REVERSE ACTING
MODEL RA

APPLICATIONS:

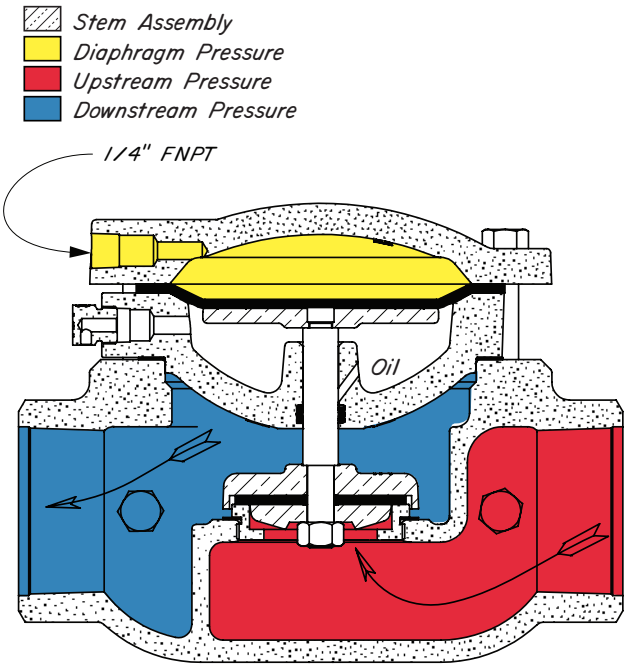
Any system requiring a valve to close when it receives a pneumatic signal.

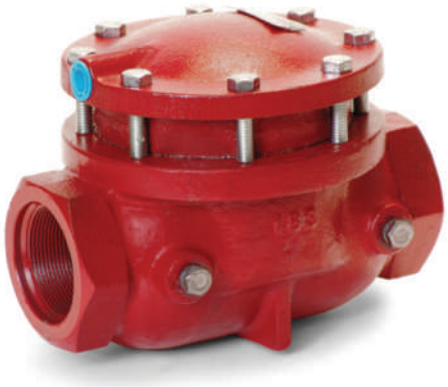
FEATURES:

- Tight shut-off
- Single soft seat
- Removable valve seat
- Minimum maintenance
- All internal parts can be removed with valve in-line
- Full line size opening:
  - Ratio of diaphragm to seat area is 2:1
- Reduced opening:
  - Ratio of diaphragm to seat area is:
    - 8:1 on 1" & 5:1 on 2", 3", 4", and 6"

CERTIFICATIONS:

Canadian Registration Number (CRN):
0C15737.24567890NTY (Ductile)
0C15620.24567890NTY (Steel)
Kimray is an ISO 9001- certified manufacturer.





