



MA DB PO / MA PB PO
Normally Closed

MA DB PO / MA PB PC
Normally Open

Abbreviations / Acronyms

DB	Diaphragm Balanced
PO	Pressure Open
PC	Pressure Closed
PB	Piston Balanced

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Introduction

The low pressure balance valve is designed for liquid systems up to 500 psig which require on/off service. The actuator is available in either pressure opening, (normally closed) or pressure closing (normally open) configurations. Valve model designations indicate PO for Pressure Opening or PC 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.

Summary:

Valve Description:	Ductile Iron, Steel
Normal Service:	Liquid
Connection Size:	2", 3", 4", 6"
Body Style:	Angle, Thru
Connection Type:	NPT or Flanged
Actuation:	Pressure Opening or Pressure Closing
Control:	Upstream or Downstream
Temperature:	-20° to 200° F -29° to 93° C

Features

- Designed for on/off service.
- Shut off at full rated upstream pressure.
- Large size port for high capacity.
- Balanced single seat.
- 10 psi (0.7 bar) minimum required diaphragm pressure.
- Up to 100 psi (6.7 bar) max. allowable diaphragm pressure for pressure closing valve.
- Soft seat for bubble tight shut-off.
- Available in pressure opening or pressure closing.
- Available in angle or thru body.
- Available in Diaphragm balanced and Piston balanced.

