

APPLICATIONS:

For Kimray Control Valves with the Kimray TRITEX II:

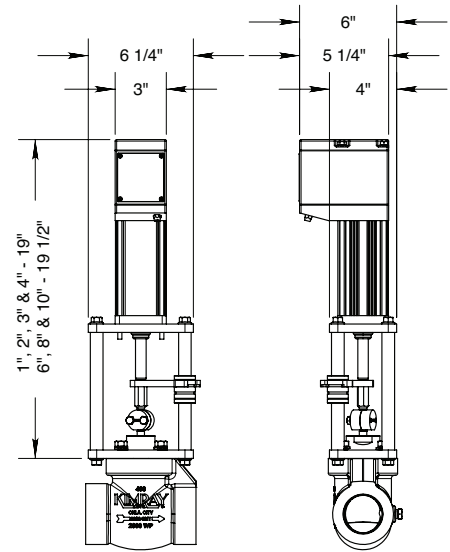
- Flow control valve
- Pressure control upstream/downstream/differential
- Choke valve
- Compressor controls
- Gas lift valve
- Dump valve

CERTIFICATIONS:

Kimray is an ISO 9001- certified manufacturer.

FEATURES:

Voltage	12-48 VDC
I/O	4/3 isolated digital 1/1 isolated 4-20 mA
Rating	Class 1, Division 2, Groups A,B,C & D
Connection	1/2" NPT
Temp	-40° F to 149° F (-40° C to 65° C)
Force	Continuous to 872 lbf Peak to 1190 lbf
Stroke	3" max
Speed	up to 5 in./sec.
Duty Cycle	100%
Life	100M + strokes



OPERATION:

The TRITEX II DC LINEAR ACTUATOR uses a roller screw attached to a servo motor to convert the rotary motion of the motor directly to a linear force. The control and positioner used in the actuator provide closed-loop feedback, eliminating the need for limit switches, torque switches or any mechanical means of feedback. The electronics provide a 4-20 mA input and output, as well as digital input and output. The result is speed, precision and a long-lasting actuator with little to no maintenance.

ELECTRIC ACTUATORS AVAILABLE		
Order Code	Description	Voltage
KSETDM0750301	TRITEX II ACTUATOR	12V-48V
MOUNTING KITS AVAILABLE		
Order Code	Description	Line Size
KSMK11EX30KITUM	TRITEX II MOUNTING KIT	1"
KSMK12EX30KITUM		2"
KSMK13EX30KITUM		3" - 4"
KSMK16EX30KITUM		6" - 10"
CABLES AVAILABLE		
Order Code	Description	Length
KSET49795	COMMUNICATION CABLE	6 FOOT
KSET49796		15 FOOT
NOTES:		
For standard & optional seals, metals, Cf Cv values, material specifications & dimensions see technical data on pages 01:I - 01:X1		

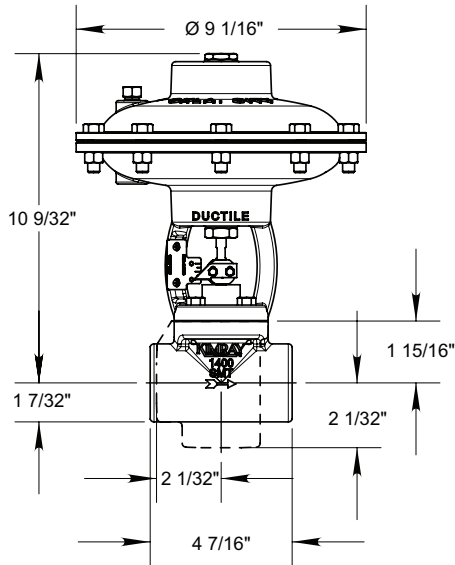
Table 1 - Flow Coefficient(Cv)														
Line Size	Trim Size in. (mm)	Trim Type	Cf	Valve Opening Percentage										
				10	20	30	40	50	60	70	80	90	100	
Stem Guided														
1"	1/8 in (3.17 mm)	Linear (Nominal)	0.58	0.10	0.40	0.50	0.70	0.90	1.00	1.00	1.00	1.10	1.10	
	3/16 in (4.74 mm)		0.59	0.20	0.50	0.77	1.00	1.30	1.40	1.50	1.50	1.50	1.50	
	1/4 in (6.35 mm)		0.78	0.28	0.72	1.11	1.50	1.80	1.95	2.08	2.13	2.15	2.17	
	3/8 in (9.52 mm)		0.91	0.40	1.10	1.60	2.20	2.70	2.90	3.10	3.20	3.20	3.20	
	1/2 in (12.7 mm)		0.94	0.70	1.90	2.90	4.00	4.80	5.20	5.50	5.60	5.70	5.70	
2"	1/4 in (6.35 mm)		0.55	0.40	1.00	1.50	2.00	2.50	2.70	2.80	2.90	2.90	3.00	
	3/8 in (9.52 mm)		0.77	0.53	1.33	2.06	2.80	3.40	3.60	3.90	4.00	4.00	4.00	
	1/2 in (12.7 mm)		0.78	0.94	2.38	3.67	4.97	5.98	6.48	6.91	7.06	7.13	7.20	
	3/4 in (19.0 mm)		0.80	1.60	4.00	6.20	8.40	10.10	11.00	12.00	12.00	12.00	12.00	
	1 in (25.4 mm)		0.77	2.80	7.00	11.00	15.00	18.00	19.00	20.00	21.00	21.00	21.00	
1"	1/8 in (3.17 mm)		Quick Opening (Carbide)	0.73	0.39	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
	3/16 in (4.74 mm)			0.74	0.77	0.90	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
	1/4 in (6.35 mm)			0.68	0.88	1.51	1.67	1.71	1.73	1.73	1.74	1.74	1.74	1.74
	3/8 in (9.52 mm)	0.74		1.02	2.40	3.36	3.64	3.73	3.78	3.82	3.83	3.83	3.86	
	1/2 in (12.7 mm)	0.90		1.09	2.46	4.17	5.03	5.27	5.45	5.60	5.72	5.85	5.93	
2"	1/4 in (6.35 mm)	0.65		1.23	1.82	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	
	3/8 in (9.52 mm)	0.76		1.65	3.41	3.77	3.83	3.84	3.84	3.84	3.84	3.84	3.84	
	1/2 in (12.7 mm)	0.80		2.26	4.35	5.87	6.36	6.51	6.58	6.61	6.63	6.63	6.63	
	3/4 in (19.0 mm)	0.78		2.16	4.61	7.23	9.19	10.2	10.6	10.9	10.9	10.9	10.9	
	1 in (25.4 mm)	0.70		2.54	5.58	9.30	12.3	14.2	15.1	15.5	15.6	15.6	15.8	
1"	1/8 in (3.17 mm)	Equal Percentage		0.73	0.01	0.02	0.03	0.04	0.06	0.09	0.15	0.26	0.32	0.34
	1/4 in (6.35 mm)			0.66	0.05	0.10	0.14	0.19	0.29	0.58	0.93	1.27	1.63	1.99
	1/2 in (12.7 mm)			0.78	0.16	0.32	0.47	0.60	0.93	1.74	2.99	4.41	5.65	6.49
2"	1/4 in (6.35 mm)		0.65	0.10	0.14	0.19	0.23	0.27	0.55	0.82	1.12	1.62	1.72	
	7/16 in (11.1 mm)		0.60	0.10	0.30	0.50	0.70	1.00	1.50	2.60	3.80	4.80	5.40	
	5/8 in (15.8 mm)		0.58	0.30	0.50	0.90	1.10	1.40	2.30	3.90	6.40	8.70	10.80	
	7/8 in (22.2 mm)		0.66	0.40	0.90	1.57	2.10	3.00	4.20	6.30	9.60	13.00	17.00	
Cage Guided														
2"	1 1/2 in (38mm)		Equal Percentage	0.75	0.60	1.30	2.20	3.40	5.00	8.60	14.0	21.0	26.0	28.6
	2 in (51 mm)	0.76		2.00	4.00	6.00	8.00	11.0	20.0	33.0	45.0	51.0	57.0	
3"	2 in (51 mm)	0.75		2.90	4.90	7.40	9.50	12.0	17.4	28.9	40.8	48.1	52.6	
	3 in (76 mm)	0.76		4.00	6.00	10.0	13.0	16.0	26.0	54.0	83.0	97.0	107	
4"	3 in (76 mm)	0.75		4.00	6.00	9.00	12.0	16.0	25.0	52.0	81.0	95.0	115	
	4 in (102 mm)	0.75		9.00	13.0	18.0	26.0	36.0	64.0	104	148	197	222	
6"	4 in (102 mm)	0.75		9.00	13.0	18.0	26.0	36.0	64.0	104	148	197	222	
	6 in (152 mm)	0.75		7.00	20.0	45.0	78.0	108	140	222	318	399	431	
8"	6 in (152 mm)	0.75		47.0	60.0	90.0	106	119	139	173	243	294	453	
	8 in (203 mm)	0.75		51.0	53.0	235	362	485	584	665	699	745	810	
10"	6 in (152 mm)	0.75		26.0	37.0	46.0	53.0	56.0	58.0	104	146	655	655	
	8.5 in (216 mm)	0.75		28.0	72.0	420	509	632	678	769	814	832	1091	
8"	8 in (203 mm)	Modified E.P.		0.75	51.0	55.0	64.0	134	162	330	452	527	571	630
10"	8.5 in (216 mm)		0.75	21.0	22.0	27.0	103	209	429	596	663	695	884	
2"	2 in (51 mm)	Quick Open	0.76	0.80	1.50	6.10	13.0	20.2	27.6	35.6	42.4	48.8	53.0	
3"	3 in (76 mm)		0.76	5.10	21.3	42.4	63.8	83.0	97.7	105	111	113	115	
4"	4 in (102 mm)		0.75	8.20	43.8	80.0	119	170	211	237	247	252	253	

