

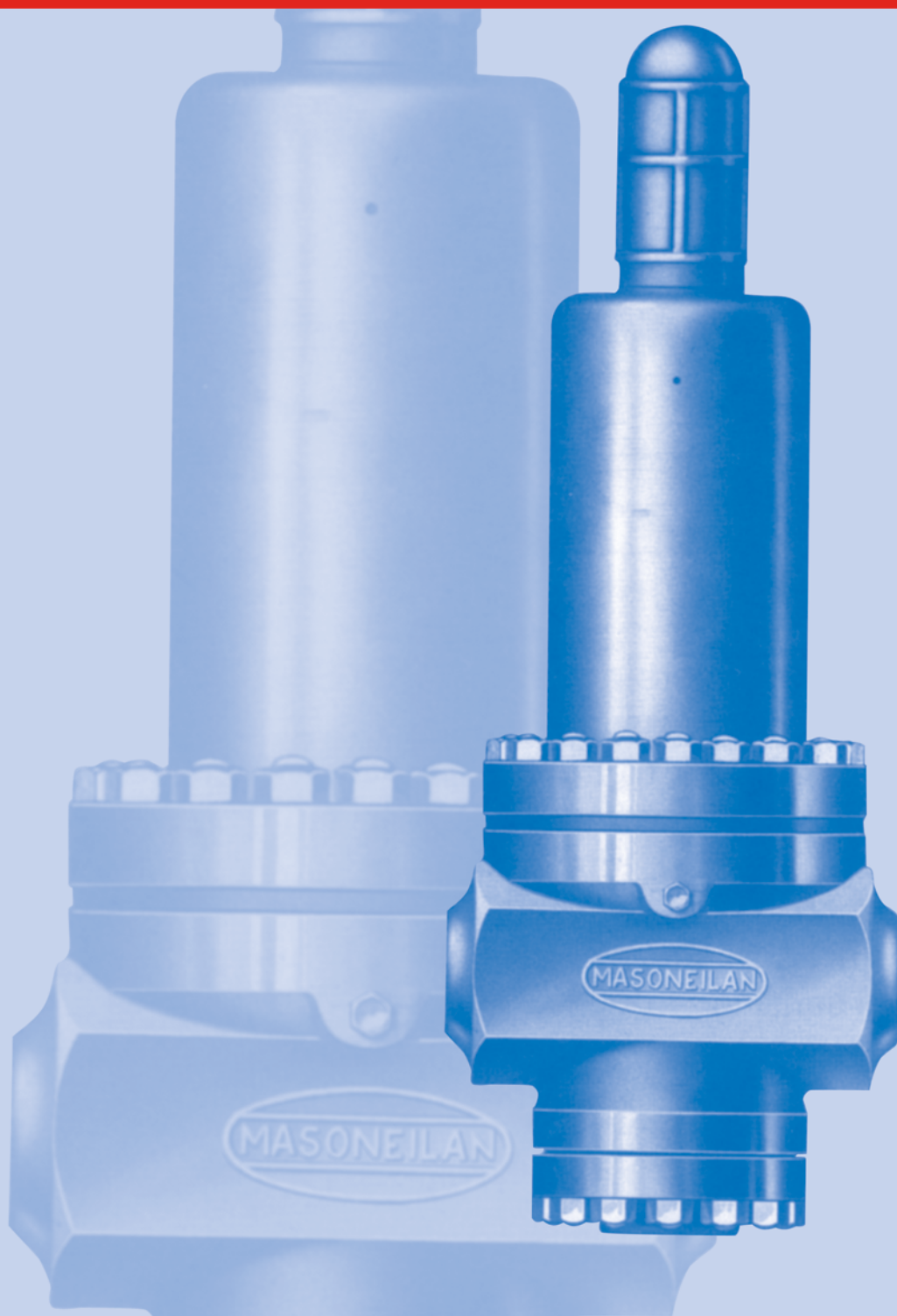
**Masoneilan®**

**40 Series Pressure Regulator for  
Reducing & Back Pressure Applications**

Specification Data

CY4000

7/95



**Steam, Gas and  
Liquid Service**



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# Foreword

Series 40 regulators are designed for reduced or back pressure control where high inlet pressures, high pressure drops or low flow applications are encountered or where reduced trim options are required. Models are available for steam, air, gas or liquid service with internal or external sensing.