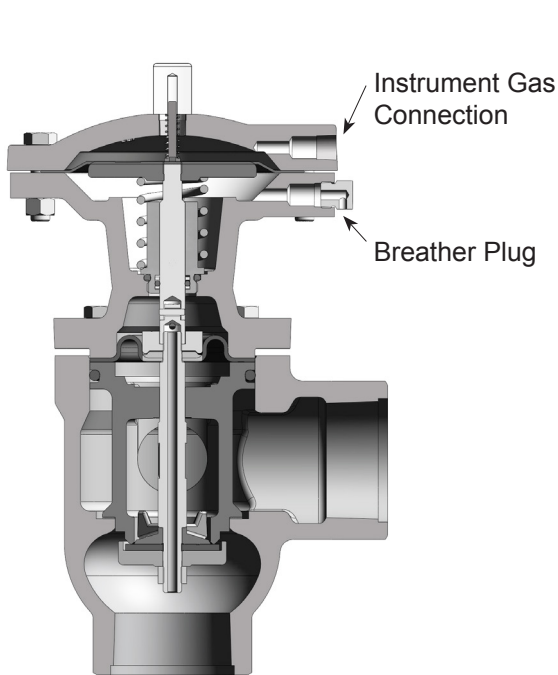


Figure 1

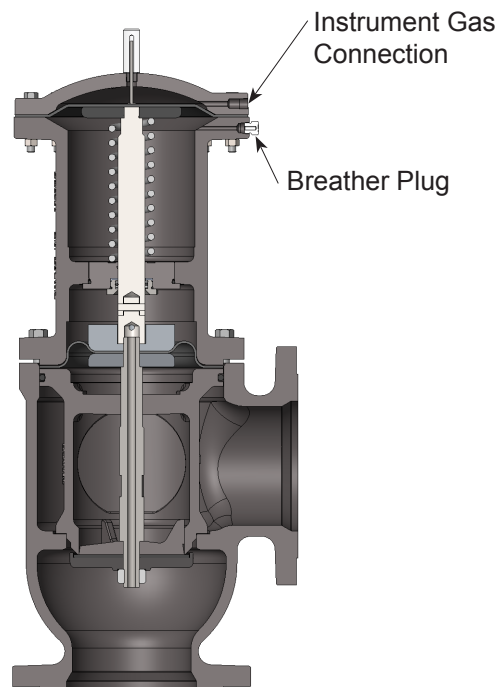


Figure 3

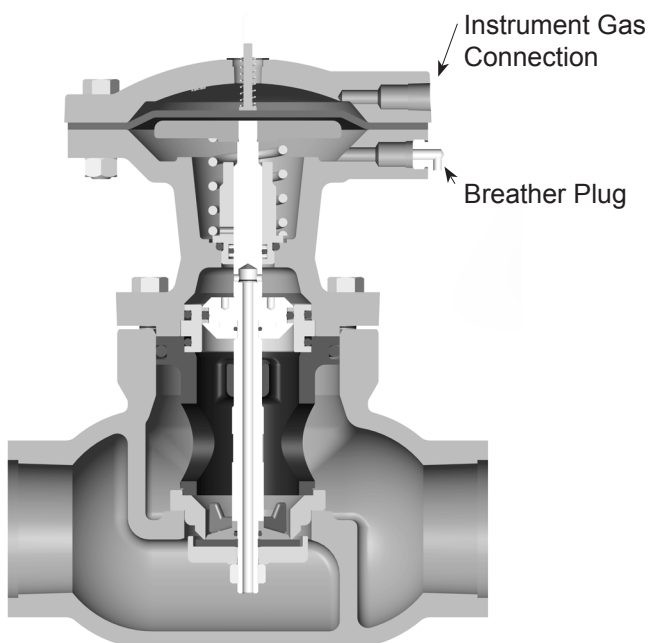


Figure 2

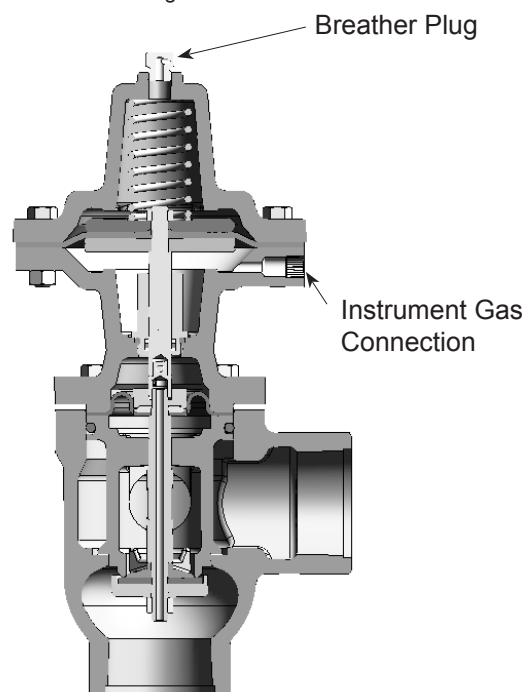


Figure 4

Table 1 - Body Materials and End Connections

Main Valve Body Size	Material Group	ASTM Group	Available Connections
2 in. (50 mm)		SA-395	125 RF 175 psig (12.0 bar)
	LCC	A352-LCC	150 RF 125 psig (8.6 bar)
3 in. (76 mm)	CF8M	A351-CF8M	125 RF 60 psig (4.1 bar)
	WCB	A216-WCB	150 RF 125 psig (8.6 bar)
4 in. (101 mm)			125 RF 60 psig (4.1 bar)
	LCC	A352-LCC	150 RF 125 psig (8.6 bar)
6 in. (152 mm)	LCC	A352-LCC	125 RF 250 psig (17.2 bar)

* Standard body is A216-WCB

* 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

Table 2 - Materials of Construction

Valve Components	Standard	*NACE Compliant
Body	Ductile Iron, Steel	
Stem	303 Stainless	316 Stainless
Ratio Plug	Ductile Iron, Steel	
Piston	303 Stainless	316 Stainless
Cylinder	303 Stainless	316 Stainless
Seat	Polyurethane	Aflas®, EP, FG, H, HSN, LTN, Nm, T, V
Diaphragm	Nitrile/Nylon	Viton® / Aflas® HSN
O-Ring	Buna-N	Viton® / Aflas® HSN, LEP, LTN

*NACE MR0175 certification upon request

Table 3 - Temperature vs. Pressure Rating	
ASTM Class Temperature °F (°C)	Flange Class
	150
	Static Test Pressure (psig)
	427 (29 bar)
	Maximum Allowable Non-Shock Pressure (psig)
ASTM A216 - WCB	
	Flange Class
-20°F to 100° (-28 to 37)	285 (19.7 bar)
200 (93)	260 (17.9 bar)
300 (148)	230 (15.9 bar)
400 (204)	200 (13.8 bar)
500 (260)	170 (11.7 bar)
ASTM A395	
	Flange Class
-20 to 100 (-28 to 37)	250 (17.2 bar)
200 (93)	235 (16.2 bar)
300 (148)	215 (14.8 bar)
400 (204)	200 (13.7 bar)
500 (260)	170 (11.7 bar)

Kimray low pressure balanced valves are capable of fully rated pressure drop.

Kimray conforms to ASME B16.34-2009 for working pressure vs working temperature and ASME B16.5-1996 for flanges and flanged fittings.

