

#### APPLICATION:

Self-contained, pilot-operated regulator used to regulate down stream pressures on vent lines for separators, heat treaters, compressor stations, gas gathering systems where it is desired that no gas be vented

- Inside Buildings
- In populated areas
- Emissions regulated areas
- Sour or poisonous gas systems

#### 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-Venting

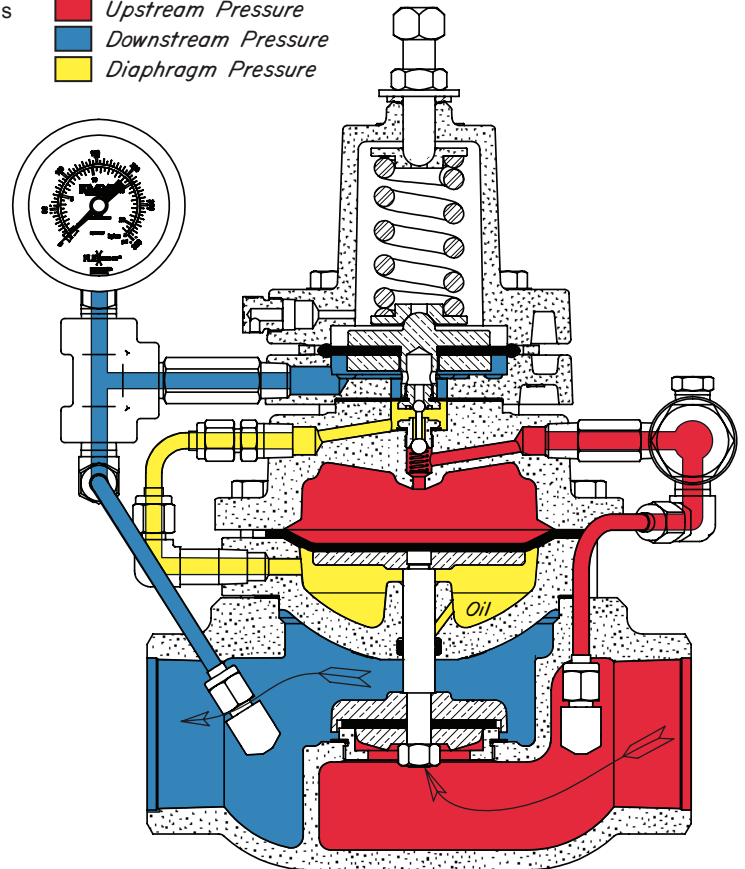
#### SET POINT DRIFT RATIO:

8:1

#### MIN. DIFFERENTIAL:

10 psig

-  Pilot Assembly
-  Motor Valve Stem Assembly
-  Upstream Pressure
-  Downstream Pressure
-  Diaphragm Pressure



	Standard Configuration Code †	Order Code	Line Size	Connection Type	Oper. Press. psig	Max. W.P. psig ††	Cv	Cf
Ductile	RRN1SADF1S	AKLD	1"	NPT	10-300	300	13.2	0.74
	RRN2SADF1S	AKMD	2"	NPT	10-300	300	47.0	0.84
	RRN2ARDF1S	AKND		150RF	10-250	250		
	RRN3SADF1S	AKPD	3"	NPT	10-300	300	117	0.75
	RRN3ARDF1S	AKQD		150RF	10-250	250		
	RRN4SADF1S	AKRD	4"	NPT	10-300	300	210	0.75
	RRN4ARDF1S	AKSD		150RF	10-250	250		
RRN4ARDF1S	AKTD	6"	150RF	10-250	250	480	0.75	
Steel	RRN2ARWF1S	AEV	2"	150RF	10-285	285	47.0	0.84
	RRN3ARWF1S	AEW	3"	150RF	10-285	285	117	0.75
	RRN4ARWF1S	AEX	4"	150RF	10-285	285	210	0.75
	RRN6ARWF1S	AEY	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 06:1 - 06:1V