HIGH PRESSURE CONTROL VALVES

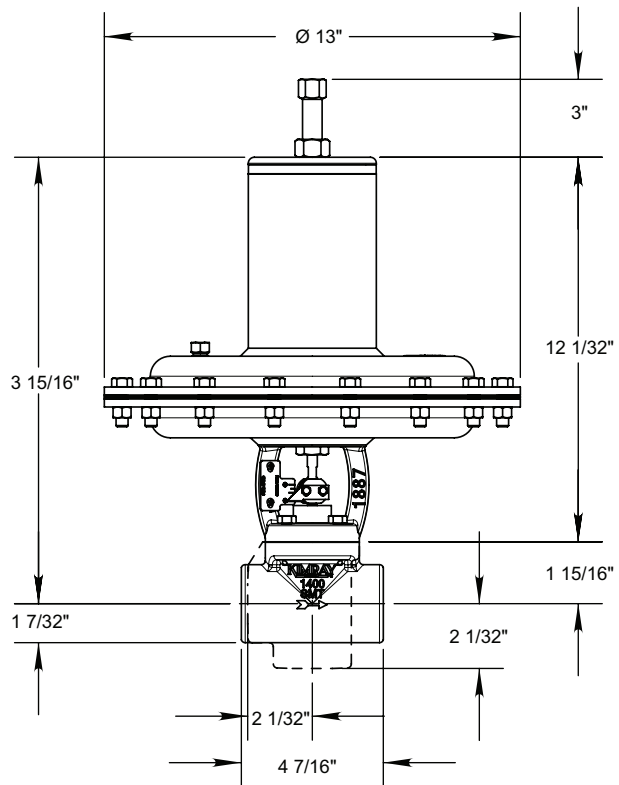


DIMENSIONS 1" MODEL CVS

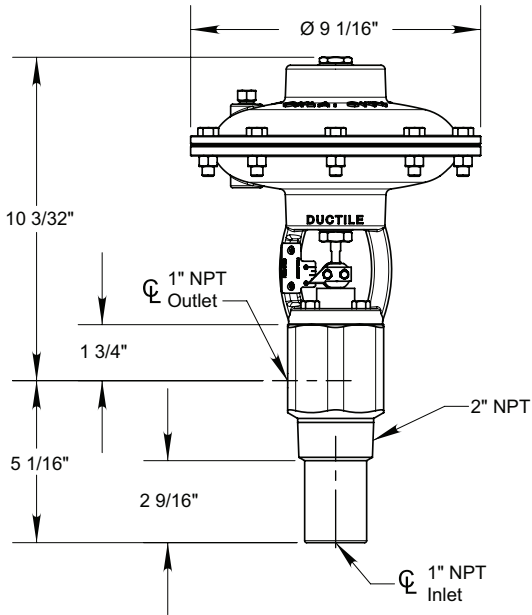
1" HPCV



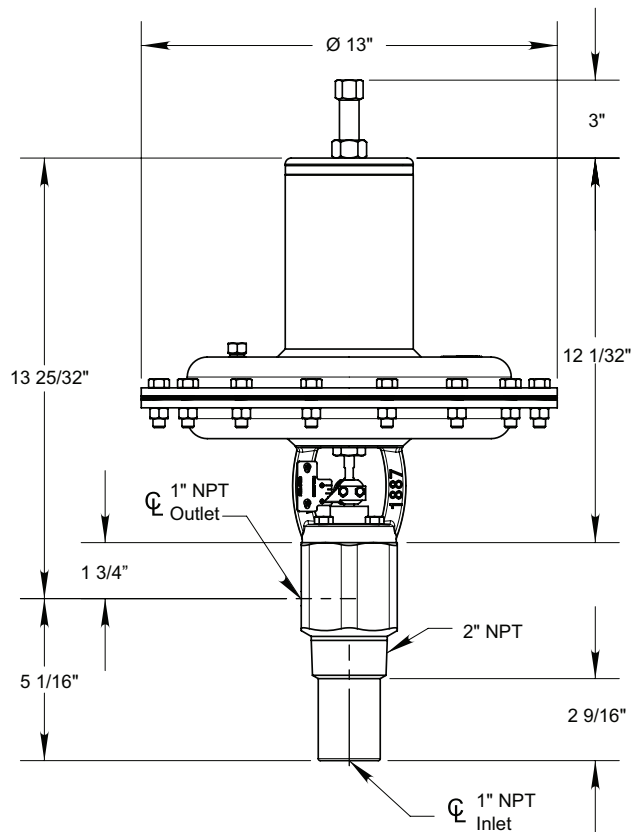
1" HPCV -65 TOPWORKS



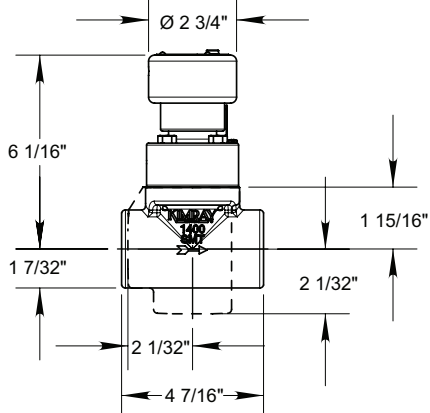
1" SMS



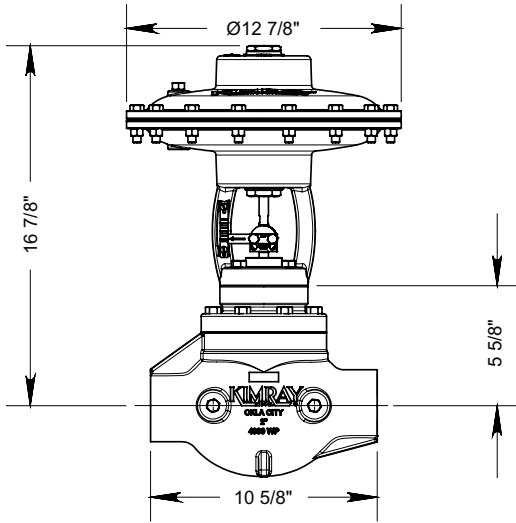
1" SMS -65 TOPWORKS



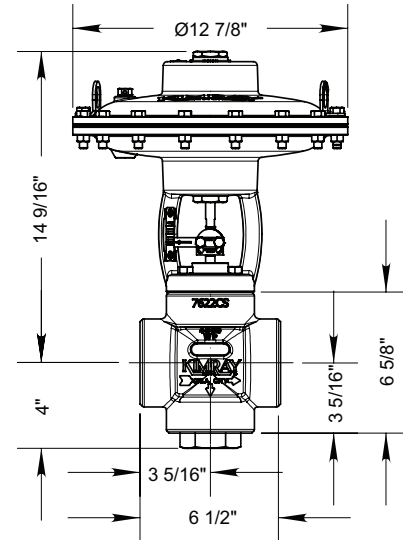
1" SMVA/T



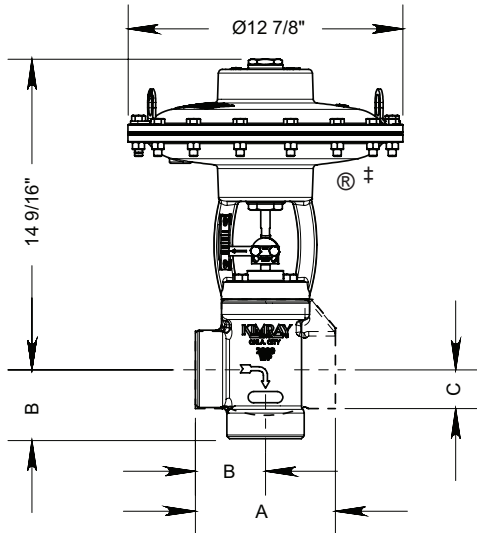
