

CASH VALVE B SERIES

PRESSURE REGULATORS

Series B regulators are designed and built to withstand long periods of service without maintenance.



Description

The Cash Valve Series B pressure reducing and regulating valves are single seated, spring loaded, direct acting diaphragm-type valves that automatically reduce a high initial inlet pressure to a lower delivery pressure and maintain that lower pressure within reasonably close limits.

Exceptionally dependable, Series B regulators are an excellent example of sound engineering and design. They are made of high quality materials to meet the requirements of a variety of applications. Each valve is assembled by skilled workmen and tested before shipment.

Series B regulators are designed and built to withstand long periods of service without maintenance. However, a functioning or operating piece of equipment such as an automatic valve does, in time, require attention. Simplicity of design aids in the ease of maintenance

when repairs may be needed. To keep these regulators in top operating order, Cash Valve make available for the more popular valve models, a convenient, pre-packaged repair kit specifically designed for that particular valve. Each kit includes genuine Cash Valve replacement parts for those that are subject to wear or damage through normal regulator usage.

Every regulator is supplied with the desired delivery pressure pre-set by the factory.

Cash Valve Series B regulators are designed to meet the installation requirements of a variety of systems and are designated as follows:

- Type B – Water and Air Service (Up to 180°F)
- Type B – Steam Service (Up to 400°F)

Features

- **Sizes:** Available in 1/4", 3/8", 1/2", 3/4", 1", 1 1/4", 1 1/2" and 2" sizes with either iron or bronze bodies with female threaded connections.
- **Simplicity of Design:** The rugged but simple design incorporated in all versions of the Type B regulator lends itself to easy maintenance and repair. Disassembly is simple since there are only six rustproof bolts to remove when replacing diaphragms or pressure springs. The inner valve assembly is easy to clean or replace by just loosening the large hex head bottom plug. All major repairs can normally be made without removing the valve from the line.
- **Optional Cryogenic Service:** Approved construction is offered for the Type B regulator to enable it to be used in handling cold fluids or gases. For more information write for Data Sheet CAVMC-0514.
- **Inbuilt Strainer Screen:** The working parts of the valve are protected by a self-supporting inbuilt Monel® strainer screen which is easily removed for cleaning by removing the bottom plug.
- **Time Tested Rugged Construction:** The Type B regulator has proven itself in countless applications for well over 40 years. The heavy rugged construction ensures long life and service; bodies are of iron or bronze. The large area reinforced BUNA-N diaphragm is furnished as standard for water or air. These valves are fitted with a carefully matched brass piston and cylinder with a composition seat disc insert for tight shut-off.

- **Easy Pressure Adjustment:** Pressure adjustment can be changed easily by loosening the lock nut and simply turning the adjusting screw – clockwise to increase, and counterclockwise to decrease the delivery pressure. The Type B regulator is furnished with a square head adjusting screw and hex lock nut as standard. They may also be fitted with either a T-handle or an aluminum handwheel for an additional charge.

Note: If downstream pressure control is critical to the safety of the installation, then the downstream side should be protected by a safety relief valve set to relieve at the maximum safe limit, but at least 10 psi higher than the delivery setting of the pressure regulator.

CASH VALVE B SERIES

PRESSURE REGULATORS

B Water and Air Service (up to 180°F)

Application

Series B regulators are available in 1/4" through 2" sizes with either iron or bronze bodies and feature a variety of optional internal trim (diaphragm, piston and cylinder) that enable them to be used in a wide range of applications.

Each Series B regulator is equipped with a pressure spring selected to provide the desired outlet or reduced delivery pressure setting. Depending on the adjusting spring installed, delivery pressures may be adjusted from a minimum of 2 psi to a maximum of 150 psi. The range of adjustment or satisfactory working range of the individual springs that may be fitted to each valve size are listed in the Spring Range Table shown under Specifications, Page 4.

