MODEL 3171

# MODEL 3171
## BACK PRESSURE RELIEF REGULATOR

The Model 3171 is a stainless steel back pressure relief regulator designed to handle small to mid-capacity flow rates in sanitary biotechnical process piping systems. This unit is capable of controlling inlet pressure to a level between 5 and 200 psig (.34 and 13.8 Barg).

## FEATURES

**High Stability:** High mass plug allows dampening of high frequency disturbances from inlet or outlet side of regulator.

**Trim Removal:** Easily removeable trim from regulator while in-line.

**Non-Asbestos Construction:** Standard gasketing of non-asbestos material.

**Materials Construction:** All metallic parts are SST. Unit is cleaned to Cashco Spec. #S-1576.

**Surface Finish:** Interior of body surface electro-polished to #32 micro-inch $R_a$ finish with electro-polished exterior.

## 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.

**⚠ CAUTION**

**This is not a safety device and must not be substituted for a code approved pressure safety relief valve or rupture disc.**

ISO 9001 Registered

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## STANDARD/GENERAL SPECIFICATIONS

**Body Size and Material:** 1/2" (DN15) Wrought Barstock; ASTM A479, Type 316L SST.

**Body Connection:** Standard - Sanitary "Tri-Clamp®". Designed to seal against weld-type clamp liners per ISO 2852.

**Spring Chamber Materials:** Standard - Cast SST; ASTM A351, Grade CF3M.

**Trim:**

| PART | S1L | SET |
|---|---|---|
| Diaphragm | 302 SST | EPDM |
| Diaphragm Cover | – | TFE |
| Piston | 316L SST | 316L SST |
| Seat[1] | 316L SST | TFE |
| Seat Screw | – | 316 SST |
| Temperature Range °F (°C) | -20 to +400 (-29 to +205) | -20 to +300 (-29 to +149) |

[1]The fixed portion of the seat is integral to the body. Indicated seat is the moving portion and is attached or integral with the piston.

**Gaskets:** Standard: TFE Gaskets; TFE O-rings at diaphragm and piston locations.

**Operating Temperature:** -20 to +400°F (-29° to +205°C)

**Inlet Pressure:** 240 psig (16.5 Barg) maximum

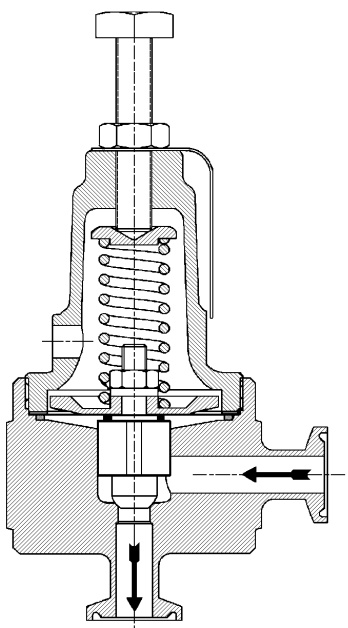

**Figure 1:** Metal Seat Design

**Range Springs:** Standard: SST

| Range Spring | | Maximum Build |
|---|---|---|
| psig | (Barg) | |
| 5-30 | (.34-2.1) | 20% |
| 20-80 | (1.4-5.5) | 20% |
| 70-140 | (4.8-9.6) | 20% |
| 130-200 | (9.0-13.8) | 20% |

