

#### APPLICATIONS:

Three-Way Valves provide a convenient means for diverting flow from one pipeline to another, for bypass applications where part or all of the fluid passing through the valve is diverted through either or both of the outlets, or as a mixing valve for combining two fluid streams and discharging them through a common outlet port.

#### FEATURES:

- Compact design
- Valve travel indicator
- Teflon-packed stuffing box

#### CERTIFICATIONS:

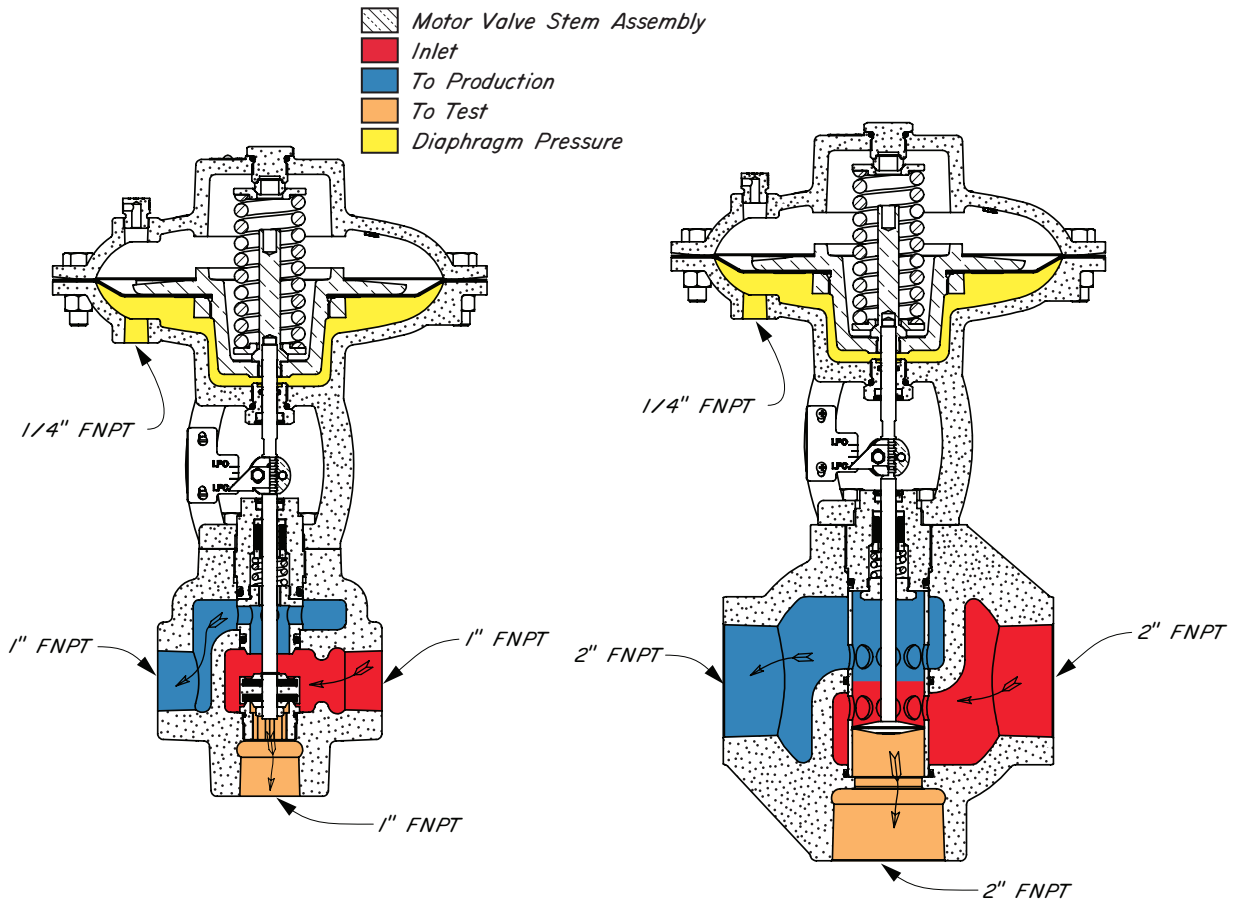
Kimray is an ISO 9001- certified manufacturer.