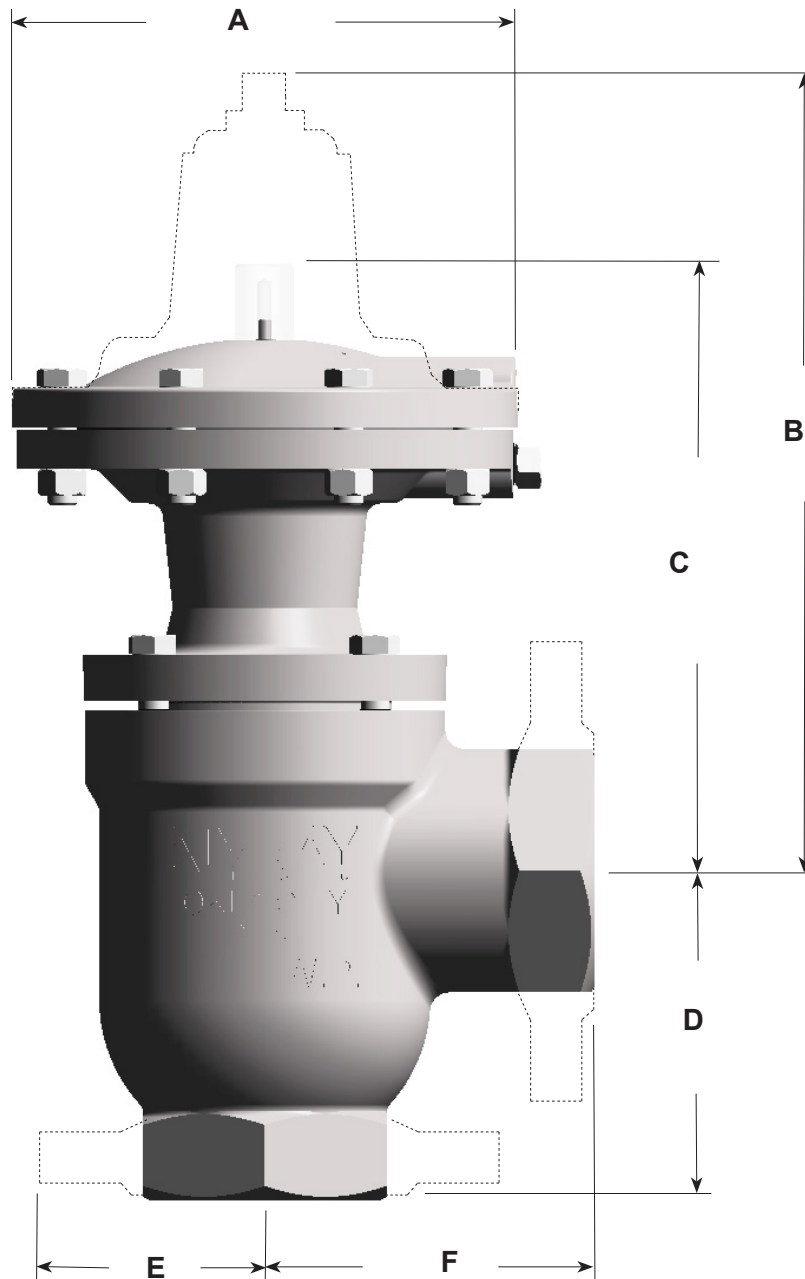


Figure 5

Table 4 - Low Pressure Balanced Angle Body Valves Dimensions

VALVE	A	B	C	D	E	F	Approx. Weight
2" S/FMA	6 1/2 in. (165. mm)	9.00 in. (228. mm)	8 1/2 in. (215. mm)	4 1/4 in. (107. mm)	3.00 in. (76. mm)	4 1/4 in. (107. mm)	29 lbs (13.15 kg) 37 lbs (16.78 kg)
3" S/FMA	8 1/2 in. (215 mm)	11 3/4 in. (298 mm)	10 1/4 in. (260 mm)	5 1/2 in. (139 mm)	3 3/4 in. (95 mm)	5 1/2 in. (139 mm)	65 lbs (29.48 kg) 71 lbs (32.20 kg)
4" FMA	8 1/2 in. (215 mm)	12 1/2 in. (317 mm)	11.00 in. (279 mm)	6 1/2 in. (165 mm)	4 1/2 in. (114 mm)	6 1/2" (165 mm)	65 lbs (29.48 kg)
6" FMA	10 3/4 in. (273 mm)	—	19 3/4 in. (501 mm)	10 1/4 in. (260 mm)	5 1/5 in. (139 mm)	7 11/16 in. (195 mm)	280 lbs (127. kg)

