

APPLICATION:

Self-contained, pilot-operated regulator ideal for use in liquid packed systems where an auxiliary source of supply air or dry gas pressure available. When compressed air can be used as the outside source of supply, it is a great way to mitigate emissions concerns related to vented gas.

FEATURES:

- Tight shut-off
- Single soft seat
- Removable valve seat
- Minimum maintenance
- All internal parts can be removed with valve in line
- Single-point adjustment of setpoint
- Utilizes upstream pressure as actuation pressure
- Efficient 3-way plug accurately maintains setpoint

CERTIFICATIONS:

Canadian Registration Number (CRN):
0C16234.24567890NTY (Ductile)
0C15604.24567890NTY (Steel)

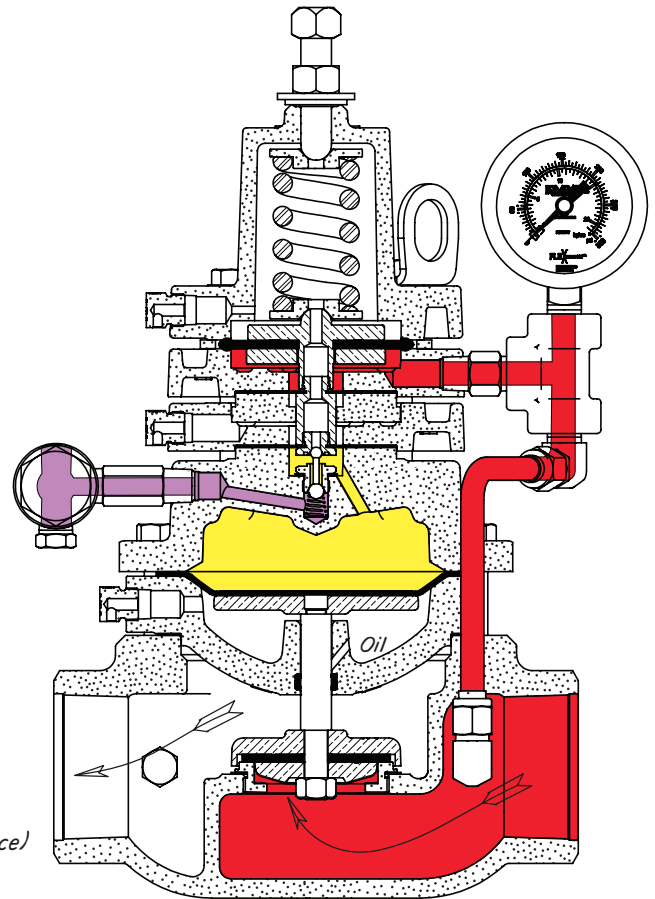
Kimray is an ISO 9001- certified manufacturer.

CLASSIFICATIONS:

Non-Bleed / Intermittent Vent

SUPPLY PRESSURE:

Equal to or not less than 60% of controlled pressure upstream



-  Pilot Assembly
-  Motor Valve Stem Assembly
-  Upstream Pressure
-  Diaphragm Pressure
-  Supply Pressure (outside source)



	Standard Configuration Code †	Order Code	Line Size	Connection Type	Oper. Press. psig	Max. W.P. psig ††	Cv	Cf
Ductile	RFB1SADF1S	ACG	1"	NPT	10-300	300	13.2	0.74
	RFB2SADF1S	AEM	2"	NPT	10-300	300	47.0	0.84
	RFB2ARDF1S	AEN		150RF	10-250	250		
	RFB3SADF1S	AEP	3"	NPT	10-300	300	117	0.75
	RFB3ARDF1S	AER		150RF	10-250	250		
	RFB4SADF1S	AES	4"	NPT	10-300	300	210	0.75
	RFB4ARDF1S	AET		150RF	10-250	250		
	RFB6ARDF1S	AEU	6"	150RF	10-250	250	480	0.75
Steel	RFB2ARWF1S	AGW	2"	150RF	10-285	285	47.0	0.84
	RFB3ARWF1S	AGX	3"	150RF	10-285	285	117	0.75
	RFB4ARWF1S	AGY	4"	150RF	10-285	285	210	0.75
	RFB6ARWF1S	AGZ	6"	150RF	10-285	285	480	0.75