#### HPCV 3-WAY Model CVW

For dividing flow into two directions, with the ability to seal off flow in one or the other direction.

#### SPLITTER VALVE Model CVD

For splitting flow into two directions, but not for sealing off in either direction.



Order Code †	Series	Line Size	Connection Type	Max Δ P	Max. W.P. psig †††	Cv Upper Port	Cv Lower Port	Cf
ESEBW	CVW	1"	NPT	3000	3000	8.3	13.8	0.70
ESIBW	CVD	2"	NPT	3000	3000	27.7	38.1	0.70
ESHBW			WELD					

#### NOTES:

For standard & optional seals, metals, Cf Cv values & material specification see technical data on pages 01:1 - 01:X1

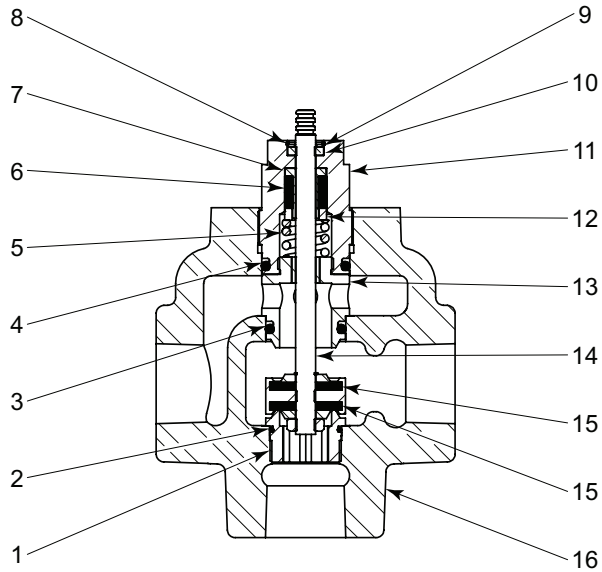
† Bottom Works only. For complete valve codes see page 01:300.4

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

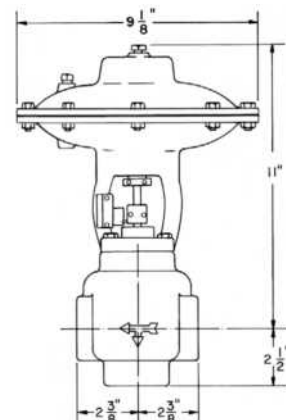
# HIGH PRESSURE CONTROL VALVES



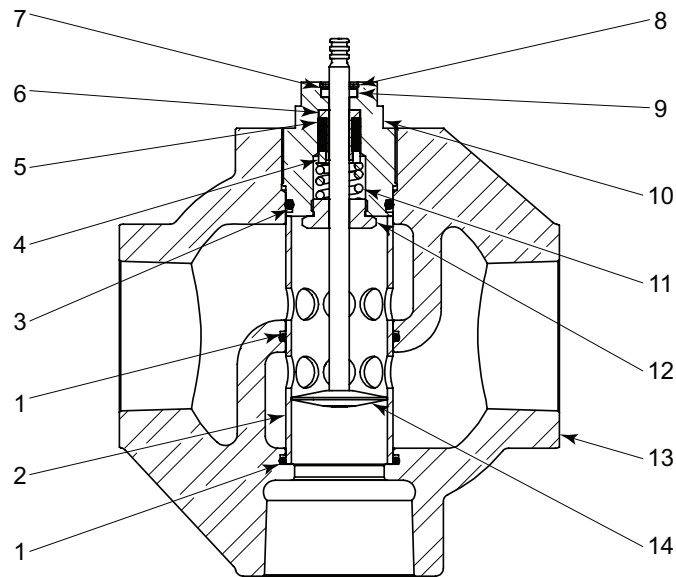
## HIGH PRESSURE 3 WAY MODEL CVW BOTTOM WORKS DRAWING



ITEM	QTY.	DESCRIPTION	PART NO
1	1	Lower Seat	2130
2	1	O-Ring *	2131
3	1	O-Ring *	156
4	1	O-Ring *	606
5	1	Spring	465
6	4	Packing Ring *	484
7	1	Packing Sleeve *	485
6&7	1	Optional VEE Packing 450°F max	5117
8	1	Snap Ring *	938
9	1	Retainer	486
10	1	Felt Wiper *	480
11	1	Stuffing Box	2127
12	1	Packing Follower	482SS6
13	1	Cage & Upper Seat	2128
14	1	Stem Assembly *	2129
15	2	Seat	2129B
16	1	Body	2126
Repair Kits			RFC
* These parts are recommended spare parts and are stocked as repair kits.			

