Pressure Reducing, Differential and Back Pressure Regulating Valves

Spring Loaded • Dome Loaded • Pilot Actuated
Burling Valves

- Largest Cv per valve size
- Possible smaller, more cost effective valve selections
- Savings of up to 25% possible
- More accurate performance due to balanced plug design
- In-line maintenance
- Soft seat
  - Tighter shutoff
  - Class VI
- High turndown ratio
- Greater rangeability
- Extremely fast response time
- Greater metallurgical selection
- Greater inventories – quicker delivery
- Flexibility
- Engineering for specific applications
- Each valve fully tested before shipment

MADE IN USA!

About Burling Valves

Burling Valves traces its background and pedigree to the 1890’s with its First Direct Acting Spring-loaded Regulator for a New York utility. The Burling Family has many years of regulator and control valve design and manufacturing expertise. Advanced technology and precision is seen in all Burling Valve products.

This fast changing marketplace requires understanding and mastering of current and future technology and designs. Both new product development and existing product enhancements ensure that tomorrow’s Burling products will continue the Burling tradition of leadership.

Both experienced and new engineers have come to trust Burling’s integrity, engineering and manufacturing expertise.

Ease of Maintenance

- No need to remove valve from pipeline
- Greater online productivity
  - Top entry
  - Quick change trim
  - No disturbing pipeline

Markets

- Chemical
- Petrochemical
- Refineries
- Food
- Pharmaceutical
- Power Generation
- Energy
- HVAC
- Environmental
- SemiConductor
- Cryogenic
- Medical
- OEM
- Marine
- Automotive
- Architectural Fountains
- Atmospheric Bulk Gas
- Natural Gas
- Boilers
- Paper
- General Process
- HVAC
- Environmental
- SemiConductor
- Cryogenic
- Medical
- OEM
- Marine
- Automotive
- Architectural Fountains
- Atmospheric Bulk Gas
- Natural Gas
- Boilers
- Paper
- General Process
**BS Series**

**BS1 (Pressure Reducing)**
Simplest regulator design
- Chemical and all simple process applications and industries
- Most fluids and medias

**BS2 (Pressure Reducing, Differential)**
Using a sealed differential chamber instead of simple BS1 chamber produces a differential PRV
- Seal pressurization applications
- Spring atomization applications
- Spray tower applications

**BS5 (Back Pressure)**
Replacing trim with back pressure trim produces simplest back pressure regulator
- Pump discharge applications
- Filter applications
- Relief valve

**BS8 (Positive Differential Back Pressure)**
By using a positive bias on spring in compression with back pressure trim produces a positive differential back pressure regulator.

**BS2–3 (Negative Bias Differential)**
By placing spring in tension rather than compression produces a negative bias relative to the reference pressure or a negative differential regulator.

**BD Series**

**BD3**
Pressure Reducing
Simplest dome-loaded regulator or 1:1 “mimic” valve. Loading signal essentially equals P2.

**BD4**
Pressure Reducing with Return Spring
Same as BD3 except with a bottom return spring for proportional band control. Used when a “Closed Loop” or feedback to regulator is generated.

**BD6**
Back Pressure
By using back pressure trim instead of standard trim, a dome loaded back pressure valve is created.
Typical Applications

SERIES BS - SEAL PRESSURIZATION
Spring Loaded Differential Pressure Regulators are used to maintain lubrication or seal media on rotating or reciprocating equipment. The differential is maintained relative to internally sensed turbine or compressor pressures.

SERIES BS - CRYOGENIC PRESSURE BUILD
Pressure building regulators used to maintain pressure in vapor space above cryogenic liquid in Dewar vessels. By using a light spring with low “droop” assisted by gas pressure, a highly accurate pressure of 275 psig or more is attained. Set-point is capable of accuracies of ± 2 psig.

SERIES BS - CONSTANT FILTER DISCHARGE
By using a spring loaded regulator with remote sensing, constant discharge pressure after a filter can be achieved regardless of cake buildup.

