.62	0.62	0.62	
X _T		0.518	0.508	0.559	0.354	0.351	0.360	0.357	0.354	0.354	
C _V	3	5.95	10.6	14.7	29.9	49.0	56.0	56.2	56.2	56.7	
K _V		5.15	9.17	12.7	25.9	42.4	48.4	48.6	48.6	49.0	
F _d ⁽¹⁾		0.53	0.66	0.75	0.82	0.88	0.92	0.96	0.99	1.00	
F _L		0.80	0.79	0.73	0.64	0.59	0.58	0.58	0.58	0.58	
X _T		0.429	0.455	0.487	0.345	0.286	0.286	0.286	0.286	0.281	
C _V	4	7.69	15.3	22.7	42.6	75.0	98.0	99.5	100	102	
K _V		6.65	13.2	19.6	36.8	64.9	84.8	86.1	86.5	88.2	
F _d ⁽¹⁾		0.52	0.65	0.74	0.82	0.88	0.92	0.96	0.99	1.00	
F _L		0.83	0.82	0.81	0.77	0.60	0.59	0.58	0.58	0.58	
X _T		0.504	0.548	0.555	0.529	0.375	0.322	0.336	0.334	0.319	
C _V	6	5.10	20.6	34.6	71.9	123	170	230	231	232	
K _V		4.41	17.8	29.9	62.2	106	147	199	200	201	
F _d ⁽¹⁾		0.52	0.65	0.74	0.82	0.88	0.92	0.96	0.99	1.00	
F _L		0.97	0.95	0.90	0.82	0.73	0.65	0.57	0.55	0.55	
X _T		0.990	0.551	0.566	0.533	0.432	0.397	0.263	0.260	0.258	
C _V	8	27.1	74.3	140	232	342	457	552	614	646	
K _V		23.4	64.3	121	201	296	395	477	531	559	
F _d ⁽²⁾		0.48	0.63	0.73	0.81	0.87	0.92	0.96	0.99	1.00	
F _L		0.92	0.91	0.88	0.76	0.69	0.66	0.62	0.60	0.58	
X _T		0.636	0.494	0.494	0.490	0.442	0.388	0.369	0.339	0.311	

1. Measured at 60% Port.
2. Measured at 40% Port.

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Coefficients	Valve Size, NPS	Valve Rotation, Degrees								Modified Linear Characteristic	
		10	20	30	40	50	60	70	80	90	
C _v	1	.30	1.91	4.68	7.3	9.17	10.3	11.0	11.5	11.6	
K _v		.260	1.65	4.05	6.31	7.93	8.91	9.52	9.95	10.0	
F _d		0.49	0.64	0.73	0.81	0.87	0.92	0.96	0.99	1.00	
F _L		---	0.98	0.87	0.87	0.85	0.86	0.85	0.86	0.84	
X _T		0.668	0.574	0.529	0.566	0.616	0.668	0.685	0.628	0.616	
C _v	1-1/2	1.46	3.79	8.13	13.4	17.9	20.7	22.4	24.0	25.0	
K _v		1.26	3.28	7.03	11.6	15.5	17.9	19.4	20.8	21.6	
F _d		0.48	0.63	0.73	0.81	0.87	0.92	0.96	0.99	1.00	
F _L		0.86	0.86	0.82	0.84	0.80	0.80	0.79	0.79	0.79	
X _T		0.566	0.605	0.55	0.544	0.551	0.574	0.589	0.585	0.597	
C _v	2	1.76	6.0	13.8	22.6	29.5	35.2	38.4	38.4	38.4	
K _v		1.52	5.19	11.9	19.5	25.5	30.4	33.2	33.2	33.2	
F _d		0.49	0.63	0.73	0.81	0.87	0.92	0.96	0.99	1.00	
F _L		0.95	0.96	0.94	0.83	0.81	0.80	0.77	0.77	0.78	
X _T		0.819	0.555	0.501	0.480	0.533	0.566	0.570	0.585	0.585	
C _v	3	7.6	23.2	44.0	62.6	82.5	102	115	119	124	
K _v		6.57	20.1	38.1	54.1	71.4	88.2	99.5	103	107	
F _d		0.46	0.62	0.73	0.81	0.87	0.92	0.96	0.99	1.00	
F _L		0.88	0.87	0.85	0.84	0.83	0.82	0.80	0.80	0.80	
X _T		0.578	0.494	0.511	0.540	0.529	0.515	0.518	0.533	0.526	
C _v	4	9.31	37.0	73.5	111	144	171	192	208	221	
K _v		8.05	32.0	63.6	96.0	125	148	166	180	191	
F _d		0.45	0.61	0.72	0.81	0.87	0.92	0.96	0.99	1.00	
F _L		0.94	0.90	0.85	0.84	0.82	0.80	0.77	0.77	0.77	
X _T		0.526	0.476	0.449	0.452	0.480	0.504	0.511	0.501	0.487	
C _v	6	9.71	64.3	141	222	299	368	426	469	499	
K _v		8.40	55.6	122	192	259	318	368	406	432	
F _d		0.44	0.60	0.72	0.81	0.87	0.92	0.96	0.99	1.00	
F _L		0.95	0.88	0.82	0.80	0.78	0.78	0.77	0.77	0.76	
X _T		0.504	0.459	0.432	0.422	0.429	0.436	0.432	0.422	0.413	
C _v	8	34.6	142	290	447	592	716	822	911	958	
K _v		29.9	123	251	387	512	619	711	788	829	
F _d		0.43	0.59	0.72	0.80	0.87	0.92	0.96	0.99	1.00	
F _L		0.92	0.76	0.78	0.79	0.77	0.76	0.73	0.71	0.73	
X _T		0.544	0.446	0.426	0.429	0.429	0.46	0.419	0.410	0.429	