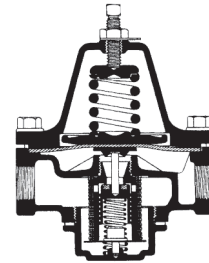
Type B Water and Air regulators are suitable for use on paint spray equipment, dishwashers, air tanks and equipment, food, chemical, and industrial process lines, and hundreds of other applications.

The Type B Water and Air regulator is designed for systems having a maximum operating temperature of 180°F. The table below shows the standard factory trim and inlet pressure maximums for valves fitted with iron or bronze bodies. Type B Water and Air regulators are normally furnished as indicated in the table, however, any combination of body material, piston-cylinder and diaphragm is available on special order.



Type B Pressure Regulator/Water and Air

Service	Maximum Initial Pressure (psig)	Maximum Reduced Pressure (psig)	Body Material		Piston and Cylinder	Seat Disc Material	Diaphragm Stock	Max. Oper. Temp. °F
			Iron	Bronze	Bronze	BUNA-N	BUNA-N	
Water or Air	200	125	X		X	X	X	180
	400	150		X	X	X	X	180



B Steam Service (up to 400°F)

Application

Type B Steam pressure reducing and regulating valve is ideally suited for installation in pressing irons, steam cookers, degreasers, sterilizers, vulcanizers, and hundreds of other applications. These valves are designed for steam operating temperatures up to 400°F and are available in 1/4" to 2" sizes with either iron body or bronze bodies: iron

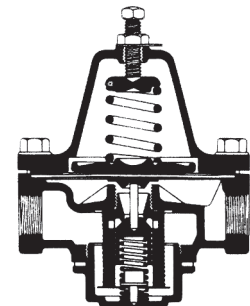
body valves are for systems having initial pressures up to 150 psi. Bronze bodies are for initial pressures up to 250 psi.

The table below shows standard factory trim and inlet pressure maximums for Type B Steam regulators. Valves will normally be furnished as indicated, however, other combinations of body

material, piston-cylinder and diaphragm are available on special order. Iron body B valves furnished with Teflon® seat.

Type B Steam regulators can also be furnished with a differential pressure control feature which may be desirable in steam/oil atomizing service. Refer to Features section.

Service	Maximum Initial Pressure (psig)	Maximum Reduced Pressure (psig)	Body Material		Piston and Cylinder	Teflon® Seat Disc*	Diaphragm Stock	Max. Oper. Temp. °F
			Iron	Bronze	Bronze	Teflon®	Phosphor Bronze	
Saturated Steam	150	125	X		X	X	X	400
	250	150		X	X	X	X	400



CASH VALVE B SERIES

PRESSURE REGULATORS

B Steam Service (up to 400°F)

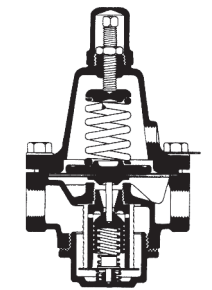
Optional Differential Pressure Control (Type B Steam regulators only):

The Type B Steam regulator can be factory modified to serve as a constant differential pressure control valve by incorporating a 1/4" side tap in the spring housing. In a typical steam-oil atomizing installation sketch below, fluid loading pressure is introduced above the diaphragm of the Type B regulator and

steam is delivered through the valve at a regulated pressure higher than the loading pressure, with the difference in pressure being determined by the diaphragm spring setting. The outlet steam pressure is automatically maintained to provide a constant, fixed pressure differential between the steam pressure and the oil pressure. Variations in the loading pressure are reflected in a

pound-for-pound change in the discharge pressure.

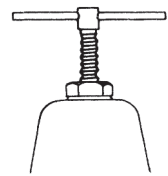
Valves equipped with the optional differential pressure control are fitted with a pressure-tight closing cap and gasket over the pressure adjusting screw. In addition, a gasket is installed above the diaphragm to ensure a good seal between the spring housing and the valve body.