These regulators find applications throughout many industries, including the oil and gas, petrochemical, pulp and paper, power generation and chemical processing industries.

Trade names noted throughout text are for reference only. Masoneilan reserves the right to supply trade named material or equivalent.

## Function

Model	Function
40C	Pressure Reducing
42C	Back Pressure

## Body Construction

Body Material & End Connection	Regulator Size (inches)					
	1/2	3/4	1	1 1/4	1 1/2	2
Forged Steel	•	•	•	•	•	•
Threaded NPT	•	•	•	•	•	•
Socket Weld	•	•	•	•	•	•
ANSI Class 150 RF Flanges <sup>①</sup>	•	•	•	•	•	•
ANSI Class 300 RF Flanges <sup>①</sup>	•	•	•	•	•	•
ANSI Class 600 RF Flanges <sup>①</sup>	•	•	•	•	•	•

<sup>①</sup> Although flanges have ANSI drilling, the regulators are not ANSI rated.

## Trim

Materials <sup>①</sup>	Orifice Size (inches)					
	1/8	1/4	3/8	1/2	3/4	7/8
316 St. St.	•	•	•	•	•	•
316 St. St. Hard-faced	•	•	•	•	•	•

<sup>①</sup> Model 42C with 1/8" orifice in 316 St. St. is available in ranges 2-15 and 10-35 psi only. All other ranges with 1/8" trim require hardened trim.

## Flow Coefficients - $C_v$

## Critical Flow Factor - $F_L = 0.9$

Diaphragm	<sup>②</sup> Orifice Size (inches)					
	Rated $C_v$					
	1/8	1/4	3/8	1/2	3/4	7/8 <sup>①</sup>
Monel, 302 St.St., 316 St.St.	0.15	0.54	1.2	1.8	2.8	7.2
Neoprene	0.23	0.81	1.8	2.7	4.2	8.0

<sup>①</sup> 7/8" orifice available in 1 1/2" and 2" bodies only

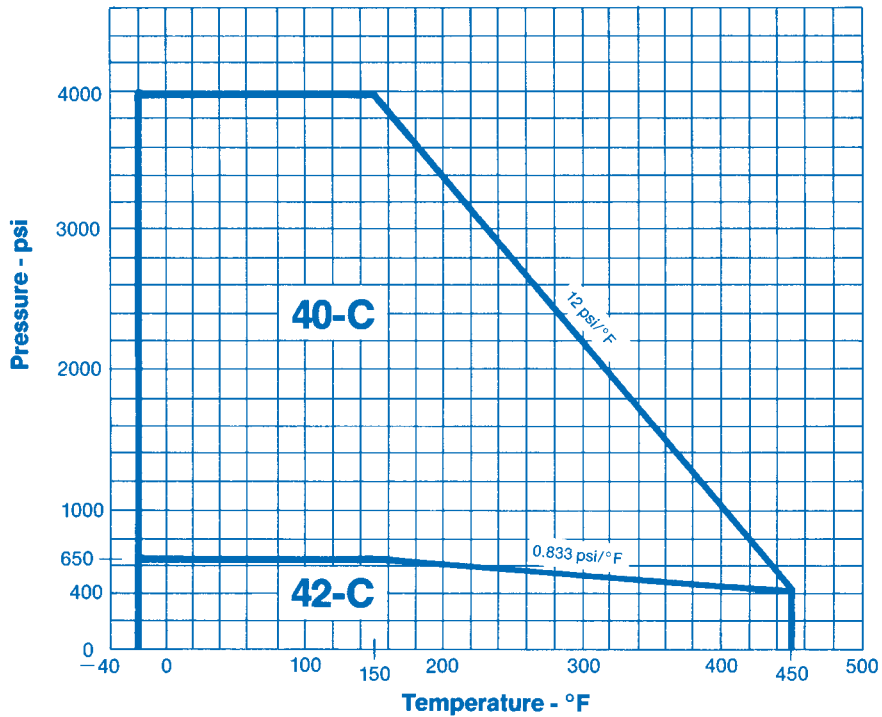
<sup>②</sup> 3/4" orifice not available in 1/2" body

## Reduced and Back Pressure Ranges (psi)

Model	
40-C Reducing	42-C Back Pressure
2-15	
10-35	
25-100	
70-250	
200-450	
300-650	300-600

## Pressure/Temperature Limits

The inlet pressure and ambient or fluid temperature must be within the boundaries of the graph for the appropriate regulator.