Coefficients	Valve Size, NPS	Valve Rotation, Degrees							Modified Linear Characteristic	
		10	20	30	40	50	60	70	80	90
C _V	1	.107	1.85	5.09	8.8	11.9	13.6	14.0	14.0	15.3
K _V		.093	1.60	4.40	7.61	10.3	11.8	12.1	12.1	13.2
F _d		0.49	0.64	0.73	0.81	0.87	0.92	0.96	0.99	1.00
F _L		---	0.88	0.65	0.60	0.54	0.54	0.60	0.62	0.61
X _T		0.334	0.526	0.426	0.360	0.334	0.345	0.372	0.384	0.334
C _V	1-1/2	.988	3.37	7.66	13.5	19.3	23.5	25.3	25.3	26.1
K _V		.854	2.92	6.63	11.7	16.7	20.3	21.9	21.9	22.6
F _d		0.48	0.63	0.73	0.81	0.87	0.92	0.96	0.99	1.00
F _L		0.98	0.92	0.75	0.73	0.62	0.58	0.59	0.61	0.61
X _T		0.473	0.585	0.563	0.487	0.432	0.403	0.400	0.426	0.429
C _V	2	1.42	4.92	11.8	20.9	29.8	36.7	40.9	42.7	43.0
K _V		1.23	4.26	10.2	18.1	25.8	31.7	35.4	36.9	37.2
F _d		0.49	0.63	0.73	0.81	0.87	0.92	0.96	0.99	1.00
F _L		0.97	0.93	0.86	0.77	0.72	0.62	0.64	0.63	0.66
X _T		0.403	0.718	0.616	0.518	0.473	0.452	0.452	0.446	0.439
C _V	3	7.64	20.6	41.3	62.4	80.5	94.8	105	109	111
K _V		6.61	17.8	34.9	54.0	69.6	82.0	90.8	94.3	96.0
F _d		0.46	0.62	0.73	0.81	0.87	0.92	0.96	0.99	1.00
F _L		0.93	0.91	0.89	0.81	0.73	0.72	0.71	0.74	0.76
X _T		0.616	0.656	0.537	0.497	0.501	0.508	0.504	0.515	0.511
C _V	4	8.07	31.3	67.1	102	129	153	174	189	192
K _V		6.98	27.1	58.0	88.2	112	132	151	163	166
F _d		0.45	0.61	0.72	0.81	0.87	0.92	0.96	0.99	1.00
F _L		0.86	0.85	0.84	0.80	0.75	0.75	0.75	0.75	0.74
X _T		0.456	0.664	0.533	0.490	0.515	0.526	0.522	0.504	0.515
C _V	6	10.5	58.6	134	218	294	356	406	445	461
K _V		9.08	50.7	116	189	254	308	351	385	399
F _d		0.44	0.60	0.72	0.81	0.87	0.92	0.96	0.99	1.00
F _L		0.80	0.76	0.72	0.70	0.68	0.69	0.69	0.69	0.69
X _T		0.511	0.551	0.459	0.406	0.391	0.397	0.410	0.416	0.429
C _V	8	25.4	136	266	413	554	686	818	895	897
K _V		22.0	118	230	357	479	593	708	774	776
F _d		0.43	0.59	0.72	0.80	0.87	0.92	0.96	0.99	1.00
F _L		0.75	0.77	0.75	0.72	0.73	0.69	0.70	0.70	0.72
X _T		0.731	0.439	0.483	0.469	0.439	0.397	0.360	0.375	0.426

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Coefficients	Valve Size, NPS	Valve Rotation, Degrees								Modified Linear Characteristic	
		10	20	30	40	50	60	70	80	90	
C_V	1	2.14	3.70	4.65	5.25	5.50	5.57	5.66	5.66	5.66	
K_V		1.84	3.18	4.00	4.52	4.73	4.79	4.87	4.87	4.87	
$F_d^{(1)}$		0.54	0.66	0.75	0.82	0.88	0.92	0.96	0.99	1.00	
F_L		0.64	0.75	0.75	0.79	0.75	0.74	0.73	0.73	0.73	
X_T		0.286	0.388	0.464	0.483	0.471	0.459	0.444	0.444	0.444	
C_V	1-1/2	2.10	4.55	6.16	8.00	10.4	11.3	11.3	11.3	11.3	
K_V		1.81	3.91	5.30	6.88	8.94	9.72	9.72	9.72	9.72	
$F_d^{(1)}$		0.53	0.66	0.75	0.82	0.88	0.92	0.96	0.99	1.00	
F_L		0.82	0.79	≥0.79	0.79	0.79	0.72	0.72	0.72	0.72	
X_T		0.469	0.397	0.454	0.500	0.502	0.482	0.482	0.482	0.482	
C_V	2	2.75	5.15	6.70	9.65	13.7	16.8	18.8	18.8	17.9	
K_V		2.37	4.43	5.76	8.30	11.8	14.5	16.2	16.2	15.4	
$F_d^{(1)}$		0.54	0.66	0.75	0.82	0.88	0.92	0.96	0.99	1.00	
F_L		0.75	0.76	0.83	≥0.86	0.87	0.85	0.77	0.77	0.81	
X_T		0.467	0.448	0.519	0.624	0.612	0.543	0.444	0.439	0.484	
C_V	3	4.12	9.50	13.1	19.8	29.6	39.0	45.3	48.0	48.0	
K_V		3.56	8.22	11.3	17.1	25.6	33.7	39.2	41.5	41.5	
$F_d^{(1)}$		0.53	0.66	0.75	0.82	0.88	0.92	0.96	0.99	1.00	
F_L		0.80	0.80	0.88	0.86	0.84	0.82	0.81	0.79	0.77	
X_T		0.469	0.551	0.605	0.522	0.518	0.551	0.515	0.466	0.466	
C_V	4	2.26	11.2	20.1	33.3	50.8	69.1	83.0	89.3	90.1	
K_V		1.95	9.69	17.4	28.8	43.9	59.8	71.8	77.2	77.9	
$F_d^{(1)}$		0.52	0.65	0.74	0.82	0.88	0.92	0.96	0.99	1.00	
F_L		0.96	0.95	0.85	0.86	0.86	0.83	0.80	0.77	0.74	
X_T		0.779	0.779	0.632	0.620	0.612	0.589	0.537	0.466	0.452	
C_V	6	13.6	37.9	49.8	82.9	122	159	184	194	196	
K_V		11.8	32.8	43.1	71.7	106	138	159	168	170	
$F_d^{(1)}$		0.52	0.65	0.74	0.82	0.88	0.92	0.96	0.99	1.00	
F_L		0.97	0.69	0.72	0.74	0.77	0.81	0.81	0.77	0.77	
X_T		0.518	0.280	0.381	0.357	0.397	0.452	0.476	0.452	0.442	
C_V	8	19.7	63.6	134	228	334	438	526	587	605	
K_V		17.0	55.0	116	197	289	379	455	508	523	
$F_d^{(2)}$		0.48	0.63	0.73	0.81	0.87	0.92	0.96	0.99	1.00	
F_L		0.93	0.83	0.76	0.77	0.77	0.77	0.75	0.75	0.72	
X_T		0.597	0.473	0.422	0.394	0.378	0.381	0.400	0.429	0.436	