NOTES:

For standard & optional seals, metals, Cf Cv values, material specifications & dimensions see technical data on pages 06:I - 06:IV

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

† For code builder see page 06:00.2

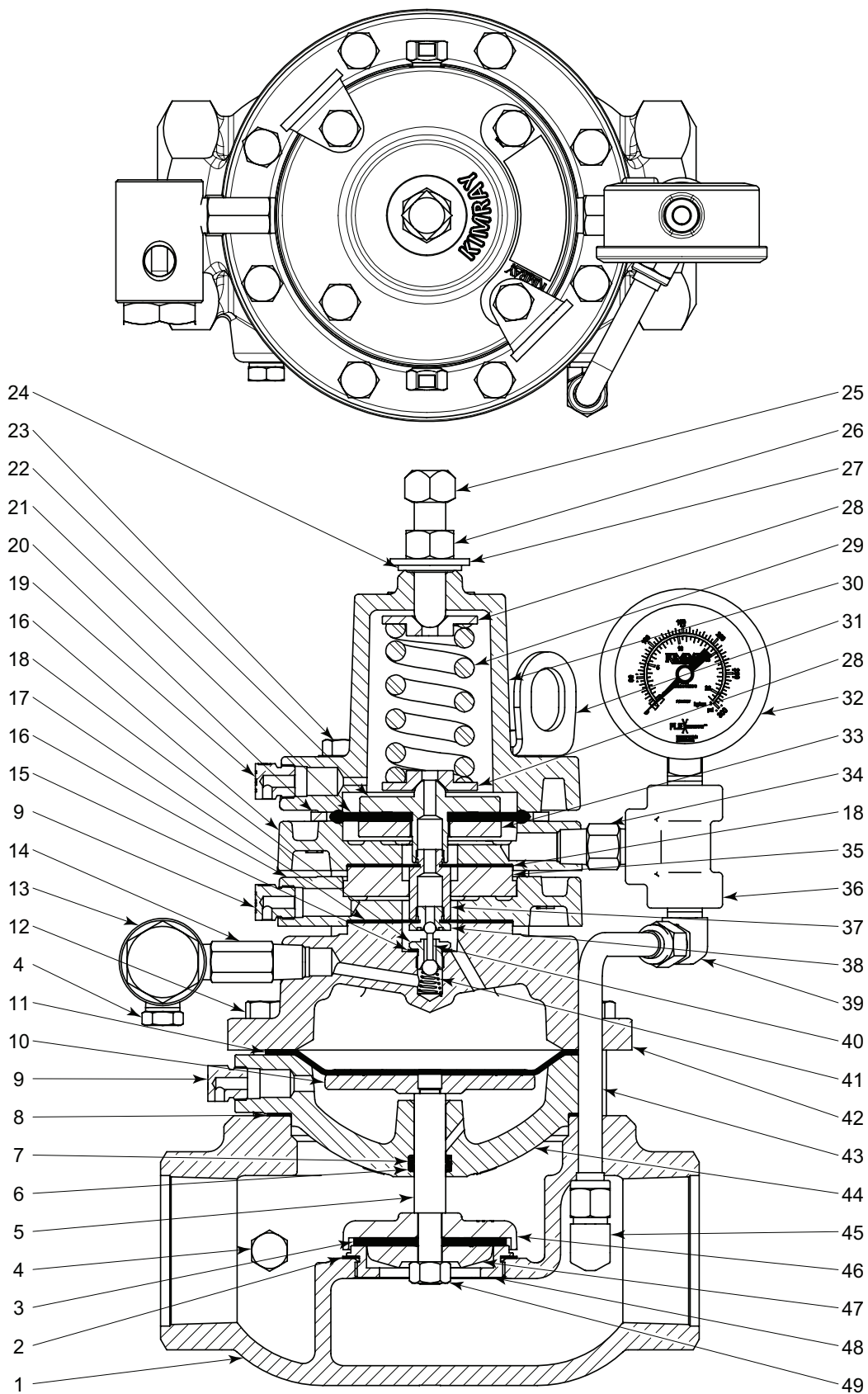
†† Max W.P. values based on -20°F to 100°F.

