TYPICAL APPLICATIONS
- Instrumentation
- Analyzer Systems
- Gas Cabinets
- Inline Point of Use
- Suitable for Corrosive
- Suitable for High Purity Gas

FEATURES
- Accurate Adjustment
- Low Internal Volume
- Low Operating Torque
- Suitable for corrosive applications

FUNCTIONAL PERFORMANCE
Supply Pressure
Effect: 0.5/100 psig (.03/6.89 Barg)

Temperature
Coefficient: 0.16 psig/°F (.01Barg/°C)

Design Proof
Pressure: 5,400 psig (372.3 Barg)

Internal Volume: 6.9 cc

Design Leakage:
Outboard - 1x10⁻⁹ scc/sec He
Inboard - 1x10⁻⁹ scc/sec He

Model P1
Single Stage Pressure Reducing Regulator
1/4”-1/2” (DN8-DN15)

The Model P1 is designed for gases and liquids with inlet pressures up to 3600 psig (248 Barg). Standard adjustable outlet ranges from 1-10 psig (.07-.69 Barg) thru 10-750 psig (.69-51.7 Barg). Flow coefficient of 0.02, 0.06, and 0.20 available. This versatile point of use regulator can be ordered with a variety of options to meet your system demands. Standard construction includes 40 micron integral filter and diffusion resistant stainless steel diaphragm.

GENERAL SPECIFICATIONS
Inlet & Outlet: 1/4", 3/8" & 1/2" (DN8, DN10 & DN15)
Size:
Cv Capability: 0.02, 0.06 and 0.20

Maximum Inlet Pressure:
FNPT/Tube Ends - 3,600 psig (248.2 Barg).
Tri-Clamp - 300 psig (20.7 Barg)
Min Pressure Drop - 100 psid.

Outlet Pressure: 1-750 psig (.07-51.7 Barg)

Body End Connections:
FNPT, Tube Ends,
Tri-Clamp - 1/2” (DN15) Port “A” Only

Body / Spring Chamber Material:
316L SST/316L SST,
Brass/6061 AL
Sanitary Construction:
Interior of body surface Electro Polished to 16 micro-inch Ra finish with Electro Polished exterior.

Temp. Limits:
PCTFE - -45 to 185°F (-42.7 to 85°C)
Polyimide - -45 to 575°F (-42.7 to 301°C)
TFE - -45 to 275°F (-42.7 to 135°C)

Operating Temp Range:
Brass - -20 to 400°F (-28.9 to 204°C)
SST - -20 to 500°F (-28.9 to 260°C)

Range Spring Material:
Std: Steel,
Sanitary Service: SST 1 -250 psig

Composite Knob:
(Standard) -50 to 200°F (-45.6 to 93°C)
For temperatures outside (Std.) knob range see Options for Colored Knobs.
**STANDARD CONSTRUCTION**

**Captured Vent**
The captured vent is designed to safely vent process fluid when handling toxic or hazardous media. The user can easily pipe this vent to a safe location. It features a 1/8” FNPT port located on the spring housing. This feature can be incorporated into a self-relieving regulator that provides an additional port to permit the piping away of the expelled media.

**OPTIONS**

**NACE Construction - (P or R)** in Position 6. - Internal wetted portions meet NACE standard MR0175, when the exterior of the regulator is not directly exposed to a sour gas environment, buried, insulated or otherwise denied direct atmospheric exposure. SST/SST body/spring chamber materials only. Inconel w/TFE liner, Inconel X-750 spring.

**Dome Loaded - (0)** in Position 11. - The dome loaded option allows for regulators to be loaded from remote location to change pressure settings. **NOTES:** Diaphragm failure will result in loading fluid to mix with the process being controlled. Maximum Loading Pressure is 125 psig (8.6 Barg).

**Mounting Bracket - (5)** in Position 14. - The mounting bracket is a base, or step type. The material is 303 stainless steel. The bracket mounts to the back of the single stage, and back pressure regulators, via 10/32 screws.