1. Measured at 60% Port.
 2. Measured at 40% Port.



Coefficients	Valve Size, NPS	Valve Rotation, Degrees								Modified Linear Characteristic	
		10	20	30	40	50	60	70	80	90	
C_V	1	1.90	3.80	4.85	5.82	5.90	5.90	5.90	5.90	5.90	
K_V		1.63	3.27	4.17	5.01	5.07	5.07	5.07	5.07	5.07	
$F_d^{(1)}$		0.54	0.66	0.75	0.82	0.88	0.92	0.96	0.99	1.00	
F_L		0.56	0.67	0.68	0.69	0.73	0.75	0.75	0.75	0.75	
X_T		0.312	0.386	0.427	0.409	0.448	0.448	0.448	0.448	0.448	
C_V	1-1/2	1.95	4.45	5.75	7.75	11.4	11.8	11.8	11.8	11.8	
K_V		1.68	3.83	4.95	6.67	9.80	10.2	10.2	10.2	10.2	
$F_d^{(1)}$		0.53	0.66	0.75	0.82	0.88	0.92	0.96	0.99	1.00	
F_L		0.83	0.77	0.78	0.76	0.68	0.72	0.73	0.73	0.73	
X_T		0.395	0.415	0.527	0.519	0.421	0.459	0.459	0.459	0.459	
C_V	2	2.70	4.65	6.30	11.1	18.3	19.8	20.2	20.4	21.0	
K_V		2.32	4.00	5.42	9.55	15.7	17.0	17.4	17.5	18.1	
$F_d^{(1)}$		0.54	0.66	0.75	0.82	0.88	0.92	0.96	0.99	1.00	
F_L		0.91	0.89	0.84	0.71	0.58	0.61	0.62	0.62	0.60	
X_T		0.459	0.464	0.594	0.453	0.307	0.358	0.366	0.337	0.328	
C_V	3	4.41	9.60	13.7	19.5	37.3	53.3	56.7	57.9	57.9	
K_V		3.81	8.30	11.9	16.9	32.3	46.1	49.0	50.1	50.1	
$F_d^{(1)}$		0.53	0.66	0.75	0.82	0.88	0.92	0.96	0.99	1.00	
F_L		0.96	0.93	0.93	0.87	0.73	0.64	0.62	0.62	0.63	
X_T		0.469	0.578	0.578	0.537	0.319	0.258	0.265	0.268	0.268	
C_V	4	9.78	11.1	19.4	32.1	49.7	67.8	80.5	84.6	86.6	
K_V		8.46	9.60	16.8	27.8	43.0	58.6	69.6	73.2	74.9	
$F_d^{(1)}$		0.52	0.65	0.74	0.82	0.88	0.92	0.96	0.99	1.00	
F_L		0.93	0.93	0.89	0.84	0.79	0.72	0.64	0.65	0.65	
X_T		0.620	0.620	0.593	0.605	0.570	0.522	0.476	0.459	0.436	
C_V	6	10.6	30.0	43.4	77.1	122	168	198	223	226	
K_V		9.17	26.0	37.5	66.7	106	145	171	193	195	
$F_d^{(1)}$		0.52	0.65	0.74	0.82	0.88	0.92	0.96	0.99	1.00	
F_L		0.77	0.79	0.77	0.75	0.69	0.64	0.63	0.58	0.58	
X_T		0.640	0.369	0.476	0.410	0.381	0.357	0.336	0.284	0.278	
C_V	8	19.8	55.8	125	222	323	413	488	549	569	
K_V		17.1	48.3	108	192	279	357	422	475	492	
$F_d^{(2)}$		0.48	0.63	0.73	0.81	0.87	0.92	0.96	0.99	1.00	
F_L		0.75	0.77	0.78	0.75	0.70	0.68	0.70	0.68	0.70	
X_T		0.459	0.581	0.462	0.394	0.375	0.381	0.391	0.391	0.391	