2" HPCV PB



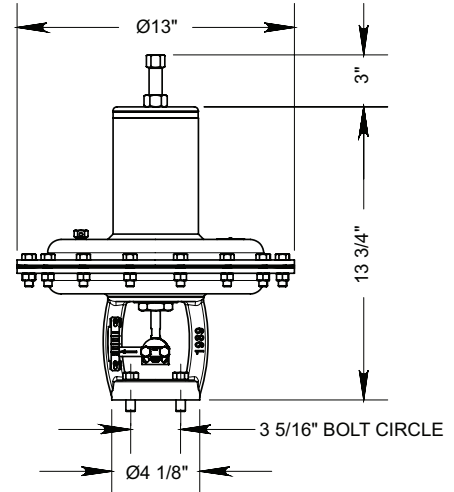
2" SMD



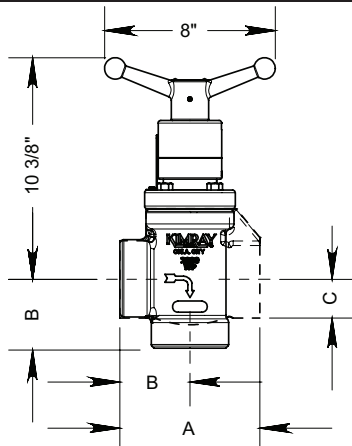
2" HPCV



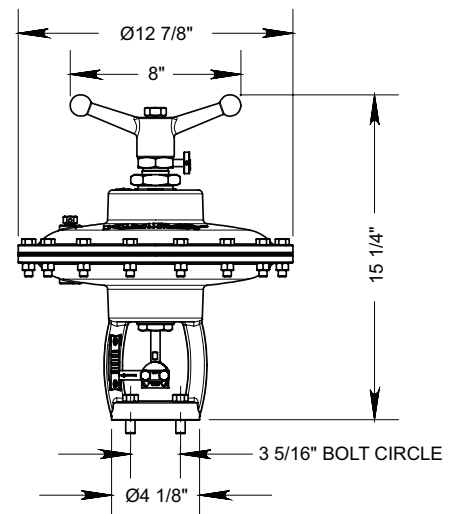
2" -65 TOPWORKS



2" SMVA/T TOPWORKS



2" MVP TOPWORKS



MODEL NO.	A	B	C
2200	6 9/16"	3 9/32"	1 13/16"
2400	6 9/16"	3 9/32"	2 1/16"

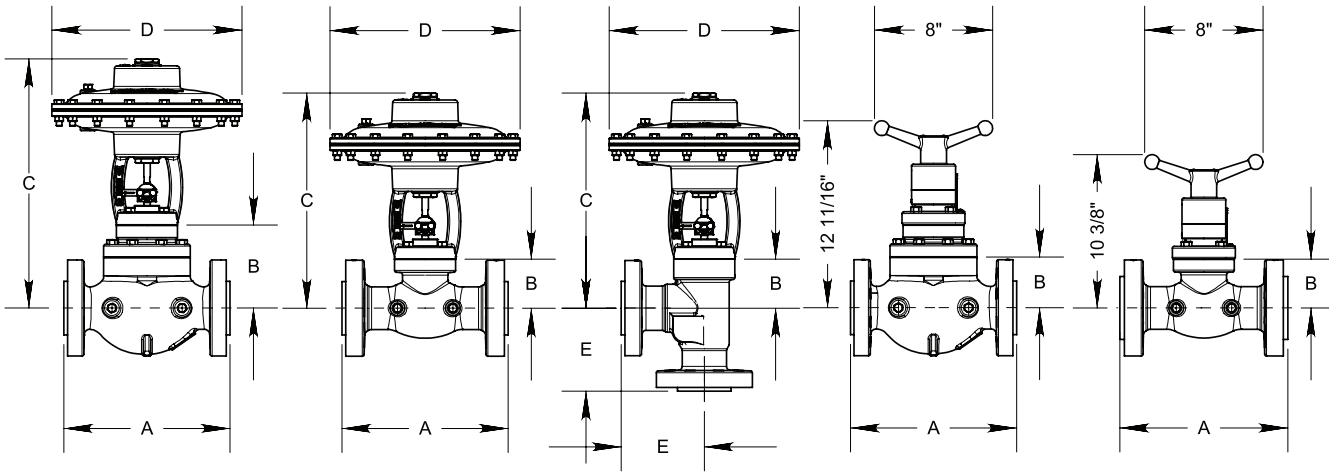
All dimensions are in inches
Flanged body dimensions available on request.