PRESSURE REGULATORS

DUCTILE BACK PRESSURE W/ OUTSIDE SUPPLY
MODEL FB PARTS DRAWING

KIMRAY[®]

INC.



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

DUCTILE BACK PRESSURE W/ OUTSIDE SUPPLY MODEL FB PARTS LIST

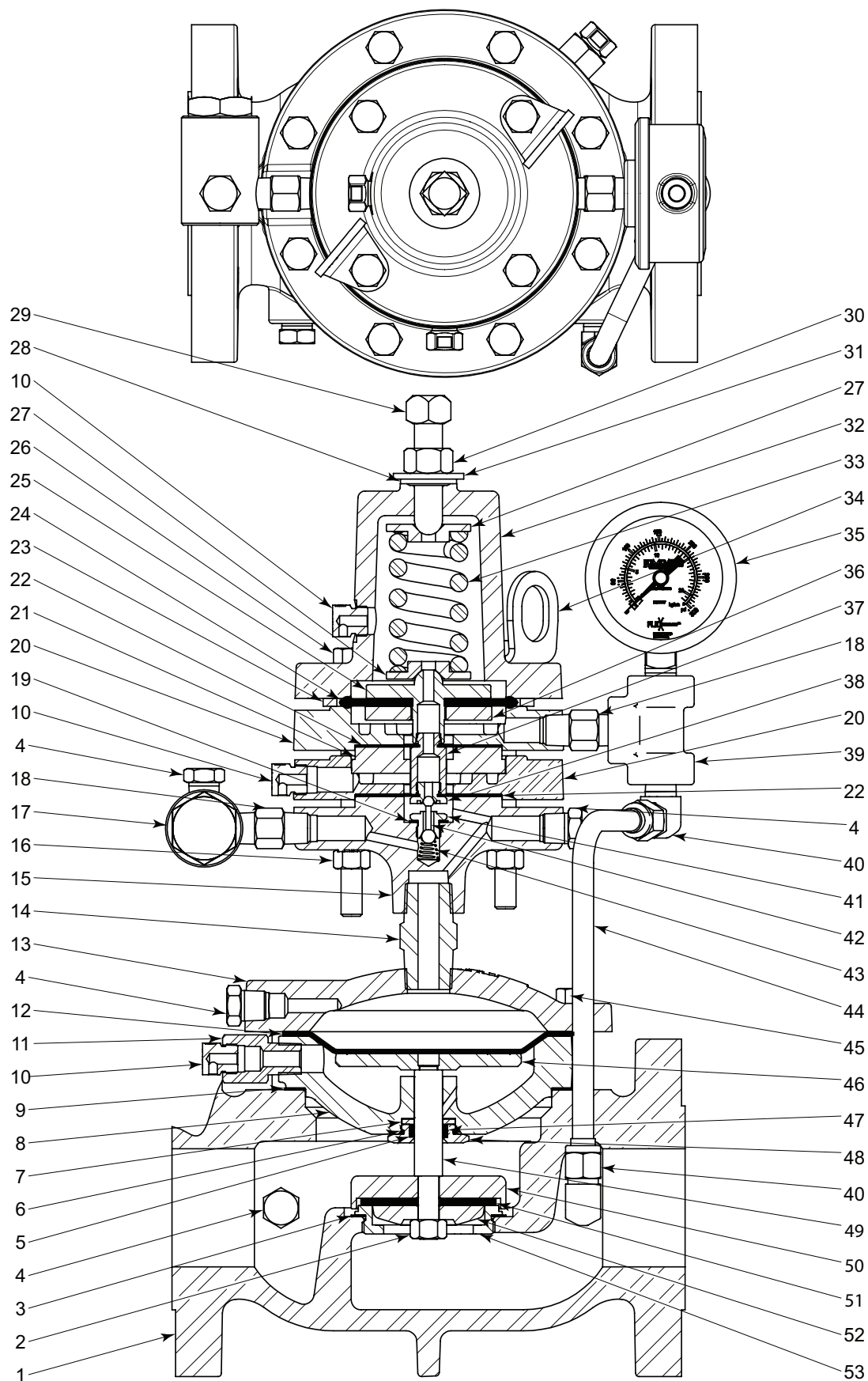
ITEM	QTY.	DESCRIPTION		PART NUMBER											
				STANDARD					CORROSIVE						
				1 INCH	2 INCH	3 INCH	4 INCH	6 INCH	1 INCH	2 INCH	3 INCH	4 INCH	6 INCH		
1	1	Body								2033	1709 ‡	1634 ‡	2001 ‡	----	
		Screwed Thru		2033	1709	1634	2001	----	----	1913 ‡	1914 ‡	2002 ‡	2466 ‡		
		Flanged Thru		----	1913	1914	2002	2466	----	2964 ‡	----	----	----		
		Grooved Thru		----	2964	----	----	----	----	2964 ‡	----	----	----		
2	1	Gasket	*	----	276	277	196	279	----	276	277	196	279		
3	1	Seat	Standard *	163HSN	164HSN	165HSN	166HSN	167HSN	163HSN	164HSN	165HSN	166HSN	167HSN		
			Reduced *	163HSN	164HSN	1230HSN	164HSN	165HSN	163HSN	164HSN	1230HSN	164HSN	165HSN		
4	2	Plug		699					699SS6						
5	1	Valve Stem	Standard	137	138	139	140	141	137SS6	138SS6	139SS6	140SS6	141SS6		
			Reduced	137	138	1222SS6	1223SS6	1224SS6	137SS6	138SS6	1222SS6	1223SS6	1224SS6		
6	2	Back Up	*	148T	149T	150T	151T	152T	148T	149T	150T	151T	152T		
7	1	O-Ring	*	153	154	155	156	157	153	154	155	156	157		
8	1	Gasket	*	195	196	197	198	199	195	196	197	198	199		
9	2	Vent Plug		1357	147					1357SS6	147SS6				
10	1	Diaphragm Plate		132SS6	133	134	135	136	132SS6	133	134	135	136		
11	1	Diaphragm	*	127	1706	1640	2015	2140	127	1706	1640	2015	2140		
12	(QTY)	Bolt		4318 (6)	965 (8)	907(10)	907 (12)	2142 (16)	4318 (6)	965 (8)	907(10)	907 (12)	2142 (16)		
13	1	1/4 F30 Filter		YAS	YAS					YASSS6	YASSS6				
14	1	Nipple		6890	262	2600			6890S6	262SS6	2600SS6				
15	1	Gasket		3018	118					3018	118				
16	2	Pilot Housing	*	3013	1701					3013SS6	1701 ‡				
17	2	Diaphragm		3014	110					3014	110				
18	1	Pilot Seat	*	3015	565					3015SS6	565SS6				
19	1	Vent Plug	*	147					147SS6						
20	1	Spacer Ring		----	7437					----	7437				
21	1	Diaphragm	*	3011P	5259P					3011P	5259P				
22	1	Diaphragm Plate		4014	116					4014SS6	116SS6				
