

### ADJUSTABLE DIRECT ACTING MODEL AA

#### APPLICATIONS:

Liquid metering vessels where up to 250 psig adjustable back pressure is desired.

Burner valve for throttling or snap action service.

Any system that requires a double acting motor valve but also requires an adjustable maximum back pressure.

#### FEATURES:

Tight shut-off

Single soft seat

Removable valve seat

Minimum maintenance

All internal parts can be removed with valve in line

Spring adjustment:

5 to 300 psig on NPT connection

5 to 250 psig on Flanged connection

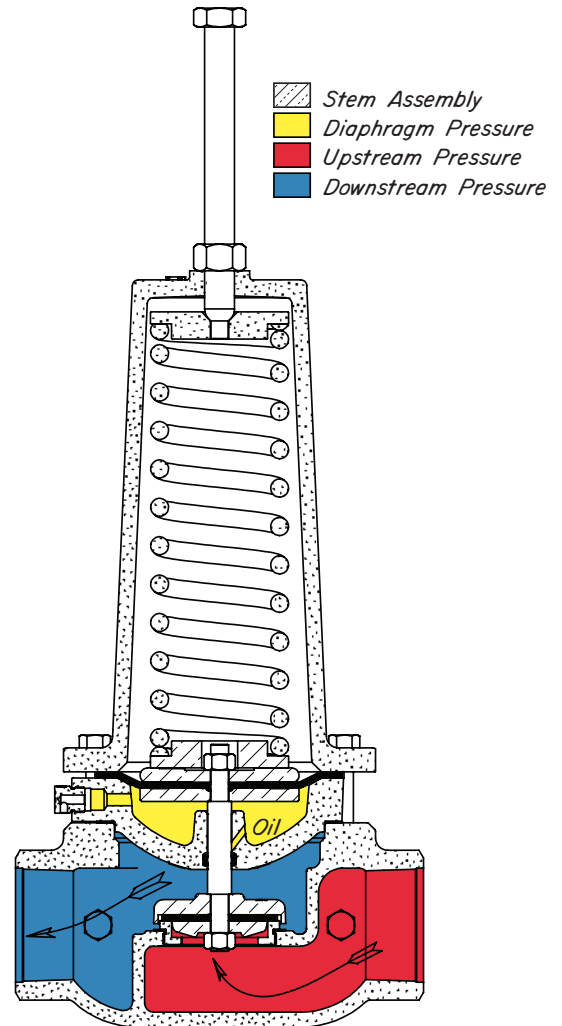
#### CERTIFICATIONS:

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
BAA1SADFS	ABC3	1"	NPT	1"	300	13.2	0.74
BAA1SADRS	ABC2			1/2"		5.00	0.75
BAA2SADFS	ATC3	2"	NPT	2"	300	47.0	0.84
BAA2ARDFS	ATD3		150RF		250		
BAA2SADRS	ATC35		NPT	1 1/4"	300	21.0	0.75
BAA2ARDS	ATD35		150RF		250		

#### NOTES:

For standard & optional seals, metals, Cf Cv values, material specifications & dimensions see technical data on pages 02:1 - 02:VI

† For Corrosive service remove last "S" & replace with "C"

† For KimCoat option remove last "S" & replace with "K"