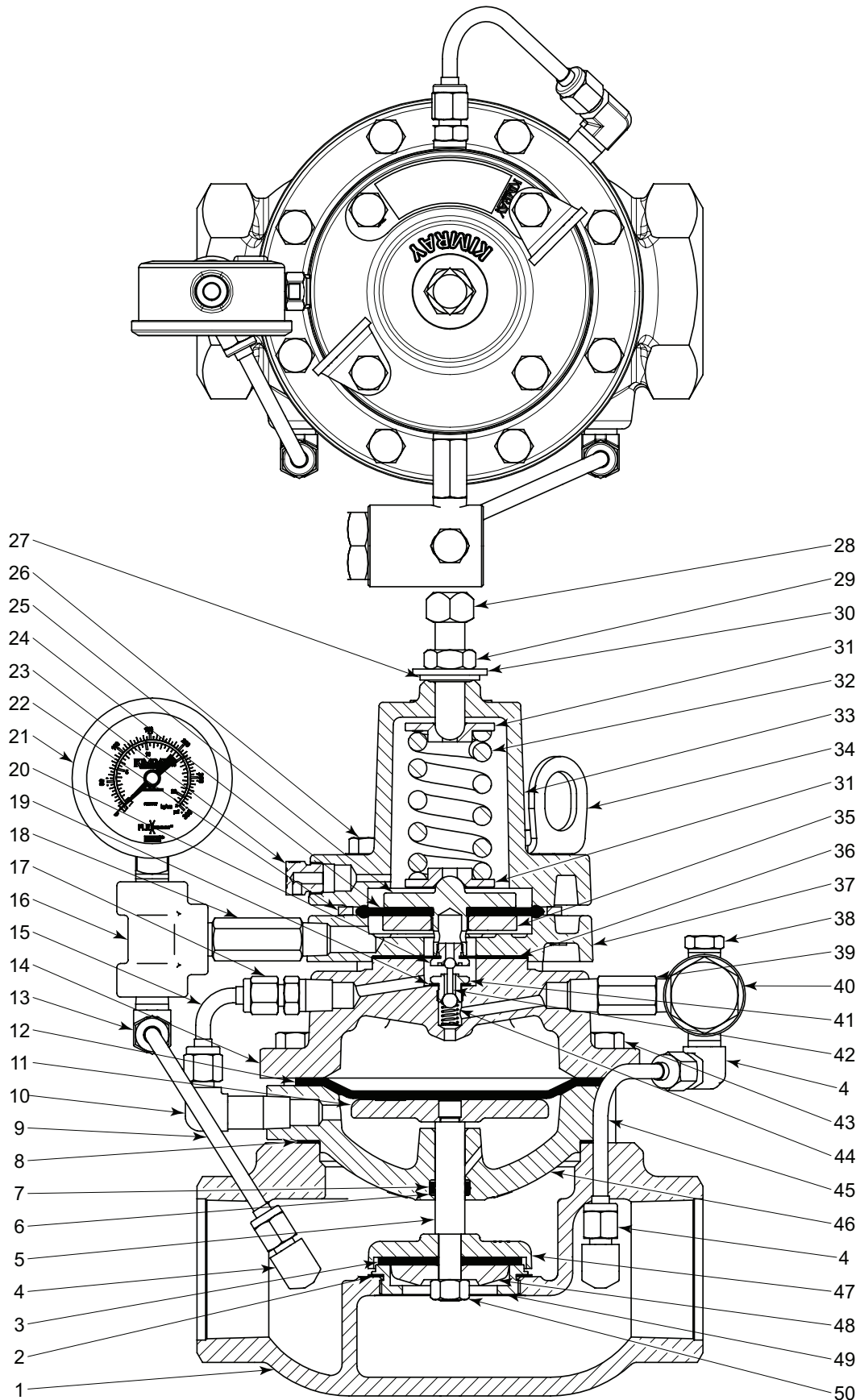
† For Corrosive service remove last "S" & replace with "C"