23	4	Bolt		4553	7671					4553	7671				
24	1	Thread Seal		4542	4488					4542	4488				
25	1	Adjusting Screw		6976	5163					6976S6	5163SS6				
26	1	Nut		1676	2377					1676SS6	2377SS6				
27	1	Washer		4543	4491					4543	4491S6				
28	2	Spring Guide		4484SS6	2612					4484SS6	2612SS6				
29	1	Spring		4323	2611					4323	2611				
30	1	Bonnet		4525	2610					4525	2610 ‡				
31	2	Lifting Ring		----	7559					----	7559				
32	1	Pressure Gauge		7707	7707					7707	7707				
33	1	Diaphragm Nut		3010	107					3010SS6	107SS6				
34	1	Nipple		6890	648					6890S6	648SS6				
35	1	Spacer Ring		4494S6	2021					4494S6	2021				
36	1	Tee		219	2000					219SS6	2000SS6				
37	1	Seat Extension		7871S6	4297					7871S6	4297				
38	1	Pilot Seat	*	3016	113					3016SS6	113SS6				
39	1	Elbow / Connector		----	877	876		877	----	877SS6	876SS6		877SS6		
40	1	Pilot Plug	*	3017	112					3017	112				
41	1	Spring	*	3008	108					3008	108HAC				
42	1	Upper Housing		3019	1719	1636	2003	2177	3019	1719 ‡	1636 ‡	2003 ‡	2177 ‡		
43	1	Tubing		4416S6	72SS6	72SS6	73SS6	74SS6	4416S6	4416S6	72SS6	73SS6	74SS6		
44	1	Lower Housing		142	1704	1632	145	146	142	1704 ‡	1632 ‡	145 ‡	146 ‡		
45	1	Elbow		875	877					875SS6	877SS6				
46	1	Seat Disc	Standard	158	159	160	161	162	158SS6	2493SS6	2494SS6	2495SS6	2961SS6		
			Reduced	158	159	1229	159	160	158SS6	2493SS6	2585SS6	2493SS6	2494SS6		
47	1	Ratio Plug	Standard	176SS6	177SS6	178	179	180	176SS6	177SS6	3076SS6	3078SS6	3079SS6		
			Reduced	4932	4933	1228SS6	177SS6	178	4932SS6	4933SS6	1228SS6	177SS6	3076SS6		
48	1	Rem. Seat	Standard	----	272K	273K	274K	275K	----	2496SS6K	2497SS6K	2498SS6K	3075SS6K		
			Reduced	----	4934K	1219DK	1220DK	1221K	----	4934SS6K	1219SS6K	1220SSK	1221SS6K		
49	1	Nut	Standard *	172	173	906		175	172SS6	173SS6	174SS6		175SS6		
			Reduced *	172	173					172SS6	173SS6			174SS6	
				‡ Coated Parts available with "E" shell material											
Repair Kits				RYD	RYG	RYK	RYO	RYR		RYDS6	RYGS6	RYKS6	RYOS6	RYRS6	
				* 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.

