



# MODEL C-BPV

## BACK PRESSURE/RELIEF REGULATOR



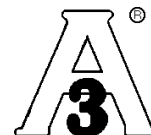
**1" MODEL C-BPV  
with Investment Cast Body**

The Model C-BPV\* is a 316L SST self-contained back pressure/relief regulator designed for liquid or gaseous fluids utilized in sanitary biotechnological process piping systems. The unit is capable of controlling inlet pressure to setpoint levels between 10-75 psig (.69-5.17 Barg).

### FEATURES

- Clean-in-Place (CIP):** Lock-open lever feature on the spring chamber area allows the regulator to be cleaned with 50 psig (3.45 Barg) cleaning solution.
- Steam-in-Place (SIP):** The combination of materials allows for steam-in-place up to 20 psig (1.38 Barg) of saturated steam.
- Self-Draining:** Angle style body with side inlet and bottom outlet.
- Readily Accessible:** Unit can be easily and quickly disassembled in-line for inspection and manual cleaning.
- Polished Interior:** Interior of body surface polished to 10 micro-inch  $R_a$  finish with electro-polished exterior.
- Wetted Materials Construction:** All metallic wetted parts of 316L SST. All diaphragms and some plug/stem selections are of non-metallic materials. Unit is cleaned to Cashco Spec. #S-1576.

**3A Construction:**



Selection of the metallic plug/stem constructions meets 3A Sanitary Standards, Authorization No. 782.

**! CAUTION**

*This is not a safety device and must not be substituted for a code approved pressure safety relief valve or a rupture disc. **CONTACT FACTORY BEFORE APPLYING IN CONTINUOUS STEAM SERVICE!***

### APPLICATIONS

Used in pharmaceutical industry in production of many health care products for both human and animal consumption. Widely applied for processed food production — candy, beverages, nutritional supplements and artificial sweeteners. May also be used in cosmetics production and specialty chemicals.

Would be found supporting fermenters, batching tanks, cookers, dryers and other similar equipment.

ISO 9001  
Registered

## SPECIFICATIONS

**Body Connections:** Sanitary Tri-Clamp® designed to seal against weld type clamp liners per ISO 2852. (side inlet, lower outlet connection.)

**Body Size and Material:** 1", 1-1/2", 2" (25, 40, 50 mm) size. ASTM A182, Gr. F316L; Forged 316L SST for superior quality and finish. Interior and exterior of body material is electro-polished.

**1" (25 mm) size only.** ASTM A351, Gr. CF3M; Investment Cast 316L SST. Interior of standard body material is mechanically polished to 10 micro-inch R<sub>a</sub> finish with electro-polished exterior.

**See Table 5 for dimensions.**

**Spring Chamber:** ASTM A351, Gr. CF8M; Cast 316 SST. Electro-polished.

**Diaphragm Clamp:** 304SST materials; polished.  
**All Sizes** — Tri-Clamp® 1-piece design with thumbscrew fastener.  
**Opt.-80 (2" size only)** — Tri-Clamp® 2-piece fastener with SST bolts designed for higher pressure and temperature ratings. (See Table 1.) (Requires wrenches for disassembly.)

**Body Design Pressure vs. Temperature Rating:** Inlet & Outlet; see Table 1.  
 Up to 150 psig (10.3 Barg).  
 Up to 300°F (149°C)

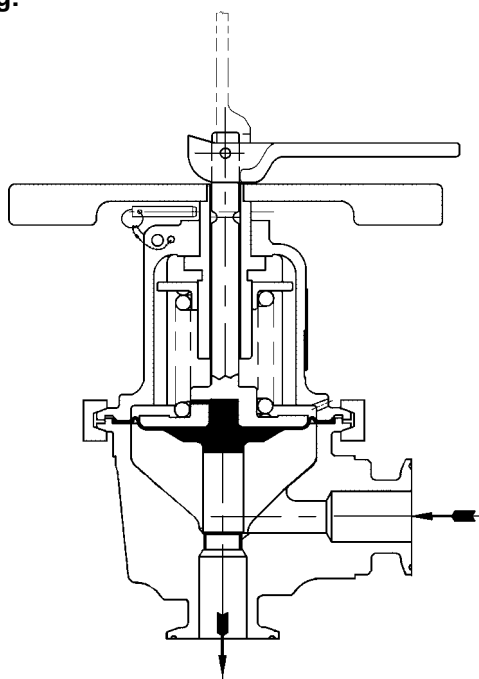


Figure 1: Forged Body, Model C-BPV

**Operating Pressure and Spring Ranges:** Recommended maximum pressure build = 30%. **Note:** Contact the factory for setting below 10 psig (.69 Barg).

SST Range Spring	
psig	(Barg)
10-30	(.69-2.07)
20-60	(1.38-4.14)
40-75	(2.76-5.17)

**Maximum Pressure Drop:** Function of range spring and set-point pressure utilized; see Table 2.

**Maximum CIP Conditions:** Maximum Cleaning Fluid:  
 Pressure = 50 psig (3.45 Barg);  
 Temperature = 300°F (149°C)

**Maximum SIP Conditions:** Saturated steam only.  
 Recommended – P = 20 psig (1.38 Barg)  
 Maximum – P = 30 psig (2.07 Barg);  
 at reduced elastomer life.

**Seat Leakage:** ANSI/FCI 70-2 (Rev. 1982). Class IV. **Not designed for continuous shutoff service.**

**Capacity:** Up to 12.5 C<sub>v</sub>.  
 See Table 2 for C<sub>v</sub> vs Setpoint pressure vs body size. (K<sub>vs</sub> = C<sub>v</sub> / 1.17).  
 See Table 3 — Water capacities.  
 See Table 4 — GN<sub>2</sub> capacities.