1. Measured at 60% Port.
2. Measured at 40% Port.

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Converging Flow																Linear Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Path ⁽¹⁾	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽²⁾	
	mm	Inches	mm	Inches			0 (Plug Down)	10	20	30	40	50	60	70	80	90		100 (Plug Up)
1/2	33.3	1.3125	19	0.75	R to B	C _V	8.37	7.10	6.68	5.94	4.97	4.03	3.10	2.15	1.49	1.30	0	0.81
						K _V	7.24	6.14	5.78	5.14	4.30	3.49	2.68	1.86	1.29	1.12	0.00	---
						X _T	0.562	0.452	0.432	0.442	0.456	0.473	0.494	0.504	0.529	0.574	---	---
					L to B	C _V	0	2.45	3.36	4.32	5.15	5.96	6.93	7.74	8.00	8.10	9.00	0.79
						K _V	0.00	2.12	2.91	3.74	4.45	5.16	5.99	6.70	6.92	7.01	7.79	---
						X _T	---	0.522	0.476	0.452	0.449	0.456	0.446	0.442	0.473	0.487	0.494	---
3/4	33.3	1.3125	19	0.75	R to B	C _V	12.3	10.7	10.1	8.94	7.42	5.83	4.24	2.77	1.85	1.59	0	0.77
						K _V	10.6	9.26	8.74	7.73	6.42	5.04	3.67	2.40	1.60	1.38	0.00	---
						X _T	0.494	0.466	0.446	0.442	0.446	0.452	0.469	0.490	0.551	0.616	---	---
					L to B	C _V	0	2.93	4.19	5.57	7.11	8.68	9.91	10.6	11.2	11.4	12.5	0.76
						K _V	0.00	2.53	3.62	4.82	6.15	7.51	8.57	9.17	9.69	9.86	10.8	---
						X _T	---	0.466	0.432	0.429	0.422	0.413	0.429	0.466	0.459	0.459	0.483	---
1	33.3	1.3125	19	0.75	R to B	C _V	19.4	17.1	15.3	12.6	9.70	6.82	4.34	2.48	1.46	1.14	0	0.91
						K _V	16.8	14.8	13.2	10.9	8.39	5.90	3.75	2.15	1.26	0.99	0.00	---
						X _T	0.655	0.656	0.681	0.714	0.745	0.768	0.717	0.682	0.751	0.848	---	---
					L to B	C _V	0	3.08	4.58	6.62	9.20	12.0	15.0	17.1	18.0	18.7	19.4	0.96
						K _V	0.00	2.66	3.96	5.73	7.96	10.4	13.0	14.8	15.6	16.2	16.8	---
						X _T	---	0.572	0.609	0.623	0.627	0.614	0.629	0.642	0.681	0.687	0.717	---
1-1/2	33.3	1.3125	19	0.75	R to B	C _V	22.2	19.7	17.6	14.5	11.1	7.82	5.97	2.85	1.68	1.30	0	0.87
						K _V	19.2	17.0	15.2	12.5	9.60	6.76	5.16	2.47	1.45	1.12	0.00	---
						X _T	0.552	0.545	0.566	0.621	0.629	0.644	0.590	0.569	0.624	0.719	---	---
					L to B	C _V	0	3.54	5.28	7.61	10.6	13.8	17.2	19.6	20.7	21.5	22.3	0.94
						K _V	0.00	3.06	4.57	6.58	9.17	11.9	14.9	17.0	17.9	18.6	19.3	---
						X _T	---	0.479	0.504	0.522	0.521	0.507	0.528	0.538	0.568	0.574	0.598	---
2	58.7	2.3125	29	1.125	R to B	C _V	74.2	69.8	64.6	57.3	46.7	35.3	24.8	15.8	9.03	5.05	0	0.81
						K _V	64.2	60.4	55.9	49.6	40.4	30.5	21.5	13.7	7.81	4.37	0.00	---
						X _T	0.670	0.655	0.660	0.659	0.697	0.759	0.778	0.794	0.761	0.742	---	---
					L to B	C _V	0	4.90	7.80	12.8	19.7	28.1	38.4	49.3	58.4	64.9	71.9	0.93
						K _V	0.00	4.24	6.75	11.1	17.0	24.3	33.2	42.6	50.5	56.1	62.2	---
						X _T	---	0.743	0.694	0.686	0.712	0.748	0.750	0.752	0.748	0.731	0.744	---
2-1/2	58.7	2.3125	29	1.125	R to B	C _V	81.6	78.8	70.0	62.9	51.7	38.5	27.5	17.6	9.9	5.5	0	0.79
						K _V	70.6	68.2	60.5	54.4	44.7	33.3	23.8	15.2	8.56	4.76	0.00	---
						X _T	0.610	0.565	0.623	0.601	0.629	0.702	0.698	0.707	0.699	0.692	---	---
					L to B	C _V	0	5.4	8.58	14.3	21.9	30.8	41.8	53.9	63.8	71.5	79.2	0.91
						K _V	0.00	4.67	7.42	12.4	18.9	26.6	36.2	46.6	55.2	61.8	68.5	---
						X _T	---	0.671	0.633	0.605	0.635	0.685	0.697	0.697	0.690	0.664	0.674	---



