APPLICATIONS:

For discharge of liquid or gas from vessels, separators, treaters, knockouts and other similar liquid accumulators.

For back pressure or pressure reducing applications with pressure pilots.

FEATURES:

Compact design
O-Ring sealed seat
Valve travel indicator
Field-reversible topworks
Teflon-packed stuffing box

CERTIFICATIONS:

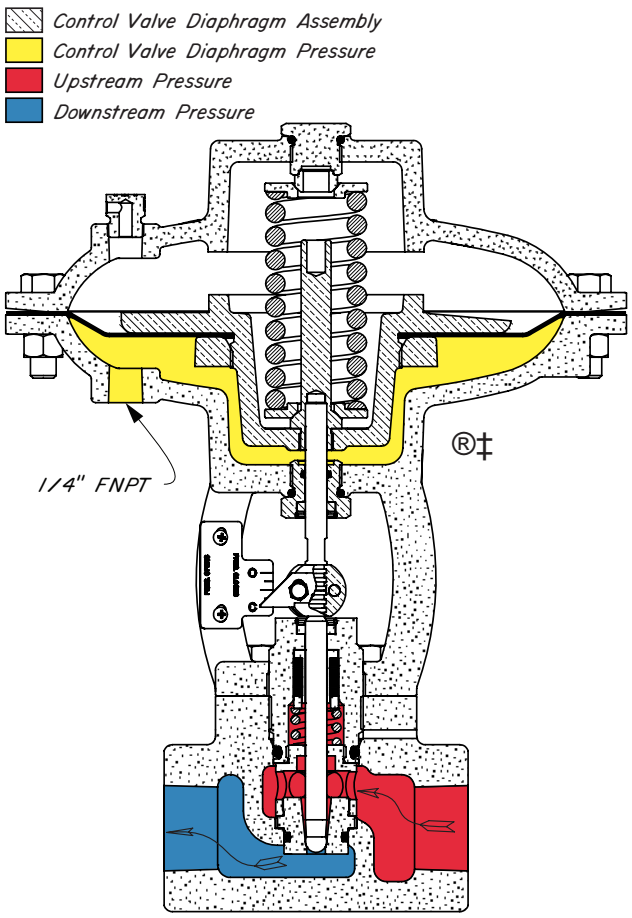
Canadian Registration Number (CRN):
0C15021.2
Kimray is an ISO 9001- certified manufacturer.

INNER VALVE SPECIFICATIONS:

The 1" HPCV standard valve plugs consist of a carbide ball rigidly connected to a 303 stainless steel stem. Standard seats are made of heat-treated tool steel.

The 2" HPCV standard valve plugs for 1/2" and smaller consist of a carbide ball rigidly connected to a 303 stainless steel stem. Standard valve plugs for 3/4" and 1" consist of a hardened high chrome alloy ball rigidly connected to a 303 stainless steel stem. Standard seats are made of heat-treated tool steel.

Inner valves can be made from a wide selection of materials. Specify when ordering.



Order Code †	Line Size	Stem Travel	Inner Valve	Linear		Quick Open		Equal Percent	
				Cv	Cf	Cv	Cf	Cv	Cf
See page 01:300.1	1"	1/2"	1/8"	1.10	0.58	0.40	0.73	0.34	0.73
			3/16"	1.50	0.59	0.92	0.74	----	----
			1/4"	2.17	0.78	1.74	0.68	1.99	0.66
			3/8"	3.20	0.91	3.86	0.74	----	----
			1/2"	5.70	0.94	5.93	0.90	6.49	0.78
	2"	3/4"	1/4"	3.00	0.55	1.87	0.65	1.72	0.65
			3/8"	4.00	0.77	3.84	0.76	----	----
			7/16"	----	----	----	----	5.40	0.60
			1/2"	7.20	0.78	6.63	0.80	----	----
			5/8"	----	----	----	----	10.8	0.58
			3/4"	12.0	0.80	10.9	0.78	----	----
			7/8"	----	----	----	----	17.0	0.66
			1"	21.0	0.77	15.8	0.70	----	----
	1" Soft Seat		15/16"	9.95	0.65	----	----	----	----
	2" Soft Seat		1 1/2"	29.8	0.75	----	----	----	----

NOTES:

For standard & optional seals, metals, Cf Cv values, material specifications & dimensions see technical data on pages 01:I - 01:XI

† For complete valve codes see page 01:300.1, For code builder see page 01:00.2

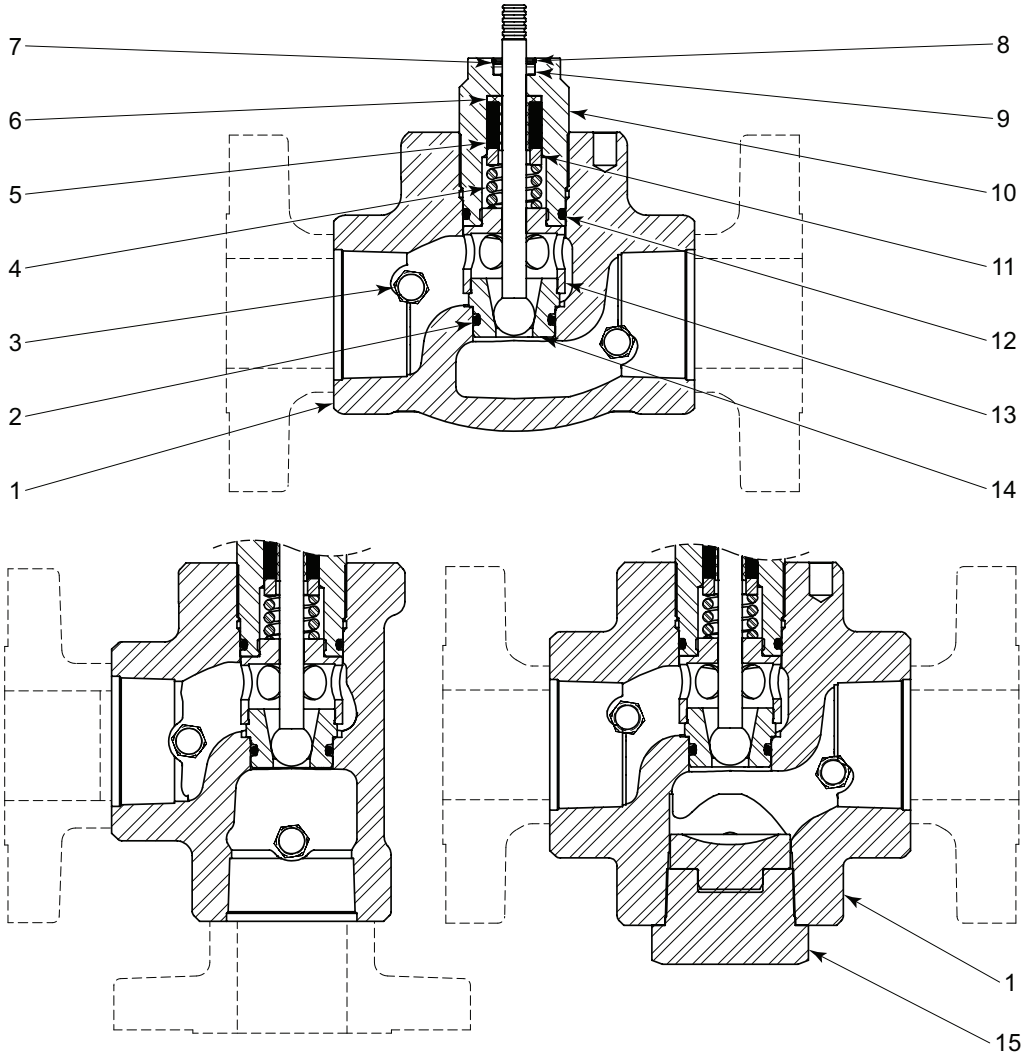
Max W.P. values based on -20°F to 100°F.

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

‡ Configuration of High Pressure Control Valve is a trademark of Kimray, Inc.

KIMRAY INC.

STEM GUIDED BOTTOM WORKS
MODEL CVS PARTS DRAWING



ITEM	QTY.	DESCRIPTION	PART NO.							
			STANDARD		CORROSIVE		EROSIVE		MIXED DUTY	
			1 INCH	2 INCH	1 INCH	2 INCH	1 INCH	2 INCH	1 INCH	2 INCH
1	1	Body	See Table On Page 01:10.3							
2	1	O-Ring *	155	157	155	157	155	157	155	157
3	2	Plug	----	699	----	699SS6	----	699	----	699SS6
4	1	Spring	465	509	465HAC	509HAC	465	509	465HAC	509HAC
5	(QTY)	Packing Ring *	484 (4)	533 (6)	484 (4)	533 (6)	484 (4)	533 (6)	484 (4)	533 (6)
6	1	Packing Sleeve *	485	534	485	534	485	534	485	534
5&6	1	Optional VEE Packing 450°F max	5117	5118	5117	5118	5117	5118	5117	5118
		Optional Grafoil Packing 450°F max	----	5118GF	----	5118GF	----	5118GF	----	5118GF
7	1	Retainer	486	528	486	528	486	528	486	528
8	1	Snap Ring *	938	940	938	940	938	940	938	940
9	1	Felt Wiper *	480	527	480	527	480	527	480	527
10	1	Stuffing Box	479	526	479SS6	526SS6	479	526	479SS6	526SS6
11	1	Packing Follower	482SS6	531SS6	482SS6	531SS6	482SS6	531SS6	482SS6	531SS6
12	1	O-Ring *	156	520	156	520	156	520	156	520
13	1	Cage	2837	2889	2837SS6	2889SS6	2837	2889	2837	2889PH
14	1	Trim Set	See Table On Page 01:10.3							
15	1	2" NPT Hex Plug w/Wear Plug	----	7886ASB	----	7886ASB	----	7886ASB	----	7886ASB
2" NPT Hex Plug for Angle T-Body (not shown)			----	7665R	----	7665R	----	7665R	----	7665R
Repair Kits			RFA	RFE	RFA	RFE	RFA	RFE	RFA	RFE
Stuffing Box Assemblies		Order Code	EAW	EBY	EAWSS6	EBYSS6	EAW	EBY	EAWSS6	EBYSS6
		Max W.P. psig	6000	6170	6000	6170	6000	6170	6000	6170
* These parts are recommended spare parts and are stocked as repair kits.										