**Wetted Trim Materials:**

Part	Trim Designation Nos.	
	R1	R3
Diaphragm <sup>1</sup>	EPDM	Silicone
Stem & Plug	Ryton®**	Ryton®**

<sup>1</sup>Diaphragms are molded to stem. These materials conform with FDA Code of Federal Regulations Title 21, Part 177.2600.

\*\*Ryton® -polyphenylene sulfide - a thermoplastic, conforms with FDA Code of Federal Regulations Title 21, Part 177.2490. Both the Ryton® Stem, Plug and adhesive were submitted and approved as meeting the standards of USP XXII, Class V Biological Test for Plastics, Case Study #T91M0152 and #T91M0158, respectively, and are on file.

Part	Trim Designation Nos.	
	LE	LC
Diaphragm <sup>1</sup>	EPDM	Silicone
Stem & Plug	316LSST	316LSST

<sup>1</sup>Diaphragms are molded to stem. These materials conform with FDA Code of Federal Regulations Title 21, Part 177.2600.

The adhesive was submitted and approved as meeting the standards of USP XXII, Class V Biological Test for Plastics, Case Study #T91M0158 are on file.



**Non-Wetted Trim Materials:** Castings - CF8M (316SST)  
 Barstock - 18-8 SST  
 All cast parts electro-polished.

**Special Cleaning:** All units are cleaned per Cashco Spec. #S-1576

## APPLICATION AND SELECTION

Backpressure/relief regulators are control devices, intended for continuous duty in throttling service. These regulators are not designed for shutoff service. The following procedure will help determine the minimum suitable selection for an application.

**STEP 1.** FIVE KNOWNs. The following minimal parameters / information must be available before a selection procedure can begin:

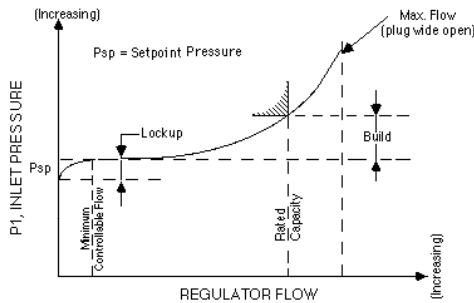
- a. Service Fluid - What is it? Liquid or gas? SG (std. cond.).
- b. Inlet Pressure -  $P_1$  (upstream pressure). How much can  $P_1$  vary as flow varies?
- c. Outlet Pressure -  $P_2$  (downstream pressure). How much can  $P_2$  vary as flow varies?
- d. Desired capacity -  $C_v$ , GPM, SCFH; minimum & maximum.
- e. Fluid temperature -  $T_1$ , SG (actual).

**STEP 2.** INLET PRESSURE. Assure that the actual design inlet pressure and temperature limits do not exceed the limits indicated in the Specifications section.

**STEP 3.** PRESSURE DROP. Do not exceed the maximum  $\Delta P$  in Table 2.

**STEP 4.** PRESSURE BUILD. Once setpoint is reached and valve opens, all self-contained back pressure/relief regulators "Build" from a setpoint pressure level as the flow rate increases.

This deviation in setpoint is described as "% build". Build is expressed on increasing flow, starting from a minimum flow level.



The "% build" or stated maximum allowable build must be known to enter the capacity tables. The acceptable level of setpoint deviation should be known for the min-to-max flow variation.

**STEP 4. (cont.)** A regulator may have a setpoint 10% below the lower stated range spring level. (Tags will show the standard ranges.) A setpoint above the higher range spring level is not recommended. Setpoint at the upper limit of a range spring is acceptable. If final setpoint is questionable and expected near the upper limit, the next higher range spring should be utilized. Best performance will be obtained when the lowest range spring is utilized.

**STEP 5.** CAPACITY. Using the five knowns of Step 1, calculate the required  $C_v$ . If a liquid, determine the flow description – no partial, partial, excess partial, or full cavitation. Exhibit care in piping orientation for cavitating liquids.

For liquids that are severely cavitating, consideration may be given to use multiple units in series to stage the pressure and prevent excess partial or full cavitation from occurring. Spacing between in-series units must be a minimum of 2 feet (0.6 meters).

For Example:

- Fluid = Pure Water
- GPM = 8.0 Max., 3 Min.
- $P_{sp}$  = 60 psig
- $P_2$  = 30 psig
- $T_1$  = 180°F
- Max Build = 15%

Preliminary  $P_1 = 1.15 \times 60 = 69$  psig

Prelim.  $P_1 = 69$  psig

$P_2 = 30$  psig

$C_v$  Req'd = 1.26

Build  $\approx 12\text{-}1/2\%$

Final  $P_1 = 1.125 \times 60 = 67.5$  psig

$C_v$  Req'd = 1.29

Build  $\approx 12\text{-}1/2\%$

Flow Description = Non-Cavitating

Selection — OK

40-75 psig range spring

$P_{sp}$  = 60 psig

**STEP 6.** TRIM MATERIAL. Select the desired trim material with 3A Approval applying to LE and LC trims.

*Refer to IOM-C-BPV for complete cleaning procedures and maintenance instructions.*