## Regulator Capacity ① - Saturated Steam (lb/hr) &amp; Air (scfm)

Inlet (psig)	Outlet (psig)	Steam					Air				
		*Orifice Size (in.)					*Orifice Size (in.)				
		1/8	1/4	3/8	1/2	3/4	1/8	1/4	3/8	1/2	3/4
30	2-10	12	42	92	135	215	3	11	24	37	55
	20	8.5	31	70	105	160	2.2	8.2	18	27	40
50	5-20	18	63	145	220	340	4.4	16	34	51	79
	30	15	54	120	180	285	3.8	13	30	44	69
	40	11	39	88	135	205	2.8	9.8	23	33	50
60	5-25	20	72	155	235	365	5.0	18	40	60	94
	40	15	57	130	190	285	4.0	14	32	48	73
	50	11	41	92	135	255	2.9	11	23	36	54
75	5-30	24	88	200	300	470	6.1	22	49	73	115
	50	19	70	155	235	360	4.9	17	39	58	91
	60	16	57	125	190	300	4.0	14	31	47	73
100	5-50	32	110	255	380	590	7.9	28	61	94	140
	60	28	97	210	335	520	6.8	25	54	80	125
	80	21	74	165	250	390	5.1	19	41	60	94
125	5-60	37	130	290	440	700	9.6	34	77	115	170
	80	32	110	245	375	590	8.6	30	67	100	150
	100	25	91	195	295	470	6.4	23	50	72	115
150	5-70	45	165	370	550	860	11	42	89	150	205
	100	38	135	300	455	710	9.6	34	73	115	160
	125	27	98	220	330	515	6.9	24	54	83	125
175	5-90	49	175	395	610	965	13	46	105	155	245
	100	43	155	355	525	830	11	42	95	140	215
	125	39	140	305	460	730	10	36	81	120	185
	150	29	105	230	350	540	7.6	27	60	92	135
200	5-100	61	215	475	700	1100	15	52	115	170	270
	125	51	185	415	615	975	13	45	100	145	235
	150	43	155	350	530	825	11	39	87	125	200
	175	32	115	255	385	615	8.2	29	65	97	145
225	5-120	63	220	490	755	1200	16	57	130	190	305
	150	54	195	440	655	1000	14	51	115	170	260
	175	45	160	360	540	840	12	42	93	135	220
	200	33	115	260	395	610	8.2	31	66	100	155
250	5-130	73	255	580	880	1350	18	65	140	220	330
	150	66	230	525	790	1250	16	59	125	195	290
	175	60	205	470	700	1100	15	52	115	180	270
	200	49	175	390	600	940	13	44	97	155	220

\*Orifice size may not exceed regulator size.

**NOTE:** Consult factory for 7/8" orifice capacities.

① Regulator Capacity Tables are included to provide convenience on common applications and not intended to establish application limitations. If your particular service conditions are not listed in the Regulator Capacity Table, calculate the required Cv for selecting the correct regulator size.