† For code builder see page 06:00.2

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

# PRESSURE REGULATORS

GAS PRESSURE REDUCING NON - VENTING  
MODEL RN PARTS DRAWING



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

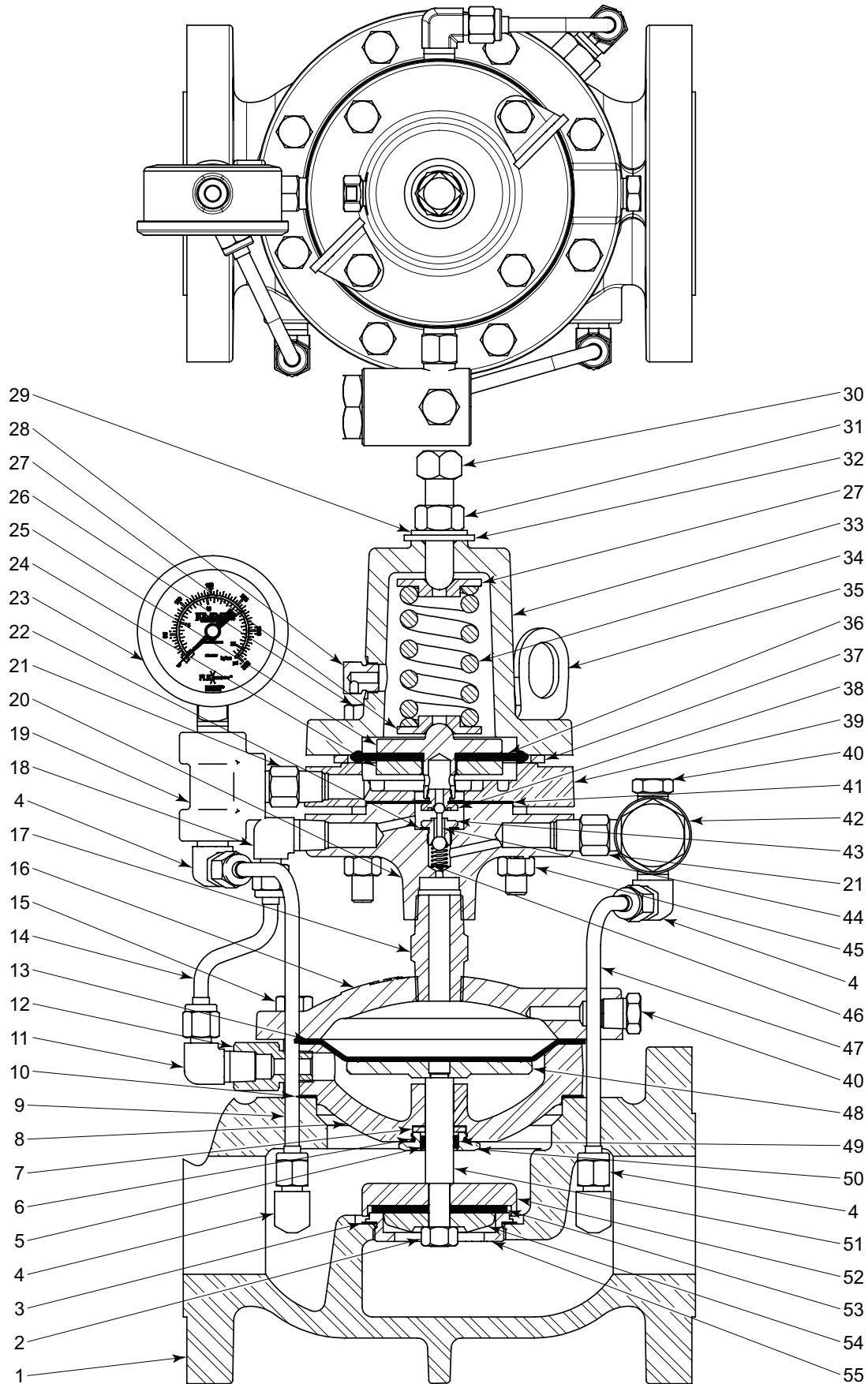
### GAS PRESSURE REDUCING NON - VENTING MODEL RN PARTS LIST

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												
		NPT Thru	2033	1709	1634	2001	----	2033 ‡	1709 ‡	1634 ‡	2001 ‡	----		
		150RF Thru	----	1913	1914	2002	2466	----	1913 ‡	1914 ‡	2002 ‡	2466 ‡		
		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	3	Elbow	875					875SS6						
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	1	Tubing	123SS6	216SS6	217SS6	4251S6	218SS6	123SS6	216SS6	217SS6	4251S6	218SS6		
10	1	Elbow	1605	875			1481	1605SS6	875SS6			1481SS6		
		Connector	----			874	874SS6	----			874SS6			
		Nipple	----			262	262SS6	----			262SS6			
11	1	Diaphragm Plate	132SS6	133	134	135	136	132SS6	133	134	135	136		
12	1	Diaphragm *	127	1706	1640	2015	2140	127	1706	1640	2015	2140		
13	1	Elbow / Connector	874	875	874		874	874SS6	875SS6	874SS6		874SS6		
14	1	Upper Housing	4015	1703	1639	2004	2178	4015SS6	1703 ‡	1639 ‡	2004 ‡	2178 ‡		
15	1	Tubing	1378SS6	4008SS6	213SS6	4011SS6	2529SS6	1378SS6	4008SS6	213SS6	4011SS6	2529SS6		
16	1	Tee	219	2000			219	2000SS6			219			
17	1	Connector	1604	874			1604	874SS6			1604			
18	1	Nipple	6890	648			6890	648SS6			6890			
19	1	Gasket *	3018	118			3018	118SS6			3018			
20	1	Pilot Seat *	3016	113			3016SS6	113SS6			3016SS6			
21	1	Pressure Gauge	7707					7707						
22	1	Spacer Ring *	----	7437			----	7437			----			
23	1	Vent Plug	147					147SS6						
24	1	Diaphragm *	3011P	5259P			3011P	5259P			3011P			
25	1	Diaphragm Plate	3009	105			3009SS6	105SS6			3009SS6			