**Panel Mount - (C)** in Position 14. - The panel mount feature requires a panel cut out of 1–3/8”, complete with a threaded spring housing, and a panel mount ring to secure the regulator.

**Tamper Proof - (1)** in Position 15. - In this feature the control knob is removed and replaced with an acorn nut. The user can set the outlet pressure and securely tighten the nut, preventing any unwanted adjustments on the regulator.

**Colored Knobs - (2, 8 and W)** in Position 15. - In this feature the control knob is anodized aluminum either in black, blue, or red, compared to the standard red composite knob. This allows for color coding of processes. Temperature range: -55 to 300°F (-45.6 to 149 °C).

**Relief Valve - (H, J, K, or L)** in Position 16. - The relief valve main function is to relieve excess downstream pressure due to system malfunctions. This feature prevents over pressurization by automatically venting of gas or liquid. The valve is fully adjustable, is 1/4” male x 1/4” male.

**Self-Relieving - (S)** in Position 16. - The self-relieving option features an integral mechanism allowing downstream pressure to be vented to the atmosphere as the outlet pressure setting is decreased. This allows the user to easily and rapidly decrease the pressure in a closed, or low volume system without an auxiliary bleed valve. In addition, this option also functions as a sensitive relief valve. The pressure at which it relieves is automatically determined by the outlet pressure setting of the regulator.

**Self-Relieving & Mechanical Stop - (T)** in Position 16. - Same as self-relieving except construction includes mechanical stop to limit maximum outlet setting.

**Vacuum Assist Spring - (V)** in Position 16. - In this feature a vacuum assist spring is placed under the diaphragm. This spring prevents the diaphragm from collapsing during a vacuum purge.

**Cleaned for Oxygen Service #S-1134 - (M)** in Position 17. - This is a requirement for gaseous oxygen environments. All regulators requiring advanced cleaning shall be processed according to strict guidelines. **NOTE:** Design Pressure Rating shall not exceed 375 psig (25.8 Barg) when body material is SST and process medium is oxygen.

**Cleaned per Spec. #S-1542 - (N)** in Position 17. - Cleaning identical to that of #S-1134, but not labeled for application in oxygen service. **NOT** suitable for Oxygen Service.

**Sanitary Construction - (P)** in Position 17. - SST Construction with Smooth SST Knob - Interior of body surface Electro Polished to 16 micro-inch Ra finish with Electro Polished exterior. NPT Connections. Tri-Clamp Ends 1/2” Size Port “A” only. Unit is cleaned to Cashco Spec. #S-1576. Comply with FDA 21 CRF 177 2600 & USP Class VI material classification.
Porting Configuration Guide

* Used as a purge port.

DIMENSIONS

<table>
<thead>
<tr>
<th>Size</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>C Dome Load</th>
<th>Wt</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4&quot;, 3/8&quot; NPT</td>
<td>.75</td>
<td>2.00</td>
<td>5.13</td>
<td>3.05</td>
<td>2.2</td>
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<td>1/2&quot; NPT</td>
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<td>2.48</td>
<td>5.38</td>
<td>3.30</td>
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<td>1/4 - 1/2&quot; Tube</td>
<td>.95</td>
<td>6.94</td>
<td>5.38</td>
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<td>2.4</td>
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<td>1/2&quot; Tri-Clamp</td>
<td>.95</td>
<td>3.31</td>
<td>5.13</td>
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Metric Units mm & kg

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<tr>
<th>Size</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>C Dome Load</th>
<th>Wt</th>
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</thead>
<tbody>
<tr>
<td>DN8, DN10 NPT</td>
<td>19</td>
<td>50</td>
<td>130</td>
<td>78</td>
<td>1.0</td>
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<td>DN15 NPT</td>
<td>22</td>
<td>63</td>
<td>137</td>
<td>84</td>
<td>1.0</td>
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<td>DN8-15 Tube</td>
<td>24</td>
<td>177</td>
<td>137</td>
<td>-</td>
<td>1.1</td>
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<tr>
<td>DN15 Tri-Clamp</td>
<td>24</td>
<td>84</td>
<td>130</td>
<td>-</td>
<td>1.1</td>
</tr>
</tbody>
</table>