**Cv's/Capacities:** See Tables 1, 2, 3, and 4.

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

**NOTE:** Refer to "TECHNICAL SPECIFICATIONS" tables for a more complete description of the above specifications.

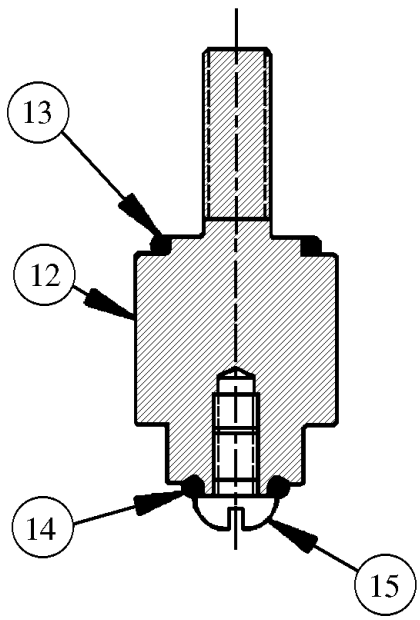


**Figure 2:** Composition Seat Design (Refer to IOM for Part Identification)

# TECHNICAL SPECIFICATIONS

## TABLE 1
## CAPACITY - Cv
## (FL = 0.95)
## 1/2" Size

| SETPOINT ($P_1$) PRESSURE (psig) | METAL DIAPHRAGM | | COMPOSITION DIAPHRAGM | |
|---|---|---|---|---|
| | % BUILD | | % BUILD | |
| | 10% | 20% | 10% | 20% |
| 10 | .05 | .10 | .07 | .14 |
| 25 | .09 | .18 | .11 | .22 |
| 50 | .09 | .18 | .11 | .22 |
| 75 | .12 | .25 | .16 | .31 |
| 100 | .08 | .17 | .10 | .20 |
| 125 | .09 | .18 | .11 | .22 |
| 150 | .03 | .07 | .05 | .10 |
| 200 | .07 | .14 | .09 | .17 |

## TABLE 2
## WATER CAPACITY - GPM
## S.G. = 1.0 T - 60°F FL = 0.95, 1/2" Size -
## Composition Diaphragm Only

| OUTLET PRESSURE (psig) | SETPOINT PRESSURE (psig) | 1/2" BODY % BUILD | |
|---|---|---|---|
| | | 10% | 20% |
| ATM | 10 | 0.2 | 0.5 |
| | 25 | 0.6 | 1.2 |
| | 50 | 0.8 | 1.7 |
| | 75 | 1.5 | CAV |
| | 100 | CAV | CAV |
| 5 | 10 | 0.2 | 0.4 |
| | 25 | 0.5 | 1.1 |
| | 50 | 0.8 | 1.6 |
| | 75 | 1.4 | CAV |
| | 100 | 1.0 | CAV |
| | 125 | CAV | CAV |
| 10 | 25 | 0.5 | 1.0 |
| | 50 | 0.7 | 1.6 |
| | 75 | 1.4 | 2.8 |
| | 100 | 1.0 | CAV |
| | 125 | 1.2 | CAV |
| | 150 | CAV | CAV |
| 15 | 25 | 0.4 | 0.9 |
| | 50 | 0.7 | 1.5 |
| | 75 | 1.3 | 2.7 |
| | 100 | 1.0 | 2.0 |
| | 125 | 1.2 | CAV |
| | 150 | 0.6 | CAV |
| | 200 | CAV | CAV |
| 25 | 50 | 0.6 | 1.3 |
| | 75 | 1.2 | 2.5 |
| | 100 | 0.9 | 1.9 |
| | 125 | 1.2 | 2.5 |
| | 150 | 0.6 | CAV |
| | 200 | 1.3 | CAV |

**NOTE:** Where "CAV" is indicated, water has reached full cavitation and flow is choked.

## TABLE 3
## AIR CAPACITY - SCFH
## S.G. = 1.0 T - 60°F $F_L$ - 0.95, 1/2" Size
## Composition Diaphragm Only

| OUTLET PRESSURE (psig) | SETPOINT PRESSURE (psig) | 1/2" BODY % BUILD | |
|---|---|---|---|
| | | 10% | 20% |
| ATM | 50 | 270 | 580 |
| | 75 | 550 | 1150 |
| | 100 | 440 | 950 |
| | 125 | 590 | 1280 |
| | 150 | 320 | 690 |
| | 200 | 750 | 1530 |
| 25 | 75 | 540 | 1140 |
| | 100 | 440 | 950 |
| | 125 | 590 | 1280 |
| | 150 | 320 | 690 |
| | 200 | 750 | 1530 |
| 50 | 100 | 420 | 900 |
| | 125 | 580 | 1250 |
| | 150 | 320 | 680 |
| | 200 | 750 | 1530 |
| 100 | 125 | 410 | 890 |
| | 150 | 270 | 580 |
| | 200 | 700 | 1450 |
| 150 | 200 | 570 | 1160 |