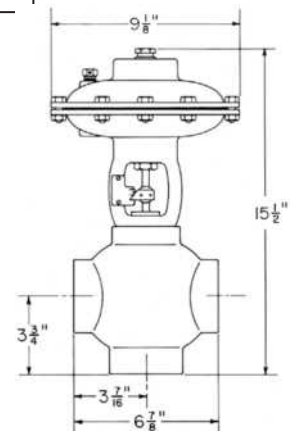


All Pictures shown are for illustration purpose only. Actual product may vary due to product enhancement.



ITEM	QTY.	DESCRIPTION	PART NO
1	2	O-Ring *	2937
2	1	Cage	2933SS6
3	1	O-Ring *	2936
4	1	Follower	482SS6
5	4	Packing Ring *	484
6	1	Packing Sleeve *	485
5&6	1	Optional VEE Packing 450°F max	5118
		Optional Grafoil Packing 450°F max	5118GF
7	1	Retainer	486
8	1	Snap Ring *	938
9	1	Felt Wiper *	480
6	1	Stuffing Box	2934
11	1	Spring	465
12	1	Nut	1828
13	1	Body	
		2" NPT	2939
		2" Socket Weld	2935
		2" 6000 lb. Socket Weld	4330
14	1	Stem	2932
Repair Kits			RRG

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



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#### APPLICATIONS:



Used for actuating HPCV Control Valves.

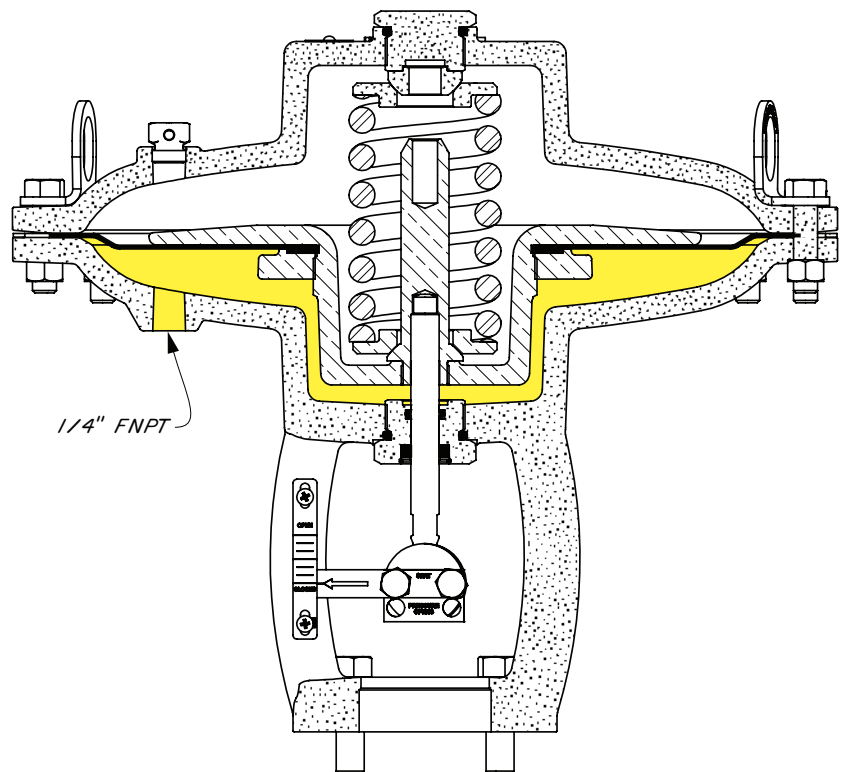
#### FEATURES:

- 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.