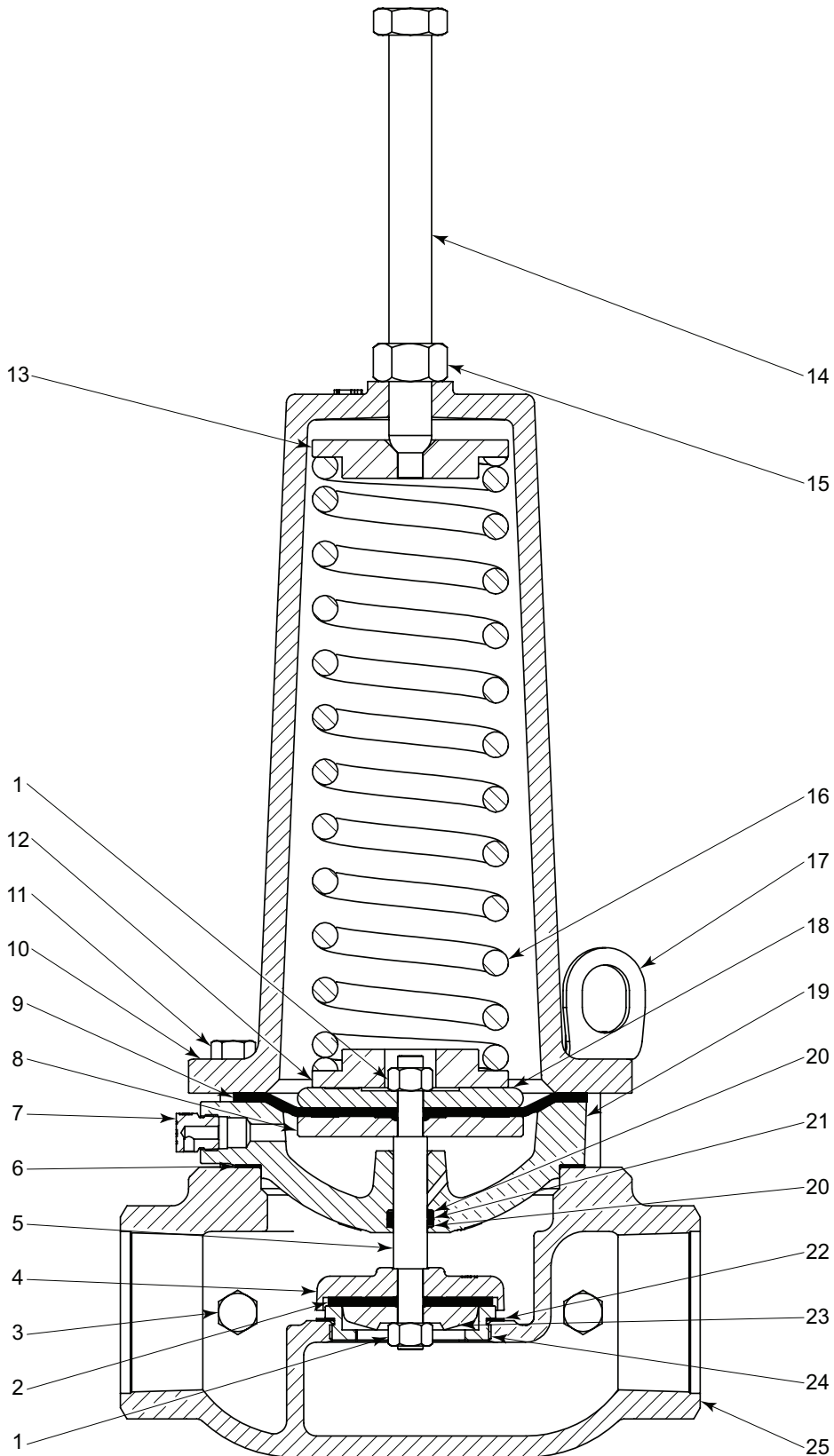
† For code builder see page 03:00.2

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

**LOW PRESSURE CONTROL VALVES**



**ADJUSTABLE DIRECT ACTING  
MODEL AA PARTS LIST**

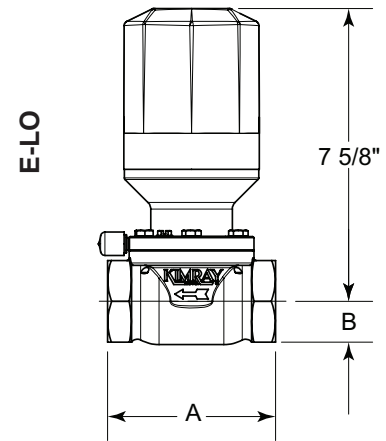