26	4	Bolt	6972	907			6972	907			6972			
27	1	Thread Seal *	4542	4488			4542	4488			4542			
28	1	Adjusting Screw	6976	5163			6976SS6	5163SS6			6976SS6			
29	1	Nut	1676	2377			1676SS6	2377SS6			1676SS6			
30	1	Washer *	4543	4491			4543	4491			4543			
31	2	Spring Guide	4484SS6	2612			4484SS6	2612SS6			4484SS6			
32	1	Spring	4323	2611			4323	2611			4323			
33	1	Bonnet	4525	2610			4525	2610 ‡			4525			
34	2	Lifting Ring	----	7559			----	7559			----			
35	1	Diaph. Nut	3010	107			3010SS6	107SS6			3010SS6			
36	1	Diaphragm *	3014	110			3014	110			3014			
37	1	Pilot Housing	3013	1701			3013SS6	1701 ‡			3013SS6			
38	1	Plug	699					699SS6						
39	1	Nipple	6890	262	2600	648	6890S6	262SS6	2600SS6	648SS6	6890SS6			
40	1	1/4 F30 Filter	YAS					YASS6						
41	1	Pilot Seat *	3015	565			3015SS6	565SS6			3015SS6			
42	1	Pilot Plug *	3017	112			3017	112			3017			
43	(QTY)	Bolt	4318 (6)	965 (8)	907(10)	907 (12)	2142 (16)	4318 (6)	965 (8)	907(10)	907 (12)	2142 (16)		
44	1	Spring *	3008	585			3008	585			3008			
45	1	Tubing	123SS6	1638SS6	1826SS6	1383SS6	2247SS6	123SS6	1638SS6	1826SS6	1383SS6	2247SS6		
46	1	Lower Housing	142	1704	1632	145	146	142 ‡	1704 ‡	1632 ‡	145 ‡	146 ‡		
47	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	
48	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	
49	1	Rem. Seat	Standard	----	272K	273K	274K	275K	----	2496SS6K	2497SS6K	2498SS6K	3075SS6K	
			Reduced	----	4934K	1219DK	1220SSK	1221K	----	4934SS6K	1219SS6K	1220SSK	1221SS6K	
50	1	Nut	Standard *	172	173	906		175	172SS6	173SS6	174SS6		175SS6	
			Reduced *	172	173			906	172SS6	173SS6			174SS6	
Repair Kits			RYD	RYG	RYK	RYO	RYR	‡ Coated Parts available with "E" shell material						
			* These parts are recommended spare parts and are stocked as repair kits.											