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**MODEL P1 PRODUCT CODER (COMPOSITE RED KNOB STANDARD)**

### POSITION 1 - OPTIONS

<table>
<thead>
<tr>
<th>OPTIONS</th>
<th>CODE</th>
<th>OPTIONS CODE</th>
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</thead>
<tbody>
<tr>
<td>No Option</td>
<td>0</td>
<td>Panel Mount.</td>
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<tr>
<td>Mounting Bracket</td>
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### POSITION 15 - OPTIONS

<table>
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<tr>
<th>OPTIONS</th>
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<th>OPTIONS CODE</th>
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</thead>
<tbody>
<tr>
<td>No Option</td>
<td>0</td>
<td>Blue Knob.</td>
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<tr>
<td>Tamper Proof.</td>
<td>1</td>
<td>Red Knob.</td>
</tr>
<tr>
<td>Black Knob.</td>
<td>2</td>
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### POSITION 3 - BODY SIZE / Cv

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<tr>
<th>Size</th>
<th>Cv</th>
<th>CODE</th>
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</thead>
<tbody>
<tr>
<td>1/4&quot; (DN8)</td>
<td>0.02</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>0.06</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>0.20</td>
<td>3</td>
</tr>
<tr>
<td>3/8&quot; (DN10)</td>
<td>0.02</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>0.06</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>0.20</td>
<td>6</td>
</tr>
<tr>
<td>1/2&quot; (DN15)</td>
<td>0.02</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>0.06</td>
<td>8</td>
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<tr>
<td></td>
<td>0.20</td>
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### POSITION 5 - BODY & SPRING CHAMBER MATERIAL

<table>
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<tr>
<th>Description</th>
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<tbody>
<tr>
<td>Body / Spring Chamber</td>
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<tr>
<td>Brass / 6061 AL</td>
<td>B</td>
</tr>
<tr>
<td>316L SST / 316L SST</td>
<td>S</td>
</tr>
</tbody>
</table>

* Select for NACE or Sanitary Construction

### POSITION 6 - TRIM MATERIALS

- **Diaphragm, Seat Retainer, Poppet & Poppet Spring**
  - Seat Material: CODE
    - PCTFE 1
    - Polyimide 2
    - TFE 3
- **Inconel w/TFE liner,**
  - Monel R-405, Monel R-405
  - Inconel X-750
  - CODE
    - PCTFE 4
    - Polyimide 5
    - TFE 6
- **Hastelloy C-276 w/TFE liner,**
  - Hastelloy C-276, Hastelloy C-276, Hastelloy C-276
  - CODE
    - PCTFE A
    - Polyimide B
    - TFE C
- **NACE Const. - Inconel w/TFE liner,**
  - Inconel X-750, 316L SST, 316L SST, Inconel X-750
  - CODE
    - TFE Q **
    - TFE 5

* 16 Micro-inch Ra Finish w/Electro-Polish. Range 1 - 250 psig only available for Port "A".
* ** Comply with FDA 21 CFR 177.2650 & USP Class VI material classification

### POSITION 7 - PORTING CONFIGURATION

**See Porting Guide**

<table>
<thead>
<tr>
<th>Description</th>
<th>CODE</th>
<th>Description CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>**** A</td>
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<td>**** N</td>
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<tr>
<td>** B</td>
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<td>** J</td>
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<td>* G</td>
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<td>* V</td>
</tr>
<tr>
<td>*** H</td>
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### POSITION 10 - END CONNECTIONS

**See Porting Guide**

**End Connection(s)** | CODE |
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>FNPT</td>
<td>1</td>
</tr>
<tr>
<td>Tri-Clamp End &quot; ** &quot;</td>
<td>S</td>
</tr>
<tr>
<td>Tube End &quot; T &quot;</td>
<td></td>
</tr>
</tbody>
</table>