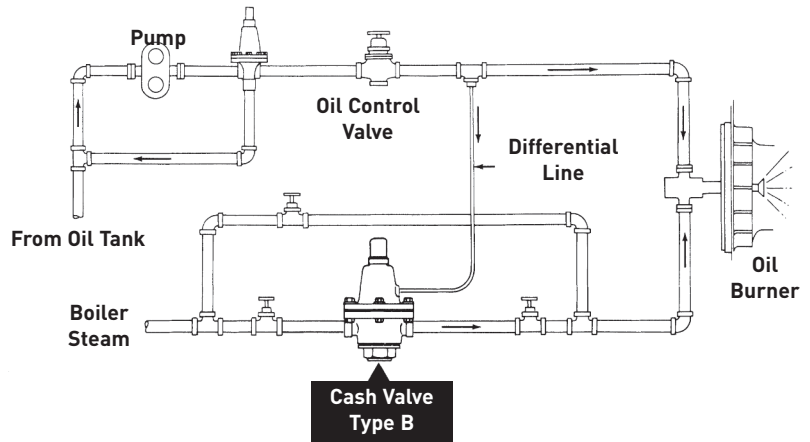
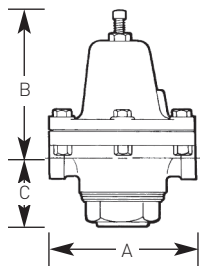
Type B Steam With Differential Construction Interior



Standard Adjusting Screw



T-Handle Options



Typical Steam-Oil Atomizing Installation

Materials of Construction

Part Description	Materials
Adjusting Screw Cap*	Brass
Cap Gasket*	Fiber
Body	Iron or Bronze
Spring Chamber	Iron or Bronze
Adjusting Spring	Steel
Pressure Plate	Cast Iron or Bronze
Diaphragm	BUNA-N, Bronze
Diaphragm Gasket**	Aramid Fiber
Pusher Post Button	Brass
Cylinder	Brass
Piston	Brass
Pusher Post	Brass
Seat Disc	BUNA-N or Teflon®
Piston Spring	302 Stainless Steel
Strainer Screen	Monel®
Bottom Gasket	Copper/Fiber
Bottom Plug	Brass

*For pressure loaded valves only

**For use with metal diaphragms only

Specifications

Size	Spring Ranges (in psi)				
1/4"	2-25	20-60	30-100	50-150	
3/8"	2-30	20-70	40-110	90-150	
1/2"	2-30	10-50	30-125	50-150	
3/4"	2-20	10-35	30-75	50-110	105-150
1"	2-20	10-45	20-60	55-100	90-150
1 1/4"	2-15	10-30	20-50	45-100	90-150
1 1/2"	2-15	10-30	20-50	45-100	90-150
2"	2-20	10-60	20-100	90-150	

Type B Valve Size	Dimensions			Shipping Weight (lbs.)	
	A	B	C	Iron	Bronze
1/4"	3"	2 7/8"	1 3/4"	2 3/4	3
3/8"	3 7/8"	4 1/2"	1 3/4"	5	5 1/2
1/2"	4 1/2"	4 1/2"	2 1/8"	7 1/2	8
3/4"	5 1/8"	4 5/8"	2 1/8"	9	10
1"	5 7/8"	5 3/8"	2 1/8"	12	16
1 1/4"	6 3/4"	6 1/8"	2 5/8"	18	20
1 1/2"	6 3/4"	6 1/8"	2 5/8"	18	20
2"	9 1/4"	8 1/2"	3 1/2"	32	37

CASH VALVE B SERIES

PRESSURE REGULATORS

Specifications (Continued)

The amount of air or fluid any regulator will pass is governed by two factors; (1) pressure differential, or the difference between the inlet and outlet pressure, and (2) a characteristic known as fall-off or droop, by which the outlet pressure drops slightly as flow starts through the

valve and drops off even more as increased demand requires increased flow. The rates of flow stated on the following charts are based on assumed conditions, which may be considered average for a given installation.