PRESSURE REGULATORS

STEEL BACK PRESSURE W/ OUTSIDE SUPPLY
MODEL FB PARTS DRAWING

KIMRAY
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ITEM	QTY.	DESCRIPTION	PART NUMBER							
			STANDARD				CORROSIVE			
			2 INCH	3 INCH	4 INCH	6 INCH	2 INCH	3 INCH	4 INCH	6 INCH
1	1	Body	2468	2469	2470	2959	2468 ‡	2469 ‡	2470 ‡	2959 ‡
2	1	Nut	Standard *	173	906	175	173SS6	174SS6	175SS6	
			Reduced *	173		906	173SS6	174SS6	175SS6	
3	1	Gasket	*	276	277	196	276	277	196	279
4	4	Plug		699			699SS6			
5	2	Back Up	*	149T	150T	151T	149T	150T	151T	152T
6	1	O-Ring	*	5225	5226	5227	5225	5226	5227	4086
7	1	Spacer		4557DS6	4561DS6	4566DS6	4557DS6	4561DS6	4566DS6	4571DS6
8	1	Lower Housing		2481	2482	2483	2481 ‡	2482 ‡	2483 ‡	2957 ‡
9	1	Gasket	*	196	197	198	196	197	198	199
10	3	Vent Plug		147			147SS6			
11	1	Adapter		7244			7244SS6			
12	1	Diaphragm	*	1706	1640	2015	1706	1640	2015	2140
13	1	Bonnet		2487	2488	2489	2487 ‡	2488 ‡	2489 ‡	2956 ‡
14	1	Nipple		2516			2516SS6			
15	1	Base		4995			4995 ‡			
16	4	Nut		241			241			
17	1	1/4 F30 Filter		YAS			YASSS6			
18	2	Nipple		648			648SS6			
19	1	Gasket	*	118			118			
20	2	Pilot Housing		2514			2514 ‡			
21	1	Spacer		2021			2021			
22	2	Diaphragm	*	110			110			
23	1	Spacer Ring	*	7437			7437			
24	1	Diaphragm	*	5259P			5259P			
25	1	Diaphragm Plate		116			116SS6			
26	4	Bolt		4298			4298			
27	2	Spring Guide		2612			2612SS6			
28	1	Thread Seal	*	4488			4488			
29	1	Adjusting Screw		5163			5163SS6			
30	1	Nut		2377			2377SS6			
31	1	Washer	*	4491			4491			
32	1	Bonnet		2672			2672 ‡			
33	1	Spring		2611			2611			
34	2	Lifting Ring		7559		----	7559		----	
35	1	Pressure Gauge		7707			7707			
