Burling Valve

The Regulator Company

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
- Higher turndown ratio 1000 : 1
- Greater rangeability
- Extremely fast response time
- Greater metallurgical selection
- Greater inventories – quicker delivery
- Flexibility
- Engineering for specific applications
- Each valve fully tested before shipment
- 100% USA manufactured

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 a total of over 700 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.

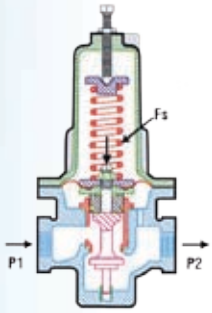
Ease of Maintenance

- **No need to remove valve from pipeline**
- **67% greater online productivity**
  - Top entry
  - Quick change trim
  - No disturbing pipeline

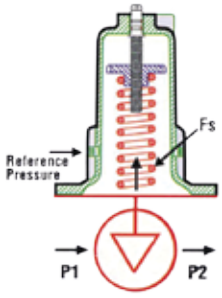
Markets

- 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

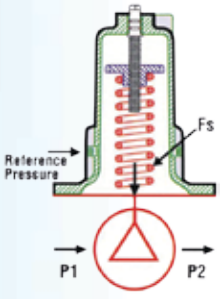
BS Series



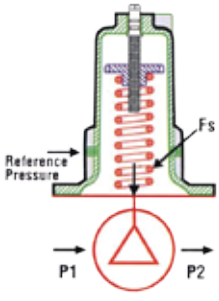
BS1
Simplest regulator design
- Chemical and all simple process applications and industries
- All fluids



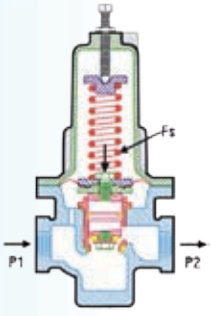
BS8
By using a positive bias on spring in compression with back pressure trim produces a positive differential back pressure regulator.



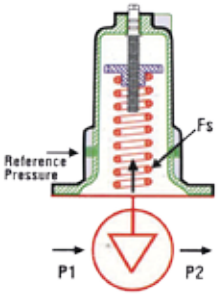
BS2
Using a sealed differential chamber instead of simple BS1 chamber produces a differential PRV
- Seal pressurization applications
- Spring atomization applications
- Spray tower applications



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

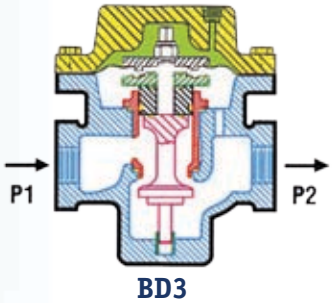


BS5
Replacing trim with back pressure trim produces simplest back pressure regulator
- Pump discharge applications
- Filter applications
- Relief valve

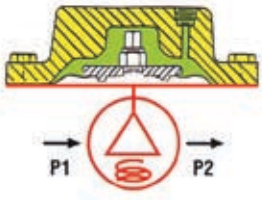


BS8-3
Similarly, by utilizing the spring in a negative or tension mode along with back pressure trim creates a negative differential back pressure regulator.

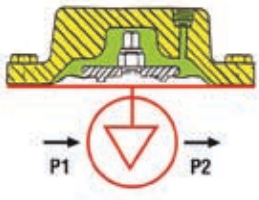
BD Series



BD3
Simplest dome-loaded regulator or 1:1 "mimic" valve. Loading signal essentially equals P2.



BD4
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
By using back pressure trim instead of standard trim, a dome loaded back pressure valve is created.

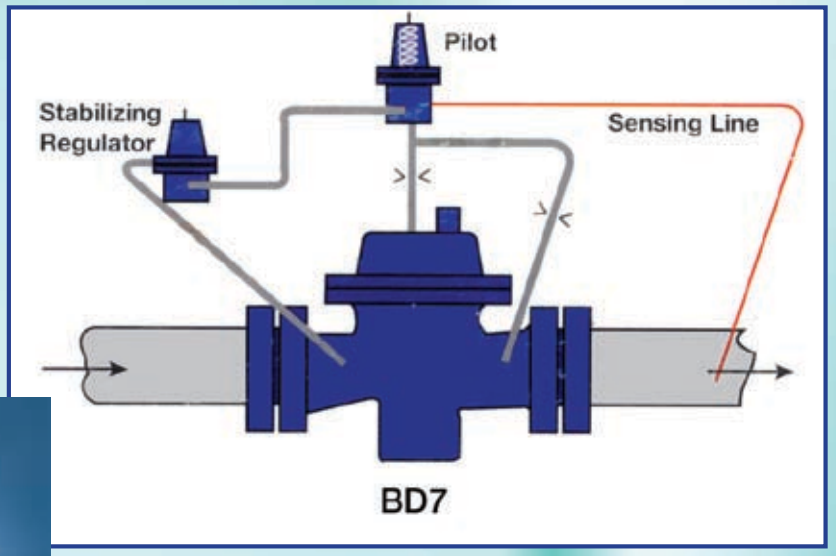
General Specifications:

Sizes: 1/2 in. through 4 in.
Body Materials: Cast Iron, Carbon Steel, Bronze, Stainless Steel, Hastelloy, Alloy 20
Trim Materials: 17-4 PH or 316L S.S., Monel, Hastelloy, Stellite, others
Diaphragm Materials: 6-ply special composition (Teflon, Viton, Tefion) Virgin Teflon, Viton, Neoprene, Buna N, EPR, Fluorosilicone, Beryllium Copper, Stainless Steel, others.
Seats: Extensive selection includes: Polyurethane, TFE, Viton, Metal, C-TFE (KEL-F)
Cv Rating: Controllable Cv Range, 4 to 220
Set Points: To Inches of Water Column
Max. Inlet & Outlet Pressure: 3000 psig @100°F
Actuators: Elastomeric Diaphragm, Metal Diaphragm or Piston Actuator
Temperature Limits: -425° to 600°F

Dome Loaded Regulators with Pilots

Accuracies of ± 1-2 psig are 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.