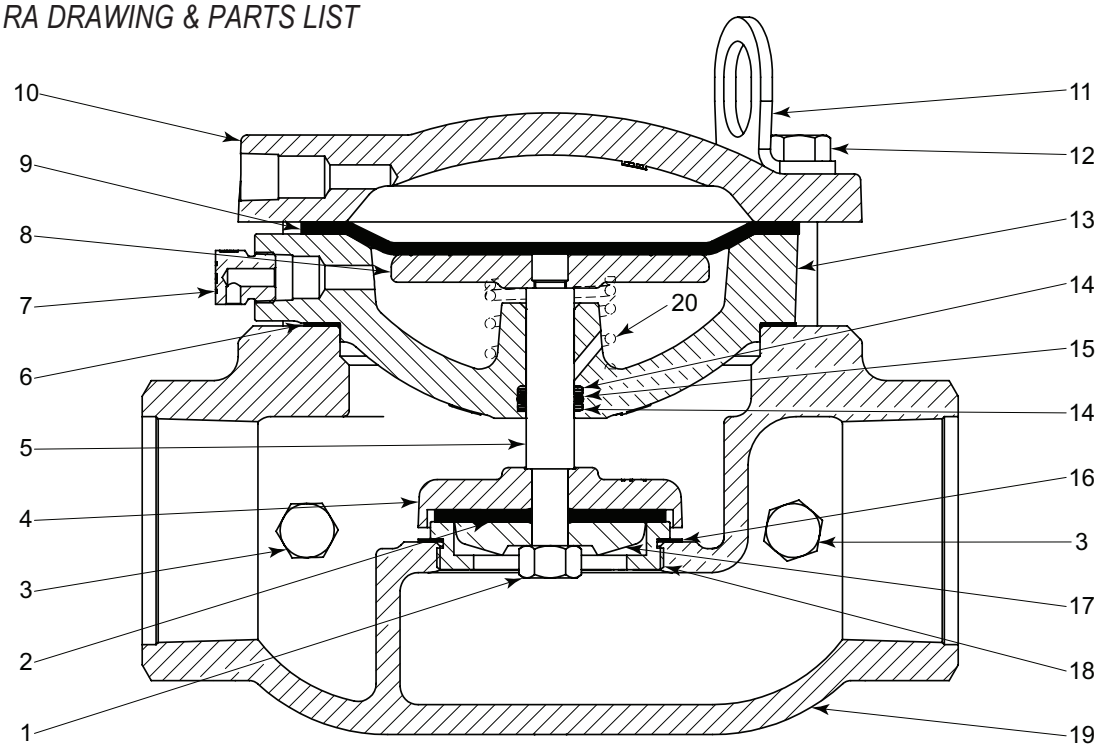
Standard Configuration Code †	Order Code	Line Size	Connection Type	Inner Valve Size	Max. W.P. †† psig	Cv	Cf
BRA1SADFS	EUA	1"	NPT	1"	300	13.2	0.74
BRA1SADRS	EUA1			1/2"		5.0	0.75
BRA2SADFS	EUB	2"	NPT	2"	300	47.0	0.84
BRA2ARDFS	EUC		150RF		250		
BRA2SADRS	EUB1		NPT	1 1/4"	300	21.0	0.75
BRA2ARDRS	EUC1		150RF		250		
BRA3SADFS	EUE	3"	NPT	3"	300	117	0.75
BRA3ARDFS	EUF		150RF		250		
BRA3SADRS	EUE1		NPT	1 5/8"	300	34.0	0.82
BRA3ARDRS	EUF1		150RF		250		
BRA4SADFS	EUG	4"	NPT	4"	300	210	0.75
BRA4ARDFS	EUH		150RF		250		
BRA4SADRS	EUG1		NPT	2"	300	55.0	0.80
BRA4ARDRS	EUH1		150RF		250		
BRA4ARDFS	EUI	6"	150RF	6"	250	480	0.75
BRA4ARDRS	EUI1		150RF	3"	250	120	0.80

NOTES:

For standard & optional seals, metals, Cf Cv values, material specifications & dimensions see technical data on pages 02:I - 02:VI
† For Corrosive service remove last "S" & replace with "C"
† For KimCoat option remove last "S" & replace with "K"
† For code builder see page 03:00.2
†† Max W.P. values based on -20°F to 100°F.

