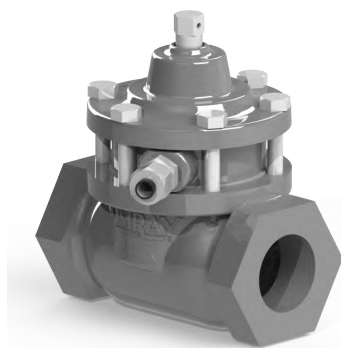


**Model MT**



**Model DA**



**Model ADA**

<b>Contents</b>	<b>Page</b>
Body Style	4
Valve Dimensions	6
Specifications	9
Elastomers	10
Model Code	11

## Introduction

The Kimray low pressure control valves are diaphragm operated and designed to control flow in liquid or gas systems up to 500 psig (34.4 bar) working pressure from a 30 to 40 psig (2.0 to 2.7 bar) pneumatic actuating signal. The control valves can be used for oil and water dump valves on low pressure separators and as burner valves for throttling or snap action service.

The actuator is available in either pressure opening, (normally closed) or pressure closing (normally open). Valve model designations indicate DA (direct acting) and ADA (adjustable double acting) for pressure opening or MT for pressure closing actuators.

### NOTE

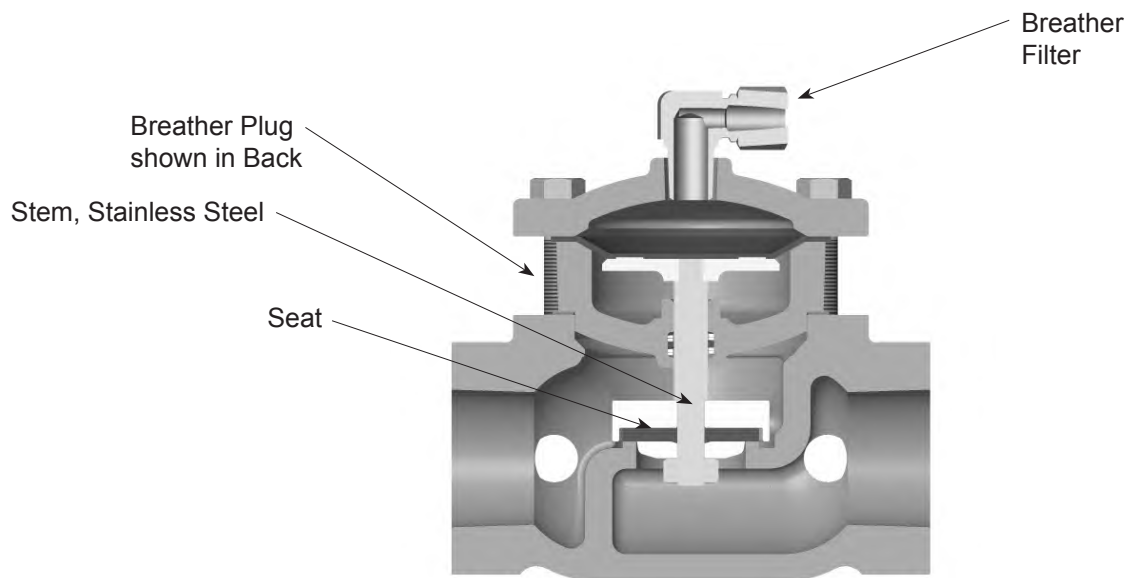
This information is presented in good faith, Kimray assumes no liability for advice or recommendations made concerning results to be obtained from the user of any Kimray product or service. Responsibility for the selection, use and maintenance of any Kimray products remain with the purchaser and end-user.

Kimray reserves the right to modify or improve the designs or specifications of such products at any time without prior notice.