SERIES BS - CONSTANT PUMP DISCHARGE PRESSURE
By using a simple spring pump discharge pressure can be generated regardless of demand.

SERIES BS - PRESSURE REDUCTION
Placing two or more Spring Loaded regulators in series for Pressure let-down will provide excellent accuracy, if flows are relatively constant. Valves are designed to fall-open position and minimization of “supply-line” effect.

General Specifications:
Sizes: 1/2 in. through 4 in.
Trim Materials: 17-4 PH or 316L S.S., Monel, Hastelloy, others
Seats: Extensive selection includes: Polyurethane, PTFE, Viton, others
Cv Rating: Controllable Cv Range, 4 to 220
Set Points: To Inches of Water Column
Max. Inlet & Outlet Pressure: 3000 psig @100°F (material specific)
Actuators: Elastomeric Diaphragm, Metal Diaphragm or Piston Actuator
Temperature Limits: -425°F to 480°F
Accuracy of ± 1-2 psig is achievable with dome loaded regulators.

If greater accuracy is required, pilot operated dome loaded regulators are utilized if possible. Since pilots are narrow band proportional controllers, accuracies of 2"-3" of W.C. are possible. Pilots can be dome loaded as well as spring loaded.

Dome Loaded Regulators as Control Valves

With the selection of the sensing element such as a transducer, pH meter, level control or other, coupled with a controller and I/P (extended range, if necessary) the functionality of a control valve is accomplished.

Advantages Over Control Valves

- Quicker dynamic response (10 cycles per second)
- More compact design (over 30% smaller)
- No fugitive emissions
- Higher turndown ratio 1000:1
- Generally less expensive than control valves in both cryogenics and industrial applications (approximately 30% less expensive)

Outlet pressure changes by 3 to 8 psig for every 100 psig variation in inlet pressure, either directly or inversely.

Sensing: Internal or external

Ratio-Loaded Configuration: Available for controlling set point when control signal is too low.

End Connections: Threaded, Flanged, Socket Weld, Butt Weld, Tube, Tri-Clamp, DIN, BSP, Others

Turn-Down Ratio: 1000 : 1

Sensitivity: 1/8 in. W.C.

Dynamic Response: 10 cps (cycles per second)

Trim: Top Entry, Balanced, Quick-Change, Single Seat

Inlet Sensitivity Effect: Minimal due to balanced design.
Sizing a Regulator Correctly

The following data is required for proper regulator sizing

<table>
<thead>
<tr>
<th>Company</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Email</td>
<td>Phone Number</td>
</tr>
<tr>
<td>Fluid (media)</td>
<td>Specific Gravity¹</td>
</tr>
<tr>
<td>Temperature (min-max)</td>
<td>Viscosity¹</td>
</tr>
<tr>
<td>Function (Pressure Reducing, Back Pressure, Differential or Other - please specify)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flow (min)²</th>
<th>Flow (norm)</th>
<th>Flow (max)²</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1 (min)²</td>
<td>P1 (norm)</td>
<td>P1 (max)²</td>
</tr>
<tr>
<td>P2 (min)²</td>
<td>P2 (norm)</td>
<td>P2 (max)²</td>
</tr>
</tbody>
</table>

**Additional (helpful) Information**

- Application Description
- Regulation Accuracy
- Auxiliary Air Available
- Body Material | Cv
- Soft Goods Materials | End Connection

¹This information is only required if we do not have information available on the fluid specified (please contact factory)
²If regulator will always be operating at normal conditions, min and max values can be omitted.

**Example Full Part Number:** BS1.0-1CCS114-113201110

**Example Replacement Kit Part Number:** 100BS1.0-11132-XXX

Expedite Possibilities and Custom Solutions Available
Burling Valve  The Regulator Company

PRESSURE REDUCING  •  DIFFERENTIAL  •  BACK PRESSURE

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