**TABLE 1  
MAXIMUM PRESSURE VS. TEMPERATURE RATINGS**

Body Size	Option	Diaphragm Clamp	Pressure		Temperature Range	
			psig	(Barg)	°F	(°C)
1" (25 mm) 1-1/2" (40 mm)	Standard	1-pc. thumbscrew	150	(10.3)	40 to 300	(4 to 149)
2" (50 mm)	Standard	1-pc. thumbscrew	150	(10.3)	100	(38.1)
			130	(8.9)	150	(65.9)
			110	(7.5)	200	(93.7)
			90	(6.2)	250	(121.4)
			75	(5.1)	300	(149.0)
2" (50 mm)	Opt. -80	2-pc. bolted	150	(10.3)	40 to 300	(4 to 149)

**TABLE 2  
CAPACITY - Cv (F<sub>L</sub> = .8)**

Setpoint Pressure	1" (25 mm) SIZE			1-1/2" (40 mm) SIZE			2" (50 mm) SIZE			Max. Pressure Drop
	Range Spring 10-30 psig			Range Spring 10-30 psig			Range Spring 10-30 psig			
psig (Barg)	10% Build	20% Build	30% Build	10% Build	20% Build	30% Build	10% Build	20% Build	30% Build	psid (Bard)
10 (.69)	.66	1.3	1.6	1.1	1.8	2.2	2.0	3.8	5.8	18 (1.24)
15 (1.03)	.99	1.7	2.6	1.3	2.0	3.0	2.3	5.0	7.2	25 (1.72)
20 (1.38)	1.1	1.9	2.9	1.4	2.6	3.7	2.9	6.3	10.1	31 (2.14)
25 (1.72)	1.2	2.0	3.3	1.7	3.0	3.9	4.1	9.1	12.5	38 (2.62)
30 (2.07)	1.3	2.6	3.5	1.9	3.1	4.1	5.3	10.3	12.5	44 (3.03)
Setpoint Pressure	Range Spring 20-60 psig			Range Spring 20-60 psig			Range Spring 20-60 psig			Max. Pressure Drop
psig (Barg)	10% Build	20% Build	30% Build	10% Build	20% Build	30% Build	10% Build	20% Build	30% Build	
20 (1.38)	.92	1.5	2.4	1.2	1.9	2.7	1.9	2.2	3.5	31 (2.14)
25 (1.72)	.98	1.6	2.5	1.3	2.3	3.3	2.0	2.9	4.0	38 (2.62)
30 (2.07)	1.0	1.9	3.0	1.4	2.6	3.7	2.1	4.0	5.5	44 (3.03)
35 (2.41)	1.1	2.1	3.2	1.5	2.9	4.1	3.2	5.2	7.1	51 (3.52)
40 (2.76)	1.2	2.3	3.5	1.7	3.2	4.6	3.4	5.3	7.3	57 (3.93)
45 (3.10)	1.3	2.6	4.0	1.8	3.4	4.9	3.4	5.6	9.1	64 (4.41)
50 (3.45)	1.4	2.7	4.4	1.9	3.5	5.1	3.4	5.9	9.7	70 (4.83)
55 (3.79)	1.5	2.9	4.5	2.0	3.8	5.3	3.8	6.2	10.5	77 (5.31)
60 (4.14)	1.6	3.2	4.6	2.3	4.2	5.5	4.0	7.1	11.5	83 (5.72)
Setpoint Pressure	Range Spring 40-75 psig			Range Spring 40-75 psig			Range Spring 40-75 psig			Max. Pressure Drop
psig (Barg)	10% Build	20% Build	30% Build	10% Build	20% Build	30% Build	10% Build	20% Build	30% Build	
40 (2.76)	.70	1.0	1.5	.86	1.4	2.0	2.7	3.9	5.5	57 (3.93)
45 (3.10)	.73	1.1	1.6	.88	1.5	2.1	2.8	4.5	6.0	64 (4.41)
50 (3.45)	.77	1.2	1.7	.90	1.6	2.3	3.0	5.0	6.5	70 (4.83)
55 (3.79)	.79	1.3	1.8	.96	1.7	2.4	3.2	5.1	7.1	77 (5.31)
60 (4.14)	.82	1.4	1.9	1.0	1.8	2.6	3.3	5.2	7.4	83 (5.72)
65 (4.48)	.84	1.5	2.0	1.1	1.9	2.7	3.5	5.3	8.8	90 (6.21)
70 (4.83)	.88	1.55	2.2	1.2	2.0	3.0	3.6	5.5	9.6	96 (6.62)
75 (5.17)	.89	1.6	2.3	1.3	2.1	3.2	3.9	6.4	11.2	103 (7.10)