<b>Summary:</b>	
Body Material:	Ductile Iron, Steel
Body Style:	Thru
Actuation:	Pressure Opening or Pressure Closed
Actuation Pressure:	Up to 1/2 of Upstream Pressure
Connection Size:	1",2",3",4",6"
Connection Style:	NPT or Flanged
Normal Service:	Liquid or Gas
Temperature:	-20° to 200° F -29° to 93° C
Pressure:	Up to 300 psig (Ductile) 500 psig (Steel)

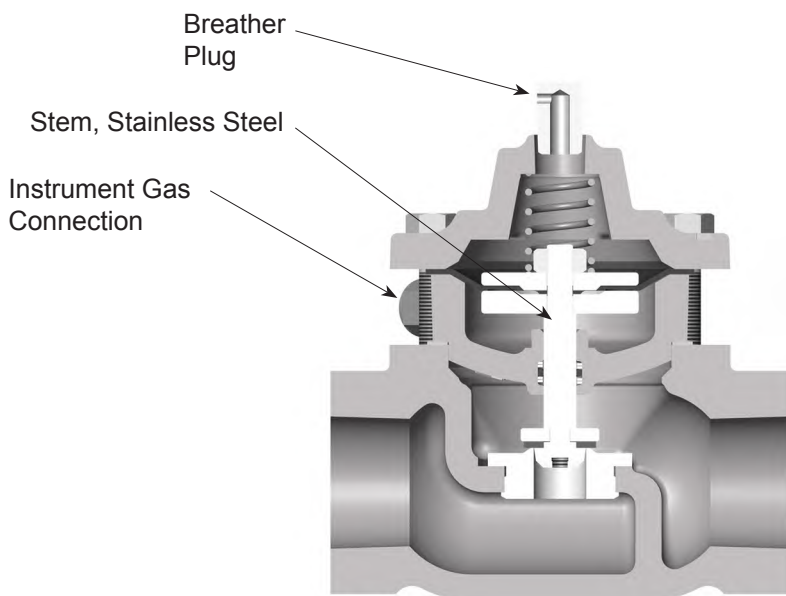
**Features**

- Equal Percentage trim for throttling service.
- Can be used for On / Off service.
- Full line size port for high capacity.
- Reduced orifice trim is available.
- Soft seat for class VI shut-off.
- Available in pressure opening or pressure closing.