KIMRAY INC.®

REVERSE ACTING
MODEL RA DRAWING & PARTS LIST



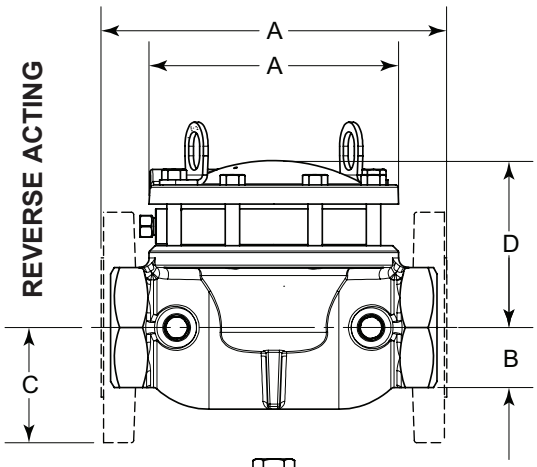
ITEM	QTY.	DESCRIPTION	PART NUMBER									
			STANDARD					CORROSIVE				
			1 INCH	2 INCH	3 INCH	4 INCH	6 INCH	1 INCH	2 INCH	3 INCH	4 INCH	6 INCH
1	1	Nut (Standard iv) *	172	173	906		175	172SS6	173SS6	174SS6		175SS6
		Nut (Reduced iv) *	172	173			906	172SS6	173SS6			174SS6
2	1	Standard Seat *	163HSN	164HSN	165HSN	166HSN	167HSN	163HSN	164HSN	165HSN	166HSN	167HSN
		Reduced Seat *	1347P	709P	1230P	164HSN	165HSN	1347HSN	709HSN	1230HSN	164HSN	165HSN
3	2	Plug	699					699SS6				
4	1	Standard Seat Disc	158	159	160	161	162	158SS6	2493SS6	2494SS6	2495SS6	2961SS6
		Reduced Seat Disc	1348SS6	707	1229	2493SS6	160	1348SS6	707SS6	1229SS6	2493SS6	160SS6
5	1	Standard Valve Stem	137	138	139	140	141	137SS6	138SS6	139SS6	140SS6	141SS6
		Reduced Valve Stem	1344	138	1222SS6	1223SS6	1224SS6	1344SS6	138SS6	1222SS6	1223SS6	1224SS6
6	1	Gasket *	195	196	197	198	199	195	196	197	198	199
7	2	Vent Plug	1357	147				1357SS6	147SS6			
8	1	Diaphragm Plate	132SS6	133	134	135	136	132SS6	133 ‡	134 ‡	135 ‡	136 ‡
9	1	Diaphragm *	127	1706	1640	2015	2140	127	1706	1640	2015	2140
10	1	Bonnet	280	281	282	283	284	280 ‡	281 ‡	282 ‡	283 ‡	284 ‡
11	2	Lifting Ring	----		7559		----	----		7559		----
12	(QTY)	Bolt	2007 (6)	965 (8)	907(10)	907 (12)	2142 (16)	2007 (6)	965 (8)	907(10)	907 (12)	2142 (16)
13	1	Lower Housing	142	1704	1632	145	146	142 ‡	1704 ‡	1632 ‡	145 ‡	146 ‡
14	2	Back Up *	148T	149T	150T	151T	152T	148T	149T	150T	151T	152T
15	1	O-Ring *	153	154	155	156	157	153	154	155	156	157
16	1	Gasket *	----	276	277	196	279	----	276	277	196	279
17	1	Standard Ratio Plug	176SS6	177SS6	178	179	180	176SS6	177SS6	3076SS6	3078SS6	3079SS6
		Reduced Ratio Plug	1346	708	1228SS6	177SS6	178	1346SS6	708SS6	1228SS6	177SS6	3076SS6
18	1	Std. Removable Seat	----	272K	273K	274K	275K	----	2496SS6K	2497SS6K	2498SS6K	3075SS6K
		Red. Removable Seat	1349	706D	1219D	1220D	1221	1349SS6	706SS6	1219SS6	1220SS	1221SS6
19	1	Body										
		NPT Thru Std.	2033	1709	1634	2001	----	2033 ‡	1709 ‡	1634 ‡	2001 ‡	----
		NPT Thru Red.	2343	----	----	----	----	2343 ‡	----	----	----	----
		150RF Thru	----	1913	1914	2002	2466	----	1913 ‡	1914 ‡	2002 ‡	2466 ‡
		Grooved Thru	----	2964	----	----	----	----	2964 ‡	----	----	----
20	Optional Spring for Fail Open		1358	1388	7132	1529	1575	1358IL	1388	7132	1529	1575
* These parts are recommended spare parts and are stocked as repair kits.								‡ Coated Parts available with "K" service type				
Repair Kits		Full Port	RCM	RDL	RDM	RDN	RDO	RCMHSN	RDLHSN	RDMHSN	RDNHSN	RDOHSN
		Reduced Port	RDB	RNI	RNJ	RNK	RNL	RDBHSN	RNIHSN	RNJHSN	RNKHSN	RNLHSN