36	1	Diaphragm Nut		107			107SS6			
37	1	Seat Extension		4297			4297			
38	1	Pilot Seat	*	113			113SS6			
39	1	Tee		2000			2000SS6			
40	2	Elbow		877			877SS6			
41	1	Pilot Seat	*	565			565SS6			
42	1	Pilot Plug	*	112			112			
43	1	Spring	*	108			108HAC			
44	1	Tubing		2558	2559	2560	2558SS6	2559SS6	2560SS6	4309SS6
45	(QTY)	Bolt		965 (8)	907 (10)	907 (12)	965SS6 (8)	907SS6 (10)	907SS6 (12)	2142SS6 (16)
46	1	Diaphragm Plate		2490	2491	2492	2490SS6	2491SS6	2492SS6	2958SS6
47	1	O-Ring	*	154	807	156	154	807	156	157
48	1	Retainer		4557ES6	4561ES6	4566ES6	4557ES6	4561ES6	4566ES6	4571ES6
49	1	Valve Stem	Standard	138	139	140	138SS6	139SS6	140SS6	141SS6
			Reduced	138	1222SS6	1223SS6	138SS6	1222SS6	1223SS6	1224SS6
50	1	Seat Disc	Standard	2493SS6	2494SS6	2495SS6	2493SS6	2494SS6	2495SS6	2961SS6
			Reduced	2493SS6	2585SS6	2493SS6	2493SS6	2585SS6	2493SS6	2494SS6
51	1	Seat	Standard *	164HSN	165HSN	166HSN	164HSN	165HSN	166HSN	167HSN
			Reduced *	164HSN	1230HSN	164HSN	164HSN	1230HSN	164HSN	165HSN
52	1	Ratio Plug	Standard	177SS6	178	179	177SS6	3076SS6	3078SS6	3079SS6
			Reduced	4933	1228SS6	177SS6	4933SS6	1228SS6	177SS6	3076SS6
53	1	Removable Seat	Standard	2496SS6K	2497SS6K	2498SS6K	2496SS6K	2497SS6K	2498SS6K	3075SS6K
			Reduced	4934SS6K	1219SS6K	1220SSK	4934SS6K	1219SS6K	1220SSK	1221SS6K
Repair Kits			RYG	RYK	RYO	RYR	RYGS6	RYKS6	RYOS6	RYRS6
			* These parts are recommended spare parts and are stocked as repair kits.							

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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

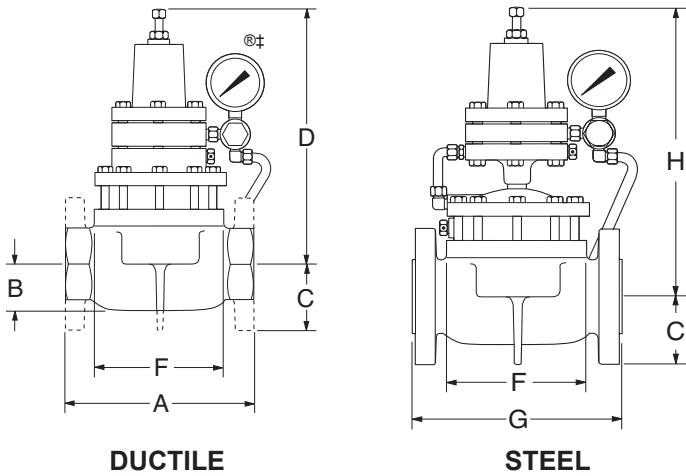
Kimray flow equations conform to ANSI/ISA - 75.01.01-2002