**TABLE 3**  
**WATER CAPACITY — GPM**  
**S.G. = 1.0 T = 60° (F<sub>L</sub> = .8)**

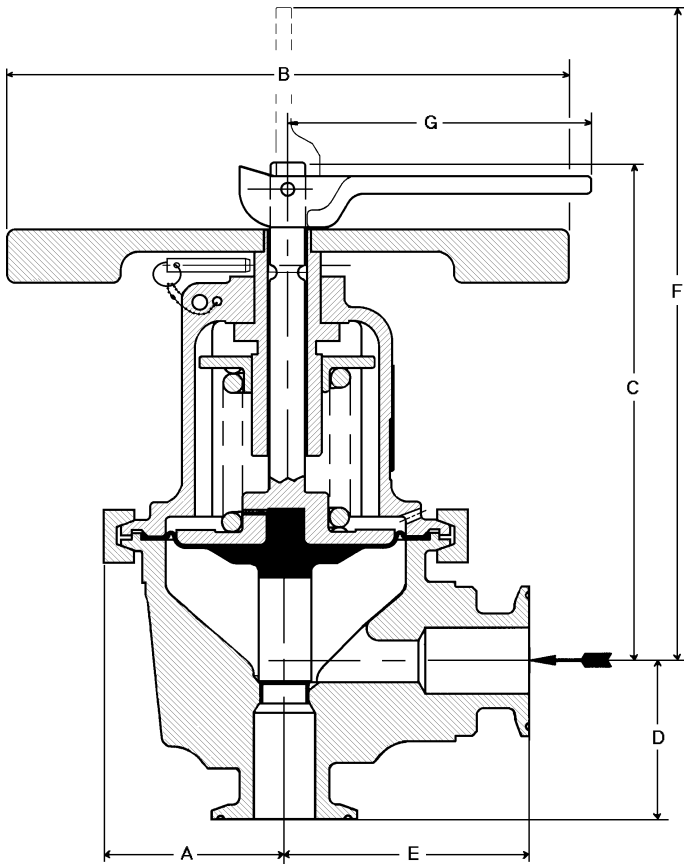
RANGE SPRING 10-30 psig											
Outlet Pressure P2, psig	Inlet Pressure P1, psig	GPM @ 1" (25 mm) Body Size			GPM @ 1-1/2" (40 mm) Body Size			GPM @ 2" (50 mm) Body Size			
		Build			Build			Build			
		10%	20%	30%	10%	20%	30%	10%	20%	30%	
0	10	2.2	4.5	5.8	3.6	6.2	7.9	6.7	13.2	20.9	
	15	4.0	7.2	11.5	5.3	8.5	13.2	9.2	21.2	32.0	
	20	5.2	9.2	14.0	6.6	12.6	17.9	13.4	30.3	48.7	
	25	6.2	10.4	17.1	8.8	15.5	20.2	21.0	47.1	64.8	
	30	7.2	14.3	19.3	10.5	17.1	22.6	29.0	56.8	68.9	
5	10	1.6	3.4	4.5	2.7	4.8	6.2	4.9	10.1	16.4	
	15	3.4	6.1	9.9	4.4	7.2	11.4	7.7	18.0	27.6	
	20	4.5	8.3	13.3	5.8	11.3	17.0	11.8	27.4	46.2	
	25	5.7	10.0	17.1	8.1	15.0	20.2	19.2	45.5	64.8	
	30	6.9	14.3	19.3	10.1	17.1	22.6	27.8	56.8	68.9	
10	15	2.5	4.8	8.0	3.3	5.7	9.2	5.8	14.1	22.3	
	20	3.8	7.1	11.6	4.8	9.7	14.8	9.9	23.5	40.3	
	25	5.0	8.9	15.7	7.1	13.4	18.5	16.9	40.7	59.3	
	30	6.2	13.3	18.8	9.1	15.8	22.1	25.2	52.5	67.3	
	20	2.9	5.7	9.6	3.7	7.8	12.3	7.6	18.8	33.4	
15	25	4.2	7.7	13.8	6.0	11.6	16.3	14.3	35.2	52.3	
	30	5.5	11.9	17.1	8.1	14.2	20.1	22.3	47.2	61.2	
	25	3.3	6.3	11.7	4.7	9.5	13.8	11.1	28.8	44.2	
30	4.7	10.4	15.3	6.9	12.4	17.9	19.0	41.2	54.5		
RANGE SPRING 20-60 psig											
0	20	4.3	7.2	11.6	5.6	9.2	13.0	8.8	10.6	16.9	
	25	5.1	8.3	13.0	6.7	11.9	17.1	10.4	15.2	20.7	
	30	5.5	10.5	16.5	7.7	14.3	20.4	11.7	22.1	30.5	
	35	6.4	12.2	18.6	8.7	16.9	23.9	18.4	30.2	41.0	
	40	7.3	14.1	21.4	10.4	19.6	28.1	20.6	32.7	44.5	
	45	8.3	16.6	25.6	11.5	21.7	31.3	21.9	35.7	58.1	
	50	9.3	18.0	29.3	12.7	23.3	34.0	22.9	39.5	64.5	
	55	10.4	20.1	31.2	13.9	26.3	36.7	26.4	43.2	72.6	
	60	11.5	23.0	33.0	16.5	30.1	39.5	28.8	50.9	82.4	
	5	20	3.8	6.5	11.0	4.9	8.3	12.4	7.8	9.6	16.0
25		4.6	8.0	13.0	6.2	11.5	17.1	9.5	14.7	20.7	
30		5.3	10.5	16.5	7.4	14.3	20.4	11.3	22.1	30.5	
35		6.4	12.2	18.6	8.7	16.9	23.9	18.3	30.2	41.0	
40		7.3	14.1	21.4	10.4	19.6	28.1	20.6	32.7	44.5	
45		8.3	16.6	25.6	11.4	21.7	31.3	21.9	35.7	58.1	
50		9.3	18.0	29.3	12.7	23.3	34.0	22.9	39.5	64.5	
55		10.4	20.1	31.2	13.9	26.3	36.7	26.4	43.2	62.6	
60		11.5	23.0	33.0	16.5	30.1	39.5	28.8	50.9	82.4	
10		20	3.2	5.6	9.6	4.2	7.1	10.8	6.5	8.2	14.0
	25	4.1	7.2	11.9	5.4	10.3	15.7	8.4	13.1	18.9	
	30	4.8	9.7	16.2	6.7	13.3	19.9	10.2	20.5	29.8	
	35	5.9	11.9	18.6	8.0	16.4	23.9	16.9	29.4	41.0	
	40	7.0	14.1	21.4	9.9	19.6	28.1	19.7	32.7	44.5	
	45	8.2	16.6	25.6	11.3	21.7	31.3	21.5	35.7	58.1	
	50	9.3	18.0	29.3	12.7	23.3	34.0	22.9	39.5	64.5	
	55	10.4	20.1	31.2	13.9	26.3	36.7	26.4	43.2	72.6	
	60	11.5	23.0	33.0	16.5	30.1	39.5	28.8	50.9	82.4	
	15	20	2.4	4.5	8.0	3.2	5.7	9.0	5.0	6.6	11.6
25		3.5	6.2	10.5	4.6	8.9	13.8	7.1	11.4	16.7	