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

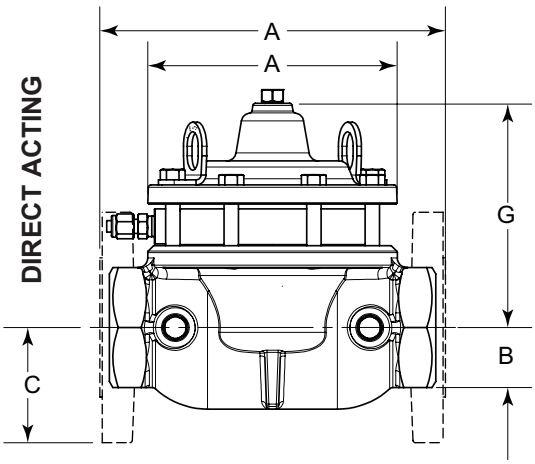
Table 1 - Flow Coefficient(Cv) at % stem travel for Pilot Operated Regulators											
1" Pressure Regulator											
Trim Size in.(mm)	**Cf**	Valve Opening Percentage									
		10	20	30	40	50	60	70	80	90	100
1/2 in (12mm) Reduced	**0.75**	0.4	0.7	0.9	1.3	1.8	2.5	3.2	3.9	4.5	5
1 in (25mm) Full Port	**0.74**	1.1	1.8	2.4	3.4	4.8	6.6	8.5	10.2	11.9	13.2
2" Pressure Regulator											
Trim Size in. (mm)	**Cf**	Valve Opening Percentage									
		10	20	30	40	50	60	70	80	90	100
1 1/4 in (31 mm) Reduced	**0.75**	1.8	2.8	3.9	5.4	7.7	10.5	13.6	16.2	19.0	21.0
2 in Removable Full Port *	**0.84**	4.0	6.2	8.6	12.1	17.2	23.5	30.4	36.3	42.5	47.0
2 in (50 mm) Full Port *	**0.75**	4.4	6.9	9.5	13.4	19.1	26.0	33.6	40.2	47.0	52.0
3" Pressure Regulator											
Trim Size in. (mm)	**Cf**	Valve Opening Percentage									
		10	20	30	40	50	60	70	80	90	100
1 5/8 in (66 mm) Reduced	**0.82**	2.9	4.5	6.2	8.8	12.5	17.0	22.0	26.3	30.7	34.0
3 in (76 mm) Full Port	**0.75**	9.9	15.6	21.5	30.2	42.9	58.6	75.7	90.4	105.7	117.0
4" Pressure Regulator											
Trim Size in. (mm)	**Cf**	Valve Opening Percentage									
		10	20	30	40	50	60	70	80	90	100
2 in (50 mm) Reduced	**0.80**	4.7	7.3	10.1	14.2	20.2	27.5	35.6	42.5	49.7	55.0
4 in (100 mm) Full Port	**0.75**	17.8	27.9	38.6	54.2	77.0	105.2	135.9	162.2	189.8	210.0
6" Pressure Regulator											
Trim Size in. (mm)	**Cf**	Valve Opening Percentage									
		10	20	30	40	50	60	70	80	90	100
3 in (76 mm) Reduced	**0.80**	10.2	16.0	22.0	30.9	44.0	60.1	77.7	92.7	108.4	120.0
6 in (152 mm) Full Port	**0.75**	40.6	63.8	88.1	123.8	176.0	240.4	310.6	370.7	433.7	480.0