Converging Flow															Linear Characteristic			
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Path ⁽¹⁾	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽²⁾	
	mm	Inches	mm	Inches			0 (Plug Down)	10	20	30	40	50	60	70	80	90		100 (Plug Up)
3	87.3	3.4375	38	1.5	R to B	C _V	143	133	121	107	91.1	73.7	56.6	39.0	20.9	8.64	0	0.74
						K _V	124	115	105	93	78.8	63.8	49.0	33.7	18.1	7.47	0.00	---
						X _T	0.594	0.632	0.680	0.696	0.714	0.754	0.734	0.673	0.711	0.873	---	---
					L to B	C _V	0	18.7	33.9	51.7	70.1	87.9	101	120	134	146	156	0.92
						K _V	0.00	16.2	29.3	44.7	60.6	76.0	87.4	104	116	126	135	---
						X _T	---	0.848	0.757	0.692	0.644	0.621	0.643	0.670	0.743	0.744	0.730	---
4	111.1	4.375	51	2	R to B	C _V	248	236	222	200	175	147	117	86.9	56.6	29.0	0	0.74
						K _V	215	204	192	173	151	127	101	75.2	49.0	25.1	0.00	---
						X _T	0.570	0.583	0.616	0.652	0.672	0.669	0.659	0.608	0.618	0.640	---	---
					L to B	C _V	0	10.2	26.5	49.7	78.4	113	154	189	216	241	265	0.92
						K _V	0.00	8.82	22.9	43.0	67.8	97.7	133	163	187	208	229	---
						X _T	---	0.658	0.622	0.616	0.625	0.631	0.643	0.683	0.704	0.711	0.752	---
6	177.8	7	51	2	R to B	C _V	451	424	387	338	282	223	162	108	60.1	22.9	0	0.84
						K _V	390	367	335	292	244	193	140	93.4	52.0	19.8	0.00	---
						X _T	0.757	0.721	0.727	0.749	0.750	0.747	0.776	0.770	0.749	0.774	---	---
					L to B	C _V	0	49.4	102	161	221	284	337	387	433	474	506	0.91
						K _V	0.00	42.7	88.2	139	191	246	292	335	375	410	438	---
						X _T	---	0.592	0.623	0.662	0.695	0.688	0.728	0.749	0.740	0.757	0.773	---
8 High Capacity	177.8	7	57.2	2.25	R to B	C _V	491	473	425	384	332	256	171	102	55	24	0	0.84
						K _V	425	409	368	332	287	221	148	88.2	47.6	20.8	0.00	---
						X _T	0.702	0.669	0.662	0.689	0.609	0.653	0.710	0.613	0.558	0.349	---	---
					L to B	C _V	0	10	34	62	103	170	264	361	446	527	588	0.91
						K _V	0.00	8.65	29.4	53.6	89.1	147	228	312	386	456	509	---
						X _T	---	0.731	0.891	0.838	0.861	0.900	0.850	0.712	0.654	0.629	0.735	---
8 Low Capacity	177.8	7	57.2	2.25	R to B	C _V	476	410	358	310	246	169	105	57.5	30.1	11.0	0	0.84
						K _V	412	355	310	268	213	146	91	49.7	26.0	9.52	0	---
						X _T	0.668	0.669	0.668	0.668	0.668	0.668	0.669	0.669	0.669	0.666	---	---
					L to B	C _V	0	12	25	47.9	88.1	144	213	283	376	461	542	0.91
						K _V	0	10.4	21.6	41.4	76.2	125	184	245	325	399	469	---
						X _T	---	0.655	0.603	0.607	0.608	0.608	0.608	0.608	0.608	0.608	0.608	---