HIGH PRESSURE CONTROL VALVES



DIMENSIONS

FLANGED BODY MODEL CVS & CVC



	SIZE	BODY STYLE	A	B	C	D	E
STEM GUIDED	1"	150RF	7 1/4"	1 15/16"	10 1/2"	9 1/8"	
		150RTJ	7 5/8"	1 15/16"	10 1/2"	9 1/8"	
		300RF	7 3/4"	1 15/16"	10 1/2"	9 1/8"	
		300RTJ	8 1/8"	1 15/16"	10 1/2"	9 1/8"	
		600RF	8 1/4"	1 15/16"	10 1/2"	9 1/8"	
		600RTJ	8 1/4"	1 15/16"	10 1/2"	9 1/8"	
		1500RF	10 3/4"	1 15/16"	10 1/2"	9 1/8"	
	1500RTJ	10 3/4"	1 15/16"	10 1/2"	9 1/8"		
	2"	150RF	10"	3 3/16"	14 1/2"	12 7/8"	5"
		150RTJ	10 3/8"	3 3/16"	14 1/2"	12 7/8"	5"
		300RF	10 1/2"	3 3/16"	14 1/2"	12 7/8"	5 1/2"
		300RTJ	11"	3 3/16"	14 1/2"	12 7/8"	5 1/4"
		600RF	11 1/4"	3 3/16"	14 1/2"	12 7/8"	5 5/8"
		600RTJ	11 3/8"	3 3/16"	14 1/2"	12 7/8"	5 5/8"
		1500RF	13 3/8"	3 3/16"	14 1/2"	12 7/8"	7 13/32"
	1500RTJ	13 1/2"	3 3/16"	14 1/2"	12 7/8"	7 13/32"	
	2500RTJ	16 3/8"	3 3/16"	14 1/2"	12 7/8"		
2-1/16 API 5000	14 3/4"	4 1/4"	14 1/2"	12 7/8"	7 3/8"		
CAGE GUIDED	2"	150RF	10"	5 5/8"	17"	12 7/8"	
		300RF	10 1/2"	5 5/8"	17"	12 7/8"	
		600RF	11 1/4"	5 5/8"	17"	12 7/8"	
		1500RF	13 3/8"	5 5/8"	17"	12 7/8"	
		1500RTJ	13 1/2"	5 5/8"	17"	12 7/8"	
	3"	150RF	11 3/4"	7 1/4"	27"	15 3/4"	
		300RF	12 1/2"	7 1/4"	27"	15 3/4"	
		600RF	13 1/4"	7 1/4"	27"	15 3/4"	
		600RTJ	13 3/8"	7 1/4"	27"	15 3/4"	
	4"	150RF	13 7/8"	11"	30"	15 3/4"	
		300RF	14 1/2"	11"	30"	15 3/4"	
		600RF	15 1/2"	11"	30"	15 3/4"	
	6"	150RF	17 3/4"	11 3/16"	34 1/2"	20 7/16"	
		300RF	18 5/8"	11 3/16"	34 1/2"	20 7/16"	
		600RF	20 1/16"	11 3/16"	34 1/2"	20 7/16"	
	8"	150RF	21 3/8"	11 5/16"	34 1/2"	20 1/2"	
		300RF	22 3/8"	11 5/16"	34 1/2"	20 1/2"	
600RF		24"	11 5/16"	34 1/2"	20 1/2"		
10"	150RF	26 1/2"	11 5/16"	34 1/2"	20 1/2"		
	300RF	27 7/8"	11 5/16"	34 1/2"	20 1/2"		
	600RF	29 9/16"	11 5/16"	34 1/2"	20 1/2"		

All Pictures shown are for illustration purpose only. Actual product may vary due to product enhancement.

Table 2 - Seal Options		
Part	Standard Material	Optional Material
Diaphragm	Nitrile	FKM
Packing Rings	Nitrile	FKM, Aflas, HSN, Graphite
Packing Sleeve	Teflon	
O-rings	Nitrile	FKM, Aflas, HSN
Seal Ring	Polyurethane	Aflas

Table 3 - Seal Specifications							
		NITRILE	HIGHLY SATURATED NITRILE	FKM	AFLAS®	TEFLON	GRAPHITE PACKING
Kimray Suffix		-	HSN	V	AF	T	G
Resistance	Abrasion	G	G-E	G	G	E	PF
	Acid	F	G-E	G-E	E	E	G
	Chemical	F	F	E	E	E	E
	Cold	G	G	P	P	E	E
	Flame	P	P	E	E	P	E
	Heat	G	E	E	E	E	E
	Oil	G-E	E	E	E	E	E
	Ozone	P	G	G-E	E	E	F
	Set	G	G	G-E	P	P	G
	Tear	F	F	F	P	E	P
	Water/Steam	F	E	P	G	E	E
	Weather	F	G	E	E	E	E
	CO2	F-G	G	G	G	E	E
	H2S	P	F	P	E	E	E
Methanol	F	E	P	P	E	E	
Properties	Dynamic	G	G	G	G	P	E
	Electrical	F	F	F	G-E	E	Conductive
	Impermeability	G	G	G	G	E	G
	Tensile Strength	G	G-E	G	F	E	P
Temp. Range		-20° to +250°F	-20° to +300°F	-15° to +400°F	+15° to +450°F	-450° to +500°F	-328° to +850°F
		-29° to +121°C	-29° to +149°C	-26° to +204°C	-9° to +232°C	-268° to +260°C	-200° to +455°C
RATINGS: P-POOR, F-FAIR, G-GOOD, E-EXCELLENT							

Table 5 - Material Options Stem Guided			
Part Description	Standard Material	Erosive Material	Corrosive Material
Body	WCB (ASTM A216)		WCB (ASTM A216) ‡
Actuator	Ductile (ASTM A395)		
Stuffing Box	Carbon Steel (ASTM A105)		316SS (ASTM A479)
Cage	Alloy Steel (ASTM A108)		316SS (ASTM A479)
Stem	303SS (ASTM A582)		316SS (ASTM A479)
Plug*	Chrome Alloy	Tungsten Carbide	316SS (ASTM A479)
Seat	D-2 (ASTM A681)	Zirconia	316SS (ASTM A479)
Cover Bonnet (Metering Valve)	WCB (ASTM A216)		

*Material can vary by trim size. See Page 01:200.2

‡ Coated Parts available with "K" service type

Table 6 - Material Options Cage Guided			
Part Description	Standard Material	Erosive Material	Corrosive Material
Body	WCB (ASTM A216)		WCB (ASTM A216) ‡
Actuator	Ductile (ASTM A395)		
Stuffing Box	2" - 4"	Carbon Steel (ASTM A105)	316SS (ASTM A479)
	6" - 10"	316SS (ASTM A479)	
Cover Bonnet (Upper Housing)	WCB (ASTM A216)		WCB (ASTM A216) ‡
Cage	2 & 3 inch 316SS (ASTM A479)	4-10 inch 316SS (ASTM A351 CF8M)	
Stem	316SS (ASTM A479)	303SS (ASTM A582)	316SS (ASTM A479)
Piston	316SS (ASTM A479)	D-2 (ASTM A597)	316SS (ASTM A479)
Seat Disc	D2 (ASTM A681)	Zirconia	316SS (ASTM A479)
Ratio Plug	D-2 (ASTM A597)		316SS (ASTM A351 CF8M)
Seat	D-2 (ASTM A681)		316SS (ASTM A479)
Bonnet (Metering Valve)	WCB (ASTM A216)		