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

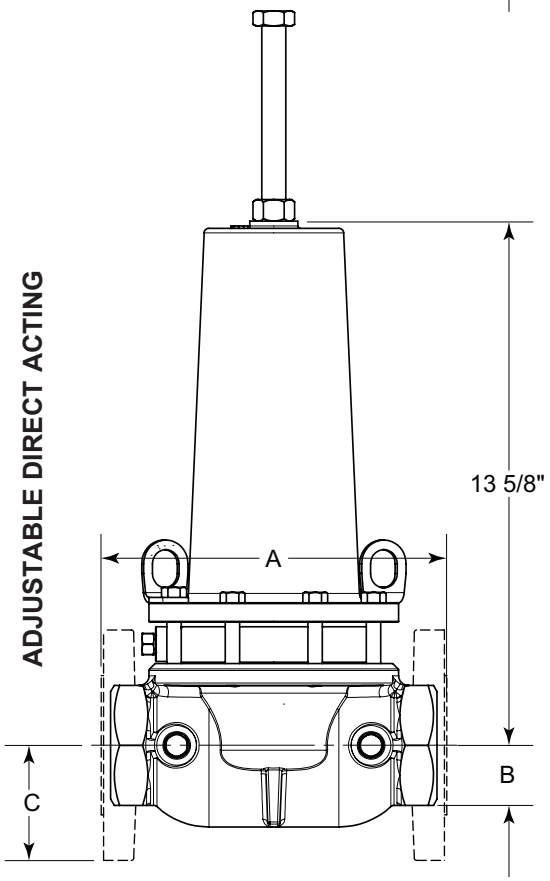
REVERSE ACTING



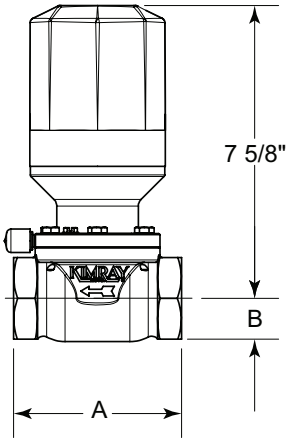
DIRECT ACTING



ADJUSTABLE DIRECT ACTING



E-LO



LINE SIZE	BODY TYPE	A	B	C	D	E	F	G	H
1"	FNPT	4 3/8"	1 1/8"	----	2 3/4	3 3/8	3 3/8	3 3/8	8
2"	FNPT	8 1/2"	2 1/8"	----	4 3/8	5 7/8	6 7/8	6 7/8	18 1/2
	Flanged	9"	----	3"	4 3/8	5 7/8	6 7/8	6 7/8	18 1/2
	Grooved	8 3/4"	2 1/8"	----	4 3/8	5 7/8	6 7/8	6 7/8	18 1/2
3"	FNPT	12 1/16"	3 1/16"	----	5 7/8	8	8	8	20
	Flanged	12 3/16"	----	3 3/4"	5 7/8	8	8	8	20
4"	FNPT	15" 1/16	4"	----	7 1/2	9 3/4	9 1/2	9 1/2	----
	Flanged	15 1/16"	----	4 1/2"	7 1/2	9 3/4	9 1/2	9 1/2	----
6"	Flanged	22"	----	5 1/2"	11	16	15 1/4	----	----
FLANGE DIMENSIONS ARE ANSI 125/150 STANDARD.									

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

Table 5 - Seal Options		
Part	**Standard Material**	**Optional Material**
Seat	HSN	FKM, AFLAS®
O-rings	HSN	FKM, AFLAS®
Diaphragm	HSN	FKM, AFLAS®

Table 6 - Seal Specifications				
		HIGHLY SATURATED NITRILE	**FKM**	**AFLAS®**
	Kimray Suffix	HSN	V	AF
Resistance	**Abrasion**	G-E	G	G
	Acid	G-E	G-E	E
	Chemical	F	E	E
	Cold	G	P	P
	Flame	P	E	E
	Heat	E	E	E
	Oil	E	E	E
	Ozone	G	G-E	E
	Set	G	G-E	P
	Tear	F	F	P
	Water/Steam	E	P	G
	Weather	G	E	E
	CO2	G	G	G
	H2S	F	P	E
	Methanol	E	P	P
Properties	**Dynamic**	G	G	G
	Electrical	F	F	G-E
	Impermeability	G	G	G
	Tensile Strength	G-E	G	F
	Temp. Range	-20° to +250°F	-15° to +400°F	+15° to +450°F
		-29° to +121°C	-26° to +204°C	-9° to +232°C
RATINGS: P-POOR, F-FAIR, G-GOOD, E-EXCELLENT				

Table 7 - Material Options				
Part Description	**Valve Size**	**Standard Material**	**Erosive Material**	**Corrosive Material**
Body	1" thru 6"	Ductile (ASTM A395)		Ductile (ASTM A395) with Kimcoat
Stem	1" thru 6"	303SS (ASTM A582)		316SS (ASTM A479)
Ratio Plug	1" & 2"	316 Powdered Metal SS-316NI-25		
	3"	Powdered Metal F-008		316SS (ASTM A479)
	4" & 6"	Ductile (ASTM A395)		316SS (ASTM A479)
Reduced Ratio Plug	1"	316 Powdered Metal SS-316NI-25		
	2"	Alloy Steel (ASTM A108)		316SS (ASTM A479)
	3"	316SS (ASTM A479)		
	4" & 6"	Ductile (ASTM A395)		316SS (ASTM A479)
Seat Disc	1"	Powdered Metal F-0008-30		316SS (ASTM A479)
	2", 3" & 4"	Ductile (ASTM A395)		316SS6 (ASTM A351 CF8M)
	6"	Ductile (ASTM A395)		316SS (ASTM A 240)
Removable Seat	1" thru 6"	Ductile (ASTM A395)		316SS6 (ASTM A351 CF8M)