## Regulator Capacity ① - Water (GPM)

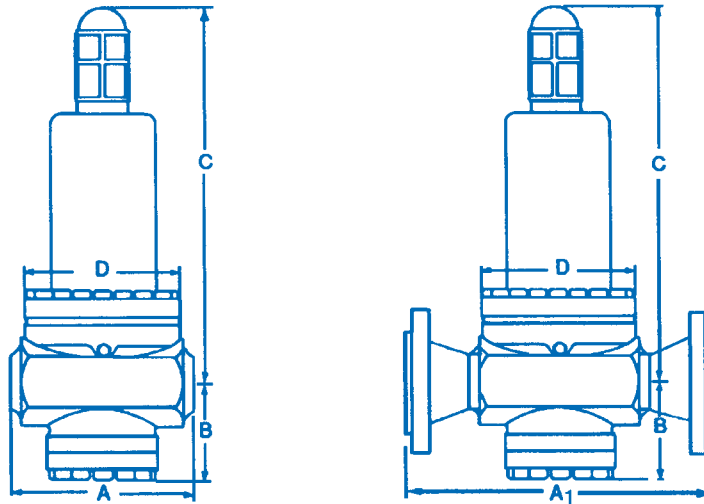
Pressure Drop Inlet Pressure minus Outlet Pressure	Metal Diaphragm					Neoprene Diaphragm				
	*Orifice Size (in.)					*Orifice Size (in.)				
	1/8	1/4	3/8	1/2	3/4	1/8	1/4	3/8	1/2	3/4
10	0.5	1.7	3.8	5.7	9	0.7	2.6	5.7	8.6	13
15	0.6	2.1	4.6	7	11	0.9	3.2	7	10.5	16
20	0.7	2.4	5.4	8	11.5	1	3.7	8	11	19
25	0.75	2.7	6	9	12	1.2	4	9	11.5	21
30	0.8	2.9	6.6	10	15.5	1.3	4.5	10	15	24
35	0.9	3.2	7	10.5	16.5	1.4	4.8	10.5	16	25
40	1	3.4	7.5	11	18	1.5	5.2	11	17	27
45	1	3.6	8	12	19	1.6	5.4	12	18	28
50	1.1	3.8	8.2	13	20	1.6	5.7	13	19	30
60	1.2	4.2	9.3	14	22	1.8	6.3	14	21	33
70	1.3	4.5	10	15	24	2	6.7	15	23	36
80	1.4	4.8	11	16	25	2.1	7.3	16	24	38
90	1.5	5.1	11.5	17	27	2.2	7.8	17	26	40
100	1.5	5.4	12	18	29	2.4	8.1	18	27	42
120	1.7	5.9	13	20	31	2.6	8.8	20	29	45
140	1.8	6.2	14	21	33	2.7	9.4	21	31	48
160	1.9	6.6	15	22	36	2.8	10	22	34	52
190	2.1	7.5	17	25	40	3.2	11	25	38	59
230	2.4	8	19	29	45	3.5	13	29	43	66

\*Orifice size may not exceed regulator size

**NOTE:** Consult factor for 7/8" orifice capacities

① Regulator Capacity Tables are included to provide convenience on common applications and not intended to establish application limitations. If your particular service conditions are not listed in the Regulator Capacity Table, calculate the required Cv for selecting the correct regulator size.

## Dimensions (inches)



Regulator Size (inches)	A	A <sub>1</sub>			B	C			D	
	Threaded & Socket Weld	Flanged*				Ranges (psi)			Ranges (psi)	
		150 ANSI	300 ANSI	600 ANSI		2-15 10-35	25-100 70-250 200-450 300-600 300-650	2-15 10-35	25-100 70-250 200-450 300-600 300-650	
1/2	7 <sup>1</sup> / <sub>4</sub>	11.01	11.37	11.87	4	15 <sup>3</sup> / <sub>8</sub>	19 <sup>5</sup> / <sub>8</sub>	8 <sup>3</sup> / <sub>4</sub>	6 <sup>1</sup> / <sub>8</sub>	
3/4		11.37	11.77	12.25						
1		11.64	12.13	12.63						
1 <sup>1</sup> / <sub>4</sub>	N/A	N/A	N/A							
1 <sup>1</sup> / <sub>2</sub>	6 <sup>5</sup> / <sub>8</sub>	11.88	12.38	13.00						
2		11.80	12.30	13.06						

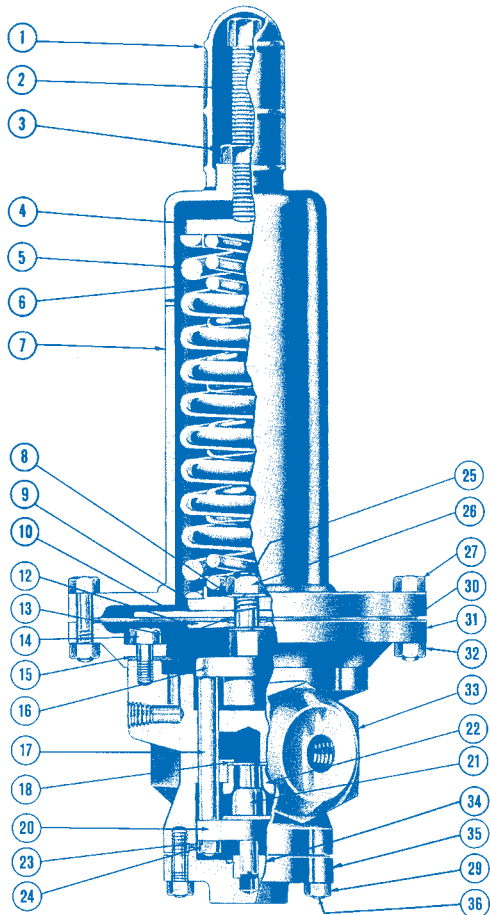
\*All "A" Dimensions for Flanged ± .18".