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

THRU BODIES AVAILABLE								
ITEM	QTY.	DESCRIPTION	PART NO.					
			1 INCH		2 INCH			
			THRU	ANGLE	THRU	ANGLE	DUAL PORT (T-BODY)	3" Flange
1	1	2000 psig NPT	----	----	493	496	----	----
		4000 psig NPT	452	453	494	497	7622	----
		6000 psig NPT	5029	7509	4083	4355	7702	----
		150RF	2374RF	2772RF	4510	2791	7765	----
		300RF	5335RF	2773RF	4512	2793	7766	----
		600RF	1945RF	2133RF	4513	2795	7767	4994
		1500RF	2768RF	----	4516	2442	7768	----
		600RTJ	2054RTJ	2778RTJ	4514	2816	----	----
		1500RTJ	2771RTJ	2780RTJ	4515	1742	7769	----
		2500RTJ	----	----	4230	----	----	----
		API 5000	----	----	6604	6612	7764	----
			Coated Bodies available with "E" shell material					

TRIM SETS AVAILABLE (Other materials available see page 01:200.2)									
ITEM	QTY.	SIZE	SERVICE	1" LINE SIZE			2" LINE SIZE		
				Linear	Quick Open	E.P.	Linear	Quick Open	E.P.
14	1	1/8"	Standard	T2842	T2856	T6400			
			Corrosive	T2842SS6		T6400SS6			
			Erosive						
			Mixed Duty	T2842PH					
		3/16"	Standard	T2841	T2855				
			Corrosive	T2841SS6					
			Erosive						
			Mixed Duty	T2841PH					
		1/4"	Standard	T2840	T2854	T4730	T2895	T2890	T6404
			Corrosive	T2840SS6		T4730SS6			T6404SS6
			Erosive			T4730ZR			
			Mixed Duty	T2840PH			T2895PH		T6404PH
		3/8"	Standard	T2838	T2853		T2896	T2891	
			Corrosive	T2838SS6			T2896SS6		
			Erosive					T2891ZR	
			Mixed Duty	T2838PH			T2896PH		
		7/16"	Standard						T2993
			Corrosive						T2993SS6
			Erosive						T2993ZR
			Mixed Duty						T2993PH
		1/2"	Standard	T2839	T5307	T4732	T2897	T2892	
			Corrosive	T2839SS6		T4732SS6	T2897SS6		
			Erosive			T4732ZR			
			Mixed Duty	T2839PH			T2897PH		
		5/8"	Standard						T2992
			Corrosive						T2992SS6
			Erosive						T2992ZR
			Mixed Duty						T2992PH
		3/4"	Standard				T2898	T4690	
			Corrosive				T2898SS6		
			Erosive					T4690ZR	
			Mixed Duty				T2898PH		
		7/8"	Standard						T2947
			Corrosive						T2947SS6
			Erosive						T2947ZR
			Mixed Duty						T2947PH
		1"	Standard				T2899	T4691	
			Corrosive				T2899SS6		
			Erosive				T2899ZR		
			Mixed Duty				T2899PH		

APPLICATIONS:

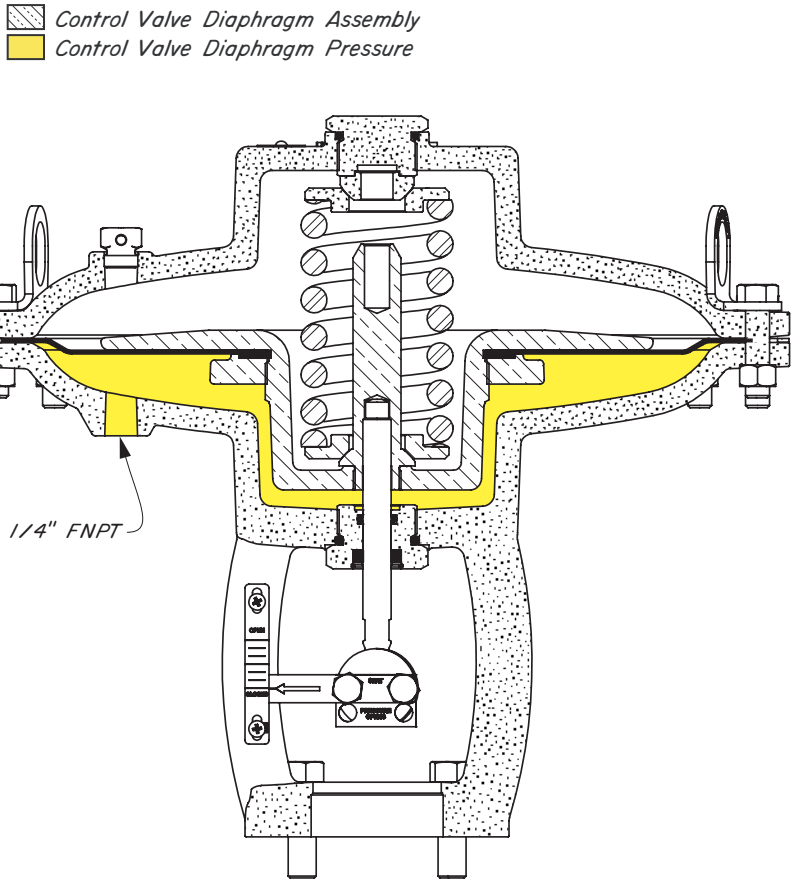
Used for actuating HPCV Control Valves.

FEATURES:

Compact design
Valve travel indicator
Field-reversible topworks
Top Adjusting Screw may be adjusted to vary the spring tension slightly; this affects pressure required to actuate valve.

CERTIFICATIONS:

Kimray is an ISO 9001- certified manufacturer.



Order Code †	Body Size	Effective Diaphragm Area	Normal Actuator. W.P. psig ††	MAX. Actuator. W.P. psig ††	Stem Travel
EAT	1"	30 square inches	10 - 30 (see spring ranges)	45	1/2"
EBT	2"	65 square inches			3/4"
EFX	3"	100 square inches			1 3/8"
EEY	4"				1 3/4
EEZ	6"	120 square inches			2 1/2"
	8"				
	10"				

NOTES:

For standard & optional seals, metals, Cf Cv values, material specifications & dimensions see technical data on pages 01:I - 01:XI

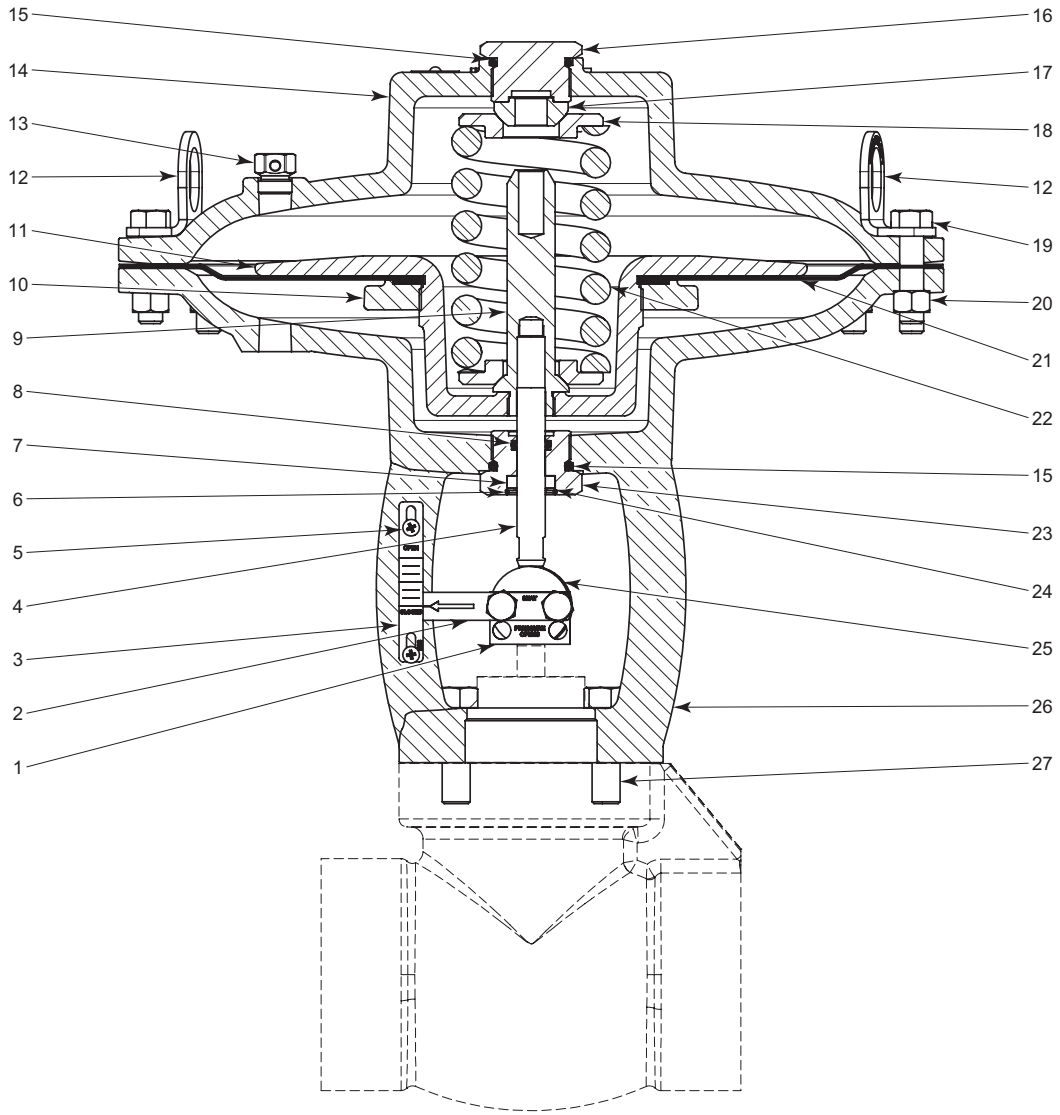
† Top Works only. For complete valve codes see pages 01:300.1 - 01:300.4

†† Max W.P. values based on -20°F to 100°F.

All Pictures shown are for illustration purpose only. Actual product may vary due to product enhancement.
‡ Configuration of High Pressure Control Valve is a trademark of Kimray, Inc.

KIMRAY INC.