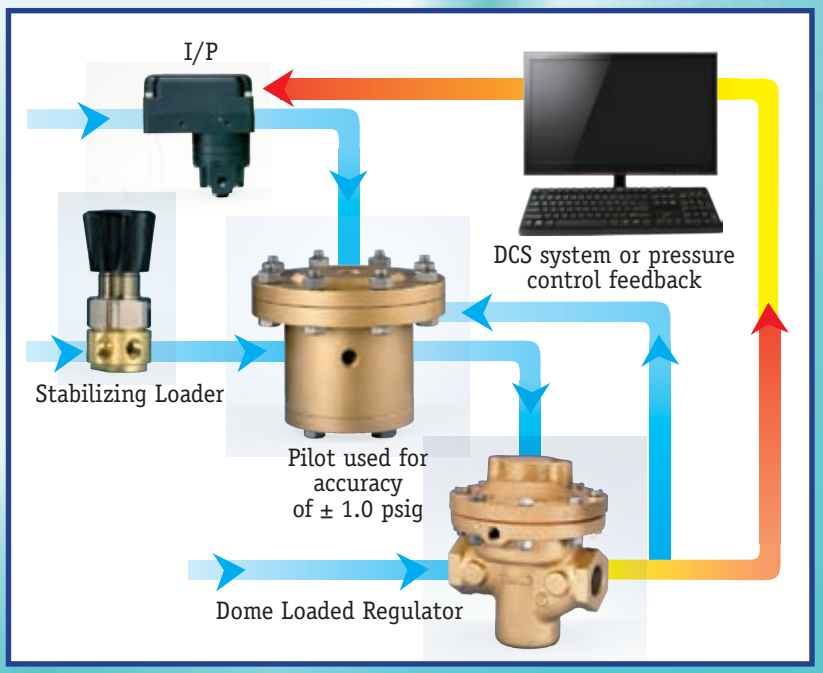
Typical pilot actuated dome loaded regulator for regulator accuracies of ± 0.1-0.2 psig.

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)



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

Typical Burling Valve Product Numbering System

Model	Size	Type		Body Material		Top Material		Rating		End Connection		Trim		Top Spring Rating
BS	0.5	1	Direct Acting	A	Al	A	Al	1	125	1	NPT	1	17-4PH	See Chart
BD	.75	2	Differential	I	CI	I	CI	2	150	2	Flange	2	316L St. St.	
	1.0	3	Dome	B	Brz	B	RTFE	3	250	3	Tube end	3	Monel	
	1.5	4	Dome/Ret spring	C	CS	C	CS	4	300	4	Butt weld	4	Other	
	2.0	5	BP Spring	S	SS	S	SS	5	600	5	Socket weld			
	3.0	7	Pilot Actuated					7	1500					
	4.0	8	Differential BP					8	Other					
		9	Small Piston											

ABBREVIATIONS

FK=Fluorosilicone
NBR=Buna-N
VTFE=Virgin TFE
BC=Neoprene
RTFE=Reinforced TFE
EPR=Ethylene Propylene

Seat		Membrane		Dynamic seal		Static Seal		Lower Return Spring		Trim variations		Sensing		Flow		Special	
1	POLY	1	BC	1	Virgin TFE U-Cup	1	RTFE	0	No Spring	1	Full	1	Internal	1	Normal	0	None
2	VTFE	2	6-Ply	2	RTFE U-Cup	2	NBR	1	1-3	2	Re-duced	2	External	2	Reverse	1	Body Tap Gauges
3	RTFE	3	Viton	3	POLY U-Cup	3	Viton	2	2-7			3	Ratio			2	Special Support
4	Kel-F	4	EPR			4	FK	3	3-15							3	Negative Differential
5	Other	5	Metal			5	EPR	4	Other							4	02 cleaned
		6	FK			6	VTFE									5	Combina-tion
		7	NBR			7	Other									6	Other
		8	Other														

Available Top Spring Ranges (psi)				
Top-Spring Range for Direct Acting Regulators				
Symbol	1/2" to 1"	1-1/2"	2"	3", 4"
Standard Spring Ranges				
1	1 to 10	1 to 10	1 to 5	1 to 10
2	2 to 20	5 to20	4 to 15	5 to20
3	10 to 35	15 to 45	10 to 30	10 to 40
4	20 to 80	10 to70	15 to50	10 to 70
5	30 to 150	40 to 125	30 to 90	40 to 125
6	70 to 200	70 to 200	50 to 150	
7	100 to 300			
Heavy Springs Ranges (requires heavy spring chamber)				
8	200 to 650	100 to 400	80 to 300	
Negative Bias Spring Range				
9	-1 to 20	-2 to 20	-1 to 15	-1 to 20
10	-20 to 50	-20 to 50	-20 to 50	-20 to 40

Sizing A Regulator Correctly

The following data is required for proper regulator application.

Fluid:_____ Specific Gravity: _____
Temperature: _____ 0F Viscosity (if known)_____
Function: _____ Flow (Min.): _____
Flow (Norm): _____ Flow (Max.): _____
P1(Min.): _____ P1(Norm): _____ P1(Max.):_____
P2(Min.): _____ P2(Norm):_____ P2(Max): _____
Regulation Accuration Desired: _____
_____ (psi) or % of set point:
Chemical Compatibility (if known): _____
Min. Noise Level: _____Inlet/Outlet Pipe: _____
Schedule: _____As Available: _____ psi.
Atmospheric Pressure (if known): _____

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