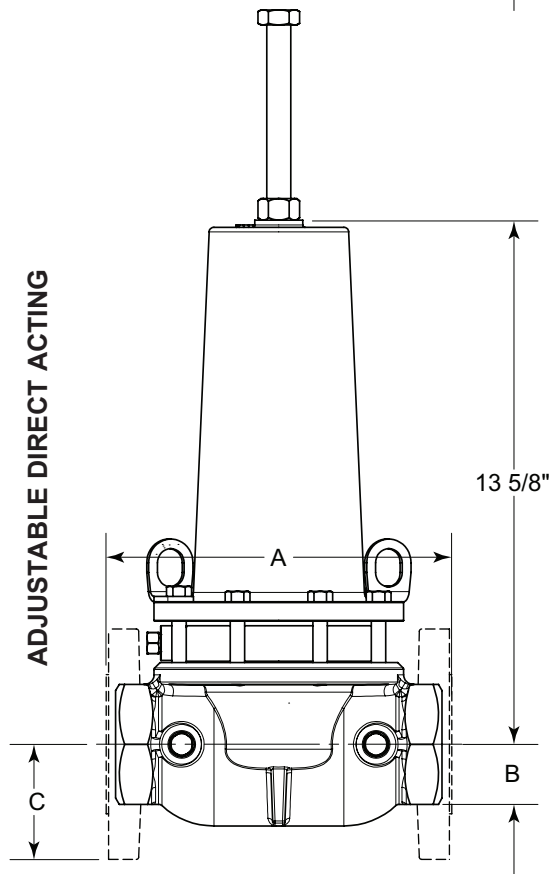
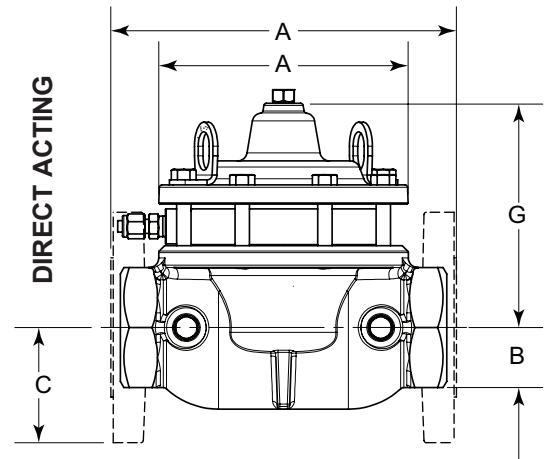
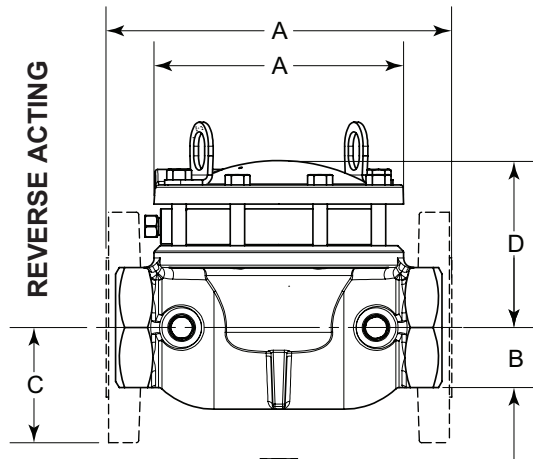


All Pictures shown are for illustration purpose only. Actual product may vary due to product enhancement.