 Control Valve Diaphragm Assembly  
 Control Valve Diaphragm Pressure



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:

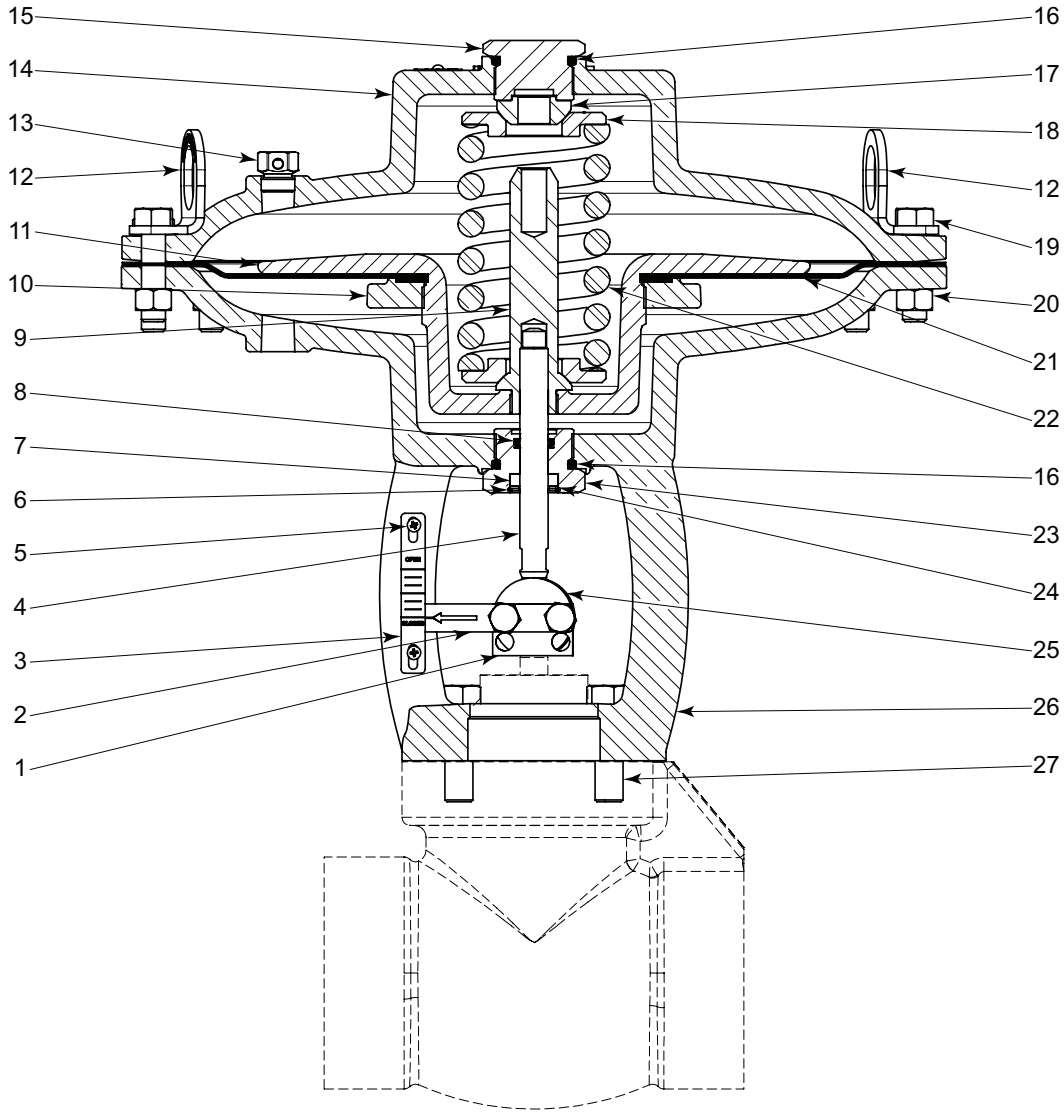
For standard & optional seals, metals, Cf Cv values, material specifications & dimensions see technical data on pages 01:1 - 01:XI

† 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.