**Model MT**

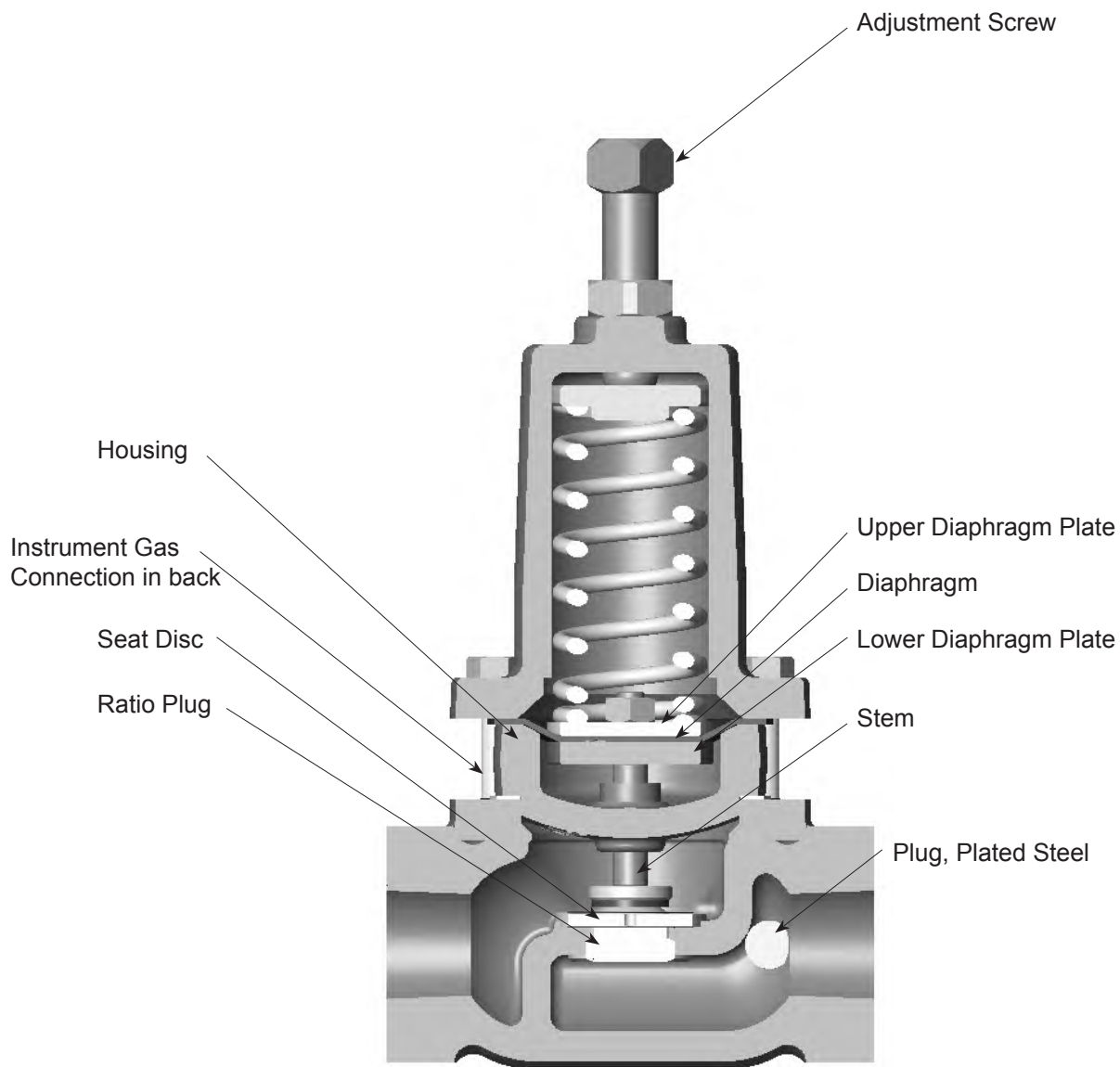
Figure 1



**Model DA**

Figure 2

**Features Continued**



**Model ADA**

Figure 3

**Table 1 - Body Materials and End Connections**

Main Valve Body Size	Material Group	ASTM Group	Available Connections
1 in. (25 mm)	WCB, LCC	A216-WCB, A352-LCC	NPT, 300 psig (20.7 bar)
2 in. (50 mm)	WCB, LCC, CD	A216-WCB, A352-LCC, ASTM A536-CD	NPT, 250 psig (17.3 bar), 300 psig (20.7 bar)
3 in. (76 mm)	WCB, LCC, CD	A216-WCB, A352-LCC, ASTM A536-CD	NPT, 300 psig (20.7 bar) 250 psig (17.2 bar), 285 psig (19.6 bar)
4 in. (101 mm)	WCB, LCC, CD	A216-WCB, A352-LCC, ASTM A536-CD	250 psig (17.2 bar), 285 psig (19.6 bar)
6 in. (152 mm)	WCB, LCC, CD	A216-WCB, A352-LCC, ASTM A536-CD	250 psig (17.2 bar), 285 psig (19.6 bar)

KIMCOAT coating available for any body material

Kimray body materials conform to ASME B16.5-1996 for external dimensions, working pressure class rating per ASME B16.34 and face to face per ANSI 75-08.01-2002

Flanges available upon request.

**Table 2 - Materials of Construction Model MT**

Valve Components	Standard	Optional
Body	Ductile Iron	Steel
Stem	303 Stainless	303 Stainless
Plug	Ductile Iron	Steel
Seat	Polyurethane	Nitrile, Viton®, Aflas®, HSN
Diaphragm	Nitrile/Nylon	Viton®, Aflas®, HSN
Elastomers	HSN, Nitrile	Viton®, Aflas®, HSN