* Not available on Brass body material.
** (Tri-Clamp Available in 1/2" Size Port "A" Only)

### POSITION 11 - RANGE SPRING

**Psig (Barg) CODE**

- Pneumatic Dome Loaded
  - 0 - 125 (0 - 8.6) 0
  - 1 - 10 (.07 - .69) 1
  - 2 - 25 (.14 - 1.7) 2
  - 2 - 50 (.14 - 3.4) 3
  - 2 - 100 (.14 - 6.9) 4
  - 3 - 250 (.21 - 17.2) 5
  - 5 - 500 (.34 - 34.5) 6
  - 10 - 750 (.69 - 51.7) * 7

* Not Available Sanitary Construction

### POSITION 12 - OUTLET GAUGE

**Psig (Barg) CODE**

- For Special Construction
  - Contact Cashco for Special Product Code
  - Contact Cashco for Special Construction

### POSITION 13 - INLET GAUGE

**Psig (Barg) CODE**

- For Special Construction
  - Contact Cashco for Special Product Code
  - Contact Cashco for Special Product Code

### EXAMPLE

- 0 - 5000 (0 - 344.9) J
- 0 - 2000 (0 - 137.9) K
- 0 - 3000 (0 - 206.9) L
- 0 - 3000 (0 - 206.9) M
- 0 - 3000 (0 - 206.9) N
- 0 - 3000 (0 - 206.9) O
- 0 - 3000 (0 - 206.9) P
- 0 - 3000 (0 - 206.9) Q
- 0 - 3000 (0 - 206.9) R
- 0 - 3000 (0 - 206.9) S
- 0 - 3000 (0 - 206.9) T
- 0 - 3000 (0 - 206.9) U
- 0 - 3000 (0 - 206.9) V
- 0 - 3000 (0 - 206.9) W
- 0 - 3000 (0 - 206.9) X
- 0 - 3000 (0 - 206.9) Y
- 0 - 3000 (0 - 206.9) Z

### POSITION 14 - OPTIONS

<table>
<thead>
<tr>
<th>OPTIONS</th>
<th>CODE</th>
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</thead>
<tbody>
<tr>
<td>No Option</td>
<td>0</td>
<td>Panel Mount.</td>
</tr>
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<td></td>
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### POSITION 15 - OPTIONS

<table>
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<tr>
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<tbody>
<tr>
<td>No Option</td>
<td>0</td>
<td>Blue Knob.</td>
</tr>
<tr>
<td>Tamper Proof.</td>
<td>1</td>
<td>Red Knob.</td>
</tr>
<tr>
<td>Black Knob.</td>
<td>2</td>
<td></td>
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</table>

### POSITION 16 - OPTIONS

<table>
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<tr>
<th>OPTIONS</th>
<th>CODE</th>
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</thead>
<tbody>
<tr>
<td>No Option</td>
<td>0</td>
</tr>
<tr>
<td>Relief Valve</td>
<td>3-50 psig. *</td>
</tr>
<tr>
<td>Self-Relieving &amp; Mechanical Stop.</td>
<td>T</td>
</tr>
<tr>
<td>Relief Valve</td>
<td>150-350 psig. *</td>
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<tr>
<td>Vacuum Assist Spring.</td>
<td>V</td>
</tr>
</tbody>
</table>

* When selecting Relief Valve indicate SET POINT PRESSURE in Special Instructions on order. If outlet gauge is also specified, Body Port Configuration must have two outlet ports. See Porting Guide page 3.

### POSITION 17 - OPTIONS

<table>
<thead>
<tr>
<th>OPTIONS</th>
<th>CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Option</td>
<td>0</td>
</tr>
</tbody>
</table>

* Special Cleaning: Per Spec SS-1542. | N
| Sanitary Construction - Clean per SS-1576 | P

* NOT suitable for Oxygen Service.