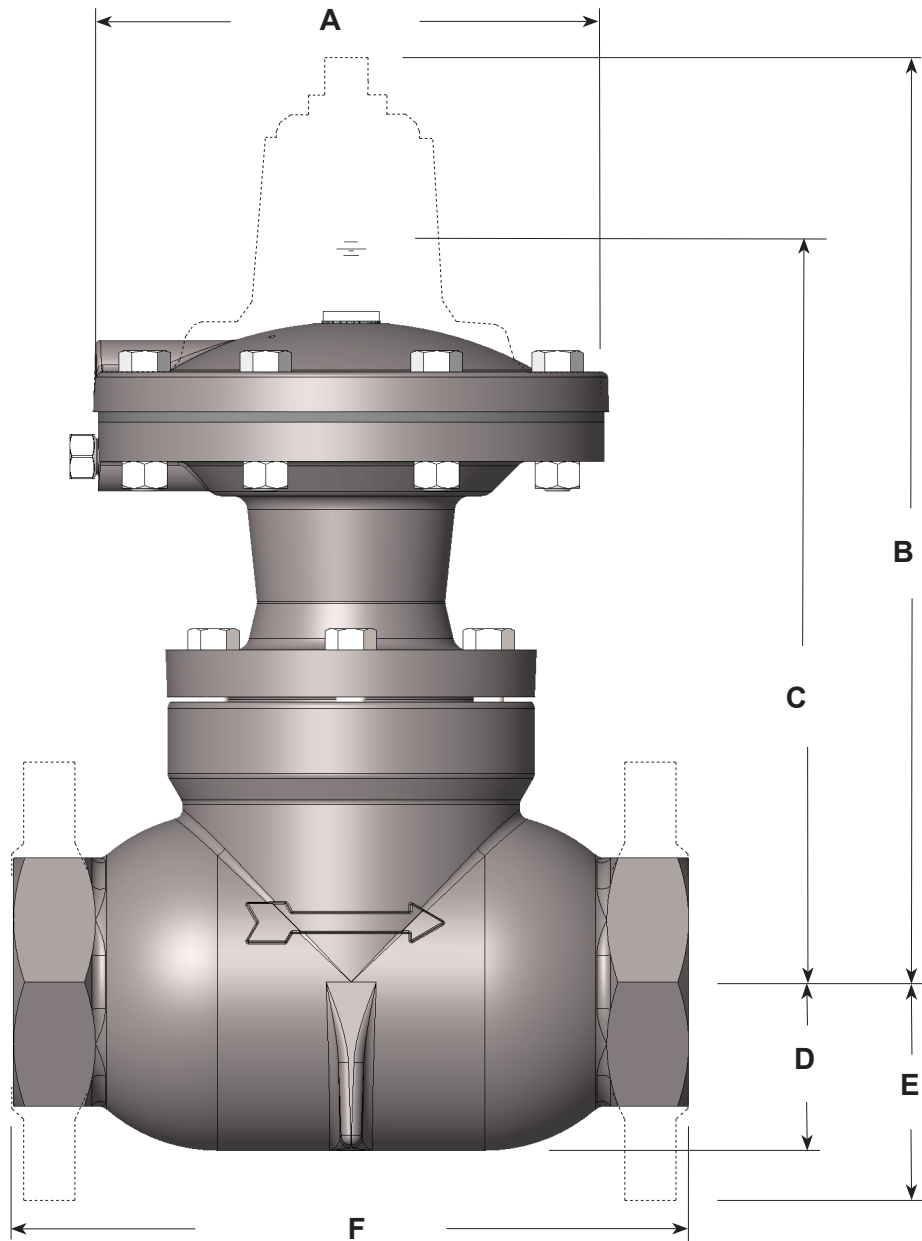


Figure 6

Table 5 - Low Pressure Balanced Thru Body Valves Dimensions

VALVE	A	B	C	D	E	F	Approx. Weight
2" SMT	6 1/2 in. (165. mm)	10 3/8 in. (263. mm)	9 7/8 in. (250. mm)	2 1/8 in. (53. mm)	–	8 1/2 in. (215. mm)	32 lbs (14.51 kg)
2" FMT	6 1/2 in. (165. mm)	10 3/8 in. (263. mm)	9 7/8 in. (250. mm)	–	3. in.	9. in.	40 lbs (18.14 kg)
3" SMT	8 1/2 in. (215. mm)	13 5/16 in. (338. mm)	11 9/16 in. (293. mm)	2 7/8 in. (73. mm)	–	12. in.	71 lbs (32.20 kg)
3" FMT	8 1/2 in. (215. mm)	13 5/16 in. (338. mm)	19 3/4 in. (501. mm)	–	3 3/4 in. (95. mm)	12 3/16 in. (309. mm)	80 lbs (36.28 kg)
4" FMT	8 1/2 in. (215. mm)	14 7/8 in. (377. mm)	13 3/8 in. (339. mm)	–	4 1/2 in. (114. mm)	15 1/8 in. (384. mm)	140 lbs (63.50 kg)
6 FMT	10 3/4 in. (273. mm)	–	19 3/4 in. (501. mm)	–	5 1/2 in. (139. mm)	22. in.	36 lbs (16.32 kg)