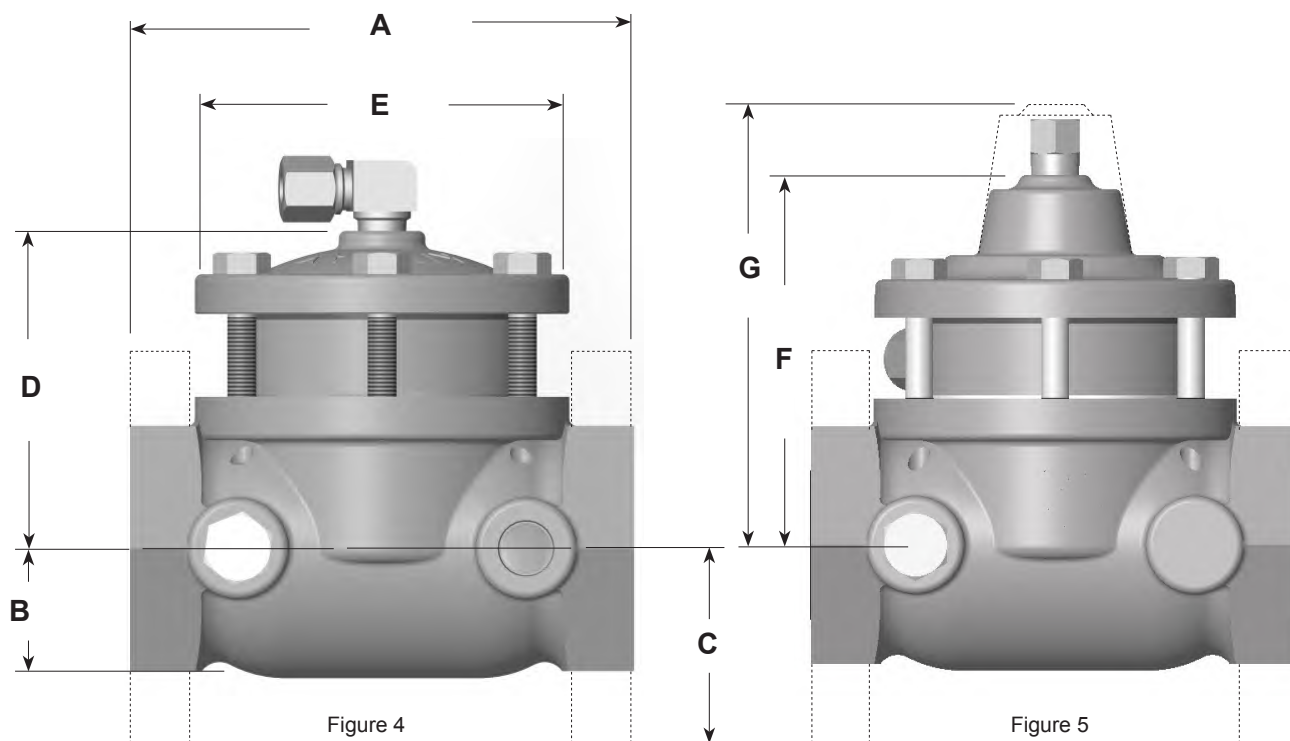


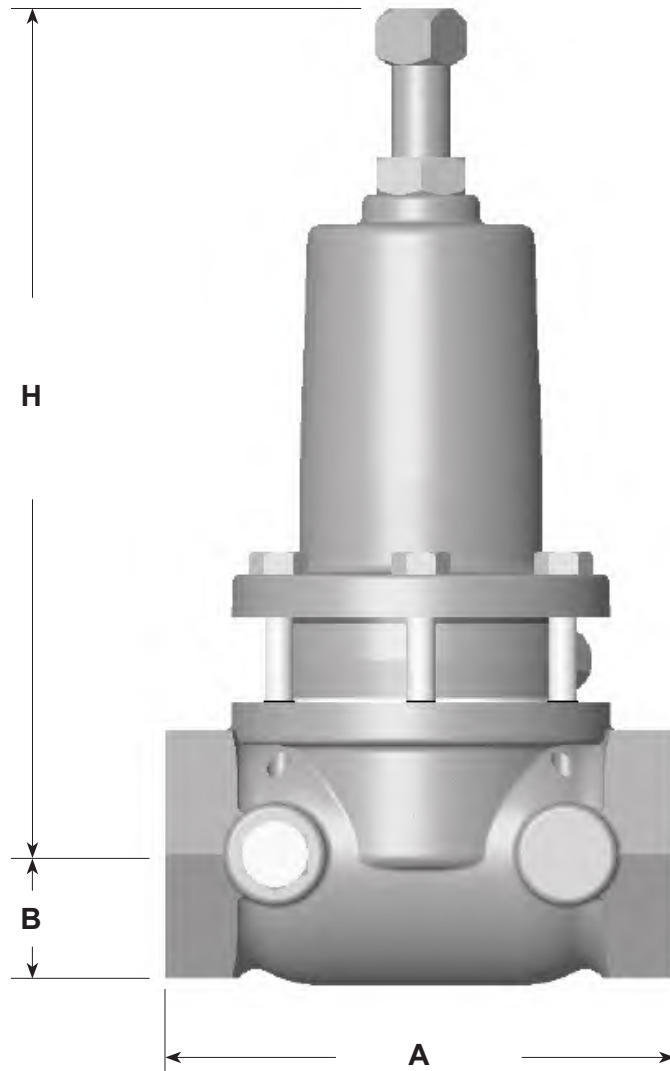
Figure 4

Figure 5

Table 4 - MT DA and ADA Low Pressure Control Valves

Line Size	End Connection	A	B	C	D	E	F	G	H	Approx. Weight
1"	NPT	4 3/8 in. (111 mm)	1 1/8 in. (28 mm)		2 3/4 (69 mm)	3 3/8 in. (85 mm)	3 3/8 in. (85 mm)	3 3/8 in. (85 mm)	8 in. (203 mm)	6 lbs. (2.7 kg)
2"	150 RF	8 1/2 in. (215 mm)	2 1/8 in. (53 mm)		4 3/8 in. (111 mm)	5 7/8 in. (149 mm)	6 7/8 in. (174 mm)	6 7/8 in. (174 mm)	18 1/2 in. (469 mm)	24 lbs (10 kg)
		9 in. (228 mm)		3 in. (76.2 mm)	4 3/8 in. (111 mm)	5 7/8 in. (149 mm)	6 7/8 in. (174 mm)	6 7/8 in. (174 mm)	18 1/2 in. (469 mm)	33 lbs. (14 kg)
		8 3/4 in. (222 mm)	2 1/8 in. (53 mm)		4 3/8 in. (111 mm)	5 7/8 in. (149 mm)	6 7/8 in. (174 mm)	6 7/8 in. (174 mm)	18 1/2 in. (469 mm)	25 lbs (11 kg)
3"	150 RF	12 in. (304 mm)	3 1/16 in. (77 mm)		5 7/8 in. (149 mm)	8 in. (203 mm)	8 in. (203 mm)	8 in. (203 mm)		62 lbs (28 kg)
		12 3/16 in. (309 mm)		3 3/4 in. (95 mm)	5 7/8 in. (149 mm)	8 in. (203 mm)	8 in. (203 mm)	8 in. (203 mm)		74 lbs (33 kg)
4"	150 RF	15 in. (381 mm)	4 in. (101 mm)		7 1/2 in. (190 mm)	9 3/4 in. (247 mm)	9 1/2 in. (241 mm)	9 1/2 in. (241 mm)		150 lbs (68 kg)
		15 1/8 in. (384 mm)		4 1/2 in. (114 mm)	7 1/2 in. (190 mm)	9 3/4 in. (247 mm)	9 1/2 in. (241 mm)	9 1/2 in. (241 mm)		
6"	150 RF	22 1/8 in. (561 mm)		5 1/2 in. (139 mm)	11 in. (279 mm)	16 in. (406 mm)	15 1/4 in. (387 mm)			385 lbs (174 kg)

Kimray valve dimensions conform to ANSI / ISA 75 series.