30		4.2	8.7	14.7	5.9	11.9	18.1	9.0	18.4	27.1	
35		5.3	10.9	17.7	7.3	15.1	22.6	15.3	27.0	38.9	
40		6.5	13.2	21.3	9.2	18.4	28.0	18.1	30.7	44.2	
45		7.6	16.2	25.6	10.6	21.2	31.3	20.1	34.8	58.1	
50		8.9	18.0	29.3	12.0	23.3	34.0	21.8	39.5	64.5	
55		10.1	20.1	31.2	13.5	26.3	36.7	25.7	43.2	72.6	
60		11.4	23.0	33.0	16.4	30.1	39.5	28.7	50.9	82.4	
20		25	2.7	5.1	8.8	3.6	7.3	11.7	5.5	9.3	14.1
	30	3.6	7.6	13.1	5.0	10.4	16.1	7.7	16.1	24.1	
	35	4.7	9.8	16.2	6.5	13.6	20.7	13.6	24.3	35.6	
	40	5.9	12.2	19.8	8.3	16.9	26.0	16.5	28.3	41.1	
	45	7.1	15.2	24.8	9.8	19.8	30.4	18.6	32.5	56.3	
	50	8.3	17.1	29.3	11.2	22.1	34.0	20.4	37.5	64.5	
	55	9.5	19.7	31.2	12.7	25.8	36.7	24.2	42.3	72.6	
	60	10.9	23.0	33.0	15.6	30.1	39.5	27.3	50.9	82.4	
	RANGE SPRING 40-75 psig										
	0	40	4.3	6.1	8.9	5.1	8.3	11.8	15.8	23.1	32.2
45		4.7	7.0	9.9	5.4	9.3	13.0	17.5	27.9	36.7	
50		5.1	8.0	10.9	5.8	10.3	14.8	19.0	32.2	41.6	
55		5.5	9.0	12.0	6.4	11.3	16.0	21.2	34.1	47.0	
60		5.9	10.0	13.1	6.9	12.4	17.9	22.5	35.7	50.9	
65		6.2	11.1	14.3	7.8	13.5	19.3	25.2	37.9	62.4	
70		6.7	11.9	16.2	8.8	14.7	22.1	26.8	40.3	70.4	
75		7.0	12.6	17.4	9.8	15.9	24.2	29.4	48.5	84.5	
5		40	4.3	6.1	9.2	5.1	8.3	11.8	15.8	23.1	32.2
		45	4.7	7.0	10.2	5.4	9.3	13.0	17.5	27.9	36.7
	50	5.1	8.0	11.3	5.8	10.3	14.8	19.0	32.2	41.6	
	55	5.5	9.0	12.5	6.4	11.3	16.0	21.2	34.1	47.0	
	60	5.9	10.0	13.6	6.9	12.4	17.9	22.5	35.7	50.9	
	65	6.2	11.1	14.8	7.8	13.5	19.3	25.2	37.9	62.4	
	70	6.7	11.9	16.8	8.8	14.7	22.1	26.8	40.3	70.4	
	75	7.0	12.6	18.1	9.8	15.9	24.2	29.4	48.5	84.5	
	10	40	4.1	6.1	9.2	5.0	8.3	11.8	15.6	23.1	32.2
		45	4.6	7.0	10.2	5.4	9.3	13.0	17.5	27.9	36.7
50		5.1	8.0	11.3	5.8	10.3	14.8	19.0	32.2	41.6	
55		5.5	9.0	12.5	6.4	11.3	16.0	21.2	34.1	47.0	
60		5.9	10.0	13.6	6.9	12.4	17.9	22.5	35.7	50.9	
65		6.2	11.1	14.8	7.8	13.5	19.3	25.2	37.9	62.4	
70		6.7	11.9	16.8	8.8	14.7	22.1	26.8	40.3	70.4	
75		7.0	12.6	18.1	9.8	15.9	24.2	29.4	48.5	84.5	
15		40	3.8	5.7	9.1	4.6	8.0	11.8	14.4	22.5	32.2
		45	4.3	6.9	10.2	5.2	9.3	13.0	16.7	27.9	36.7
	50	4.9	8.0	11.3	5.7	10.3	14.8	18.7	32.2	41.6	
	55	5.3	9.0	12.5	6.4	11.3	16.0	21.2	34.1	47.0	
	60	5.9	10.0	13.6	6.9	12.4	17.9	22.5	35.7	50.9	
	65	6.2	11.1	14.8	7.8	13.5	19.3	25.2	37.9	62.4	
	70	6.7	11.9	16.8	8.8	14.7	22.1	26.8	40.3	70.4	
	75	7.0	12.6	18.1	9.8	15.9	24.2	29.4	48.5	84.5	
	20	40	3.4	5.3	8.5	4.2	7.4	11.3	13.1	20.7	30.9
		45	4.0	6.4	9.9	4.8	8.7	13.0	15.4	26.4	36.7
50		4.6	7.6	11.3	5.3	10.1	14.8	17.5	31.7	41.6	
55		5.0	8.8	12.5	6.1	11.3	16.0	20.2	34.1	47.0	
60		5.6	10.0	13.6	6.8	12.4	17.9	22.1	35.7	50.9	
65		6.0	11.1	14.8	7.8	13.5	19.3	25.2	37.9	62.4	
70		6.6	11.9	16.8	8.8	14.7	22.1	26.8	40.3	70.4	
75		7.0	12.6	18.1	9.8	15.9	24.2	29.4	48.5	84.5	