B Series Water Capacity Information									
Inlet Pressure (psig)	Outlet Pressure (psig)	Gallons Per Minute By Size							
		1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
25	15	.6	1.0	2.6	4.0	5.7	9.2	10.4	16.0
	10	.6	1.2	2.9	4.5	6.4	10.4	11.7	18.0
50	40	.8	1.4	3.5	5.5	7.9	12.7	14.3	22.0
	25	.8	1.6	3.8	6.0	8.6	13.8	15.6	24.0
	10	.8	1.6	3.8	6.0	8.6	13.8	15.6	24.0
75	65	1.0	2.0	4.8	7.5	10.7	17.3	19.5	30.0
	50	1.1	2.1	5.1	8.0	11.4	18.4	20.4	32.0
	25	1.3	2.3	5.8	9.0	12.9	20.7	23.4	36.0
100	10	1.3	2.3	5.8	9.0	12.9	20.7	23.4	36.0
	90	1.5	2.7	6.7	10.5	15.0	24.2	27.3	42.0
	75	1.6	3.0	7.4	11.5	16.4	26.5	29.9	46.0
125	50	1.7	3.2	8.0	12.5	17.9	28.8	32.5	50.0
	25	1.8	3.4	8.3	13.0	18.6	29.9	33.8	52.0
	100	1.5	2.9	7.0	11.0	15.7	25.3	28.6	44.0
150	75	1.7	3.3	8.0	12.5	17.9	28.8	32.5	50.0
	50	2.0	3.6	9.0	14.0	20.0	32.2	36.4	56.0
	25	2.0	3.6	9.0	14.0	20.0	32.2	36.4	56.0
200	140	1.5	2.9	7.0	11.0	15.7	25.3	28.6	44.0
	100	1.9	3.5	8.6	13.5	19.3	27.0	35.1	54.0
	75	2.0	3.8	9.3	14.5	20.7	33.4	37.7	58.0
	50	2.2	4.0	9.9	15.5	22.2	35.7	40.3	62.0
250	25	2.2	4.0	9.9	15.5	22.2	35.7	40.3	62.0
	150	1.9	3.5	8.6	13.5	19.3	31.1	35.1	54.0
	100	2.2	4.0	9.9	15.5	22.2	35.7	40.3	62.0
	75	2.5	4.6	11.2	17.5	25.0	40.3	45.5	70.0
300/400	50	2.7	4.9	12.2	19.0	27.2	43.7	49.4	76.0
	25	2.7	4.9	12.2	19.0	27.2	43.7	49.4	76.0
	150	2.1	3.9	9.6	15.0	21.5	34.5	39.0	60.0
	100	2.5	4.6	11.2	17.5	25.0	40.3	45.5	70.0
300/400	75	2.8	5.2	12.8	20.0	28.6	46.0	52.0	80.0
	50	2.9	5.5	13.4	21.0	30.0	48.3	54.6	84.0
	25	2.9	5.5	13.4	21.0	30.0	48.3	54.6	84.0
	150	2.5	4.6	11.2	17.5	25.0	40.3	45.5	70.0
300/400	100	3.5	6.5	16.0	25.0	35.8	57.5	65.0	100.0
	75	4.2	7.8	19.2	30.0	42.9	69.0	78.0	120.0
	50	4.2	7.8	19.2	30.0	42.9	69.0	78.0	120.0

Note: Capacities are based upon a 20% fallout.

CASH VALVE B SERIES
PRESSURE REGULATORS

Specifications (Continued)