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

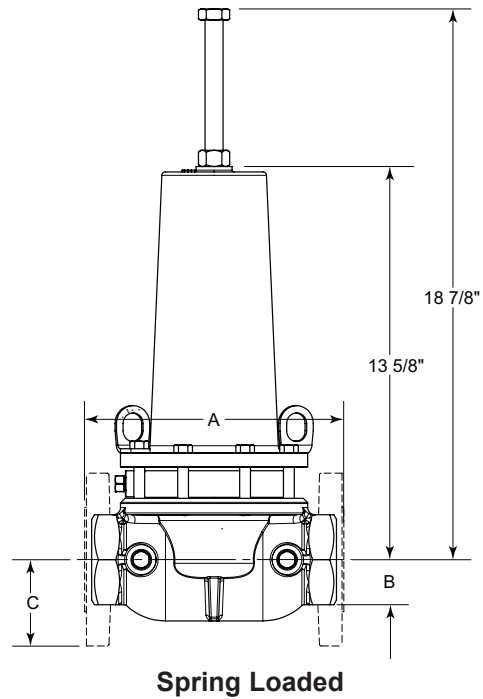
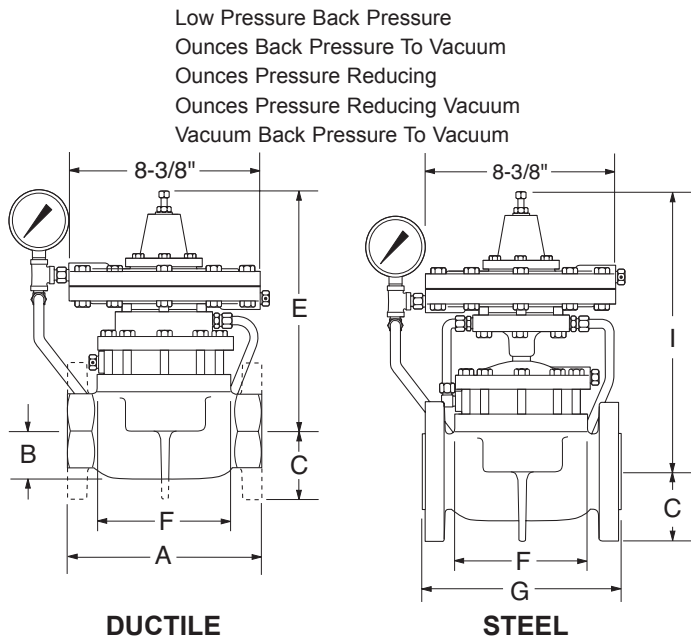
PRESSURE REGULATORS

DIMENSIONS

KIMRAY[®]



Back Pressure
Back Pressure Vacuum
Liquid Back Pressure
Pressure Reducing
Pressure Reducing Vacuum
Pressure Reducing-Balanced
Pressure Differential



LINE SIZE	BODY SIZE	A	B	C	D *	E	F	G	H *	I
1"	NPT	4 3/8"	1 1/8"		7 1/2"	11 5/8"	3 1/4"			
	FLANGED	7 1/4"	1 1/8"	2 1/8"	7 1/2"	11 5/8"	3 1/4"			
2"	NPT	8 1/2"	2 1/8"		11 1/2"	10 1/2"	6 1/2"			
	FLANGED	9"		3"	11 1/2"	10 1/2"	6 1/2"	9 1/8"	14 1/2"	14"
	GROOVED	8 3/4"	2 1/8"		11 1/2"	10 1/2"	6 1/2"			
250 S/FGT	NPT							10 1/2"		
	FLANGED							10 3/8"		
3"	NPT	12 1/16"	3 1/16"		13"	12"	8 1/2"			
	FLANGED	12 3/16"		3 3/4"	13"	12"	8 1/2"	12 3/8"	16 1/2"	15 1/2"
4"	NPT	15" 1/16	4"		14 1/2"	13 3/16"	10 1/2"			
	FLANGED	15 1/16"		4 1/2"	14 1/2"	13 3/16"	10 1/2"	15 1/16"	18 1/2"	16 11/16"
6"	FLANGED	22"		5 1/2"	17"	17 7/8"	16"	21 15/16"	20 1/2"	18 3/8"

FLANGE DIMENSIONS ARE ANSI 125/150 STANDARD. *Add 7/8" to Pressure Reducing Balanced and Up Stream Differential Pressure Regulators for this dimension.

All Pictures shown are for illustration purpose only. Actual product may vary due to product enhancement.
‡ Configuration of Back Pressure Control Valve is a trademark of Kimray, Inc.