STANDARD PISTON BALANCED / CAGE GUIDED ACTUATORS
PARTS DRAWING



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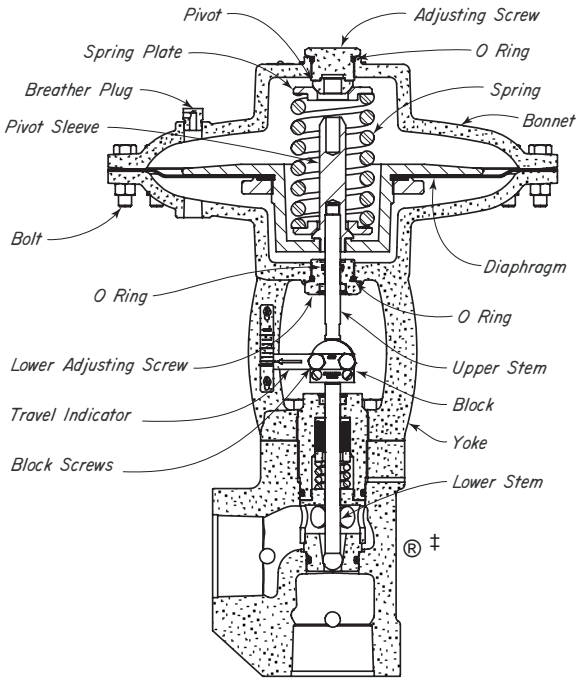
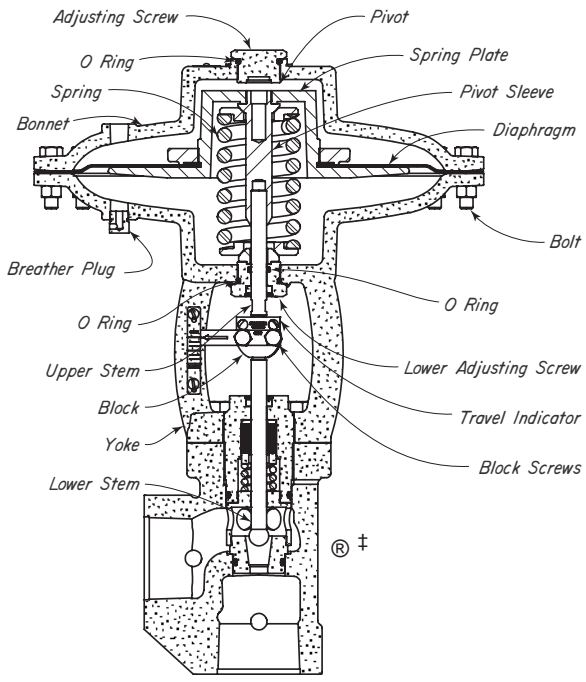
‡ Configuration of High Pressure Control Valve is a trademark of Kimray, Inc.

STANDARD PISTON BALANCED / CAGE GUIDED ACTUATORS
PARTS LIST

ITEM	QTY.	DESCRIPTION		STANDARD PART NO.					
				1 INCH	2 INCH	3 INCH	4 INCH	6 INCH	8 & 10 INCH
1	1	Tag		----	677	4975		5352	
2	1	Travel Indicator		1659A	535	4974		5317	
3	1	Indicator Scale		488	536	4973	5131	5316	
4	1	Upper Stem		1643	522	4971	5171	5310	
5	2	Screw		7534					
6	1	Snap Ring *		938	940	4968		5311	
7	(QTY)	Felt Wiper *		480	527 (1)	4969 (2)		5337 (2)	
8	1	O-Ring *		153	530	155		5355	
9	1	Pivot Sleeve		466	510	4963	5179	5309	
10	1	Retainer Ring		476	4356	4965		5344	
11	1	Diaphragm Plate		469	4357	4964		5343	
12	2	Lifting Ring		-----	7559	-----			
13	1	Breather Plug		147				5559SS6	
14	1	Bonnet		461	506	4956		5299	
15	2	O-Ring		491	537	808		2632	
16	1	Upper Adjusting Screw *		457	502	4959	6560	5348	
17	1	Pivot		459	504	4960		5349	
18	2	Spring Plate		462	507	4961		5350	
19	(Qty)	Bolt		247 (10)	430 (16)	236 (24)		191 (24)	
20	(Qty)	Nut		241 (10)	241 (16)	241 (24)			
21	1	Diaphragm		475	519	5169		5315	
22	1	Spring 2-10 lb		621 (silver)	----	-----	-----	-----	-----
		Spring 3-15 lb		7659 (blue)	1245 (silver)	----	----	----	----
		Spring 4-20 lb		463 (red)	538 (red)	----	----	----	----
		Spring 6-30 lb		464 (green)	508 (yellow)	4962	5130 (red)	5353 / 5314 ‡	
		Spring 9-45 lb		----	6848 (blue)	-----	-----	-----	-----
23	1	Lower Adjusting Screw		458	503	4967		5351	
24	1	Retainer		486	528	4970		5338	
25	1	Coupling Block		1659	511	4972		5345	
26	1	Yoke		460	505	4957		5300	
27	4	Bolt		694	524	4991		5406	
Repair Kits				RHV	RHW	RYB		RWDTW	
Actuator Assembly		Fail Close	2-10 lb Spring	EASPO10	----	----	----	----	----
			3-15 lb Spring	EASPO15	EBTPO15	-----	-----	-----	-----
			4-20 lb Spring	EASPO20	EBTPO20	----	----	----	----
			6-30 lb Spring	EASPO30	EBTPO30	EFXPO30	EEYPO30	EEZPO30	
			9-45 lb Spring	----	EBTPO45	-----	-----	-----	-----
		Fail Open	2-10 lb Spring	EASPC10	----	----	----	----	----
			3-15 lb Spring	EASPC15	EBTPC15	-----	-----	-----	-----
			4-20 lb Spring	EASPC20	EBTPC20	----	----	----	----
			6-30 lb Spring	EASPC30	EBTPC30	EFXPC30	EEYPC30	EEZPC30	
			9-45 lb Spring	----	EBTPC45	-----	-----	-----	-----
				* These parts are recommended spare parts and are stocked as repair kits.					
				‡ 5314 on Pressure Open only					

STANDARD STEM GUIDED / CAGE GUIDED ACTUATOR CONVERSION INSTRUCTIONS





PRESSURE CLOSING to PRESSURE OPENING:

Remove BLOCK SCREWS, TRAVEL INDICATOR and COUPLING BLOCK. Remove UPPER ADJUSTING SCREW, BOLTS, and BONNET. Lift out Diaphragm Assembly (Crosshatched). Remove SPRING, SPRING PLATES and PIVOT. Unscrew UPPER STEM and insert in opposite end of PIVOT SLEEVE.

Invert Diaphragm Assembly and replace. Care should be taken when threading the UPPER STEM through the LOWER ADJUSTING SCREW so as not to damage O RING, 153 - 1", 530 -2". Replace SPRING with a SPRING PLATE in each end. UPPER ADJUSTING SCREW opening Thread UPPER ADJUSTING SCREW into BONNET until contact is made with the PIVOT, then tighten two turns. The UPPER ADJUSTING SCREW now becomes the SPRING adjustment. With BLOCK SCREWS through INDICATOR, replace COUPLING BLOCK matching match marks. Move BREATHER PLUG to BONNET (upper Diaphragm Housing). Connect Diaphragm Pressure from PILOT to YOKE (Lower Diaphragm Housing).

PRESSURE OPENING to PRESSURE CLOSING:

Remove BLOCK SCREWS, TRAVEL INDICATOR and COUPLING BLOCK. Remove UPPER ADJUSTING SCREW, BOLTS, and BONNET. Lift out Diaphragm Assembly (Crosshatched). Remove SPRING, SPRING PLATES and PIVOT. Rotate Diaphragm Assembly when pulling UPPER STEM through LOWER ADJUSTING SCREW so as not to damage O RING, 153 - 1", and 530 - 2".

Unscrew UPPER STEM and replace in opposite end of PIVOT SLEEVE.

Using COUPLING BLOCK, pull LOWER STEM up to open position. Thread LOWER ADJUSTING SCREW in YOKE until end is flush with inside surface of YOKE. Set PIVOT on top of LOWER ADJUSTING SCREW with the beveled surface up. Replace SPRING with a SPRING PLATE in each end.

Invert Diaphragm Assembly from its original position and replace. Be sure UPPER STEM and LOWER STEM meet. With BLOCK SCREWS through INDICATOR, replace COUPLING BLOCK matching match marks. Replace BONNET and BOLTS and INDICATOR is in "Open" position, then tighten one turn. Move BREATHER PLUG to YOKE (Lower Diaphragm Housing). Connect Diaphragm Pressure from PILOT to BONNET (Upper Diaphragm Housing).

All Pictures shown are for illustration purpose only. Actual product may vary due to product enhancement.
‡ Configuration of High Pressure Control Valve is a trademark of Kimray, Inc.