‡ Coated Parts available with "K" service type

Table 6 - 1" Stem Guided HPCV

Valve Description	ΔP	0 psig (0 bar)		100 psig (6.8 bar)		500 psig (34.4 bar)		1000 psig (68.9 bar)		1500 psig (103.4 bar)	
	Spring	Crack	Full	Crack	Full	Crack	Full	Crack	Full	Crack	Full
1400 SMT PO 1/8" IV	621 (10 lbs)	3 psig (0.21 bar)	9.5 psig (0.66 bar)	3 psig (0.21 bar)	9 psig (0.62 bar)	3 psig (0.21 bar)	8.5 psig (0.59 bar)	2 psig (0.13 bar)	7 psig (0.48 bar)	2 psig (0.13 bar)	6 psig (0.41 bar)
	463 (20 lbs)	6.5 psig (0.44 bar)	20.5 psig (1.41 bar)	6 psig (0.41 bar)	20 psig (1.37 bar)	6 psig (0.41 bar)	19.5 psig (1.34 bar)	5.5 psig (0.37 bar)	18 psig (1.24 bar)	5.5 psig (0.37 bar)	17.5 psig (1.20 bar)
	464 (30 lbs)	9.5 psig (0.65 bar)	34 psig (2.34 bar)	9.5 psig (0.65 bar)	34 psig (2.34 bar)	9 psig (0.62 bar)	33 psig (2.27 bar)	9 psig (0.62 bar)	32 psig (2.20 bar)	8.5 psig (0.58 bar)	31 psig (2.13 bar)
1400 SMT PO 1/8" IV EP	621 (10 lbs)	3.5 psig (0.23 bar)	10 psig (0.68 bar)	3.5 psig (0.23 bar)	10 psig (0.68 bar)	3 psig (0.21 bar)	8.5 psig (0.58 bar)	2.5 psig (0.17 bar)	7.5 psig (0.51 bar)	2 psig (0.13 bar)	6 psig (0.41 bar)
	463 (20 lbs)	7 psig (0.48 bar)	21.5 psig (1.48 bar)	7 psig (0.48 bar)	21 psig (0.44 bar)	6.5 psig (0.44 bar)	19.5 psig (1.34 bar)	6 psig (0.41 bar)	18.5 psig (1.27 bar)	6 psig (0.41 bar)	17.5 psig (1.20 bar)
	464 (30 lbs)	12.5 psig (0.86 bar)	38 psig (2.61 bar)	12.5 psig (0.86 bar)	38 psig (2.61 bar)	11 psig (0.75 bar)	35.5 psig (2.44 bar)	10.5 psig (0.72 bar)	34.5 psig (2.37 bar)	10 psig (0.68 bar)	33 psig (2.27 bar)
1400 SMT PO 3/16" IV	621 (10 lbs)	3.5 psig (0.23 bar)	10.5 psig (0.72 bar)	3.5 psig (0.23 bar)	10 psig (0.68 bar)	3.5 psig (0.23 bar)	9 psig (0.62 bar)	3.5 psig (0.23 bar)	7.5 psig (0.51 bar)	3 psig (0.21 bar)	6.5 psig (0.44 bar)
	463 (20 lbs)	6.5 psig (0.44 bar)	21.5 psig (1.48 bar)	6.5 psig (0.44 bar)	21 psig (1.44 bar)	7.5 psig (0.51 bar)	21 psig (1.44 bar)	7 psig (0.48 bar)	19.5 psig (1.34 bar)	7 psig (0.48 bar)	18.5 psig (1.27 bar)
	464 (30 lbs)	11 psig (0.75 bar)	36 psig (2.48 bar)	10.5 psig (0.72 bar)	36 psig (2.48 bar)	11 psig (0.75 bar)	35 psig (2.41 bar)	11 psig (0.75 bar)	34 psig (2.34 bar)	10.5 psig (0.72 bar)	32.5 psig (2.23 bar)
1400 SMT PO 1/4" IV	621 (10 lbs)	3 psig (0.21 bar)	9.5 psig (0.65 bar)	3 psig (0.21 bar)	9 psig (0.62 bar)	3 psig (0.21 bar)	8.5 psig (0.58 bar)	2.5 psig (0.17 bar)	7.5 psig (0.51 bar)	2.5 psig (0.17 bar)	6.5 psig (0.44 bar)
	463 (20 lbs)	6 psig (0.41 bar)	20.5 psig (1.41 bar)	6 psig (0.41 bar)	20 psig (1.37 bar)	6 psig (0.41 bar)	19.5 psig (1.34 bar)	5.5 psig (0.37 bar)	18 psig (1.24 bar)	5.5 psig (0.37 bar)	17 psig (1.20 bar)
	464 (30 lbs)	10 psig (0.68 bar)	35 psig (2.41 bar)	10 psig (0.68 bar)	35 psig (2.42 bar)	10 psig (0.68 bar)	34 psig (2.34 bar)	9.5 psig (0.65 bar)	33 psig (2.27 bar)	9 psig (0.62 bar)	32 psig (2.20 bar)
1400 SMT PO 1/4" IV EP	621 (10 lbs)	3 psig (0.20 bar)	10 psig (0.68 bar)	3 psig (0.20 bar)	9.5 psig (0.65 bar)	2.5 psig (0.17 bar)	8 psig (0.55 bar)	2.5 psig (0.17 bar)	7 psig (0.48 bar)	2 psig (0.13 bar)	6 psig (0.41 bar)