1. The end connections are identified on the valve body.
2. At maximum flow.

Diverging Flow															Linear Characteristic			
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Path ⁽¹⁾	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽²⁾	
	mm	Inches	mm	Inches			0 (Plug Down)	10	20	30	40	50	60	70	80	90		100 (Plug Up)
1/2	33.3	1.3125	19	0.75	B to R	C _V	9.25	8.47	8.19	7.74	6.97	5.92	4.54	3.08	2.19	2.02	0	0.80
						K _V	8.00	7.33	7.08	6.70	6.03	5.12	3.93	2.66	1.89	1.75	0.00	---
						X _T	0.518	0.473	422	0.410	0.439	0.515	0.620	0.714	0.689	0.727	---	---
					B to L	C _V	0	2.08	2.80	3.51	4.26	5.11	6.02	6.90	7.50	7.72	8.67	0.80
						K _V	0.00	1.80	2.42	3.04	3.68	4.42	5.21	5.97	6.49	6.68	7.50	---
						X _T	---	---	0.898	0.744	0.628	0.540	0.533	0.578	0.574	0.555	0.563	---
3/4	33.3	1.3125	19	0.75	B to R	C _V	13.0	12.1	11.5	10.5	9.17	7.48	5.49	3.57	2.49	2.34	0	0.77
						K _V	11.2	10.5	9.95	9.08	7.93	6.47	4.75	3.09	2.15	2.02	0.00	---
						X _T	0.537	0.537	0.522	0.529	0.574	0.628	0.648	0.636	0.620	0.648	---	---
					B to L	C _V	0	2.39	3.40	4.46	5.70	6.96	8.21	9.39	10.1	10.3	11.5	0.79
						K _V	0.00	2.07	2.94	3.86	4.93	6.02	7.10	8.12	8.74	8.91	9.95	---
						X _T	---	0.946	0.884	0.783	0.681	0.648	0.660	0.668	0.648	0.640	0.608	---
1	33.3	1.3125	19	0.75	B to R	C _V	19.4	18.1	16.3	14.5	12.5	9.68	6.58	4.04	2.73	2.40	0	0.89
						K _V	16.8	15.7	14.1	12.5	10.8	8.37	5.69	3.49	2.36	2.08	0.00	---
						X _T	0.632	0.666	0.694	0.674	0.614	0.616	0.549	0.455	0.537	0.515	---	---
					B to L	C _V	0	4.16	6.18	8.34	10.9	13.3	15.2	16.7	18.0	18.9	19.2	0.87
						K _V	0.00	3.60	5.35	7.21	9.43	11.5	13.1	14.4	15.6	16.3	16.6	---
						X _T	---	0.718	0.749	0.787	0.756	0.738	0.712	0.693	0.656	0.640	0.648	---
1-1/2	33.3	1.3125	19	0.75	B to R	C _V	23	20.9	18.9	16.8	13.3	9.90	6.90	4.36	2.53	2.06	0	0.89
						K _V	19.9	18.1	16.3	14.5	11.5	8.56	5.97	3.77	2.19	1.78	0.00	---
						X _T	0.604	0.604	0.599	0.599	0.565	0.559	0.525	0.522	0.492	0.487	---	---
					B to L	C _V	0	4.20	6.30	8.40	11.1	13.5	15.5	17.5	19.6	21.4	23	0.84
						K _V	0.00	3.63	5.45	7.27	9.60	11.7	13.4	15.1	17.0	18.5	19.9	---
						X _T	---	0.684	0.694	0.719	0.732	0.726	0.725	0.674	0.677	0.634	0.596	---
2	58.7	2.3125	29	1.125	B to R	C _V	74.2	73.1	69.7	64.2	55.0	44.5	32.6	21.0	12.7	8.77	0	0.90
						K _V	64.2	63.2	60.3	55.5	47.6	38.5	28.2	18.2	11.0	7.59	0.00	---
						X _T	0.750	0.756	0.760	0.754	0.762	0.739	0.712	0.734	0.680	0.651	---	---
					B to L	C _V	0	6.40	9.32	15.0	28.8	34.3	46.9	59.0	69.8	79.3	85.5	0.87
						K _V	0.00	5.54	8.06	13.0	24.9	29.7	40.6	51.0	60.4	68.6	74.0	---
						X _T	---	0.660	0.674	0.624	0.577	0.631	0.639	0.662	0.673	0.636	0.628	---
2-1/2	58.7	2.3125	29	1.125	B to R	C _V	77.9	76.7	73.2	67.4	57.7	46.7	34.4	22.1	13.3	9.21	0	0.89
						K _V	67.4	66.3	63.3	58.3	49.9	40.4	29.8	19.1	11.5	7.97	0.00	---
						X _T	0.723	0.729	0.735	0.734	0.743	0.715	0.680	0.710	0.659	0.628	---	---
					B to L	C _V	0	6.72	9.79	15.8	25.0	36.0	49.2	62.0	73.3	83.3	89.7	0.87
						K _V	0.00	5.81	8.47	13.7	21.6	31.1	42.6	53.6	63.4	72.1	77.6	---
						X _T	---	0.640	0.647	0.601	0.558	0.616	0.620	0.644	0.653	0.623	0.609	---



Diverging Flow																Linear Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Path ⁽¹⁾	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽²⁾	
	mm	Inches	mm	Inches			0 (Plug Down)	10	20	30	40	50	60	70	80	90		100 (Plug Up)
3	87.3	3.4375	38	1.5	B to R	C _V	146	146	146	143	128	106	81.1	55.0	29.8	16.4	0	0.87
						K _V	126	126	126	124	111	91.7	70.2	47.6	25.8	14.2	0.00	---
						X _T	0.687	0.716	0.733	0.687	0.686	0.689	0.688	0.684	0.684	0.688	---	---
					B to L	C _V	0	26.9	44.3	64.5	84.0	103	122	140	153	165	174	0.90
						K _V	0.00	23.3	38.3	55.8	72.7	89.1	106	121	132	143	151	---
						X _T	---	0.673	0.679	0.675	0.674	0.673	0.672	0.672	0.676	0.674	0.671	---
4	111.1	4.375	51	2	B to R	C _V	252	249	246	241	227	203	172	135	94.6	52.1	0	0.76
						K _V	218	215	213	208	196	176	149	117	81.8	45.1	0.00	---
						X _T	0.670	0.671	0.674	0.672	0.673	0.673	0.674	0.643	0.671	0.673	---	---
					B to L	C _V	0	12.0	28.0	50.2	79.7	119	172	226	267	297	316	0.91
						K _V	0.00	10.4	24.2	43.4	68.9	103	149	195	231	257	273	---
						X _T	---	0.691	0.689	0.692	0.691	0.692	0.691	0.688	0.687	0.887	0.690	---
6	177.8	7	51	2	B to R	C _V	483	470	444	395	343	273	203	134	74.8	33.0	0	0.89
						K _V	418	407	384	342	297	236	176	116	64.7	28.5	0.00	---
						X _T	0.783	0.780	0.781	0.785	0.791	0.781	0.786	0.785	0.784	0.786	---	---
					B to L	C _V	0	58.4	106	164	230	301	374	437	491	534	567	0.89
						K _V	0.00	50.5	91.7	142	199	260	324	378	425	462	490	---
						X _T	---	0.726	0.729	0.729	0.728	0.732	0.732	0.727	0.732	0.726	0.732	---
8 High Capacity	177.8	7	57.5	2.25	B to R	C _V	546	525	472	427	369	284	190	114	61	26	0	0.89
						K _V	472	454	408	369	319	246	164	98.6	52.8	22.5	0.00	---
						X _T	0.700	0.670	0.734	0.688	0.609	0.655	0.710	0.606	0.559	0.367	---	---
					B to L	C _V	0	12	37	68	114	189	293	401	495	586	653	0.89
						K _V	0.00	10.4	32.0	58.8	98.6	163	253	347	428	507	565	---
						X _T	---	0.628	0.929	0.860	0.858	0.899	0.824	0.712	0.655	0.625	0.735	---
8 Low Capacity	177.8	7	57.5	2.25	B to R	C _V	529	456	398	341	273	188	117	63.9	33.5	12.2	0	0.89
						K _V	458	394	344	295	236	163	101	55.3	29.0	10.6	0	---
						X _T	0.660	0.667	0.668	0.668	0.668	0.668	0.668	0.668	0.667	0.661	---	---
					B to L	C _V	0	14	28	53.2	97.9	160	236	315	418	512	602	0.89
						K _V	0	12.1	24.2	46.0	84.7	138	204	272	362	443	521	---
						X _T	---	0.594	0.594	0.608	0.608	0.608	0.608	0.608	0.608	0.608	0.608	---