NOTES:

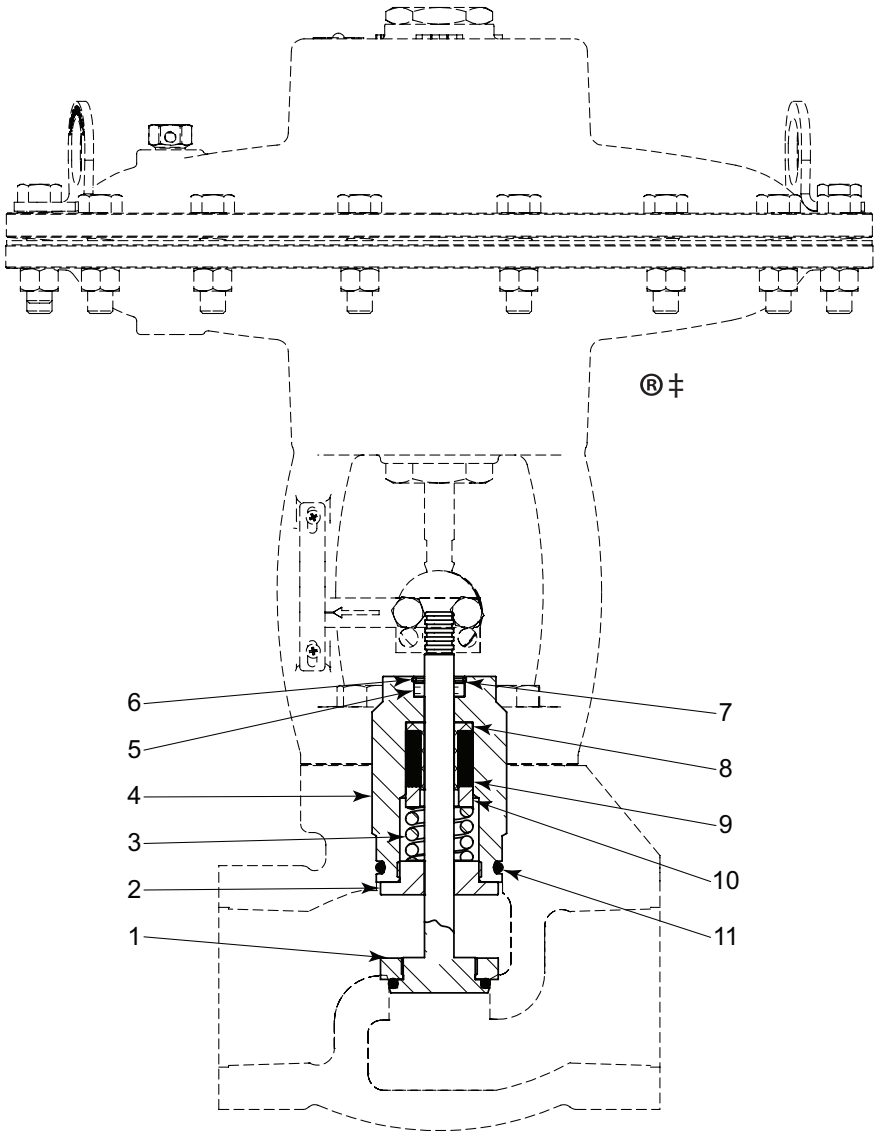
KIMRAY INC.

1" & 2" HPCV OVERSIZED SOFT SEATS STUFFING BOX ASSEMBLY PARTS DRAWING

For increased flow at low operating pressure. Maximum pressure drop is 300 psig For on - off service only.

Uses standard valve body

Teflon seal



ITEM	QTY.	DESCRIPTION	PART NO.			
			STANDARD		CORROSIVE	
			1 INCH	2 INCH	1 INCH	2 INCH
1	1	Soft Seat	2137	2136	2137SS6	2136SS6
2	1	Nut	1828	1829	1828SS6	1829SS6
3	1	Spring	465	509	465HAC	509HAC
4	1	Stuffing Box	479	526	479SS6	526SS6
5	1	Felt Wiper *	480	527	480	527
6	1	Snap Ring *	938	940	938	940
7	1	Retainer	486	528	486	528
8	1	Packing Sleeve *	485	534	485	534
9	(QTY)	Packing Ring *	484 (4)	533 (6)	484 (4)	533 (6)
10	1	Packing Follower	482SS6	531SS6	482SS6	531SS6
11	1	O-Ring *	156	520	156	520
Repair Kits			RFA	RFE	RFA	RFE
Stuffing Box Assemblies			EAX	EBZ	EAXSS6	EBZSS6
* These parts are recommended spare parts and are stocked as repair kits.						

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‡ Configuration of High Pressure Control Valve is a trademark of Kimray, Inc.

Equal Percentage Trim:

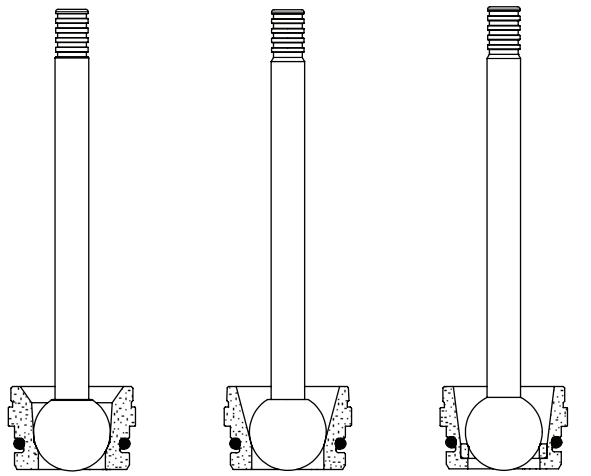
A given amount of change in stem position will make the same percent of change in flow whether the flow is low and the valve is nearly closed, or the flow volume is high and the valve is nearly open. In other words: if a 10 psi change in diaphragm pressure is required to fully travel the plug in the valve then with the valve in a specific open position, adding 1 psi to the diaphragm pressure will increase the flow by 154% of the previous value, no matter where you start. This allows for precise control at high pressure drops throughout the valve's range of position.
Application: Throttling service.

Linear “Nominal” Trim:

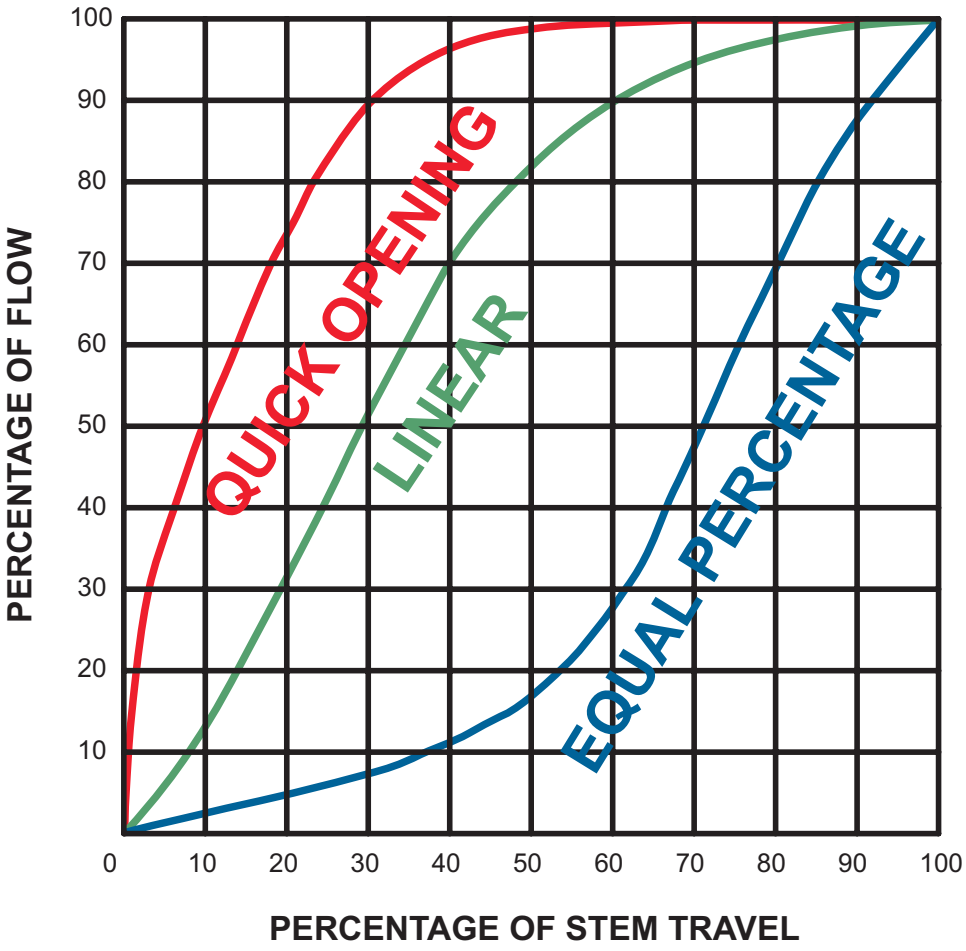
The characteristic could be described as “quick opening, semi-linear”. Application: On / off service where abrasive material is not present in the media stream. May be used for throttling liquid service, though Equal Percentage trim would provide smoother control at higher pressure drops.

Carbide “Quick Opening” Trim:

The seat is designed so that the maximum Cv is reached with a minimal amount of closure member travel. Quick opening will have a carbide ring brazed in the bottom of the seat and the stem ball will have one lapping ring around it.
Applications: On / off service. Highly abrasive service.



EQUAL PERCENTAGE | LINEAR "NOMINAL" | CARBIDE "SNAP"



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

VALVE	FLOW CHARACTERISTIC	MATERIAL	INNER VALVE SIZE				
			1/8”	3/16”	1/4”	3/8”	1/2”
1" SMA & 1" SMT	LINEAR "NOMINAL" FLOW	TOOL STEEL*[a]	T2842	T2841	T2840	T2838	T2839
		17-4PH[d]	T2842PH	T2841PH	T2840PH	T2838PH	T2839PH
		316SS[c]	T2842SS6	T2841SS6	T2840SS6	T2838SS6	T2839SS6
	CARBIDE "QUICK OPENING"	CARB. INSERT	T2856	T2855	T2854	T2853	T5307
	EQUAL PERCENTAGE	TOOL STEEL*	T6400		T4730[a]		T4732[a]
		316SS[c]	T6400SS6		T4730SS6		T4732SS6
		ZIRCONIA			T4730ZR		T4732ZR
1" SMS	LINEAR "NOMINAL" FLOW	TOOL STEEL*[a]			T1202	T1234	T1977
		316SS[c]			T1202SS6	T1234SS6	T1977SS6
	CARBIDE "QUICK OPENING"	CARB. INSERT[a]			T1463	T1462	T5325
1" MV	EQUAL PERCENTAGE	TOOL STEEL*[a]			T4730MV		T4732MV
		316SS[c]			T4730SS6MV		T4732SS6MV
		ZIRCONIA			T4730ZRMV		T4732ZRMV

VALVE	FLOW CHARACTERISTIC	MATERIAL	INNER VALVE SIZE				
			1/4"	3/8"	1/2"	3/4"	1"
2" SMA & 2" SMT	LINEAR "NOMINAL" FLOW	TOOL STEEL*	T2895[a]	T2896[a]	T2897[a]	T2898[b]	T2899[b]
		17-4PH[d]	T2895PH	T2896PH	T2897PH	T2898PH	T2899PH
		316SS[c]		T2896SS6	T2897SS6	T2898SS6	T2899SS6
		ZIRCONIA					T2899ZR
	CARBIDE "QUICK OPENING"	CARB INSERT	T2890	T2891	T2892	T4690	T4691
		ZIRCONIA		T2891ZR		T4690ZR	