## Weights Approximate (lbs)

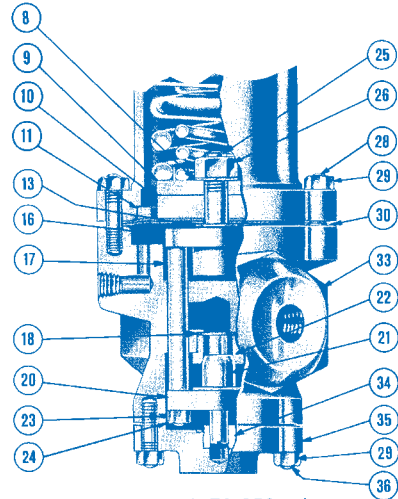
Ranges (psi)	Weights
2-15, 10-35	63
25-100, 70-250	58
200-450, 300-600 & 300-650	59

**For flanged regulator weights:**

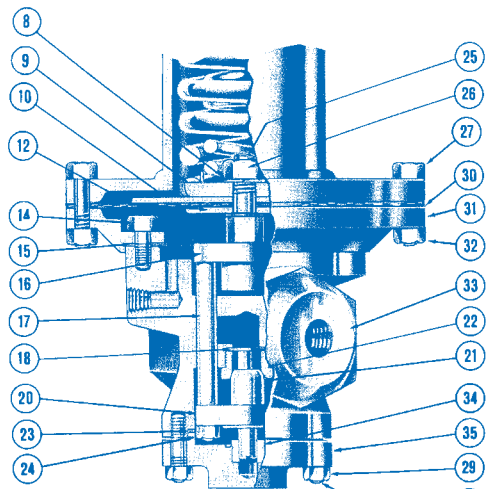
- Add 10% to 1/2" & 3/4" sizes
- Add 20% to 1" size
- Add 30% to 1 1/2" size
- Add 40% to 2" size