1. The end connections are identified on the valve body.
2. At maximum flow.

Converging Flow

Converging Flow																Linear Characteristic		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Path ⁽¹⁾	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽²⁾	
	mm	Inches	mm	Inches			0 (Plug Down)	10	20	30	40	50	60	70	80	90		100 (Plug Up)
1/2	33.3	1.3125	19	0.75	R to L	C _v	8.43	7.37	6.62	6.11	5.66	5.20	4.73	4.25	3.65	2.48	0	0.80
						K _v	7.29	6.38	5.73	5.29	4.90	4.50	4.09	3.68	3.16	2.15	0.00	---
						X _T	0.518	0.473	0.446	0.422	0.416	0.429	0.442	0.449	0.459	0.501	---	---
					B to L	C _v	0	1.74	2.44	3.16	3.61	4.10	4.95	5.85	6.38	7.07	8.42	0.80
						K _v	0.00	1.51	2.11	2.73	3.12	3.55	4.28	5.06	5.52	6.12	7.28	---
						X _T	---	0.936	0.819	0.744	0.761	0.697	0.559	0.469	0.456	0.490	0.526	---
3/4	33.3	1.3125	19	0.75	R to L	C _v	11.8	10.4	9.37	8.71	8.07	7.25	6.27	5.32	4.40	2.78	0	0.79
						K _v	10.2	9.00	8.11	7.53	6.98	6.27	5.42	4.60	3.81	2.40	0.00	---
						X _T	0.508	0.508	0.490	0.462	0.452	0.452	0.459	0.459	0.436	0.452	---	---
					B to L	C _v	0	2.65	3.72	4.87	6.30	7.43	8.29	9.16	9.97	11.2	12.5	0.77
						K _v	0.00	2.29	3.22	4.21	5.45	6.43	7.17	7.92	8.62	9.69	10.8	---
						X _T	---	0.533	0.508	0.494	0.446	0.397	0.397	0.436	0.446	0.432	0.497	---
1	33.3	1.3125	19	0.75	R to L	C _v	18.4	16.5	15.3	13.8	12.0	9.84	7.63	5.37	3.38	1.64	0	0.93
						K _v	15.9	14.3	13.2	11.9	10.4	8.51	6.60	4.65	2.92	1.42	0.00	---
						X _T	0.682	0.664	0.665	0.668	0.674	0.694	0.704	0.702	0.736	0.845	---	---
					B to L	C _v	0	2.11	3.03	4.45	6.15	8.18	10.5	13.0	15.7	18.3	20.5	0.88
						K _v	0.00	1.83	2.62	3.85	5.32	7.08	9.08	11.2	13.6	15.8	17.7	---
						X _T	---	0.602	0.722	0.691	0.674	0.646	0.644	0.646	0.626	0.594	0.613	---
1-1/2	33.3	1.3125	19	0.75	R to L	C _v	20.6	18.0	16.2	14.3	12.4	9.90	7.70	5.42	3.30	1.65	0	0.91
						K _v	17.8	15.6	14.0	12.4	10.7	8.56	6.66	4.69	2.85	1.43	0.00	---
						X _T	0.603	0.616	0.656	0.690	0.700	0.759	0.763	0.768	0.854	0.926	---	---
					B to L	C _v	0	2.60	4.90	6.90	9.40	12.6	15.4	18.8	22.0	24.5	25.1	0.82
						K _v	0.00	2.25	4.24	5.97	8.13	10.9	13.3	16.3	19.0	21.2	21.7	---
						X _T	---	0.453	0.315	0.328	0.330	0.313	0.342	0.353	0.365	0.379	0.468	---
2	58.7	2.3125	29	1.125	R to L	C _v	66.1	63.6	61.9	59.3	53.7	47.0	37.7	27.6	17.1	6.68	0	0.92
						K _v	57.2	55.0	53.5	51.3	46.5	40.7	32.6	23.9	14.8	5.78	0.00	---
						X _T	0.757	0.762	0.747	0.725	0.734	0.743	0.743	0.733	0.724	0.848	---	---
					B to L	C _v	0	3.85	5.48	9.16	14.6	21.5	30.7	42.4	56.3	71.9	85.6	0.65
						K _v	0.00	3.33	4.74	7.92	12.6	18.6	26.6	36.7	48.7	62.2	74.0	---
						X _T	---	0.911	0.883	0.801	0.772	0.756	0.745	0.731	0.697	0.656	0.608	---