ITEM	QTY.	DESCRIPTION	PART NUMBER				
			STANDARD		CORROSIVE		
			1 INCH	2 INCH	1 INCH	2 INCH	
1	2	Nut *	172	173	172SS6	173SS6	
2	1	Standard Seat *	163HSN	164HSN	163HSN	164HSN	
		Reduced Seat *	1347P	709P	1347HSN	709HSN	
3	2	Plug	699		699SS6		
4	1	Standard Seat Disc	158	159	158SS6	2493SS6	
		Reduced Seat Disc	1348SS6	707	1348SS6	707SS6	
5	1	Standard Valve Stem	726	727	726SS6	727SS6	
		Reduced Valve Stem	1345	726	1345	726	
6	1	Gasket *	195	196	195	196	
7	1	Vent Plug	----	147	----	147SS6	
		Connector	1604	----	1604SS6	----	
8	1	Lower Diaphragm Plate	736	737	736SS6	737	
9	1	Diaphragm *	741	1965	741	1965	
10	1	Bonnet	2103	2031	2103 ‡	2031 ‡	
	1	Vent Plug (not shown)	147	----	147SS6	----	
11	(QTY)	Bolt	4318 (6)	965 (8)	4318 (6)	965 (8)	
12	1	Lower Spring Guide	----	2029	----	2029	
13	1	Upper Spring Guide	2104	1888	2104	1888	
14	1	Adjusting Screw	100	6911	100	6911	
15	1	Nut	101	1897	101	1897	
16	1	Spring	6999	2013	6999	2013	
17	2	Lifting Ring	----	7559	----	7559	
18	1	Upper Diaphragm Plate	731	732	731 ‡	732 ‡	
19	1	Lower Housing *	142	1704	142 ‡	1704 ‡	
20	2	Back Up *	148T	149T	148T	149T	
21	1	O-Ring *	153	154	153	154	
22	1	Standard Gasket	----	276	----	276	
		Reduced Gasket	364	276	364	276	
23	1	Standard Ratio Plug	176SS6	177SS6	176SS6	177SS6	
		Reduced Ratio Plug	1346	708	1346SS6	708SS6	
24	1	Std. Removable Seat	----	272K	----	2496SS6K	
		Red. Removable Seat	1349	706D	1349SS6	706SS6	
25	1	Body					
		NPT Thru	Std.	2033	1709	2343 ‡	1709 ‡
			Red.	2343	----	2343	----
		150RF Thru	----	1913	----	1913 ‡	
Grooved Thru	----	2964	----	2964 ‡			
‡ Coated Parts available with "K" service type							
Repair Kits	Full Port		RNQ	RNU	RNQHSN	RNUHSN	
	Reduced Port		RHE	ROI	RHEHSN	ROIHSN	
* These parts are recommended spare parts and are stocked as repair kits.							

<b>Table 1 - Flow Coefficient(Cv) at % stem travel for Pilot Operated Regulators</b>											
<b>1" Pressure Regulator</b>											
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
<b>2" Pressure Regulator</b>											
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
<b>3" Pressure Regulator</b>											
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
<b>4" Pressure Regulator</b>											
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
<b>6" Pressure Regulator</b>											
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



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®
<b>Kimray Suffix</b>		HSN	V	AF
<b>Resistance</b>	<b>Abrasion</b>	G-E	G	G
	<b>Acid</b>	G-E	G-E	E
	<b>Chemical</b>	F	E	E
	<b>Cold</b>	G	P	P
	<b>Flame</b>	P	E	E
	<b>Heat</b>	E	E	E
	<b>Oil</b>	E	E	E
	<b>Ozone</b>	G	G-E	E
	<b>Set</b>	G	G-E	P
	<b>Tear</b>	F	F	P
	<b>Water/Steam</b>	E	P	G
	<b>Weather</b>	G	E	E
	<b>CO2</b>	G	G	G
	<b>H2S</b>	F	P	E
<b>Methanol</b>	E	P	P	
<b>Properties</b>	<b>Dynamic</b>	G	G	G
	<b>Electrical</b>	F	F	G-E
	<b>Impermeability</b>	G	G	G
	<b>Tensile Strength</b>	G-E	G	F
<b>Temp. Range</b>		-20° to +300°F	-15° to +400°F	+15° to +450°F
		-29° to +149°C	-26° to +204°C	-9° to +232°C
RATINGS: P-POOR, F-FAIR, G-GOOD, E-EXCELLENT				

<b>Table 7 - Material Options</b>				
<b>Part Description</b>	<b>Valve Size</b>	<b>Standard Material</b>	<b>Erosive Material</b>	<b>Corrosive Material</b>
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)

Table 2 - Reverse Acting Capacity - Bids. 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 - Bids. 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 - Bids. 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  $\sqrt{\frac{1}{G}}$   
 Where "G" is the specific gravity of the flowing liquid.



# LOW PRESSURE CONTROL VALVES



## 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