Moderate level of cavitation.  
 Full cavitation.

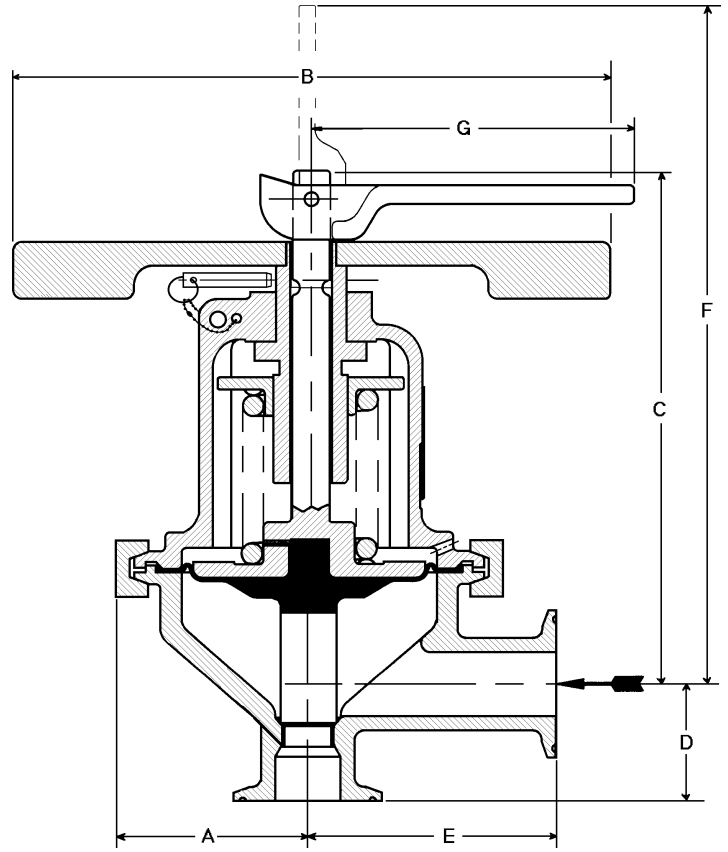
@Q    @QW

**TABLE 4**  
**NITROGEN CAPACITY --SCFH**  
**S.G. = 0.987    T = 60°    (F<sub>L</sub> = .8)**

RANGE SPRING 10-30 psig										
Outlet Pressure P2, psig	Inlet Pressure P1, psig	SCFH @ 1" (25 mm) Body Size			SCFH @ 1-1/2" (40 mm) Body Size			SCFH @ 2" (50 mm) Body Size		
		Build			Build			Build		
		10%	20%	30%	10%	20%	30%	10%	20%	30%
0	10	500	1,030	1,310	840	1,420	1,810	1,540	3,010	4,770
	15	920	1,650	2,640	1,200	1,940	3,040	2,100	4,840	7,340
	20	1,200	2,180	3,500	1,520	2,980	4,460	3,110	7,200	12,160
	25	1,500	2,650	4,620	2,130	3,970	5,460	5,070	12,060	17,490
	30	1,840	3,910	5,570	2,690	4,660	6,530	7,440	15,480	19,900
5	10	500	1,030	1,310	840	1,420	1,800	1,540	3,000	4,760
	15	920	1,650	2,640	1,200	1,940	3,040	2,100	4,840	7,340
	20	1,200	2,180	3,500	1,520	2,980	4,460	3,110	7,200	12,160
	25	1,500	2,650	4,620	2,130	3,970	5,460	5,070	12,060	17,490
	30	1,840	3,910	5,570	2,690	4,660	6,530	7,440	15,480	19,900
10	15	860	1,540	2,470	1,130	1,820	2,850	1,970	4,530	6,880
	20	1,190	2,180	3,490	1,520	2,980	4,460	3,110	7,190	12,140
	25	1,500	2,650	4,620	2,130	3,970	5,460	5,070	12,060	17,490
	30	1,840	3,910	5,570	2,690	4,660	6,530	7,440	15,480	19,900
	20	1,030	1,880	3,020	1,320	2,580	3,860	2,690	6,230	10,510
15	25	1,460	2,580	4,490	2,070	3,870	5,310	4,930	11,730	17,020
	30	1,830	3,900	5,560	2,680	4,650	6,510	7,420	15,450	19,860
	20	1,200	2,120	3,700	1,700	3,190	4,370	4,060	9,660	14,020
30	1,720	3,660	5,220	2,520	4,370	6,120	6,970	14,500	18,640	
RANGE SPRING 20-60 psig										
0	20	1,000	1,720	2,900	1,310	2,180	3,260	2,050	2,520	4,210
	25	1,230	2,120	3,500	1,630	3,050	4,620	2,500	3,900	5,580
	30	1,410	2,860	4,780	1,980	3,910	5,890	3,010	6,040	8,800
	35	1,730	3,530	5,710	2,370	4,870	7,320	4,980	8,720	12,580
	40	2,090	4,270	6,920	2,960	5,950	9,090	5,860	9,920	14,370
	45	2,470	5,290	8,680	3,430	6,920	10,630	6,510	11,360	19,700
	50	2,890	5,980	10,390	3,930	7,750	12,050	7,110	13,130	22,870
	55	3,340	6,940	11,500	4,460	9,090	13,540	8,490	14,930	26,800
	60	3,830	8,220	12,640	5,500	10,790	15,110	9,620	18,220	31,570
	20	1,000	1,720	2,900	1,310	2,180	3,260	2,050	2,520	4,210
25	1,230	2,120	3,500	1,630	3,050	4,620	2,500	3,900	5,580	
30	1,410	2,860	4,780	1,980	3,910	5,890	3,010	6,040	8,800	
35	1,730	3,530	5,710	2,370	4,870	7,320	4,980	8,720	12,580	
40	2,090	4,270	6,920	2,960	5,950	9,090	5,860	9,920	14,370	
45	2,470	5,290	8,680	3,430	6,920	10,630	6,510	11,360	19,700	
50	2,890	5,980	10,390	3,930	7,750	12,050	7,110	13,130	22,870	
55	3,340	6,940	11,500	4,460	9,090	13,540	8,490	14,930	26,800	
60	3,830	8,220	12,640	5,500	10,790	15,110	9,620	18,220	31,570	
5	20	1,000	1,720	2,900	1,310	2,180	3,260	2,050	2,520	4,210
	25	1,230	2,120	3,500	1,630	3,050	4,620	2,500	3,900	5,580
	30	1,410	2,860	4,780	1,980	3,910	5,890	3,010	6,040	8,800
	35	1,730	3,530	5,710	2,370	4,870	7,320	4,980	8,720	12,580
	40	2,090	4,270	6,920	2,960	5,950	9,090	5,860	9,920	14,370
	45	2,470	5,290	8,680	3,430	6,920	10,630	6,510	11,360	19,700
	50	2,890	5,980	10,390	3,930	7,750	12,050	7,110	13,130	22,870
	55	3,340	6,940	11,500	4,460	9,090	13,540	8,490	14,930	26,800
	60	3,830	8,220	12,640	5,500	10,790	15,110	9,620	18,220	31,570
	20	870	1,490	2,500	1,130	1,880	2,820	1,770	2,160	3,640
25	1,190	2,060	3,400	1,580	2,970	4,490	2,430	3,790	5,430	