	463 (20 lbs)	6.5 psig (0.44 bar)	21.5 psig (1.48 bar)	6.5 psig (0.44 bar)	20 psig (1.37 bar)	6 psig (0.41 bar)	20 psig (1.37 bar)	6 psig (0.41 bar)	18.5 psig (1.27 bar)	6 psig (0.41 bar)	17.5 psig (1.20 bar)
	464 (30 lbs)	12 psig (0.83 bar)	40 psig (2.75 bar)	11.5 psig (0.79 bar)	39 psig (2.68 bar)	9.5 psig (0.66 bar)	35 psig (2.42 bar)	9 psig (0.62 bar)	33 psig (2.27 bar)	9 psig (0.62 bar)	32 psig (2.20 bar)
1400 SMT PO 3/8" IV SNAP	621 (10 lbs)	4.5 psig (0.31 bar)	10.5 psig (0.72 bar)	4.5 psig (0.31 bar)	10.5 psig (0.72 bar)	5.5 psig (0.38 bar)	9.5 psig (0.66 bar)	6.5 psig (0.44 bar)	8 psig (0.55 bar)	7.5 psig (0.51 bar)	7 psig (0.48 bar)
	463 (20 lbs)	7 psig (0.48 bar)	21.5 psig (1.48 bar)	7 psig (0.48 bar)	21 psig (1.44 bar)	9.5 psig (0.65 bar)	21 psig (0.44 bar)	10.5 psig (0.72 bar)	20 psig (1.37 bar)	11 psig (0.75 bar)	19 psig (1.31 bar)
	464 (30 lbs)	11 psig (0.75 bar)	35 psig (2.41 bar)	11 psig (0.75 bar)	35 psig (2.41 bar)	13 psig (0.89 bar)	35 psig (2.42 bar)	14 psig (0.97 bar)	33 psig (2.27 bar)	15.5 psig (1.06 bar)	32 psig (2.20 bar)
1400 SMT PO 3/8" IV	621 (10 lbs)	3 psig (0.20 bar)	9 psig (0.62 bar)	3 psig (0.20 bar)	9 psig (0.62 bar)	5 psig (0.34 bar)	9 psig (0.62 bar)	6.5 psig (0.44 bar)	7.5 psig (0.51 bar)	7.5 psig (0.51 bar)	6.5 psig (0.44 bar)
	463 (20 lbs)	6 psig (0.41 bar)	20.5 psig (1.41 bar)	6 psig (0.41 bar)	20 psig (1.37 bar)	8.5 psig (0.58 bar)	21 psig (0.44 bar)	9.5 psig (0.65 bar)	20 psig (1.37 bar)	10.5 psig (0.72 bar)	18.5 psig (1.27 bar)
	464 (30 lbs)	9.5 psig (0.66 bar)	34 psig (2.34 bar)	9.5 psig (0.66 bar)	34 psig (2.34 bar)	11.5 psig (0.79 bar)	33 psig (2.27 bar)	12.5 psig (0.85 bar)	32 psig (2.20 bar)	13.5 psig (0.93 bar)	31 psig (2.14 bar)
1400 SMT PO 1/2" IV	621 (10 lbs)	3 psig (0.20 bar)	10.5 psig (0.72 bar)	3 psig (0.20 bar)	10 psig (0.68 bar)	5.5 psig (0.38 bar)	8.5 psig (0.58 bar)	7 psig (0.48 bar)	7.5 psig (0.51 bar)	9 psig (0.62 bar)	6.5 psig (0.44 bar)
	463 (20 lbs)	6.5 psig (0.44 bar)	21 psig (0.44 bar)	6 psig (0.41 bar)	20.5 psig (1.41 bar)	8.5 psig (0.58 bar)	19.5 psig (1.34 bar)	10 psig (0.68 bar)	18.5 psig (1.27 bar)	12 psig (0.83 bar)	17.5 psig (1.20 bar)
	464 (30 lbs)	11.5 psig (0.79 bar)	37 psig (2.54 bar)	11 psig (0.75 bar)	36 psig (2.48 bar)	13.5 psig (0.93 bar)	35 psig (2.41 bar)	15 psig (1.03 bar)	34 psig (2.34 bar)	17 psig (1.20 bar)	33 psig (2.27 bar)
1400 SMT PO 1/2" IV EP	621 (10 lbs)	3.5 psig (0.24 bar)	10 psig (0.68 bar)	3.5 psig (0.24 bar)	9.5 psig (0.66 bar)	7 psig (0.48 bar)	10 psig (0.68 bar)	7.5 psig (0.52 bar)	7.5 psig (0.51 bar)	9.5 psig (0.65 bar)	6 psig (0.41 bar)
	463 (20 lbs)	7 psig (0.48 bar)	21.5 psig (1.48 bar)	7.5 psig (0.51 bar)	21.5 psig (1.48 bar)	10.5 psig (0.72 bar)	21 psig (0.44 bar)	12.5 psig (0.86 bar)	20.5 psig (1.41 bar)	14 psig (0.97 bar)	19 psig (1.31 bar)
	464 (30 lbs)	11 psig (0.75 bar)	37 psig (2.54 bar)	11 psig (0.75 bar)	37 psig (2.54 bar)	14 psig (0.97 bar)	35 psig (2.41 bar)	16 psig (1.10 bar)	34 psig (2.34 bar)	18 psig (1.24 bar)	33 psig (2.27 bar)