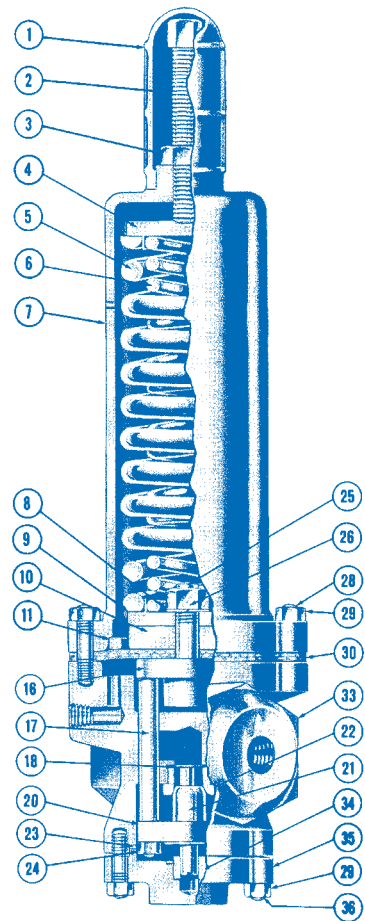
2-15, 10-35 psi  
Metal Diaphragm



25-100, 70-250 psi  
200-450, 300-600 psi  
Metal Diaphragm



2-15, 10-35 psi  
Neoprene Diaphragm



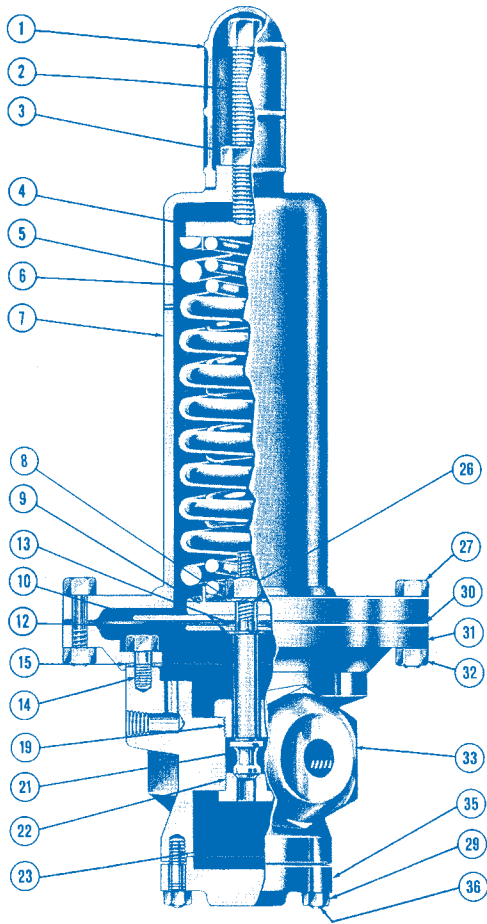
25-100, 70-250 psi  
200-450, 300-650 psi  
Neoprene Diaphragm

### Model 40-C Pressure Reducing

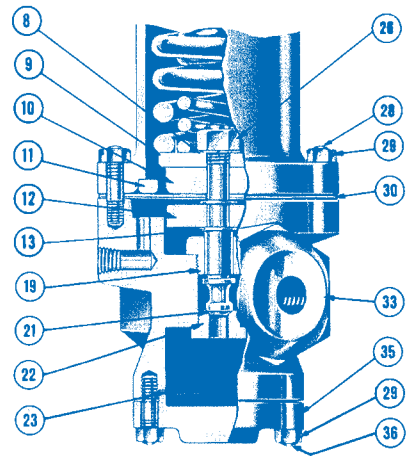


## Materials - Model 40C Reducing Regulators

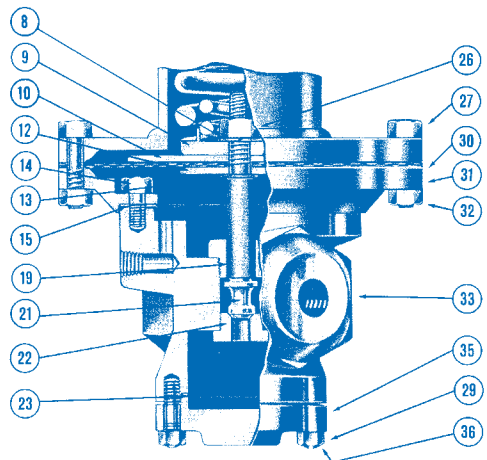
Ref. No.	Description	Materials
1	Spring Barrel Cap	Cast Iron ASTM A126 CLB
2	Adjusting Screw	Carbon Steel
3	Adjusting Screw Locknut	
4	Spring Button (upper)	
5 & 6	Range Spring(s)	Carbon and Alloy Spring Steel
7	Spring Barrel	Carbon St. Welded Construction
8	Lockwasher	Carbon Steel
9	Spring Button (lower)	
10	Diaphragm Plate (upper)	
11	Reducing Ring (200-400 & 300-600 psi ranges only)	
12	Diaphragm Plate (lower) (2-15 & 10-35 psi ranges only)	
13	Stud or Plug Gasket (Metal diaphragm only)	Bluegard 3000
14	Cap Screws (2-15 & 10-35 psi ranges only)	Carbon Steel
15	Gasket (2-15 & 10-35 psi ranges only)	Bluegard 3000
16	Guide Plate (upper)	Carbon Steel
17	Guide Post	304 Stainless Steel
18	Seat Ring Gasket	Bluegard 3000
20	Guide Plate (lower)	Carbon Steel
21	Plug	316 Stainless Steel
22	Orifice (SeatRing)	316 Stainless Steel
23	Blindhead Gasket	Bluegard 3000
24	Guide Post Nut	Carbon Steel
25	Upper Guide Plate Stud	Carbon Steel (2-15 & 10-35 psi ranges)
		Chrome Moly (25-100 70-250, 200-450 & 300-650 psi ranges)
26	Stud Nut	Carbon Steel
27	Cap Screws (2-15 & 10-35 psi ranges only)	Carbon Steel
28	Body Stud (25-100, 70-250, 200-450, & 300-650 psi ranges only)	Chrome Molybdenum
29	Stud Nut	Carbon Steel
30	Diaphragm	Neoprene
		Monel
		302 St. St.
		316 St. St.
31	Adapter (2-15 & 10-35 psi ranges only)	Carbon Steel
32	Nut	Carbon Steel
33	Body	Carbon Steel ASTM A105
34	Guiding Bushing	440C Stainless Steel
35	Blindhead	Carbon Steel ASTM A105
36	Stud	Chrome Molybdenum
N.S.	Identification Plate	Stainless Steel