# HIGH PRESSURE CONTROL VALVES

## STANDARD PISTON BALANCED / CAGE GUIDED ACTUATORS PARTS DRAWING



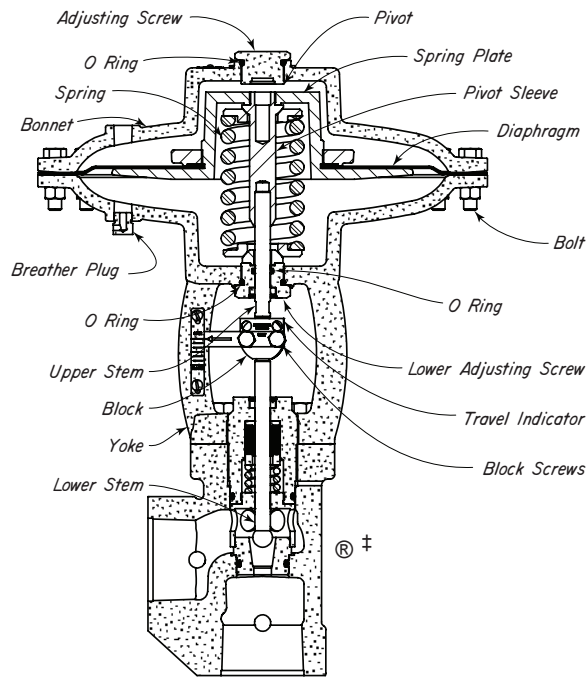
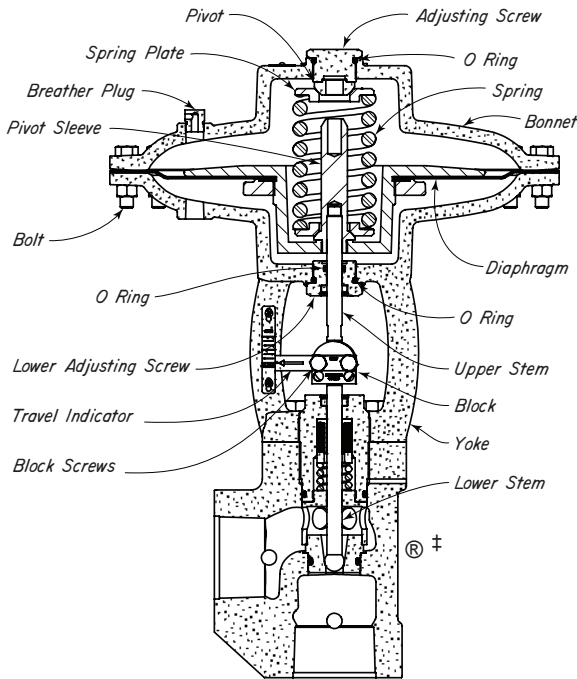


# HIGH PRESSURE CONTROL VALVES

## 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	1	Upper Adjusting Screw	457	502	4959	6560	5348	
16	2	O-Ring *	491	537	808		2632	
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.

Replace LOWER ADJUSTING SCREW and tighten against YOKE. O RING 491 - 1", 537 - 2", provides the necessary pressure seal. 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, 153Q - 1", 530Q - 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, 153Q - 1", and 530Q - 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).