## TABLE 4
## STEAM - LBS/HR
## S.G. = Actual T = Saturated $F_L$ = 0.95, 1/2" Size
## Metal Diaphragm Only

| OUTLET PRESSURE (psig) | SETPOINT PRESSURE (psig) | 1/2" BODY % BUILD | |
|---|---|---|---|
| | | 10% | 20% |
| ATM | 50 | 11 | 23 |
| | 75 | 20 | 43 |
| | 100 | 17 | 38 |
| | 125 | 23 | 48 |
| | 150 | 9 | 22 |
| | 200 | 28 | HI VEL |
| 10 | 50 | 11 | 22 |
| | 75 | 20 | 42 |
| | 100 | 17 | 38 |
| | 125 | 23 | 48 |
| | 150 | 9 | 22 |
| | 200 | 28 | 57 |
| 25 | 75 | 19 | 41 |
| | 100 | 17 | 37 |
| | 125 | 23 | 47 |
| | 150 | 9 | 22 |
| | 200 | 28 | 57 |
| 50 | 100 | 16 | 35 |
| | 125 | 22 | 46 |
| | 150 | 9 | 21 |
| | 200 | 27 | 56 |
| 100 | 125 | 17 | 36 |
| | 150 | 8 | 19 |
| | 200 | 26 | 54 |

**NOTES:** Where "HI VEL" is indicated within the above capacity tables, outlet velocity with 1/2" tube has reached 0.35 x Sonic Velocity, an accepted practical velocity limit. Flow is the last indicated value in the column above "HI VEL".



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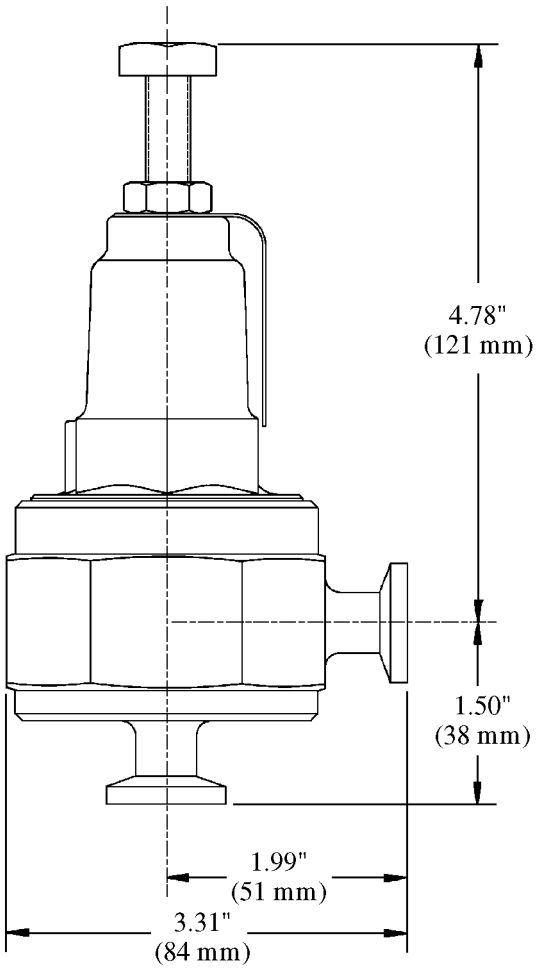
## DIMENSIONS AND WEIGHTS




Weight = 3 Lbs.
(1.36 kgs)

# MODEL 3171 PRODUCT CODE 09/05/07

### FOR THE FOOD AND PHARMACEUTICAL INDUSTRY

| L | S | 4 | – | A | Table 1 | 7 | – | 1 | Table 2 | 6 | 0 | 0 | 0 | 0 | 0 | B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| TABLE 1 – TRIM DESIGNATION NUMBERS | |
|---|---|
| **Desig.** | **CODE** |
| S1L* | **L1** |
| SET | **ST** |
| * Trim utilize on steam service only. | |

| TABLE 2 – RANGE SPRINGS | | |
|---|---|---|
| **SST Range Spring** | | **CODE** |
| **psig** | **(Barg)** | |
| 5-30 | (.34-2.1) | **A** |
| 20-80 | (1.4-5.5) | **B** |
| 70-140 | (4.8-9.7) | **C** |
| 130-200 | (9.0-13.8) | **D** |

| OPTIONS | | |
|---|---|---|
| **Description** | **Option** | **CODE** |
| Wetted Parts Cert 'U' (USP) | **Std** | **6** |
| For Special Construction Other Than Above Contact Cashco for Special Product Code | | |

1. NUMERIC digits assigned first in “ascending” order.
2. ALPHA designations are assigned second in “alphabetical” order.
3. Left justify.
4. Add “0” to all unused squares.
5. If insufficient quantity of squares, consult factory for proper code.

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