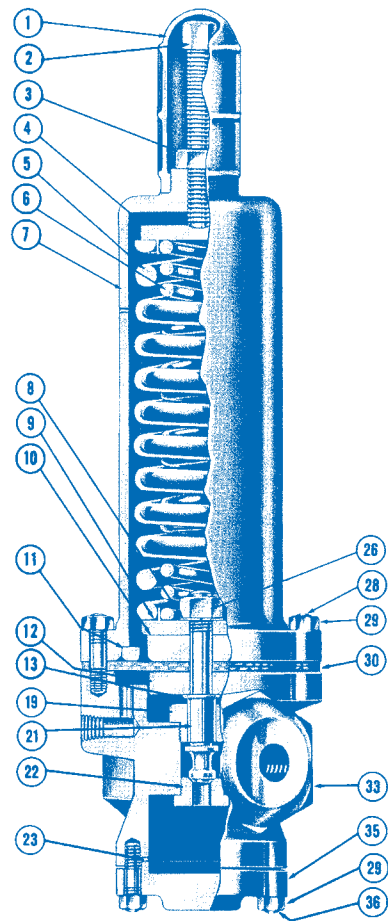
2-15, 10-35 psi  
Metal Diaphragm



25-100, 70-250 psi  
200-450, 300-650 psi  
Metal Diaphragm



2-15, 10-35 psi  
Neoprene Diaphragm



25-100, 70-250 psi  
200-450, 300-600 psi  
Neoprene Diaphragm

**Model 42-C Back Pressure**

## Materials - Model 42C Back Pressure Regulators

Ref. No.	Description	Materials
1	Spring Barrel Cap	Cast Iron ASTM A126 CLB
2	Adjusting Screw	Carbon Steel
3	Adjusting Screw Locknut	
4	Spring Button (upper)	
5 & 6	Range Spring(s)	
7	Spring Barrel	Carbon St. Welded Construction
8	Lockwasher	Carbon Steel
9	Spring Button (lower)	
10	Diaphragm Plate (upper)	
11	Reducing Ring( 200-400 & 300-600 psi ranges only)	
12	Diaphragm Plate (lower) (2-15 & 10-35 psi ranges only)	
13	Stud or Plug Gasket (Metal diaphragm only)	Bluegard 3000
14	Cap Screws (2-15 & 10-35 psi ranges only)	Carbon Steel
15	Gasket (2-15 & 10-35 psi ranges only)	Bluegard 3000
19	Plug Ring Guide	316 Stainless Steel
21	Plug	
22	Orifice (SeatRing)	
23	Blindhead Gasket	Bluegard 3000
26	Stud Nut	Carbon Steel
27	Cap Screws (2-15 & 10-35 psi ranges only)	Carbon Steel
28	Body Stud (25-100, 70-250, 200-450, & 300-650 psi ranges only)	Chrome Molybdenum
29	Stud Nut	Carbon Steel
30	Diaphragm	Neoprene
		Monel
		302 St. St.
		316 St. St.
31	Adapter (2-15 & 10-35 psi ranges only)	Carbon Steel
32	Nut	Carbon Steel
33	Body	Carbon Steel ASTM A105
35	Blindhead	Carbon Steel
36	Stud	Chrome Molybdenum
N.S.	Identification Plate	Stainless Steel

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CY4000 SD - 7/95  
40 Series Pressure Regulator