See Table 4 for Dimensions  
Figure 6

Table 5 - Material Specification					
	Body		Inner Parts		
	CAST STEEL	CAST DUCTILE	303 STAIN-LESS STEEL	316 STAIN-LESS STEEL	17-4 PH STAINLESS STEEL
KIMRAY SUFFIX	CS	CD	SS6	SS6	PH
ASTM GROUP	ASTM A216	ASTM A536/395	(1)	ASTM A276	ASTM A564
GRADE	WCB	60-40-18	303	316	630
UNS	J03002	F32800	S30300	S31600	S17400
NACE Compliant	Yes	Yes	No	Yes	Yes
Mechanical Properties					
Allowable Stress (ksi)	20	20	N/A	N/A	N/A
Tensile min (ksi)	70	70	90	80	130
Yield min (ksi)	36	42	35	35	105
Hardness HB		170	160	170	310
Physical Properties					
Density (lbs/in <sup>3</sup> )		0.24-0.26	0.29	0.29	0.28
Electrical Resistivity @ 68°F (microh-in)		19.7	28.3	29.4	38.6
Specific Heat @ 32-212°F (BTU/lb/°F)		0.11	0.12	0.12	0.11
Thermal Conductivity BTU/hr/ft <sup>2</sup> /ft/°F @ 212°F		6.5	9.4	9.4	
Coeff. of Thermal Expansion (in/in/°F) 32-212°F		2.9X10	9.6X10 <sub>-6</sub>	8.9x10 <sup>-6</sup>	6.0x10 <sup>-6</sup>
Coeff. of Thermal Expansion (in/in/°F) 32-600°F		3.4X10	10.2X10 <sub>-6</sub>	9.0x10 <sup>-6</sup>	6.2x10 <sup>-6</sup>
Modulus of Elasticity (ksi) Tension		24.5X10	28.0X10 <sub>3</sub>	28.0 x 10 <sup>3</sup>	
Modulus of Elasticity (ksi) Torsion				11.2 x 10 <sup>3</sup>	9.68 x 10 <sup>3</sup>
Magnetic Permeability, H Oersteds				200	200
Chemical Composition					
Al	0.03-.06	0.003	-	-	-
C	0.30 max	3.75	0.15 max	0.08 max	0.07 max
Cb	-	N/A	-	-	0.15-0.45
Co	-	N/A	-	-	-
Cr	0.50 max	0.026	17.00-19.00	16.00-18.00	15.50-17.50
Cu	0.30 max	0.16	-	-	3.00-5.00
Mg	-	0.046	-	-	-
Mn	1.00 max	0.21	2.0 max	2.00 max	1.00 max
Mo	0.20 max	0	0.60 max	2.00-3.00	-
Ni	0.50 max	0.023	8.00-10.00	10.00-14.00	3.00-5.00
P	0.04 max	0.023	0.20 max	0.045 max	0.040 max
Pb	-	0.0003	-	-	-
S	0.045 max	0.012	0.15 max	0.030 max	0.030 max
Si	0.60 max	2.63	1.00 max	1.00 max	1.00 max
V	0.03 max	0.003	-	-	-
Zn	-	N/A	-	-	-
Temp. Range (°F)	-20 to 800	-20 TO 650	-20-800	-20 to 850	-20 to 650
Temp. Range (°C)	-28 to 426			-28 to 454	-28 to 343

(1) ASTM A194, A314, A320, A473, A581, A582

(2) ASTM A167, A182, A193, A194, A213, A240, A249, A269, A270, A271, A276, A312, A313, A314, A320, A358, A368, A376, A409, A430, A473, A478, A479, A492, A493, A511, A554, A580, A632, A651, A666, A688

(3) ASTM A564, A693, A705

Table 6 - Elastomer Options		
Part	Standard Material	Optional Material
Diaphragm	Nitrile	Viton®, Aflas®, HSN
O-Ring	Buna-N	Nitrile, Viton®, Aflas®, HSN