VALVE	FLOW CHARACTERISTIC	MATERIAL	INNER VALVE SIZES				
			1/4"	7/16"	5/8"	7/8"	1”
2" SMA & 2" SMT	EQUAL PERCENTAGE	TOOL STEEL*	T6404	T2993[a]	T2992[b]	T2947[b]	
		17-4PH[d]	T6404PH	T2993PH	T2992PH	T2947PH	
		316SS[c]	T6404SS6	T2993SS6	T2992SS6	T2947SS6	
		ZIRCONIA		T2993ZR	T2992ZR	T2947ZR	
2" MV	EQUAL PERCENTAGE	TOOL STEEL*[a]	T6404MV	T2993MV	T2992MV	T2947MV	
		17-4PH[d]				T2947PHMV	
		316SS[c]	T6404S6MV	T2993S6MV	T2992S6MV	T2947S6MV	
		ZIRCONIA		T2993ZRMV	T2992ZRMV	T2947ZRMV	

[a]Carbide ball rigidly connected to a 303SS stem
[b]Hardened high chrome alloy ball connected to a 303SS stem
[c]One piece 316SS steel stem
[d]One piece 17-4 PH SS steel stem
*Seat and Plug furnished with Standard HPCV

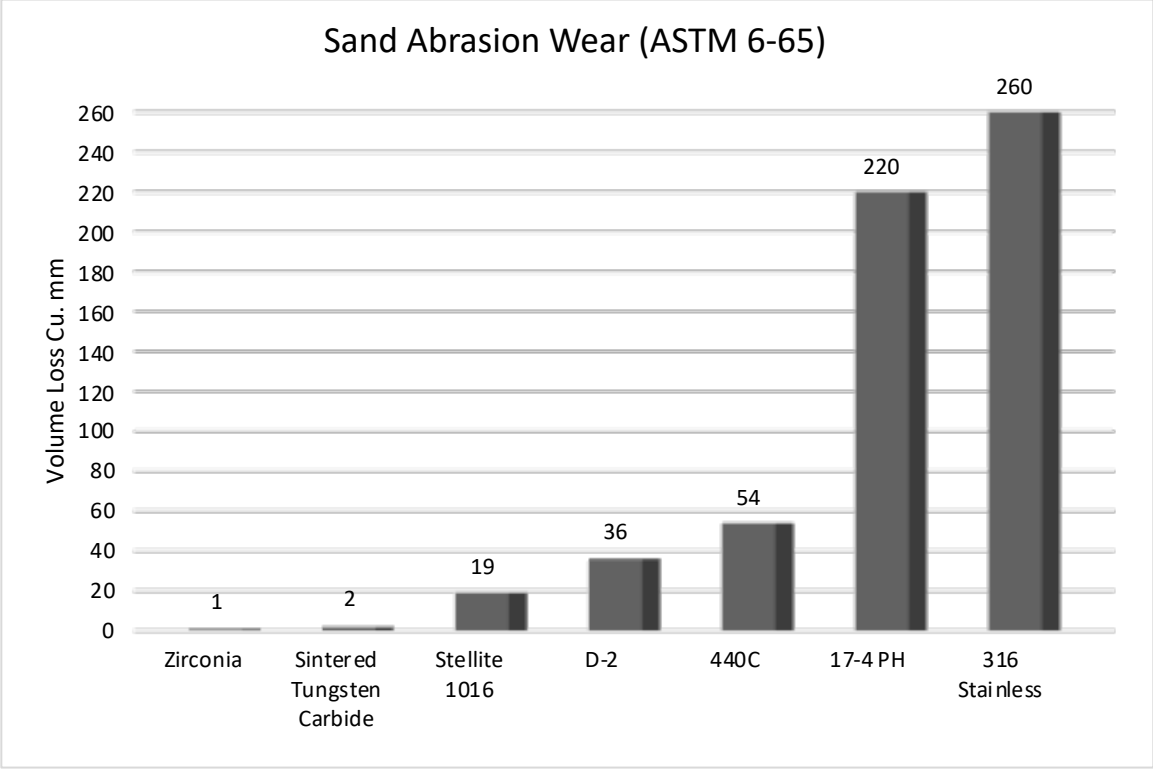


Figure 1

Valve Trim & Inner Valve Material Abrasion Resistance

The abrasion resistance of common inner valve materials varies (seat, ball, trim sets, ratio plug, piston). A standard ASTM G-65 test can be used to compare the abrasion resistance of valve plug materials using silica sand as abrasive.

In the ASTM G-65 procedure A, fine silica sand is introduced at a specified rate between the wear sample and a rubber wheel that is spinning in contact with the wear sample. The rubber wheel carries the sand across the surface of the wear sample for a specified period of time, abrading the surface. Volume loss is then calculated for the wear sample.

References

Budinski, Kenneth G., and Michael K. Budinski. Engineering Materials: Properties and Selection. 8th ed. Upper Saddle River, NJ: Prentice Hall, 2005. Print.
*(ASTM G-65, table x1.2 Volume Loss Range) .

-65 ACTUATOR
MODEL CVS

APPLICATIONS:

Allows a wider spring adjustment range for discharge of liquid or gas from vessels, separators, treaters, knockouts and similar liquid accumulators.

Allows a finer control when used with back pressure and pressure reducing controllers.

Used as an operator on 1" HPCV, 2" HPCV or 1" SMS.

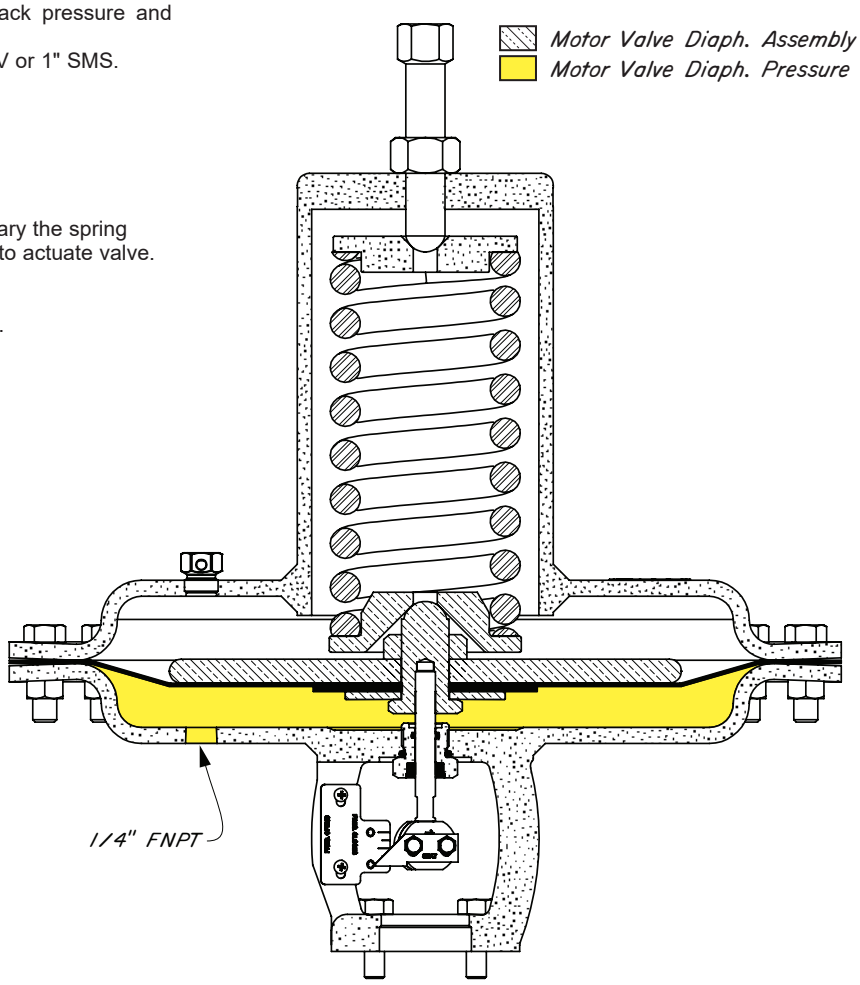
FEATURES:

Compact design
Valve travel indicator
All steel
Adjustable topworks

Top Adjusting Screw may be adjusted to vary the spring tension slightly; this affects pressure required to actuate valve.

CERTIFICATIONS:

Kimray is an ISO 9001- certified manufacturer.



Order Code †	Body Size	Effective Diaphragm Area	Spring Diaphragm Pressure psig ††	Normal Actuator. W.P. psig ††	MAX. Actuator. W.P. psig ††	Stem Travel
EAU	1"	65 square inches	10 - 30	25	45	3/4" MAX
EBW	2"					

NOTES:

For standard & optional seals, metals, Cf Cv values, material specifications & dimensions see technical data on pages 01:I - 01:XI

† Top Works only. For complete valve codes see page 01:300.4

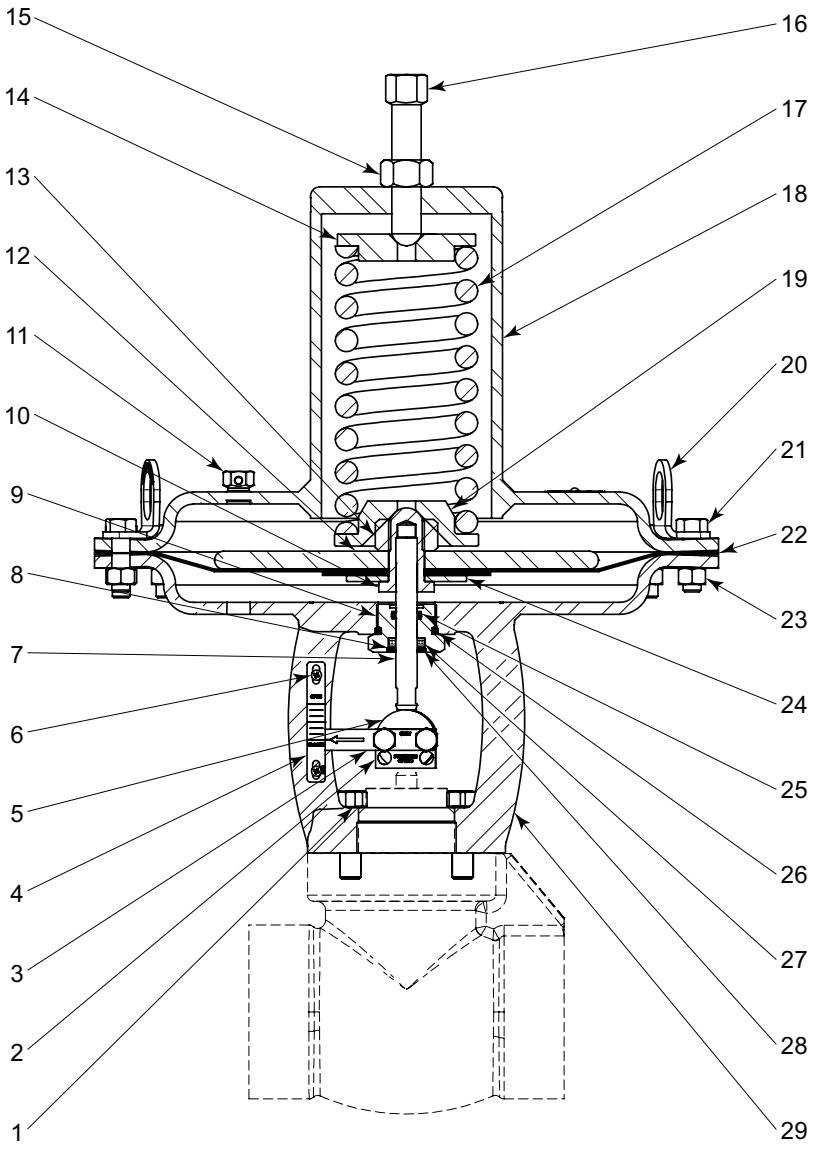
†† Max W.P. values based on -20°F to 100°F.