# PRESSURE REGULATORS



## STEEL GAS PRESSURE REDUCING NON - VENTING MODEL RN PARTS DRAWING



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



**PRESSURE REGULATORS**

**STEEL GAS PRESSURE REDUCING NON - VENTING  
MODEL RN PARTS LIST**

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		
3	1	Gasket	* 276	277	196	279	276	277	196	279	
4	4	Ell	875				875SS6				
5	2	Back Up	* 149T	150T	151T	152T	149T	150T	151T	152T	
6	1	O-Ring	* 5225	5226	5227	4086	5225	5226	5227	4086	
7	1	Spacer	4557DS6	4561DS6	4566DS6	4571DS6	4557DS6	4561DS6	4566DS6	4571DS6	
8	1	Lower Housing	2481	2482	2483	2957	2481 ‡	2482 ‡	2483 ‡	2957 ‡	
9	1	Tubing	2505SS6	2552SS6	2529SS6	4306SS6	2505SS6	2552SS6	2529SS6	4306SS6	
10	1	Gasket	* 196	197	198	199	196	197	198	199	
11	1	Elbow / Connector	875			874	875SS6			874SS6	
12	1	Adapter	7244			----	7244SS6			----	
		Nipple	----			648	----			648SS6	
		Elbow	----			1481	----			1481SS6	
13	1	Diaphragm	* 1706	1640	2015	2140	1706	1640	2015	2140	
14	1	Tubing	2511SS6	4011SS6	2529SS6	2511SS6	4011SS6	2529SS6	2511SS6	4011SS6	
15	(QTY)	Bolt	965 (8)	907(10)	907 (12)	2142 (16)	965 (8)	907(10)	907 (12)	2142 (16)	
16	1	Bonnet	2487	2488	2489	2956	2487 ‡	2488 ‡	2489 ‡	2956 ‡	
17	1	Nipple	2516				2516SS6				
18	1	Elbow / Connector	875		874	875SS6		874SS6			
19	1	Tee	2000				2000SS6				
20	1	Base	2515				2515 ‡				
21	2	Nipple	648				648SS6				
22	1	Gasket	118				118				
23	1	Pressure Gauge	7707				7707				
24	1	Diaphragm Nut	107				107SS6				
25	1	Diaphragm Plate	105				105SS6				
26	4	Bolt	1232				1232				
27	2	Spring Guide	2612				2612SS6				
28	1	Breather Plug	147				147SS6				
29	1	Washer	4491				4491				
30	1	Adjusting Screw	5163				5163SS6				
31	1	Nut	2377				2377SS6				
32	1	Thread Seal	4488				4488				
33	1	Bonnet	2672				2672 ‡				
34	1	Spring	2611				2611				
35	2	Lifting Ring	7559			----	7559			----	
36	1	Diaphragm	5259P				5259P				
37	1	Spacer Ring	7437				7437				
38	1	Pilot Seat	113				113SS6				
39	1	Pilot Housing	2514				2514 ‡				
40	2	Plug	699				699SS6				
41	1	Diaphragm	110				110				
42	1	1/4 F30 Filter	YAS				YASSS6				
43	1	Pilot Seat	565				565SS6				
44	1	Pilot Plug	112				112				
45	4	Nut	241				241				
46	1	Spring	585				585				
47	1	Tubing	2505SS6	4011SS6	2529SS6	5061SS6	2505SS6	4011SS6	2529SS6	5061SS6	
48	1	Diaphragm Plate	2490	2491	2492	2958	2490SS6	2491SS6	2492SS6	2958SS6	
49	1	O-Ring	* 154	807	156	157	154	807	156	157	
50	1	Retainer	4557ES6	4561ES6	4566ES6	4571ES6	4557ES6	4561ES6	4566ES6	4571ES6	
51	1	Valve Stem	Standard	138	139	140	141	138SS6	139SS6	140SS6	141SS6
			Reduced	138	1222SS6	1223SS6	1224SS6	138SS6	1222SS6	1223SS6	1224SS6
52	1	Seat Disc	Standard	2493SS6	2494SS6	2495SS6	2961SS6	2493SS6	2494SS6	2495SS6	2961SS6
			Reduced	2493SS6	2585SS6	2493SS6	2494SS6	2493SS6	2585SS6	2493SS6	2494SS6
53	1	Seat	Standard *	164HSN	165HSN	166HSN	167HSN	164HSN	165HSN	166HSN	167HSN
			Reduced *	164HSN	1230HSN	164HSN	165HSN	164HSN	1230HSN	164HSN	165HSN
54	1	Ratio Plug	Standard	177SS6	178	179	3079SS6	177SS6	3076SS6	3078SS6	3079SS6
			Reduced	4933	1228SS6	177SS6	178	4933SS6	1228SS6	177SS6	3076SS6
55	1	Removable Seat	Standard	2496SS6K	2497SS6K	2498SS6K	3075SS6K	2496SS6K	2497SS6K	2498SS6K	3075SS6K
			Reduced	4934SS6K	1219SS6K	1220SSK	1221SS6K	4934SS6K	1219SS6K	1220SSK	1221SS6K