Table 7 - Elastomer Specifications														
	ELASTOMERS								PLASTICS					
	AFLAS	ETHYLENE PROPYLENE	VITON	HIGHLY SATURATED NITRILE	BUNA-N	LOW TEMP. BUNA-N	POLY-ACRY-LATE	GEO-THERMAL EPDM	POLY-URETHANE	GYLON	PEEK	PPDI	TEFLON	
Kimray Suffix	AF	EP	V	HSN	-	LTN	H	GEP	P	GY	PK	PPDI	T	
Resistance	Abrasion	GE	GE	G	G	G	G	GE	E	E	E	E	E	
	Acid	E	G	E	E	F	F	P	P	E	G	P	E	
	Chemical	E	E	E	FG	FG	FG	P	FG	E	G	FG	E	
	Cold	P	GE	PF	G	G	E	P	G	E	P	G	E	
	Flame	E	P	E	P	P	P	P	P	P	P	P	P	
	Heat	E	G	E	E	G	G	E	F	E	G	G	E	
	Oil	E	P	E	E	E	E	E	G	E	G	G	E	
	Ozone	E	E	E	G	P	P	E	E	E	G	E	E	
	Set	PF	GE	E	GE	GE	GE	F	F	P	P	F	P	
	Tear	PF	GE	F	FG	FG	FG	FG	GE	GE	E	E	GE	E
	Water/Steam	GE	E	P	E	FG	FG	P	E	P	E	E	P	E
	Weather	E	E	E	G	F	F	E	E	E	E	G	E	E
	CO2	GE	GE	PG	GE	FG	FG	P	GE	G	E	G	G	E
H2S	E	P	P	FG	P	P	P	F	G	E	G	G	E	
Methanol	PF	G	PF	P	P	P	P	G	P	E	G	G	E	
Properties	Dynamic	GE	GE	GE	GE	GE	GE	F	E	P	G	G	P	
	Impermeability	G	G	G	G	G	G	E	G	E	E	G	E	
	Tensile Strength	FG	GE	GE	E	GE	GE	F	E	E	E	E	E	
	Temp. Range (°F)	25 to 450	-65 to 300	-15 to 350	-20 to 300	-30 to 250	-65 to 225	0 to 300	0 to 500	-40 to 180	-350 to 500	-30 to 400	-65 to 275	-40 to 400
	Temp. Range (°C)	-3 to 232	-53 to 148	-26 to 176	-28 to 148	-34 to 121	-53 to 107	-17 to 148	-17 to 260	-40 to 82	-212 to 260	-34 to 204	-53 to 135	-40 to 204
	Form	O,S,D	O,S,D	O,S,D	O,S,D	O,S,D	O,D	O,S,D	O, S	S,D	S,D	S	S	O, S

RATINGS: P - POOR, F - FAIR, G - GOOD, E - EXCELLENT



Table 7 - Flow Coefficient(Cv) at Valve Position												
1" Low Pressure Control Valve MT & DA & ADA												
	Trim Size in.(mm)	CF	Valve Opening Percentage									
			10	20	30	40	50	60	70	80	90	100
Equal %	.50 (12)	0.86	0.5	0.7	1.0	1.4	2.1	2.8	3.6	4.3	5.1	5.6
Modified %	1.0 (25)	0.86	1.1	1.8	2.4	3.4	4.8	6.6	8.5	10.2	11.9	13.2
2" Low Pressure Control Valve MT & DA & ADA												
Flow Characteristic	Trim Size in.(mm)	CF	Valve Opening Percentage									
			10	20	30	40	50	60	70	80	90	100
Equal %	1.25 (31)	0.84	1.3	2.4	4.0	6.7	10.4	14.4	16.9	19.7	22.1	24.0
Modified %	2.0 (50) Removable	0.75	4.0	6.2	8.6	12.1	17.2	23.5	30.4	36.3	42.5	47.0
	2.0 (50)	0.75	4.4	6.9	9.5	13.4	19.1	26.0	33.6	40.2	47.0	52.0
3" Low Pressure Control Valve MT & DA												
Flow Characteristic	Trim Size in.(mm)	CF	Valve Opening Percentage									
			10	20	30	40	50	60	70	80	90	100
Equal %	1.62 (41)	0.82	2.9	4.5	6.2	8.8	12.5	17.0	22.0	26.3	30.7	34.0
Modified %	3.0 (76)	0.75	9.9	15.6	21.5	30.2	42.9	58.6	75.7	90.4	105.7	117.0
4" Low Pressure Control Valve MT & DA												
Flow Characteristic	Trim Size in.(mm)	CF	Valve Opening Percentage									
			10	20	30	40	50	60	70	80	90	100
Equal %	2.0 (50)	0.80	4.7	7.3	10.1	14.2	20.2	27.5	35.6	42.5	49.7	55.0
Modified %	4.0 (101)	0.75	17.8	27.9	38.6	54.2	77.0	105.2	135.9	162.2	189.8	210.0
6" Low Pressure Control Valve MT & DA												
Flow Characteristic	Trim Size in.(mm)	CF	Valve Opening Percentage									
			10	20	30	40	50	60	70	80	90	100
Equal %	3.0 (76)	0.80	10.2	16.0	22.0	30.9	44.0	60.1	77.7	92.7	108.4	120.0
Modified %	6.0 (162)	0.75	40.6	63.8	88.1	123.8	176.	240.4	310.6	370.7	433.7	480.0