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

KIMRAY INC.

-65 ACTUATORS

MODEL CVS PARTS DRAWING



ITEM	QTY.	DESCRIPTION	STANDARD PART NO.	
			1 INCH	2 INCH
1	4	Bolt	845	524
2	1	Tag	----	677
3	1	Travel Indicator	1659A	535
4	1	Indicator Scale	488	536
5	1	Coupling Block	1659	511
6	2	Screw	7534	
7	1	Upper Stem	1643	522
8	1	Retainer	486	528
9	1	Lower Adjusting Screw	458	503
10	1	Pivot Screw	2237	1986
11	1	Breather Plug	147	
12	1	Diaphragm Plate	1890	
13	1	Lock Nut	175	
14	1	Upper Spring Guide	1888	
15	1	Nut	1897	

ITEM	QTY.	DESCRIPTION	STANDARD PART NO.	
			1 INCH	2 INCH
16	1	Adjusting Screw	1987	
17	1	Spring	1848	
18	1	Bonnet	1886	
19	1	Lower Spring Guide	1889	
20	2	Lifting Ring	-----	7559
21	16	Bolt	247	
22	1	Diaphragm	1892	
23	16	Nut	241	
24	1	Lower Diaphragm Plate	1893	
25	1	O-Ring *	153	530
26	1	O-Ring *	491	537
27	(QTY)	Felt Wiper *	480	527 (1)
28	1	Snap Ring *	938	940
29	1	Yoke	1887	1989
		Repair Kits	RHV	RHW

* These parts are recommended spare parts and are stocked as repair kits.

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

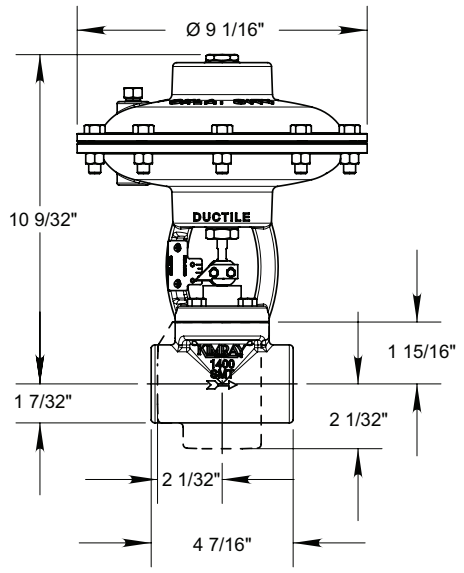
Table 1 - Flow Coefficient(Cv)

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	55.0	64.0	134	162	330	452	527	571	630
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	21.0	22.0	27.0	103	209	429	596	663	695	884
8"	8 in (203 mm)	Modified E.P.	0.75	51.0	53.0	235	362	485	584	665	699	745	810
10"	8.5 in (216 mm)		0.75	28.0	72.0	420	509	632	678	769	814	832	1091
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

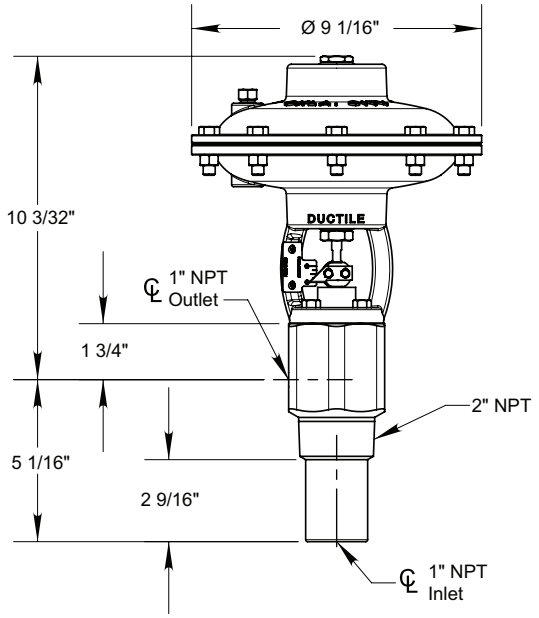
Kimray flow equations conform to ANSI/ISA - 75.01.01-2002 Kimray inherent flow characteristics conform to ANSI/ISA 75.11.01 -1985

DIMENSIONS
1" MODEL CVS

1" HPCV



1" SMS



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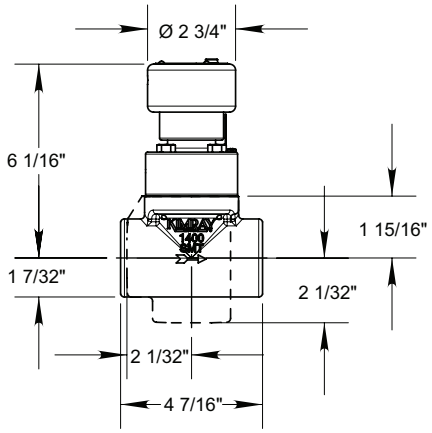
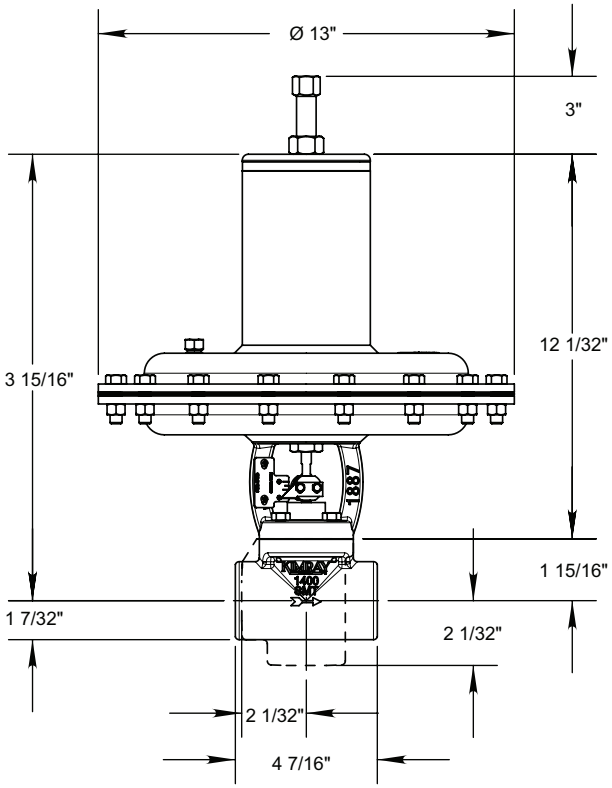


1" HPCV -65 TOPWORKS



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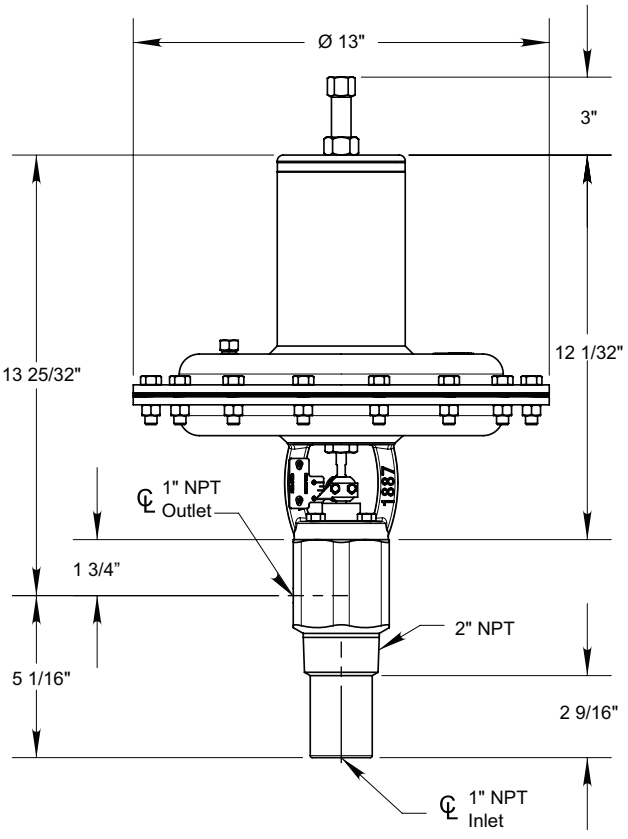
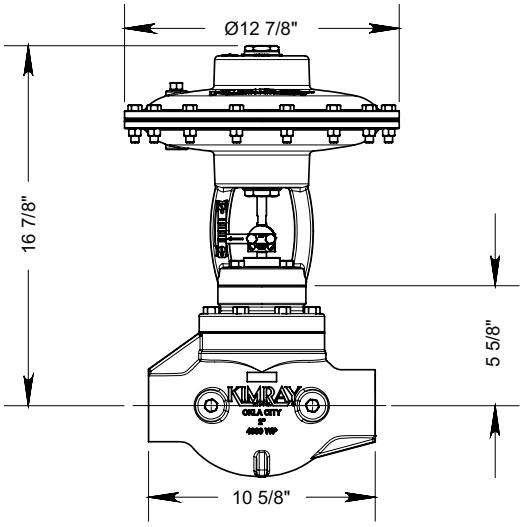


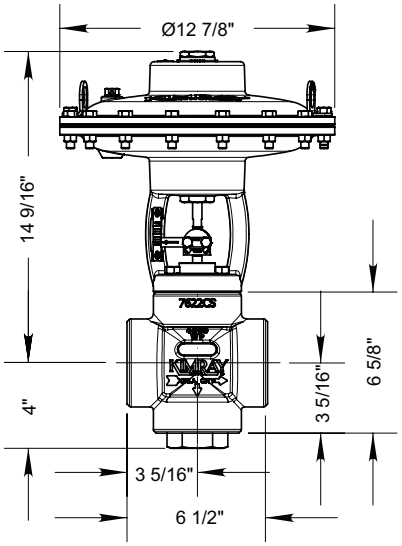
All Pictures shown are for illustration purpose only. Actual product may vary due to product enhancement.