Table 7 - 2" Stem Guided HPCV

Valve Description	ΔP	0 psig (0 bar)		100 psig (6.8 bar)		500 psig (34.4 bar)		1000 psig (68.9 bar)		1500 psig (103.4 bar)	
		Spring	Crack	Full	Crack	Full	Crack	Full	Crack	Full	Crack
2400 SMT PO 1/4" EP IV	1245 (15 lbs)	3.5 psig (0.24 bar)	15.5 psig (1.06 bar)	3 psig (0.20 bar)	15 psig (1.03 bar)	2.5 psig (0.17 bar)	15 psig (1.03 bar)	2 psig (0.13 bar)	14.5 psig (1.00 bar)	1.5 psig (0.10 bar)	13 psig (0.89 bar)
	538 (20 lbs)	3.5 psig (0.24 bar)	18 psig (1.24 bar)	3.5 psig (0.24 bar)	17.5 psig (1.20 bar)	3.5 psig (0.24 bar)	17.5 psig (1.20 bar)	2.5 psig (0.17 bar)	16.5 psig (1.13 bar)	1.5 psig (0.10 bar)	15 psig (1.03 bar)
	508 (30 lbs)	7.5 psig (0.52 bar)	32 psig (2.20 bar)	7 psig (0.48 bar)	32 psig (2.20 bar)	6.5 psig (0.44 bar)	31 psig (2.14 bar)	6 psig (0.41 bar)	30 psig (2.07 bar)	5.5 psig (0.38 br)	29 psig (2.00 bar)
2400 SMT PO 1/4" IV	1245 (15 lbs)	3.5 psig (0.24 bar)	16 psig (1.10 bar)	3.5 psig (0.24 bar)	16 psig (1.10 bar)	3 psig (0.20 bar)	14.5 psig (1.00 bar)	3 psig (0.20 bar)	13 psig (0.89 bar)	3 psig (0.20 bar)	12.5 psig (0.85 bar)
	538 (20 lbs)	4 psig (0.27 bar)	18.5 psig (1.27 bar)	3.5 psig (0.24 bar)	18.5 psig (1.27 bar)	3.5 psig (0.24 bar)	18 psig (1.24 bar)	3 psig (0.20 bar)	17.5 psig (1.20 bar)	3 psig (0.20 bar)	16.5 psig (1.13 bar)
	508 (30 lbs)	6.5 psig (0.44 bar)	32 psig (2.20 bar)	6.5 psig (0.44 bar)	33 psig (2.27 bar)	7 psig (0.48 bar)	31 psig (2.14 bar)	6.5 psig (0.44 bar)	30 psig (2.07 bar)	6.5 psig (0.44 bar)	29 psig (2.00 bar)
2400 SMT PO 1/4" IV SNAP	1245 (15 lbs)	3.5 psig (0.23 bar)	15.5 psig (1.06 bar)	4 psig (0.27 bar)	15.5 psig (1.06 bar)	3 psig (0.20 bar)	15 psig (1.03 bar)	2.5 psig (0.17 bar)	14.5 psig (1.00 bar)	2 psig (0.13 bar)	14 psig (0.97 bar)
	538 (20 lbs)	4 psig (0.27 bar)	18 psig (1.24 bar)	4 psig (0.27 bar)	18 psig (1.24 bar)	3 psig (0.20 bar)	17 psig (1.22 bar)	2.5 psig (0.17 bar)	17 psig (1.22 bar)	2 psig (0.13 bar)	16.5 psig (1.13 bar)
	508 (30 lbs)	6.5 psig (0.44 bar)	32 psig (2.20 bar)	7 psig (0.48 bar)	32 psig (2.20 bar)	6 psig (0.41 bar)	31 psig (2.14 bar)	5 psig (0.34 bar)	30 psig (2.07 bar)	4 psig (0.27 bar)	29 psig (2.00 bar)
2400 SMT PO 3/8" IV	1245 (15 lbs)	4 psig (0.27 bar)	16.5 psig (1.13 bar)	4 psig (0.27 bar)	16 psig (1.10 bar)	3.5 psig (0.23 bar)	16 psig (1.10 bar)	3.5 psig (0.23 bar)	15.5 psig (1.06 bar)	3.5 psig (0.23 bar)	15 psig (1.03 bar)
	538 (20 lbs)	4.5 psig (0.31 bar)	18 psig (1.24 bar)	4 psig (0.27 bar)	18 psig (1.24 bar)	4 psig (0.27 bar)	17 psig (1.22 bar)	4 psig (0.27 bar)	16.5 psig (1.13 bar)	4 psig (0.27 bar)	16.5 psig (1.13 bar)
	508 (30 lbs)	8 psig (0.55 bar)	32 psig (2.20 bar)	8 psig (0.55 bar)	32 psig (2.20 bar)	7.5 psig (0.51 bar)	32 psig (2.20 bar)	7.5 psig (0.51 bar)	31 psig (2.13 bar)	7.5 psig (0.51 bar)	30 psig (2.07 bar)
2400 SMT PO 3/8" IV SNAP	1245 (15 lbs)	4 psig (0.27 bar)	14.5 psig (1.00 bar)	3.5 psig (0.23 bar)	14.5 psig (1.00 bar)	4.5 psig (0.31 bar)	14 psig (0.97 bar)	4.5 psig (0.31 bar)	14 psig (0.97 bar)	4.5 psig (0.31 bar)	13.5 psig (0.93 bar)
	538 (20 lbs)	4 psig (0.27 bar)	17.5 psig (1.20 bar)	4 psig (0.27 bar)	17 psig (1.22 bar)	5 psig (0.34 bar)	17 psig (1.22 bar)	5 psig (0.34 bar)	16.5 psig (1.13 bar)	5 psig (0.34 bar)	16 psig (1.10 bar)
	508 (30 lbs)	7.5 psig (0.51 bar)	32 psig (2.20 bar)	7 psig (0.48 bar)	32 psig (2.20 bar)	8 psig (0.55 bar)	31 psig (2.13 bar)	8.5 psig (0.58 bar)	30 psig (2.07 bar)	8.5 psig (0.58 bar)	29 psig (2.00 bar)
2400 SMT PO 7/16" EP IV	1245 (15 lbs)	4 psig (0.27 bar)	15.5 psig (1.06 bar)	4 psig (0.27 bar)	15.5 psig (1.06 bar)	3.5 psig (0.23 bar)	15 psig (1.03 bar)	3.5 psig (0.23 bar)	14.5 psig (1.00 bar)	3.5 psig (0.23 bar)	14 psig (0.97 bar)
	538 (20 lbs)	4.5 psig (0.31 bar)	18.5 psig (1.31 bar)	4.5 psig (0.31 bar)	18.5 psig (1.27 bar)	4.5 psig (0.31 bar)	17.5 psig (1.20 bar)	4 psig (0.27 bar)	16 psig (1.10 bar)	4 psig (0.27 bar)	15 psig (1.03 bar)
	508 (30 lbs)	8 psig (0.55 bar)	32 psig (2.20 bar)	8 psig (0.55 bar)	31 psig (2.13 bar)	7.5 psig (0.51 bar)	30 psig (2.07 bar)	7.5 psig (0.51 bar)	29 psig (2.00 bar)	7.5 psig (0.51 bar)	28 psig (1.93 bar)
2400 SMT PO 1/2" IV	1245 (15 lbs)	4 psig (0.27 bar)	15 psig (1.03 bar)	4 psig (0.27 bar)	15 psig (1.03 bar)	4.5 psig (0.31 bar)	14.5 psig (1.00 bar)	5 psig (0.34 bar)	13.5 psig (0.93 bar)	5 psig (0.34 bar)	12 psig (0.83 bar)
	538 (20 lbs)	4 psig (0.27 bar)	17 psig (1.22 bar)	3.5 psig (0.23 bar)	16.5 psig (1.13 bar)	4.5 psig (0.31 bar)	16.5 psig (1.13 bar)	4.5 psig (0.31 bar)	15.5 psig (1.06 bar)	5 psig (0.34 bar)	14 psig (0.97 bar)
	508 (30 lbs)	7 psig (0.48 bar)	30 psig (2.07 bar)	7 psig (0.48 bar)	30 psig (2.07 bar)	8 psig (0.58 bar)	30 psig (2.07 bar)	8 psig (0.55 bar)	28 psig (1.93 bar)	8.5 psig (0.58 bar)	27 psig (1.86 bar)
2400 SMT 1/2" IV SNAP	1245 (15 lbs)	3 psig (0.20 bar)	16 psig (1.10 bar)	3 psig (0.20 bar)	15 psig (1.03 bar)	4.5 psig (0.31 bar)	14.5 psig (1.00 bar)	5 psig (0.34 bar)	14 psig (0.97 bar)	5 psig (0.34 bar)	13.5 psig (0.93 bar)
	538 (20 lbs)	3.5 psig (0.23 bar)	17 psig (1.22 bar)	3 psig (0.20 bar)	16.5 psig (1.13 bar)	4.5 psig (0.31 bar)	16 psig (1.10 bar)	5 psig (0.34 bar)	15 psig (1.03 bar)	5 psig (0.34 bar)	14.5 psig (1.00 bar)
	508 (30 lbs)	7 psig (0.48 bar)	32 psig (2.20 bar)	7.5 psig (0.51 bar)	32 psig (2.20 bar)	7.5 psig (0.51 bar)	31 psig (2.14 bar)	7.5 psig (0.51 bar)	30 psig (2.07 bar)	8 psig (0.55 bar)	29 psig (2.00 bar)
2400 SMT PO 5/8" EP IV	1245 (15 lbs)	4 psig (0.27 bar)	16 psig (1.10 bar)	4 psig (0.27 bar)	16 psig (1.10 bar)	6 psig (0.41 bar)	16.5 psig (1.13 bar)	7.5 psig (0.51 bar)	16 psig (1.10 bar)	8.5 psig (0.58 bar)	15.5 psig (1.06 bar)
	538 (20 lbs)	4 psig (0.27 bar)	19 psig (1.31 bar)	4 psig (0.27 bar)	19 psig (1.31 bar)	6.5 psig (0.44 bar)	18.5 psig (1.27 bar)	7.5 psig (0.51 bar)	17.5 psig (1.20 bar)	9 psig (0.62 bar)	17 psig (1.22 bar)
	508 (30 lbs)	8 psig (0.55 bar)	32 psig (2.20 bar)	8.5 psig (0.58 bar)	32 psig (2.20 bar)	10 psig (0.68 bar)	31 psig (2.14 bar)	11.5 psig (0.79 bar)	30 psig (2.06 bar)	12.5 psig (1.48 bar)	29 psig (2.00 bar)