30	1,410	2,850	4,770	1,980	3,900	5,880	3,010	6,030	8,790	
35	1,730	3,530	5,710	2,370	4,870	7,320	4,980	8,720	12,580	
40	2,090	4,270	6,920	2,960	5,950	9,090	5,860	9,920	14,370	
45	2,470	5,290	8,680	3,430	6,920	10,630	6,510	11,360	19,700	
50	2,890	5,980	10,390	3,930	7,750	12,050	7,110	13,130	22,870	
55	3,340	6,940	11,500	4,460	9,090	13,540	8,490	14,930	26,800	
60	3,830	8,220	12,640	5,500	10,790	15,110	9,620	18,220	31,570	
10	20	980	1,700	2,800	1,300	2,440	3,700	2,010	2,470	4,470
	25	1,320	2,680	4,470	1,850	3,660	5,520	2,820	5,660	8,250
	30	1,710	3,470	5,620	2,330	4,790	7,190	4,900	8,580	12,370
	35	2,080	4,270	6,910	2,950	5,940	9,080	5,850	9,910	14,350
	40	2,470	5,290	8,680	3,430	6,920	10,630	6,510	11,360	19,700
	45	2,890	5,980	10,390	3,930	7,750	12,050	7,110	13,130	22,870
	50	3,340	6,940	11,500	4,460	9,090	13,540	8,490	14,930	26,800
	55	3,830	8,220	12,640	5,500	10,790	15,110	9,620	18,220	31,570
	20	1,220	1,860	2,970	1,500	2,600	3,950	4,660	7,270	10,790
	25	1,390	2,240	3,470	1,670	3,050	4,560	5,400	9,200	12,910
30	1,590	2,660	4,020	1,860	3,540	5,430	6,120	11,090	15,310	
35	1,760	3,110	4,600	2,140	4,070	6,130	7,090	12,220	18,010	
40	1,960	3,600	5,220	2,390	4,630	7,140	7,800	13,290	20,280	
45	2,150	4,120	5,880	2,810	5,220	7,940	9,020	14,620	25,370	
50	2,390	4,530	6,890	3,260	5,850	9,400	9,890	16,030	30,010	
55	2,560	4,970	7,650	3,750	6,520	10,640	11,210	19,890	37,150	
5	20	1,220	1,860	2,970	1,500	2,600	3,950	4,660	7,270	10,790
	25	1,390	2,240	3,470	1,670	3,050	4,560	5,400	9,200	12,910
	30	1,590	2,660	4,020	1,860	3,540	5,430	6,120	11,090	15,310
	35	1,760	3,110	4,600	2,140	4,070	6,130	7,090	12,220	18,010
	40	1,960	3,600	5,220	2,390	4,630	7,140	7,800	13,290	20,280
	45	2,150	4,120	5,880	2,810	5,220	7,940	9,020	14,620	25,370
	50	2,390	4,530	6,890	3,260	5,850	9,400	9,890	16,030	30,010
	55	2,560	4,970	7,650	3,750	6,520	10,640	11,210	19,890	37,150
	20	1,220	1,860	2,970	1,500	2,600	3,950	4,660	7,270	10,790
	25	1,390	2,240	3,470	1,670	3,050	4,560	5,400	9,200	12,910
30	1,590	2,660	4,020	1,860	3,540	5,430	6,120	11,090	15,310	
35	1,760	3,110	4,600	2,140	4,070	6,130	7,090	12,220	18,010	
40	1,960	3,600	5,220	2,390	4,630	7,140	7,800	13,290	20,280	
45	2,150	4,120	5,880	2,810	5,220	7,940	9,020	14,620	25,370	
50	2,390	4,530	6,890	3,260	5,850	9,400	9,890	16,030	30,010	
55	2,560	4,970	7,650	3,750	6,520	10,640	11,210	19,890	37,150	
10	20	1,220	1,860	2,970	1,500	2,600	3,950	4,660	7,270	10,790
	25	1,390	2,240	3,470	1,670	3,050	4,560	5,400	9,200	12,910
	30	1,590	2,660	4,020	1,860	3,540	5,430	6,120	11,090	15,310
	35	1,760	3,110	4,600	2,140	4,070	6,130	7,090	12,220	18,010
	40	1,960	3,600	5,220	2,390	4,630	7,140	7,800	13,290	20,280
	45	2,150	4,120	5,880	2,810	5,220	7,940	9,020	14,620	25,370
	50	2,390	4,530	6,890	3,260	5,850	9,400	9,890	16,030	30,010
	55	2,560	4,970	7,650	3,750	6,520	10,640	11,210	19,890	37,150
	20	1,220	1,860	2,970	1,500	2,600	3,950	4,660	7,270	10,790
	25	1,390	2,240	3,470	1,670	3,050	4,560	5,400	9,200	12,910
30	1,590	2,660	4,020	1,860	3,540	5,430	6,120	11,090	15,310	
35	1,760	3,110	4,600	2,140	4,070	6,130	7,090	12,220	18,010	
40	1,960	3,600	5,220	2,390	4,630	7,140	7,800	13,290	20,280	
45	2,150	4,120	5,880	2,810	5,220	7,940	9,020	14,620	25,370	
50	2,390	4,530	6,890	3,260	5,850	9,400	9,890	16,030	30,010	
55	2,560	4,970	7,650	3,750	6,520	10,640	11,210	19,890	37,150	