#### 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

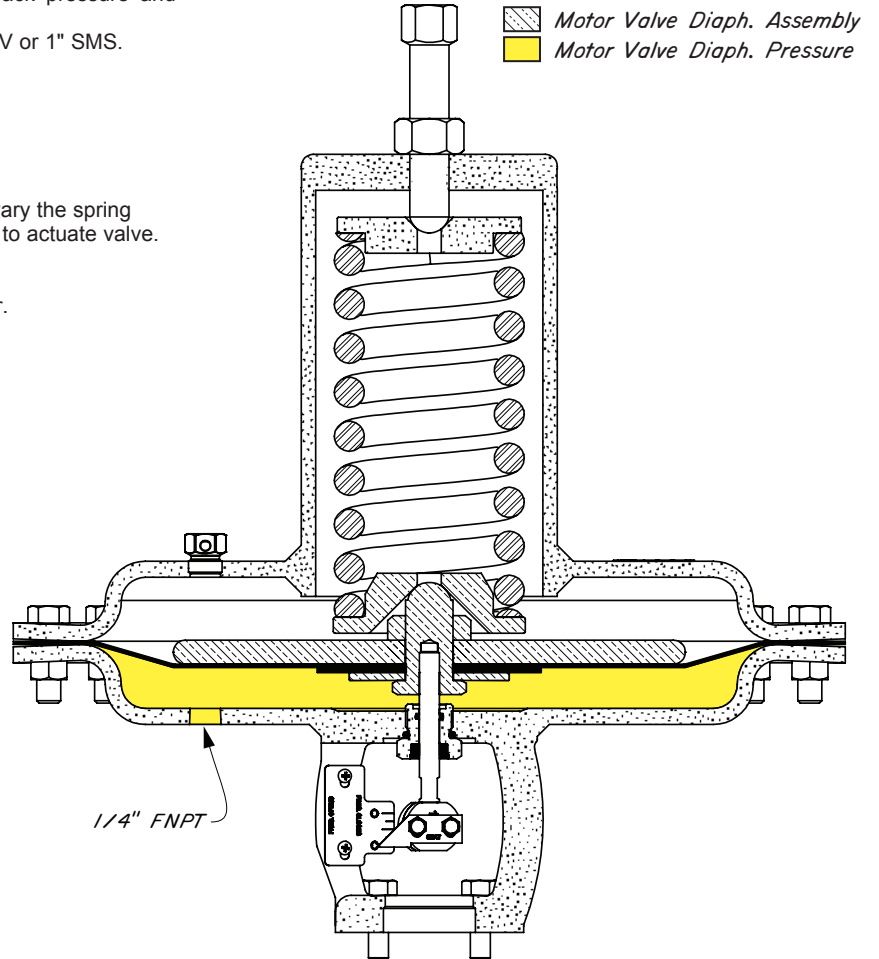
All steel

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

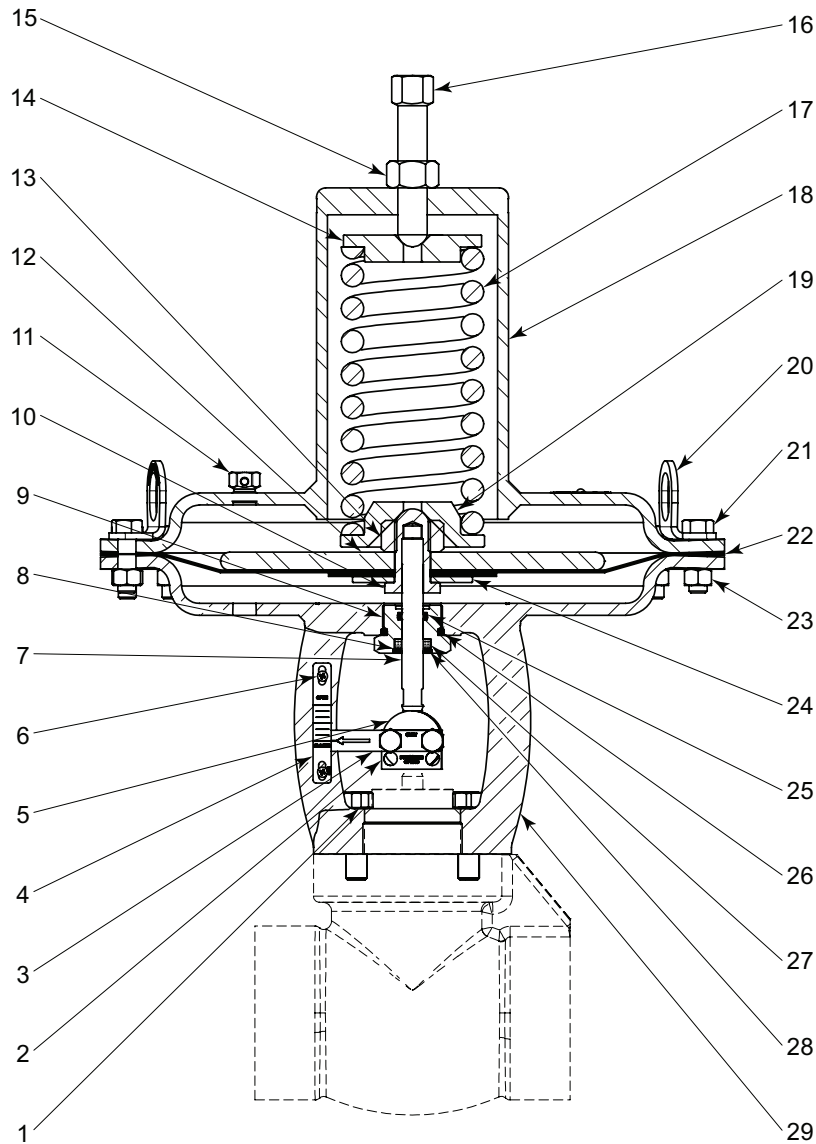
†† Max W.P. values based on -20°F to 100°F.