‡ Coated Parts available with "E" shell material

Repair Kits

RYG	RYK	RYO	RYR	RYGS6	RYKS6	RYOS6	RYRS6
* These parts are recommended spare parts and are stocked as repair kits.							

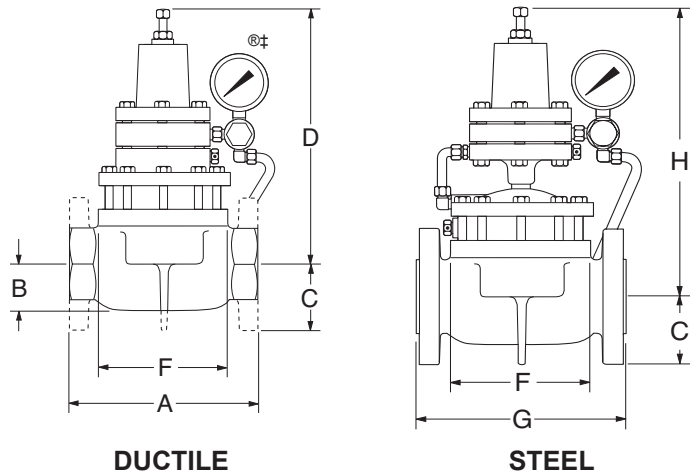
<b>Table 1 - Flow Coefficient(Cv) at % stem travel for Pilot-operated Regulators</b>											
<b>1" Pressure Regulator</b>											
Trim Size in.(mm)	Cf	Valve Opening Percentage									
		10	20	30	40	50	60	70	80	90	100
<b>1/2 in (12mm) Reduced</b>	<b>0.75</b>	0.4	0.7	0.9	1.3	1.8	2.5	3.2	3.9	4.5	5
<b>1 in (25mm) Full Port</b>	<b>0.74</b>	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
<b>1 1/4 in (31 mm) Reduced</b>	<b>0.75</b>	1.8	2.8	3.9	5.4	7.7	10.5	13.6	16.2	19.0	21.0
<b>2 in Removable Full Port *</b>	<b>0.84</b>	4.0	6.2	8.6	12.1	17.2	23.5	30.4	36.3	42.5	47.0
<b>2 in (50 mm) Full Port *</b>	<b>0.75</b>	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
<b>1 5/8 in (66 mm) Reduced</b>	<b>0.82</b>	2.9	4.5	6.2	8.8	12.5	17.0	22.0	26.3	30.7	34.0
<b>3 in (76 mm) Full Port</b>	<b>0.75</b>	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
<b>2 in (50 mm) Reduced</b>	<b>0.80</b>	4.7	7.3	10.1	14.2	20.2	27.5	35.6	42.5	49.7	55.0
<b>4 in (100 mm) Full Port</b>	<b>0.75</b>	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
<b>3 in (76 mm) Reduced</b>	<b>0.80</b>	10.2	16.0	22.0	30.9	44.0	60.1	77.7	92.7	108.4	120.0
<b>6 in (152 mm) Full Port</b>	<b>0.75</b>	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