KIMRAY INC.®

LIQUID CAPACITY CHART

Table 2 - Reverse Acting Capacity - Blds. Water/Day, Steady Row											
Valve Size Inches:		Full Inner Valve					Reduced Inner Valve				
		1	2	3	4	6	1	2	3	4	6
Pressure Drop Across Valve psig	1	105	745	1,760	3,350	7,800	26	290	515	835	1,950
	2	150	1,060	2,500	4,900	11,000	37	410	735	1,225	2,750
	3	180	1,300	3,050	6,100	13,500	45	510	895	1,525	3,370
	4	210	1,500	3,500	7,000	15,600	52	590	1,025	1,750	3,900
	5	235	1,700	3,900	7,800	17,500	59	660	1,140	1,950	4,375
	10	330	2,300	5,600	11,000	24,700	82	900	1,640	2,750	6,175
	15	405	2,900	6,800	13,500	30,200	101	1,130	2,000	3,370	7,550
	20	465	3,300	7,900	15,600	34,900	116	1,290	2,320	3,900	8,725
	30	575	4,100	9,600	19,200	42,700	145	1,600	2,820	4,800	10,675
	40	660	4,700	11,100	22,100	49,300	165	1,840	3,260	5,500	12,300
	50	740	5,300	12,400	24,800	55,200	185	2,070	3,640	6,200	13,800
	60	810	5,800	13,600	27,100	60,500	200	2,260	4,000	6,750	15,100
	70	875	6,200	14,700	29,300	65,400	220	2,420	4,300	7,300	16,350
	80	935	6,700	15,700	31,300	69,800	230	2,620	4,600	7,800	17,450
	100	1,045	7,500	17,600	33,500	78,200	260	2,940	5,150	8,350	19,500
	125	1,170	8,400	19,700	38,200	87,500	290	3,280	5,750	9,800	21,900

Table 4 - Direct Acting Capacity - Blds. Water/Day, Steady Row											
Valve Size Inches:		Full Inner Valve					Reduced Inner Valve				
		1	2	3	4	6	1	2	3	4	6
Pressure Drop Across Valve psig	1	405	1,520	3,150	5,830	13,150	101	740	1,080	1,650	3,740
	2	573	2,150	4,460	8,250	18,600	143	1,040	1,525	2,340	5,330
	3	702	2,630	5,450	10,700	22,800	175	1,280	1,860	2,860	6,530
	4	810	3,040	6,300	11,700	26,300	200	1,475	2,150	3,300	7,550
	5	905	3,400	7,030	13,100	29,400	225	1,650	2,400	3,700	8,400
	10	1,280	4,800	9,980	18,500	41,700	320	2,330	3,400	5,250	11,950
	15	1,570	5,880	12,200	22,600	50,900	390	2,875	4,150	6,400	14,600
	20	1,810	6,800	14,100	26,100	58,800	450	3,300	4,800	7,400	16,850
	30	2,220	8,320	17,300	31,900	72,000	555	4,050	5,900	9,050	20,600
	40	2,560	9,600	19,900	36,900	83,100	640	4,650	6,800	10,500	23,800
	50	2,860	10,750	22,300	41,300	93,000	710	5,200	7,600	11,700	26,600
	60	3,130	11,780	24,400	45,200	102,000	780	5,700	8,350	12,800	29,200
	70	3,380	12,700	26,400	48,800	110,000	845	6,150	9,000	13,800	31,500
	80	3,620	13,600	28,200	52,100	117,500	905	6,600	9,650	14,800	33,600
	100	4,050	15,200	31,500	58,300	131,500	1,010	7,375	10,800	16,500	37,400
	125	4,520	16,900	35,200	65,100	147,000	1,105	8,200	12,000	18,450	42,000

Table 3 - Adjustable Direct Acting Capacity - Blds. Water/Day, Steady Row					
Valve Size Inches:		Full Inner Valve		Reduced Inner Valve	
		1	2	1	2
Pressure Drop Across Valve psig	1			101	
	2			143	
	3			175	
	4			200	
	5			225	
	10			320	
	15			390	
	20			450	
	30			555	
	40			640	
	50			710	
	60			780	
	70			845	
	80			905	
	100			1,010	
	125			1,105	

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

KIMRAY INC.®

CODE BUILDER
B SERIES

Series:

B = Low Pressure Control Valve

Model:

RA = Reverse Acting
DA = Direct Acting
AA = Adjustable Direct Acting

Line Size:

1 = 1 NPS
2 = 2 NPS
3 = 3 NPS (RA & DA only)
4 = 4 NPS (RA & DA only)
6 = 6 NPS (RA & DA only)

End Connection:

SA = FNPT
AR = 150RF Flange
GV = Grooved (2 NPS only)

Shell Material:

D = Ductile Iron

Inner Valve Size:

F = Full Port
R = Reduced Port

Service Type:

S = Standard
C = Corrosive
K = Corrosive with Coated Shell Components

B	RA	2	SA	D	F	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
H = HSN Elastomers
V = FKM Elastomers
X = Export (Hydrostatic test, MTR & 3.1)

Not all selections available on all products listed.
See product pages 02:10.1 - 02:30.3 for available options