DIMENSIONS
2" MODEL CVS & CVC

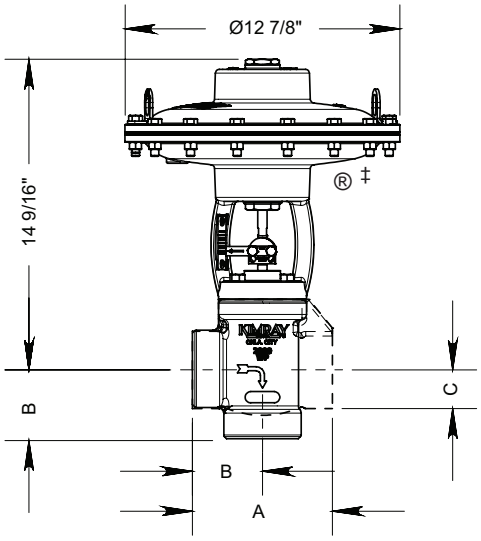
2" HPCV PB



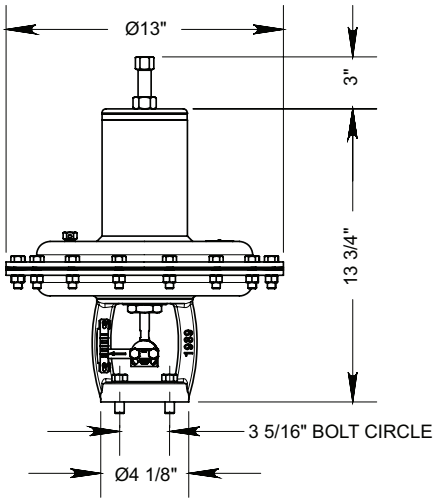
2" SMD



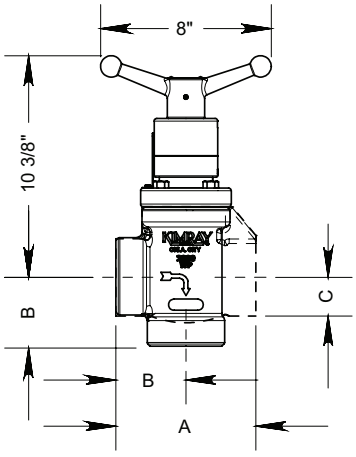
2" HPCV



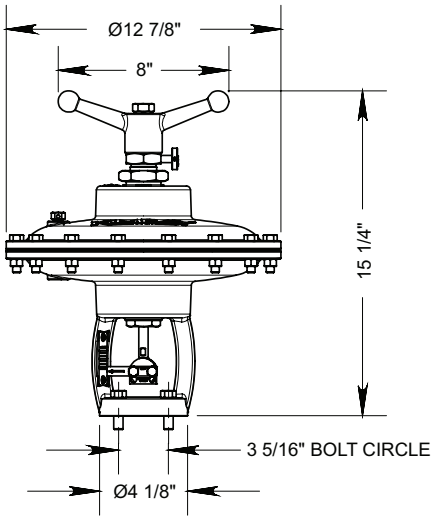
2" -65 TOPWORKS



2" SMVA/T TOPWORKS



2" MVP TOPWORKS

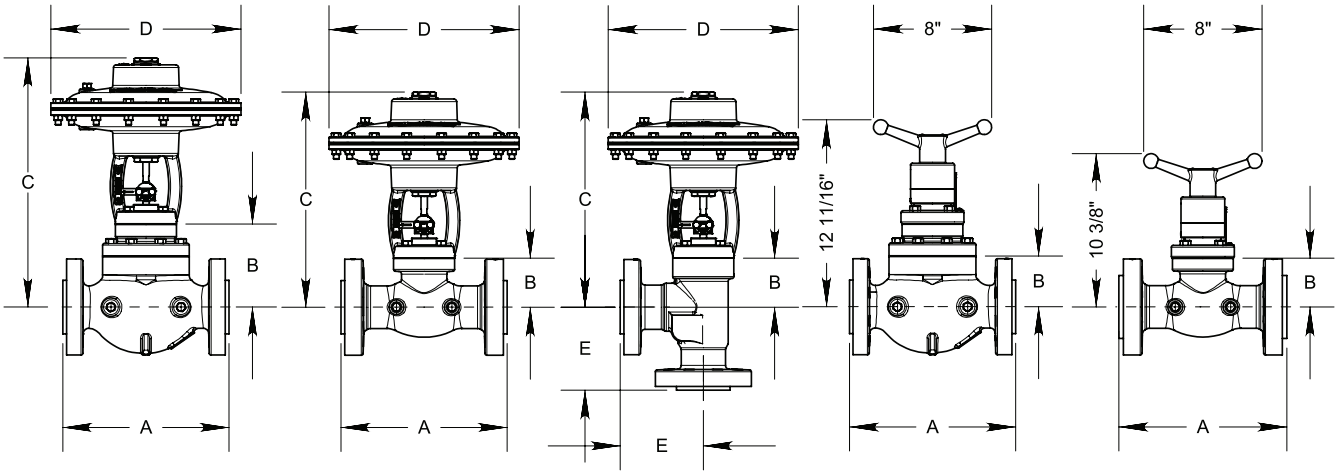


MODEL NO.	A	B	C
2200	6 9/16"	3 9/32"	1 13/16"
2400	6 9/16"	3 9/32"	2 1/16"

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

All Pictures shown are for illustration purpose only. Actual product may vary due to product enhancement.
‡ Configuration of High Pressure Control Valve is a trademark of Kimray, Inc.

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 1/4"
		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 4 - 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)		

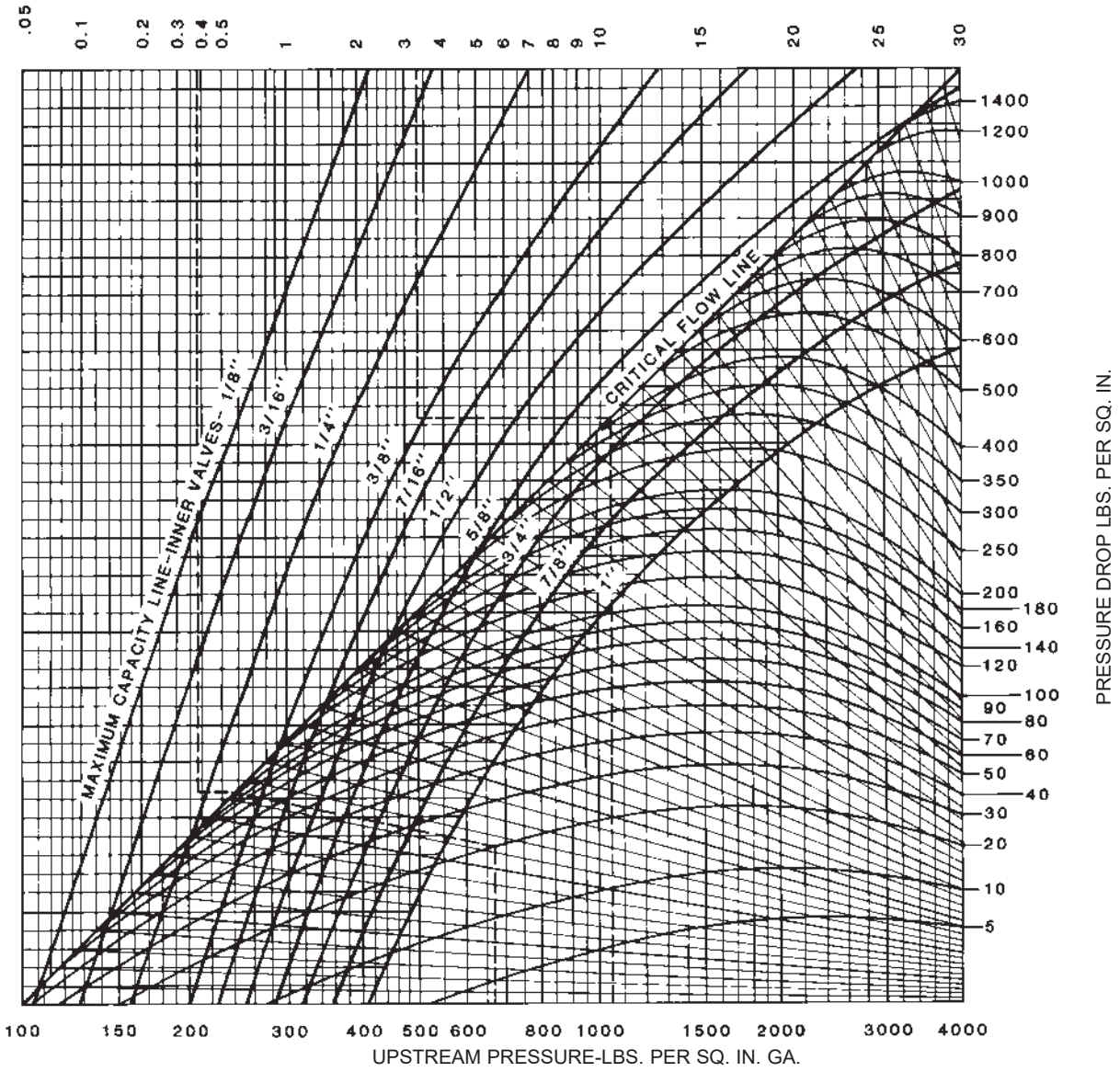
*Material can vary by trim size. See Page 01:200.2
‡ Coated Parts available with "K" service type

Table 5 - 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

GAS CAPACITY CHART

VOLUME-MILLIONS CU. FT. PER 24 HOURS - 65 SP. GR. AT 14.4 & 60°



Gas capacities are based on pressures taken immediately upstream from the valve in a wide open position. Indicated volumes have been corrected for supercompressibility.