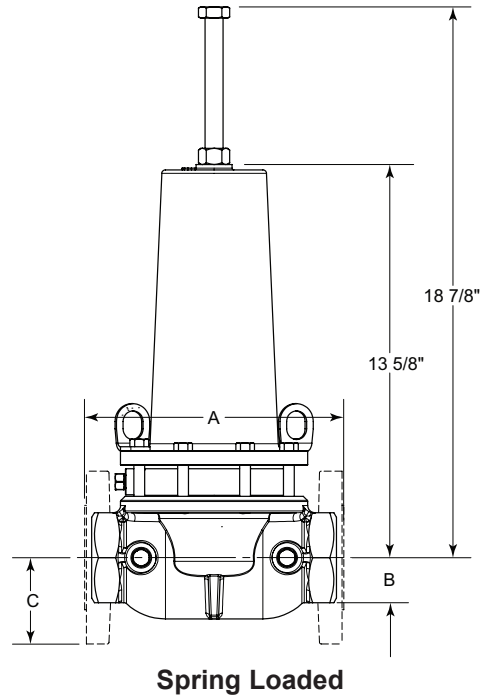
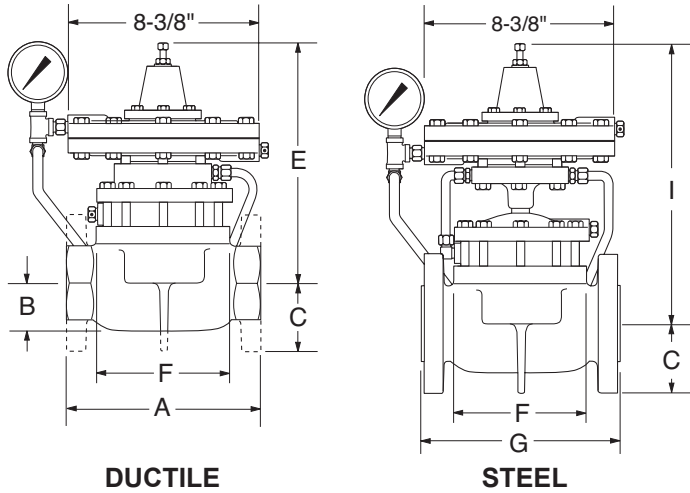


## DIMENSIONS



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

- Low Pressure Back Pressure
- Ounces Back Pressure To Vacuum
- Ounces Pressure Reducing
- Ounces Pressure Reducing Vacuum
- Vacuum Back Pressure To Vacuum



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.

[www.kimray.com](http://www.kimray.com)

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				
	NITRILE	HIGHLY SATURATED NITRILE	FKM	AFLAS®
Kimray Suffix	-	HSN	V	AF
Resistance	Abrasion	G	G-E	G
	Acid	F	G-E	E
	Chemical	F	F	E
	Cold	G	G	P
	Flame	P	P	E
	Heat	G	E	E
	Oil	G-E	E	E
	Ozone	P	G	G-E
	Set	G	G	G-E
	Tear	F	F	F
	Water/Steam	F	E	P
	Weather	F	G	E
	CO2	F-G	G	G
	H2S	P	F	P
	Methanol	F	E	P
Properties	Dynamic	G	G	G
	Electrical	F	F	G-E
	Impermeability	G	G	G
	Tensile Strength	G	G-E	G
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,