2400 SMT PO 3/4" IV	1245 (15 lbs)	5 psig (0.34 bar)	17 psig (1.72 bar)	5 psig (0.34 bar)	17 psig (1.72 bar)	7.5 psig (0.51 bar)	14.5 psig (1.00 bar)	8.5 psig (0.58 bar)	13 psig (0.89 bar)	10 psig (0.68 bar)	12 psig (0.83 bar)
	538 (20 lbs)	5.5 psig (0.37 bar)	19 psig (1.31 bar)	5.5 psig (0.37 bar)	19 psig (1.31 bar)	7 psig (0.48 bar)	17 psig (1.72 bar)	9 psig (0.62 bar)	16 psig (1.10 bar)	11 psig (0.75 bar)	14 psig (0.97 bar)
	508 (30 lbs)	9 psig (0.62 bar)	34 psig (2.34 bar)	9 psig (0.62 bar)	34 psig (2.34 bar)	11 psig (0.75 bar)	33 psig (2.27 bar)	13 psig (0.89 bar)	32 psig (2.20 bar)	15 psig (1.03 bar)	30 psig (2.07 bar)
2400 SMT PO 3/4" IV SNAP	1245 (15 lbs)	4 psig (0.27 bar)	15 psig (1.03 bar)	4 psig (0.27 bar)	15 psig (1.03 bar)	6.5 psig (0.44 bar)	14.5 psig (0.96 bar)	8 psig (0.55 bar)	13.5 psig (0.93 bar)	9 psig (0.62 bar)	12 psig (0.83 bar)
	538 (20 lbs)	5 psig (0.34 bar)	18.5 psig (1.27 bar)	5 psig (0.34 bar)	18.5 psig (1.27 bar)	6.5 psig (0.44 bar)	16.5 psig (1.13 bar)	8 psig (0.55 bar)	15.5 psig (1.06 bar)	9.5 psig (0.66 bar)	14 psig (0.97 bar)
	508 (30 lbs)	9 psig (0.62 bar)	32 psig (2.20 bar)	9 psig (0.62 bar)	32 psig (2.20 bar)	10 psig (0.68 bar)	31 psig (2.14 bar)	11 psig (0.75 bar)	30 psig (2.07 bar)	12.5 psig (0.86 bar)	29 psig (2.00 bar)
2400 SMT PO 7/8" EP IV	1245 (15 lbs)	3.5 psig (0.23 bar)	15 psig (1.03 bar)	4 psig (0.27 bar)	15 psig (1.03 bar)	7 psig (0.48 bar)	14.5 psig (1.00 bar)	11 psig (0.75 bar)	14 psig (0.97 bar)	13.5 psig (0.93 bar)	13.5 psig (0.93 bar)
	538 (20 lbs)	3.5 psig (0.23 bar)	17.5 psig (1.20 bar)	4 psig (0.27 bar)	17.5 psig (1.20 bar)	7.5 psig (0.51 bar)	17 psig (1.72 bar)	10.5 psig (0.72 bar)	16.5 psig (1.13 bar)	13.5 psig (0.93 bar)	16 psig (1.10 bar)
	508 (30 lbs)	7 psig (0.48 bar)	30 psig (2.07 bar)	7.5 psig (0.51 bar)	30 psig (2.07 bar)	10.5 psig (0.72 bar)	29 psig (2.00 bar)	14 psig (0.97 bar)	28 psig (1.93 bar)	17 psig (1.72 bar)	27 psig (1.86 bar)
2400 SMT PO 1" IV	1245 (15 lbs)	4.5 psig (0.31 bar)	14.5 psig (1.00 bar)	5 psig (0.34 bar)	14 psig (0.97 bar)	8.5 psig (0.58 bar)	13 psig (0.89 bar)	12.5 psig (0.86 bar)	11.5 psig (0.79 bar)	16 psig (1.10 bar)	11 psig (0.75 bar)
	538 (20 lbs)	4.5 psig (0.31 bar)	17 psig (1.72 bar)	5 psig (0.34 bar)	17 psig (1.72 bar)	8.5 psig (0.58 bar)	16 psig (1.10 bar)	12.5 psig (0.86 bar)	15 psig (1.03 bar)	17 psig (1.72 bar)	14 psig (0.97 bar)
	508 (30 lbs)	7 psig (0.48 bar)	31 psig (2.14 bar)	7.5 psig (0.51 bar)	31 psig (2.14 bar)	12 psig (0.83 bar)	30 psig (2.07 bar)	16 psig (1.10 bar)	29 psig (2.00 bar)	19.5 psig (1.34 bar)	28 psig (1.93 bar)
2400 SMT PO 1" IV SNAP	1245 (15 lbs)	4.5 psig (0.31 bar)	16.5 psig (1.13 bar)	4.5 psig (0.31 bar)	16.5 psig (1.13 bar)	8.5 psig (0.58 bar)	15.5 psig (1.06 bar)	11.5 psig (0.79 bar)	15 psig (1.03 bar)	15 psig (1.03 bar)	15 psig (1.03 bar)
	538 (20 lbs)	4.5 psig (0.31 bar)	19 psig (1.31 bar)	4.5 psig (0.31 bar)	19 psig (1.31 bar)	8.5 psig (0.58 bar)	16 psig (1.10 bar)	11.5 psig (0.79 bar)	15.5 psig (1.06 bar)	15 psig (1.03 bar)	15 psig (1.03 bar)
	508 (30 lbs)	8 psig (0.55 bar)	32 psig (2.20 bar)	8 psig (0.55 bar)	32 psig (2.20 bar)	12 psig (0.83 bar)	31 psig (2.14 bar)	16 psig (1.10 bar)	30 psig (2.07 bar)	19.5 psig (1.34 bar)	29 psig (2.00 bar)

Table 8 - 2", 3", 4", 6", 8" & 10" Cage Guided HPCV											
Valve Description	ΔP	0 psig (0 bar)		100 psig (6.8 bar)		500 psig (34.4 bar)		1000 psig (68.9 bar)		1500 psig (103.4 bar)	
	Spring	Crack	Full	Crack	Full	Crack	Full	Crack	Full	Crack	Full
2150 SMT PB 2 IN IV	15 lbs	3 psig (0.21bar)	16 psig (1.1bar)	3.5 psig (0.24bar)	16 psig (1.1bar)	5.5 psig (0.38bar)	15 psig (1.03bar)	7.5 psig (0.52bar)	14 psig (0.97bar)	9.5 psig (0.66bar)	12 psig (0.83bar)
	20 lbs	3 psig (0.21bar)	19 psig (1.31bar)	3 psig (0.21bar)	18 psig (1.24bar)	5.5 psig (0.38bar)	17 psig (1.17bar)	8 psig (0.55bar)	16 psig (1.1bar)	8.5 psig (0.59bar)	15 psig (1.03bar)
	30 lbs	6 psig (0.41bar)	32 psig (2.21bar)	7 psig (0.48bar)	31 psig (2.14bar)	8 psig (0.55bar)	30 psig (2.07bar)	10.5 psig (0.72bar)	29 psig (2bar)	12.5 psig (0.86bar)	28 psig (1.93bar)
3150 FMT PB 3" IV	30 lbs	6 psig (0.41bar)	30 psig (2.07bar)	6.5 psig (0.45bar)	27.5 psig (1.9bar)	10.5 psig (0.72bar)	27 psig (1.86bar)	13.5 psig (0.93bar)	25 psig (1.72bar)	17 psig (1.17bar)	22 psig (1.52bar)
3150 FMT PB 3" IV- PC	30 lbs	Shut	27 psig (1.86bar)	Shut	28 psig (1.93bar)	Shut	30.5 psig (2.1bar)	Shut	33 psig (2.28bar)	Shut	36.5 psig (2.52bar)
4150 FMT PB	30 lbs	8.5 psig (0.59bar)	32 psig (2.21bar)	8.5 psig (0.59bar)	32 psig (2.21bar)	8 psig (0.55bar)	29.5 psig (2.03bar)	7.5 psig (0.52bar)	27 psig (1.86bar)	6 psig (0.41bar)	24.5 psig (1.69bar)
4150 FMT PB 4 IN IV PC	30 lbs	Shut	31 psig (2.14bar)	Shut	32.5 psig (2.24bar)	Shut	34.5 psig (2.38bar)	Shut	37 psig (2.55bar)	Shut	39.5 psig (2.72bar)
6150 FMT PB 6 IN IV	30 lbs	8 psig (0.55bar)	29 psig (2bar)	9.5 psig (0.66bar)	28 psig (1.93bar)	10.5 psig (0.72bar)	27 psig (1.86bar)	11 psig (0.76bar)	25 psig (1.72bar)	11.5 psig (0.79bar)	22 psig (1.52bar)
8150 FMT PB 8 IN IV	30 lbs	8 psig (0.55bar)	29 psig (2bar)	8.5 psig (0.59bar)	27.5 psig (1.9bar)	10 psig (0.69bar)	26.5 psig (1.83bar)	10.5 psig (0.72bar)	24 psig (1.65bar)	10.5 psig (0.72bar)	21.5 psig (1.48bar)
10150 FMT PB 8 IN IV	30 lbs	7.5 psig (0.52bar)	28.5 psig (1.97bar)	8.5 psig (0.59bar)	27.5 psig (1.9bar)	9.5 psig (0.66bar)	26 psig (1.79bar)	10 psig (0.69bar)	24 psig (1.65bar)	10.5 psig (0.72bar)	21.5 psig (1.48bar)