B Series Air Capacity Information									
Inlet Pressure (psig)	Outlet Pressure (psig)	Air Capacity in SCFM By Size							
		1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
25	15	4.7	7.0	16.5	23.5	37.6	56.4	65.8	105.8
	10	5.0	7.5	17.5	25.0	40.0	60.0	70.0	112.5
50	40	7.0	10.5	24.5	35.0	56.0	84.0	98.0	157.5
	25	8.2	12.3	28.7	41.0	65.6	98.4	114.8	184.5
	10	8.2	12.3	28.7	41.0	65.6	98.4	114.8	184.5
75	65	7.5	11.3	26.3	37.5	60.0	90.0	105.0	168.8
	50	8.5	12.8	29.8	42.5	68.0	102.0	115.0	191.3
	25	11.0	16.5	38.5	55.0	88.0	132.0	154.0	247.5
	10	11.0	16.5	38.5	55.0	88.0	132.0	154.0	247.5
100	90	9.0	13.5	31.5	45.0	72.0	108.0	126.0	203.0
	75	12.0	18.0	42.0	60.0	96.0	144.0	168.0	270.0
	50	15.0	22.5	52.5	75.0	120.0	180.0	210.0	337.5
	25	15.0	22.5	52.5	75.0	120.0	180.0	210.0	337.5
125	100	13.0	19.5	45.5	65.0	104.0	156.0	182.0	293.0
	75	15.0	22.5	52.5	75.0	120.0	180.0	236.0	338.0
	50	18.0	27.0	63.0	90.0	144.0	216.0	252.0	405.0
	25	18.0	27.0	63.0	90.0	144.0	216.0	252.0	405.0
150	140	15.0	22.5	52.5	75.0	120.0	180.0	210.0	338.0
	100	18.0	27.0	63.0	90.0	144.0	216.0	252.0	405.0
	75	23.0	34.5	80.5	115.0	184.0	276.0	322.0	518.0
	50	25.0	37.5	87.5	125.0	200.0	300.0	350.0	563.0
200	25	25.0	37.5	87.5	125.0	200.0	300.0	350.0	563.0
	150	19.0	28.5	66.5	95.0	152.0	228.0	266.0	428.0
	100	23.0	34.5	80.5	115.0	184.0	276.0	322.0	518.0
	75	27.0	40.5	94.5	135.0	216.0	324.0	378.0	608.0
250	50	29.0	43.5	101.5	145.0	232.0	348.0	406.0	653.0
	25	29.0	43.5	101.5	145.0	232.0	348.0	406.0	653.0
	150	25.0	37.5	87.5	125.0	200.0	300.0	350.0	563.0
	100	33.0	49.5	115.5	165.0	264.0	396.0	462.0	743.0
300/400	75	37.0	55.5	129.5	185.0	296.0	444.0	518.0	833.0
	50	37.0	55.5	129.5	185.0	296.0	444.0	518.0	833.0
	25	37.0	55.5	129.5	185.0	296.0	444.0	518.0	833.0
	150	34.0	51.0	115.0	170	272.0	408.0	476.0	765.0
300/400	100	37.0	55.5	129.5	185	296.0	444.0	518.0	833.0
	75	43.0	64.5	150.5	215	344.0	516.0	602.0	968.0
	50	43.0	64.5	150.5	215	344.0	516.0	602.0	968.0

Note: Capacities are based upon a 20% fallout.

CASH VALVE B SERIES
PRESSURE REGULATORS

Specifications (Continued)

B Series Steam Capacity Information (with Teflon® Seat)									
Inlet Pressure (psig)	Outlet Pressure (psig)	Steam LBS Per Hour By Size							
		1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
25	15	25	38	88	126	202	302	353	567
	10	25	38	88	126	202	302	353	567
50	40	36	55	129	183	294	440	514	826
	25	42	63	137	210	336	504	588	945
	10	42	63	137	210	336	504	588	945
75	65	39	59	139	197	316	473	553	889
	50	53	78	185	263	421	631	736	1184
	25	68	102	239	342	546	820	956	1537
	10	69	102	239	342	546	820	956	1537
100	90	49	91	154	231	371	560	654	1050
	75	84	126	294	420	672	1008	1176	1890
	50	85	129	300	427	683	1025	1196	1922
	25	85	129	300	427	683	1025	1196	1922
125	100	88	133	266	441	706	1008	1165	1985
	75	111	165	385	550	881	1320	1540	2477
	50	115	172	400	573	916	1375	1603	2577
	25	115	172	400	573	916	1375	1603	2577
150	140	63	95	126	210	350	525	616	994
	125	112	168	392	560	896	1344	1568	2520
	100	116	174	405	578	924	1387	1618	2603
	75	137	204	479	683	1093	1639	1912	3074
	50	137	204	479	683	1093	1639	1912	3074
200	150	130	195	454	648	1037	1555	1814	2916
	125	153	230	535	763	1221	1831	2136	3434
	100	179	267	626	893	1429	2143	2500	4019
	75	179	267	626	893	1429	2143	2500	4019
225	150	190	287	671	956	1532	2297	2681	4308
	125	214	322	750	1072	1715	2572	3002	4823
	100	230	344	804	1147	1835	2752	3212	5162
	75	230	344	804	1147	1835	2752	3212	5162
250	150	196	294	686	980	1568	2352	2744	4410
	125	253	379	888	1267	2027	3039	3546	5699
	100	253	379	888	1267	2027	3039	3546	5699