# HIGH PRESSURE CONTROL VALVES



## -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
26	1	O-Ring	*	491
27	(QTY)	Felt Wiper	*	480
28	1	Snap Ring	*	938
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	
<b>Stem Guided</b>														
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	
<b>Cage Guided</b>														
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	

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							

<b>Table 5 - Material Options Stem Guided</b>			
<b>Part Description</b>	<b>Standard Material</b>	<b>Erosive Material</b>	<b>Corrosive Material</b>
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)		

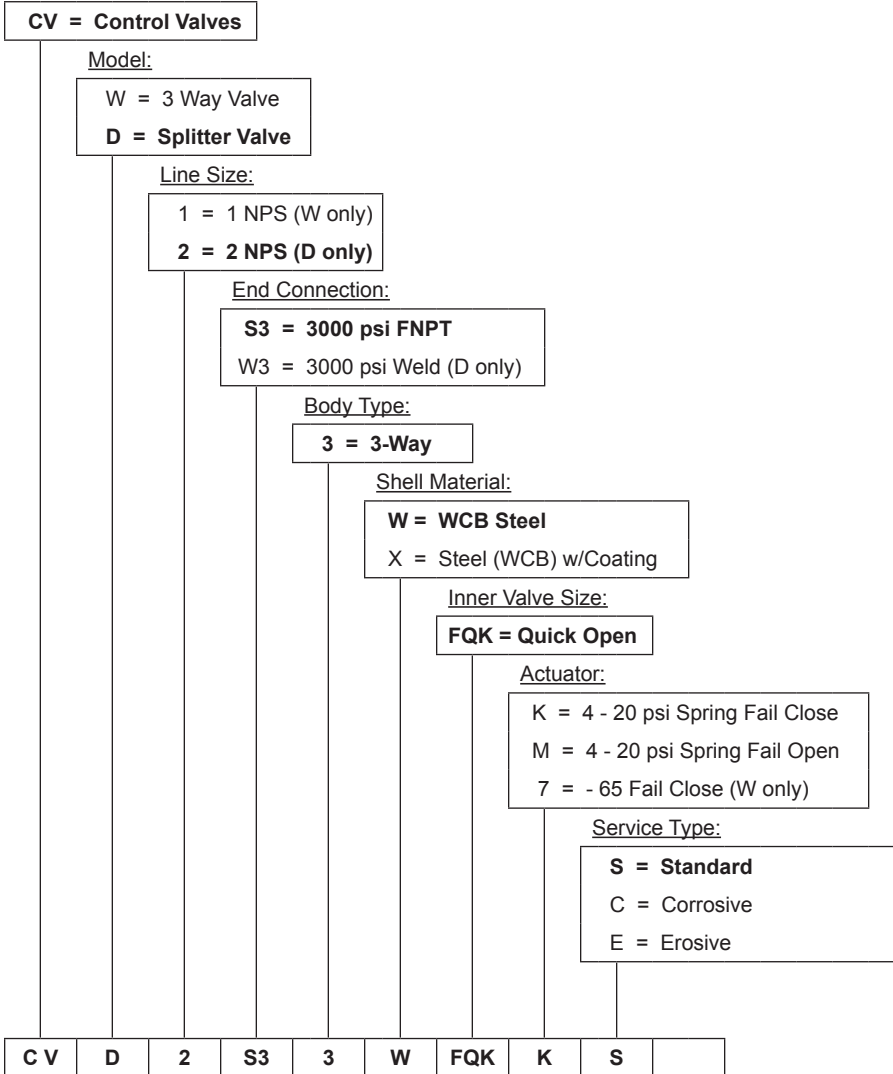
\*Material can vary by trim size. See Page 01:200.2

‡ Coated Parts available with "K" service type

<b>Table 6 - Material Options Cage Guided</b>			
<b>Part Description</b>	<b>Standard Material</b>	<b>Erosive Material</b>	<b>Corrosive Material</b>
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

Series:



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
- V = FKM Elastomers
- X = Export (Hydrostatic test, MTR & 3.1)

Not all selections available on all products listed.  
See product pages 01:40.1 - 01:40.2 for available options