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Table 2 - Seal Options

Part	Standard Material	Optional Material
Seat	HSN	FKM, AFLAS®
O-rings	Nitrile	HSN, FKM, AFLAS®
All Diaphragms	Nitrile	HSN, FKM, AFLAS®

Table 3 - Seal Specifications

Table 3 - Seal Specifications						
		NITRILE	HIGHLY SATURATED NITRILE	FKM	AFLAS®	
Resistance	Kimray Suffix	-	HSN	V	AF	
	Abrasion	G	G-E	G	G	
	Acid	F	G-E	G-E	E	
	Chemical	F	F	E	E	
	Cold	G	G	P	P	
	Flame	P	P	E	E	
	Heat	G	E	E	E	
	Oil	G-E	E	E	E	
	Ozone	P	G	G-E	E	
	Set	G	G	G-E	P	
	Tear	F	F	F	P	
	Water/Steam	F	E	P	G	
	Weather	F	G	E	E	
	CO2	F-G	G	G	G	
	H2S	P	F	P	E	
	Methanol	F	E	P	P	
	Properties	Dynamic	G	G	G	G
		Electrical	F	F	F	G-E
Impermeability		G	G	G	G	
Tensile Strength		G	G-E	G	F	
Temp. Range	-20° to +250°F	-20° to +300°F	-15° to +400°F	+15° to +450°F		
	-29° to +121°C	-29° to +149°C	-26° to +204°C	-9° to +232°C		
RATINGS: P-POOR, F-FAIR, G-GOOD, E-EXCELLENT						

Table 4 - Material Options

Part Description	Valve Size	Standard Material	Corrosive Material
Ratio Plug	1" & 2"	316 Powdered Metal SS-316NI-25	
	1" & 2" Reduced Trim	Alloy Steel (ASTM A108)	316SS (ASTM A479)
	3"	Powdered Metal F-008	316SS (ASTM A479)
	4" & 6"	Ductile (ASTM A395)	316SS (ASTM A479)
Seat Disc	1"	Powdered Metal F-008	316SS (ASTM A479)
	2", 3" & 4"	Ductile (ASTM A395)	316SS (ASTM A351 CF8M)
	6"	Ductile (ASTM A395)	316SS (ASTM A 240)
Stem	1" thru 6"	303SS (ASTM A582)	316SS (ASTM A479)
Body	1" thru 6"	Ductile (ASTM A395)	Ductile (ASTM A395) + Kimcoat
	2" thru 6"	WCB (ASTM A216)	WCB (ASTM A216) + Kimcoat
Tubing	1" thru 6"	304SS (ASTM A249)	316SS (ASTM A213)
Removable Seat	2" thru 6" Ductile Body	Ductile (ASTM A395)	316SS (ASTM A351 CF8M)
	2" thru 6" Steel Body	316SS (ASTM A351 CF8M)	

PRESSURE REGULATORS



CODE BUILDER

STANDARD PRESSURE R SERIES

Series:

R = Pressure Regulator

Model:

Line Size:

1 = 1 NPS
2 = 2 NPS
3 = 3 NPS
4 = 4 NPS
6 = 6 NPS

End Connection:

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

Shell Material:

D = Ductile Iron
E = Ductile Iron w/Coating
W = Steel (WCB)
X = Steel (WCB) w/Coating

Inner Valve Size:

F = Full Port
R = Reduced Port

Control Range:

1 = 10 - 300 psig Spring

Service Type:

S = Standard
C = Corrosive

BP = Back Pressure

BN = Back Pressure Non - Vent

BV = Back Pressure Vacuum

FB = Back Pressure Outside Supply

PR = Pressure Reducing

RN = Pressure Reducing Non - Vent

FR = Pressure Reducing Outside Supply

RB = Pressure Reducing Balanced

PN = Pressure Reducing Balanced Non - Vent

DP = Differential Pressure

PA = Pneumatically Adjusted

R BP 2 SA D F 1 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 the following product pages for available options

06:10.1 - 06:10.7, 06:20.1 - 06:20.5,
06:30.1 - 06:30.3, 06:40.1 - 06:40.5,
06:50.1 - 06:50.7, 06:60.1 - 06:60.5,
06:70.1 - 06:70.5, 06:80.1 - 06:80.5,