Converging Flow															Linear Characteristic			
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Path ⁽¹⁾	Flow Coefficient	Valve Opening—Percent of Total Travel										F _L ⁽²⁾	
	mm	Inches	mm	Inches			0 (Plug Down)	10	20	30	40	50	60	70	80	90		100 (Plug Up)
2-1/2	58.7	2.3125	29	1.125	R to L	C _v	72.8	70.0	68.0	65.3	59.2	51.7	41.5	30.3	18.8	7.35	0	0.89
						K _v	63.0	60.5	58.8	56.5	51.2	44.7	35.9	26.2	16.3	6.36	0.00	---
						X _T	0.691	0.677	0.684	0.659	0.664	0.676	0.681	0.667	0.662	0.662	---	---
					B to L	C _v	0	4.24	6.03	10.1	16.0	23.7	33.8	46.7	62.0	79.0	94.2	0.84
						K _v	0.00	3.67	5.22	8.74	13.8	20.5	29.2	40.4	53.6	68.3	81.5	---
						X _T	---	0.824	0.802	0.725	0.694	0.684	0.674	0.662	0.631	0.601	0.552	---
3	87.3	3.4375	38	1.5	R to L	C _v	140	131	121	111	99.3	85.3	68.3	46.1	23.9	9.07	0	0.86
						K _v	121	113	105	96.0	85.9	73.8	59.1	39.9	20.7	7.85	0.00	---
						X _T	0.713	0.714	0.714	0.713	0.716	0.712	0.715	0.716	0.713	0.711	---	---
					B to L	C _v	0	14.1	27.4	40.3	53.8	68.3	87.1	111	138	164	185	0.83
						K _v	0.00	12.2	23.7	34.9	46.5	59.1	75.3	96.0	119	142	160	---
						X _T	---	0.519	0.592	0.592	0.595	0.591	0.592	0.593	0.593	0.593	0.593	---
4	111.1	4.375	51	2	R to L	C _v	234	231	225	216	200	175	140	103	65.2	30.0	0	0.87
						K _v	202	200	195	187	173	151	121	89.1	56.4	25.9	0.00	---
						X _T	0.727	0.698	0.702	0.685	0.672	0.670	0.692	0.657	0.548	0.583	---	---
					B to L	C _v	0	2.81	11.9	25.0	43.1	69.0	106	149	200	256	312	0.84
						K _v	0.00	2.43	10.3	21.6	37.3	59.7	91.7	129	173	221	270	---
						X _T	---	0.754	0.866	0.805	0.747	0.725	0.729	0.715	0.695	0.659	0.590	---
6	177.8	7	51	2	R to L	C _v	413	386	363	331	296	252	207	157	102	49.5	0	0.87
						K _v	357	334	314	286	256	218	179	136	88	42.8	0.00	---
						X _T	0.770	0.764	0.729	0.716	0.699	0.665	0.607	0.537	0.488	0.465	---	---
					B to L	C _v	0	38.4	70.1	110	156	208	262	324	393	473	556	0.84
						K _v	0.00	33.2	60.6	95.2	135	180	227	280	340	409	481	---
						X _T	---	0.750	0.789	0.770	0.738	0.720	0.708	0.707	0.694	0.654	0.605	---

1. The end connections are identified on the valve body.
2. At maximum flow.

Diverging Flow								On-Off Service Only	
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Path ⁽¹⁾	Flow Coefficient	Valve Opening—Percent of Total Travel		F _L ⁽²⁾
	mm	Inches	mm	Inches			0 (Plug Down)	100 (Plug Up)	
1/2	33.3	1.3125	19	0.75	L to R	C _v	8.20	0	0.84
						K _v	7.09	0.00	---
						X _T	0.612	---	---
					L to B	C _v	0	8.89	0.82
						K _v	0.00	7.69	---
						X _T	---	0.544	---
3/4	33.3	1.3125	19	0.75	L to R	C _v	11.0	0	0.84
						K _v	9.52	0.00	---
						X _T	0.616	---	---
					L to B	C _v	0	11.8	0.81
						K _v	0.00	10.2	---
						X _T	---	0.597	---
1	33.3	1.3125	19	0.75	L to R	C _v	17.1	0	0.94
						K _v	14.8	0.00	---
						X _T	0.742	---	---
					L to B	C _v	0	19.3	0.89
						K _v	0.00	16.7	---
						X _T	---	0.696	---
1-1/2	33.3	1.3125	19	0.75	L to R	C _v	20.5	0	0.89
						K _v	17.7	0.00	---
						X _T	0.590	---	---
					L to B	C _v	0	23.2	0.85
						K _v	0.00	20.1	---
						X _T	---	0.550	---
2	58.7	2.3125	29	1.125	L to R	C _v	58.1	0	0.94
						K _v	50.3	0.00	---
						X _T	0.848	---	---
					L to B	C _v	0	72.7	0.93
						K _v	0.00	62.9	---
						X _T	---	0.757	---
2-1/2	58.7	2.3125	29	1.125	L to R	C _v	64.0	0	0.92
						K _v	55.4	0.00	---
						X _T	0.772	---	---
					L to B	C _v	0	80.0	0.91
						K _v	0.00	69.2	---
						X _T	---	0.691	---



Diverging Flow							On-Off Service Only		
Valve Size, NPS	Port Diameter		Maximum Travel		Flow Path ⁽¹⁾	Flow Coefficient	Valve Opening—Percent of Total Travel		F _L ⁽²⁾
	mm	Inches	mm	Inches			0 (Plug Down)	100 (Plug Up)	
3	87.3	3.4375	38	1.5	L to R	C _v	118	0	0.93
						K _v	102	0.00	---
						X _T	0.830	---	---
					L to B	C _v	0	148	0.95
						K _v	0.00	128	---
						X _T	---	0.766	---
4	111.1	4.375	51	2	L to R	C _v	203	0	0.92
						K _v	176	0.00	---
						X _T	0.819	---	---
					L to B	C _v	0	265	0.94
						K _v	0.00	229	---
						X _T	---	0.757	---
6	177.8	7	51	2	L to R	C _v	386	0	0.94
						K _v	334	0.00	---
						X _T	0.849	---	---
					L to B	C _v	0	512	0.94
						K _v	0.00	443	---
						X _T	---	0.772	---

1. The end connections are identified on the valve body.
2. At maximum flow.

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