*To determine capacity when valves have metal-to-metal seats use a multiplier of 0.6.

Note: Capacities are based upon a 20% fallout.

CASH VALVE B SERIES

PRESSURE REGULATORS

Type B-95

Description

The Type B-95 is a fully automatic pressure reducing valve designed to reduce a high inlet pressure to a lower pressure and maintain the lower pressure to reasonably close limits. Also available in a cryogenic version, it is ideal for use in the pressure build-up circuit, for either liquid or gas service.

Specification Data

Service: Air, water, steam, oil and other liquids, also cryogenic liquids and gases.

Sizes: 1/2", 3/4" and 1"

Connections: Threaded (NPTF)

Temperature Rating: +450°F to -320°F depending on construction.

Maximum Inlet Pressure:
720 psig @ +180°F
400 psig @ -320°F to +450°F

Materials

Available in carbon steel and stainless steel.
Diaphragms — BUNA-N and stainless steel.
Teflon® seat or BUNA-N seat disc.

Available Options

Closing cap. T-Handle. Also available with drilled and tapped spring chamber for differential service.



Reduced Pressure Ranges (psig)					
Size	Steel Spring	Size	Steel Spring	Size	Steel Spring
1/2"	2-30	3/4"	2-20	1"	2-20
	10-50		10-35		10-45
	30-125	30-75	20-60		
	50-150	50-110	55-100		
			105-150		90-150

Note (1) Steel springs are furnished as standard. Stainless springs furnished for higher ranges and for all cryogenic valves.

Note (2) Stainless Steel valves available with 200-400 psi range. Consult factory.

Note (3) For steam service, we recommend a Max. differential pressure of 150 psi to prevent seat erosion.

BBC Heavy Oil or Viscous Fluids

Description/Application

Type BBC is a direct acting, single seated, spring loaded diaphragm-type pressure reducing and regulating valve that automatically reduces a high pressure to a lower pressure and maintains the lower pressure within reasonably close limits. It is available in 3/8" through 1 1/2" sizes and may be fitted with either a cast iron or bronze body.

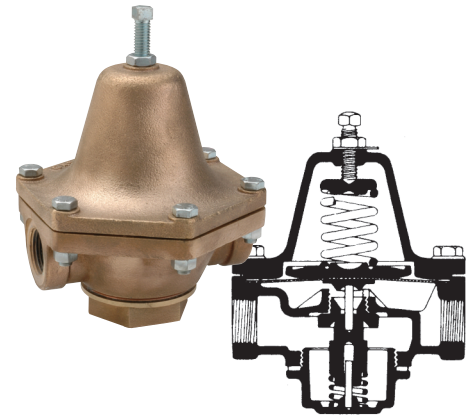
The Type BBC regulator is designed for heavy oil service (Bunker C and other grades), as well as dirty liquids or fluids with a high viscosity. These valves are well suited for systems having a maximum operating temperature of 180°F when fitted with a BUNA-N diaphragm and systems with a maximum operating temperature of 400°F when fitted with a Monel® metal diaphragm. Type BBC regulators are equipped with a stainless steel piston and seat as standard.

Depending on the setting of the adjusting spring installed, delivery pressures may be adjusted from a minimum of 2 psi to a maximum of 200 psi. The range of adjustment for each of the various springs that may be installed is shown in the Spring Range Table under Specifications, Page 8.