Kimray flow equations conform to ANSI/ISA - 75.01.01-2002

--	--	--	--	--

Base Code	Body Material		Elastomer		Coating		Certification	
Code	Code	Description	Code	Description	Code	Description	Code	Description
Three character base code	-	Standard Material	AF	Aflas®	-	No Coating	-	No Certifications
	S6	316SS6 Body	V	Viton®	EB	Endurobond Coating	NC	NACE
			HSN	High Saturated Nitrile	PR	Primer Color Painted	MTR	Material Test Reports (i.e. Steel Casting)
			-	Standard (Buna-N)				
			H	Polyacrylate				

### Base Codes for Kimray Low Pressure Control Valves

See Catalog Pages **E2**:

- 10.2, 10.3, **Single Acting** - Ductile Iron
- 10.4, 10.5, **Single Acting** - Steel
- 20.2, 20.3, **Double Acting** - Ductile Iron
- 20.4, **Double Acting** - Steel
- 30.2, 30.3, **MT 5 w/ Reduced Inner Valve** - Ductile Iron
- 30.4, **MT 5 w/ Reduced Inner Valve** - Ductile Steel
- 40.2, 40.3, **MT DA5 w/ Reduced Inner Valve** - Ductile Iron
- 40.4, **MT 5 w/ Reduced Inner Valve** - Steel
- 50.2, **50.3, MT 2DA Double Acting** - Ductile Iron
- 50.4, **MT 2DA Double Acting** - Steel
- 60.2, 60.3, **MT 2DA5 w/ Reduced Inner Valve** - Ductile Iron
- 60.4, **MT 2DA5 w/Reduced Inner Valve** - Steel
- 70.2, 70.3, **MT 4DA Double Acting** - Ductile Iron
- 70.4, **MT 4DA Double Acting** - Steel
- 80.2, 80.3, **MT 4DA5 w/ Reduced Inner Valve** - Ductile Iron
- 80.4, **MT 4DA5 w/ Reduced Inner Valve** - Steel
- 90.2, 90.3, **MT ADA Adjustable Double Acting** - Ductile Iron
- 90.4, **MT ADA Adjustable Double Acting** - Steel
- 100.2, **MT ADAB ADJ. Double Acting w/ Reduced Inner Valve** - Ductile Iron
- 110.2, 110.3, **MT BP Spring Loaded Back Pressure** - Ductile Iron
- 110.4, **MT BP Spring Loaded Back Pressure** - Steel
- 115.2, 115.3, **MT BP5 Spring Loaded Back Pressure w/ Reduced Inner Valve** - Ductile Iron
- 115.4, **MT BP5 Spring Loaded Back Pressure w/ Reduced Inner Valve** - Steel

**Related Publications:**

See Installation and Maintenance - IM0006

See Catalog Page E2:i

Kimray is an ISO 9001- certified manufacturer.  
Kimray quality assurance process maintains strict controls  
of materials and the certification of parts used in Kimray low pressure control valves