HOW TO USE CHART: PRESSURE DROP LESS THAN CRITICAL FLOW with: UPSTREAM PRESSURE 670 pounds gauge; PRESSURE DROP 20 pounds; VOLUME 380,000 Cu. Ft. per 24 hours.

Locate 670 at bottom of chart. Project a vertical line to intersect the 20 pound PRESSURE DROP line, and using sloping GUIDE LINES, project this point to the CRITICAL FLOWLINE. A horizontal line drawn through this point intersects all INNER VALVE lines at the maximum capacity is 0.43 millions of 430,000 Std. Cu. Ft. per 24 hours. A 3/8" is 0.78 and a 1/2" is 1.43. Select the inner valve size for the desired over-capacity.

CRITICAL FLOW with: UPSTREAM PRESSURE 1050 pounds gauge. PRESSURE DROP 600 pounds. VOLUME 3.3 millions per 24 hours.

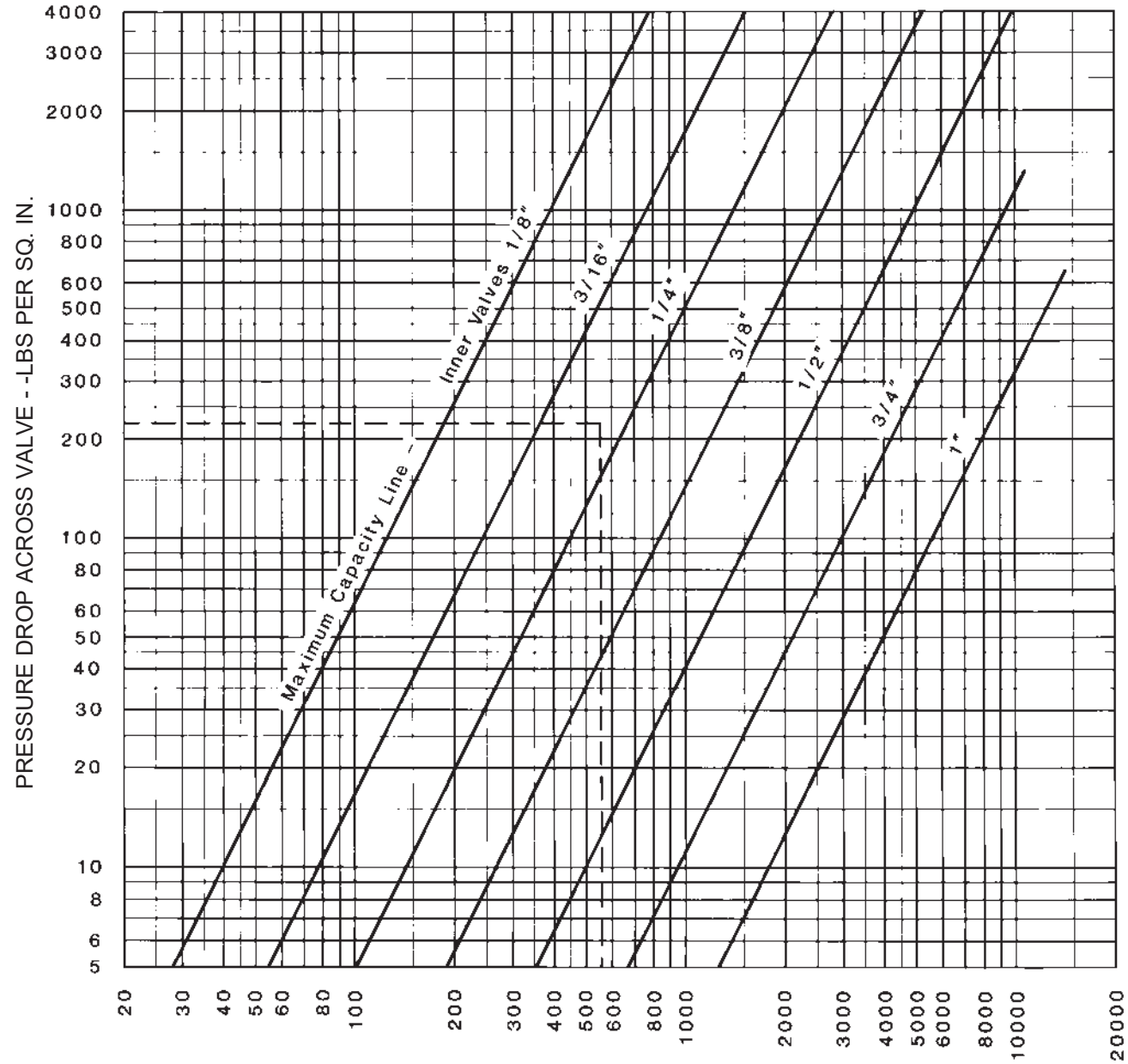
Locate 1050 at bottom of chart. Project a vertical line to intersect the CRITICAL FLOW LINE. A horizontal line drawn through this point intersects all INNER VALVE LINES at the maximum capacity of each for the above conditions. A 3/8" inner valve maximum capacity is 3.4 millions and a 1/2" is y6.4 millions. Select the inner valve size for the desired over-capacity.

*For Gravity correction multiply above capacities by √.65/G; where G equals specific gravity of gas.

See Liquid Capacity Chart for maximum pressure drops on large inner valves.

Flow rates are for steady flow conditions over a 24-hour period. Corrections should be made to deal with intermittent flow conditions.

STEADY FLOW RATE - BARRELS WATER PER 24 HOURS



A good rule to follow when sizing liquid valves discharging from any kind of accumulator is to assume a volume at least twice than expected under steady flow conditions.

HOW TO USE CHART: Assume that it is desired to handle 275 barrels of water per day under steady flow conditions with a 225 psig pressure drop across the valve. Using the rule above we will use a volume of 550 barrels. The intersection of the 550 barrel line and the 225 psig pressure drop line lies between the 3/16" and 1/4" inner valve lines. Since the inner valve lines indicated maximum capacities, we must therefore select the 1/4" inner valve size to handle this volume.

*For gravity correction multiply above capacities by $1/\sqrt{G}$; where G equals specific gravity of flowing liquid.

MAXIMUM PRESSURE DROP for LARGE INNER VALVES

1" CONTROL VALVES			2" CONTROL VALVES		
I.V.	THROTTLE	RELIEF	I.V.	THROTTLE	RELIEF
1/2"	1200	2400	1"	650	1300
3/8"	1850	3700	3/4"	1350	2700

Above values are for valves furnished with standard springs for 20 psig diaphragm pressure.

NOTE: Flow rates are for steady flow conditions over a 24-hour period. Corrections should be made to deal with intermittent flow conditions.

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 (1.72 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 (1.72 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**	**Full**
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 (1.72 bar)	2.5 psig (0.17 bar)	17 psig (1.72 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 (1.72 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 (1.72 bar)	5 psig (0.34 bar)	17 psig (1.72 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 (0.31 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 (1.72 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 (1.72 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 (1.72 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)

KIMRAY INC.

CODE BUILDER
MODEL CVS (STEM GUIDED)

Series:

CV = Control Valves

Model:

S = Stem Guided

Line Size:

1 = 1 NPS

2 = 2 NPS

End Connection:

S2 = 2000 psi FNPT
S4 = 4000 psi FNPT
S6 = 6000 psi FNPT
AR = 150 RF
BR = 300 RF
DR = 600 RF
FR = 900/1500 RF
GR = 2500 RF
DJ = 600 RTJ
FJ = 900/1500 RTJ
GJ = 2500 RTJ
P5 = API 5000

Body Type:

A = Angle

T = Thru

D = Dual

Shell Material:

W = Steel (WCB)

X = Steel (WCB) w/Coating

Inner Valve Size:

	1" Line Size			2" Line Size		
	Linear	Quick Open	E.P.	**Linear**	Quick Open	E.P.
1/8"	02L	02Q	02E			
3/16"	03L	03Q				
1/4"	04L	04Q	04E	04L	04Q	04E
3/8"	06L	06Q		06L	06Q	
7/16"						07E
1/2"	08L	08Q	08E	08L	08Q	
5/8"						10E
3/4"				12L	12Q	
7/8"						14E
1"		16Q		**16L**	16Q	
1 1/2"					24Q	

Actuator:

0 = No Actuator
1 = 3 - 15 psi Spring Fail Close
2 = 6 - 30 psi Spring Fail Close
3 = 9 - 45 psi Spring Fail Close
4 = 3 - 15 psi Spring Fail Open
5 = 6 - 30 psi Spring Fail Open
6 = 9 - 45 psi Spring Fail Open
7 = - 65 Fail Close
8 = Metering Valve (EP trim only)
J = 2 - 10 psi Spring Fail Close (1" only)
K = 4 - 20 psi Spring Fail Close
L = 2 - 10 psi Spring Fail Open (1" only)
M = 4 - 20 psi Spring Fail Open

Service Type:	Trim Materials (Stem - Plug - Seat)		
	Linear	Quick Open	E.P.
S = Standard	**S3-CR-D2**	**S3-CB-CB**	**S3-CR-D2**
C = Corrosive	S6-S6-S6	N/A	S6-S6-S6
E = Erosive	S3-CB-ZR	S3-CB-ZR	S3-CB-ZR
M = Mixed Duty	S7-S7-S7	N/A	S7-S7-S7

CV	S	2	S2	T	W	16L	2	S	

Options: Additional cost and lead times will apply
If multiple options required input in sequential order
Leave blank if no options required

1 = NACE Certification (Corrosive Option Only)
2 = Hydrostatic Test Certification
3 = MTR (Shell Components)
A = AFLAS Elastomers (Green)
E = VEE Packing
G = Graphite Vee Packing
H = HSN Elastomers
V = FKM Elastomers (Yellow)
X = Export (Hydrostatic test, MTR & 3.1)

Not all selections available on all products listed.
See product pages 01:10.1 - 01:10.4 for available options