**FORGED BODY  
MODEL C-BPV**



**INVESTMENT CAST BODY  
MODEL C-BPV**

**TABLE 5: DIMENSIONS**

**ENGLISH UNITS**

Regulator Size (Inches)	FORGED BODY-inch							Shipping Weight lbs.
	A	B	C	D	E	F	G	
1"	3.75	8.00	8.50	2.00	3.31	12.56	4.31	18
1-1/2"	3.75	8.00	8.50	2.00	3.31	12.56	4.31	22
2"	5.00	8.00	9.12	2.60	4.50	13.03	4.31	32
INVESTMENT CAST BODY								
1"	3.75	8.00	8.44	1.59	3.31	12.50	4.31	12

**METRIC UNITS**

Regulator Size (mm)	FORGED BODY-mm							Shipping Weight kgs.
	A	B	C	D	E	F	G	
25	95	203	216	50	84	319	110	8.1
40	95	203	216	50	84	319	110	9.9
50	127	203	232	66	114	331	110	14.5
INVESTMENT CAST BODY								
25	95	203	214	40	84	318	110	5.4

# PRODUCT CODE 07/01/95

TABLE 2

SST BODY / SPRING CHAMBER	BODY SIZE	CODE
316L Forged Body / 316 Investment Cast	All	<b>F</b>
316L Investment Cast / 316 Investment Cast	1" only	<b>M</b>

TABLE 1


SIZE	CODE
1"	<b>6</b>
1-1/2"	<b>8</b>
2"	<b>9</b>

Body/Spring Chamber Materials

Size

Trim Designation

TABLE 3

STAINLESS STEEL TRIM			
DESIG. No.	CODE	DESIG. NO.	CODE
R1	<b>R1</b>	LE	<b>LE</b>
R3	<b>R3</b>	LC	<b>LC</b>
Non-3A Approved		3A Approved	

Tri-Clamp Fitting Connections

TABLE 4

SST RANGE SPRING	
PSIG	CODE
10-30	<b>1</b>
20-60	<b>2</b>
40-75	<b>3</b>

Range Spring

**CR**

[ ]

[ ]

[ ] [ ]

**7**

**1**

[ ]

[ ]

[ ]

[ ]

[ ]

[ ]

[ ]

**B**

Options

**MODEL "C-BPV"  
BACK PRESSURE RELIEF REGULATOR**

ASSIGNMENT OF "OPTION" CODES

1. When ordering a valve per one of Cashco's special drawings, the code "X" and the 5-digit number following override all other options. Otherwise, proceed with the following.
2. NUMERIC digits assigned first in "ascending" order.
3. ALPHA designations are assigned second (excluding the "X") in "alphabetical order".
4. Left justify.
5. Add "0" to all unused squares.
6. If insufficient quantity of squares, consult factory for proper code.

TABLE 5

DESCRIPTION	OPTION	CODE
None	—	<b>0</b>
Special Construction	—	<b>X</b>
Tri-Clamp® 2-piece design with SST bolts. (Available on 2" size only.)	-80	<b>A</b>