Table 6 - Elastomer Options		
Part	Standard Material	Optional Material
Actuator Diaphragm	Viton®, Aflas®, HSN, Nitrile	HSN, EP, LTN
O-rings	Buna	Aflas®, EP, HSN, LTN, V, S
Valve Seat	Buna	Aflas®, FG, G, P, V, MN

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	E	FG	E	G	FG	E
	Cold	P	GE	PF	G	G	E	P	GE	G	E	P	G	E
	Flame	E	P	E	P	P	P	P	P	P	P	P	P	P
	Heat	E	G	E	E	G	G	E	E	F	E	G	G	E
	Oil	E	P	E	E	E	E	E	F	G	E	G	G	E
	Ozone	E	E	E	G	P	P	E	E	E	E	G	E	E
	Set	PF	GE	E	GE	GE	GE	F	GE	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	GE	E	P	G	G	P
	Impermeability	G	G	G	G	G	G	E	G	G	E	E	G	E
	Tensile Strength	FG	GE	GE	E	GE	GE	F	GE	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

Capacity - BBIs. Water / Day, Steady Flow

Table 8 - Low Pressure Balanced Valves				
Press. Drop Across Valve PSI	2 in. (50 mm)	3 in. (76 mm)	4 in. (101 mm)	6 in. (152 mm)
1	800	1,500	2,400	9,500
2	1,500	2,100	3,400	13,450
3	1,400	2,600	4,150	16,450
4	1,600	3,000	4,800	19,000
5	1,800	3,350	5,350	21,250
10	2,550	4,750	7,600	30,050
15	3,100	5,800	9,300	36,800
20	3,600	6,700	10,750	42,500
30	4,400	8,200	13,150	52,000
40	5,100	9,500	15,200	60,050
50	5,700	10,600	16,950	67,150
60	6,250	11,600	18,600	73,550
70	6,750	12,550	20,100	79,450
80	7,200	13,400	21,450	84,950
90	7,650	14,200	22,750	90,100
100	8,050	15,000	24,000	94,950
120	8,850	16,400	26,300	104,050
140	9,550	17,750	28,400	112,350
160	10,200	18,950	30,350	120,150
180	10,800	20,100	32,200	127,400
200	11,400	21,200	33,950	134,300
220	11,950	22,200	35,600	140,850
240	12,500	23,200	37,200	147,150
260	13,000	24,150	38,700	153,150
280	13,500	25,050	40,150	158,900
300	13,950	25,950	41,550	164,500
325	14,500	27,000	43,250	171,200
350	15,050	28,050	44,900	177,700
375	15,600	29,000	46,500	183,900
400	16,100	29,950	48,000	189,950

For gravity correction, multiply the above figures by $\frac{1}{\sqrt{G}}$ Where "G" is the specific gravity of the flowing liquid.

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

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

Base Codes for Kimray Low Pressure Balanced Valves

See Catalog Pages E3:

- 10.3 **Diaphragm Balanced Pressure Open** - Ductile Iron
- 10.4 **Diaphragm Balanced Pressure Open** - Ductile Iron Steel
- 10.7 **Diaphragm Balanced Pressure Close** - Ductile Iron
- 20.3 **Piston Balanced Pressure Open** - Ductile Iron
- 20.4 **Piston Balanced Pressure Open** - Steel
- 20.7 **Piston Balanced Pressure Close** - Ductile Iron
- 20.8 **Piston Balanced Pressure Close** - Steel
- 25.3 **Piston Balanced Throttling Pressure Open** - Ductile Iron
- 25.4 **Piston Balanced Throttling Pressure Open** - Steel
- 25.7 **Piston Balanced Throttling Pressure Close** - Ductile Iron
- 25.8 **Piston Balanced Throttling Pressure Close** - Steel

Related Publications:

See Installation and Maintenance - IM0007

See Catalog Page E3: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 balanced valves.