The table shows the standard factory trim (piston, piston seat, and diaphragm) as

well as the inlet pressure maximums for the Type BBC Heavy Oil or Viscous Fluids regulators. Valves will normally be furnished as indicated, however, other combinations of body material, piston-cylinder and diaphragm are available on special order.

The Type BBC Heavy Oil and Viscous Fluid regulator incorporates a radical departure from the conventional regulator valve design, featuring a "universal joint" type seating arrangement which insures free valve operation. As a result of this design there are no small ports or close tolerances that would prevent dependable performance. Like other Series B regulators, the working parts are easily accessible without removing the valve from the line. The standard regulator is fitted with a square head adjusting screw and lock nut arrangement. For a small additional charge, a T-handle or a handwheel may also be fitted.



Note: If downstream pressure control is critical to the safety of the installation, then the downstream side should be protected by a safety relief valve set to relieve at the maximum safe limit, but at least 10 psi higher than the pressure regulator's delivery setting.

Service	Maximum Initial Pressure (psig)	Maximum Reduced Pressure (psig)	Body Material		Piston and Seat	Diaphragm Stock	
			Iron	Bronze		BUNA-N	Monel®
Oil up to 180°F	200	125	X		X	X	
	400	200		X	X	X	
Oil 180°F to 400°F	150	125	X		X		X
	250	200		X	X		X

CASH VALVE B SERIES

PRESSURE REGULATORS

Specifications

Dimensions and Weights: The dimensions and weights stated for the 3/8" through 1 1/2" Series B regulators as shown in the table on page 4 also apply to the Type BBC – Heavy Oil or Viscous Fluids Regulator.

Capacity Information: For specific capacity information, consult the factory giving the pressure conditions that apply to your system.

Size	Spring Ranges (in psi)				
3/8"	2-15	10-50	40-80	75-150	125-200
1/2"		2-35	20-50	40-120	100-200
3/4"	2-15	10-30	20-75	60-125	100-200
1"	2-15	10-40	30-60	50-150	100-200
1 1/4"	2-20	10-30	20-100	100-150	100-200
1 1/2"	2-20	10-30	20-100	100-150	100-200

Materials of Construction

Part Description	Materials	Part Description	Materials
Adjusting Spring	Steel	Pusher Post Seat	Brass
Spring Housing	Cast Iron or Bronze	Body Seat	303 Stainless Steel
Pressure Plate	Cast Iron	Bottom Plug Gasket	Copper/Fiber
Diaphragm	BUNA-N or Monel®	Piston	303 Stainless Steel
Diaphragm Gasket (For Metal Diaphragms only)	Aramid Fiber	Pusher Post	Monel®
Body	Cast Iron or Bronze	Piston Spring	Monel®

How To Order

To order, specify Cash Valve type by specific series designation (i.e. B Series). Also state the following:

1. Valve size
2. Service (water, air, oil, etc.)
3. Inlet pressure
4. Outlet or delivery pressure range and setting
5. Maximum required flow rate
6. System operating temperature
7. Optional features, if any, as described for a specific valve.

Notes:

1. NPTF, also referred to as "Dryseal" thread, is designed to provide a more leak-free seal without the use of Teflon tape or other sealant compound. NPTF threads are interchangeable with NPT threads and are standard on all Cash Valve products.
2. Series B valves are also available with special modifications. Cash Valve will be pleased to assist you in selecting the regulator features that are needed to meet the service requirements of your particular system. Consult the factory for details.



5500 WAYZATA BLVD # 800, MINNEAPOLIS, MN 55416 WWW.PENTAIR.COM/VALVES

Cash Valve; 953 Old U.S. Highway 70; Black Mountain, NC 28771; Phone: 800-879-2042 • WWW.CASHVALVE.COM

All Pentair trademarks and logos are owned by Pentair, Inc. All other brand or product names are trademarks or registered marks of their respective owners. Because we are continuously improving our products and services, Pentair reserves the right to change specifications without prior notice. Pentair is an equal opportunity employer.