CASH VALVE™ B SERIES PRESSURE REGULATORS

Single seated, spring loaded, direct acting diaphragm-type pressure reducing and regulating valves for a broad range of services

FEATURES

- Reduce high inlet pressures to lower outlet pressures within close limits.
- Ruggedly built for long service life without maintenance.
- Simple design for easy maintenance and on-line repairs.
- Broad materials choice to suit a variety of applications.
- Self-supporting inbuilt strainer screen protects working parts and is cleaned easily.
- Easy pressure adjustment via standard square head adjusting screw and hex locknut. T-handle and aluminum handwheel option available.
- Optional construction for cryogenic service.
- Pre-packaged repair kits available for selected models to simplify maintenance.
- Every regulator supplied with pre-set delivery pressure.
- Each valve assembled and tested prior to shipment.

GENERAL APPLICATION

B Series Pressure Reducing Valves and Regulators include models suitable for air, water, steam, oil and other liquids with versions also available for cryogenic liquids and gases. Type BBC is specifically designed for heavy oil and viscous fluid applications.

TECHNICAL DATA[1]

Materials:	Cast iron, bronze, carbon steel, stainless steel
Sizes:	¼ to 2 in. (8 to 50 mm)
Connections:	NPTF
Maximum inlet pressures	
Air or water:	720 psig (49.6 barg)
Steam:	400 psig (27.6 barg)
Heavy oil or viscous fluids:	400 psig (27.6 psig)
Maximum reduced pressures	
Air, water or steam:	600 psig (41.4 barg)
Heavy oil or viscous fluids:	200 psig (13.8 barg)
Maximum temperature[2]:	400°F (204°C)

1. Refer to General Specifications Table in page 2 for more information.
2. Cryogenic standard temperature range is not included.

GENERAL SPECIFICATIONS

Type	Body Material	Spring Chamber Material	Service	Body Size, in. (mm)	Materials		Maximum Inlet Pressure, psig (barg)	Maximum Outlet Pressure, psig (barg)	Temperature, °F (°C)
					Diaphragm	Seat (Disc)			
B	Bronze	Bronze	Steam	¼, ⅜, 1¼, 1½ and 2 (8, 10, 32, 40 and 50)	Bronze	PTFE	235 (16.2)	150 (10.3)	400 (204)
					Monel	PTFE	235 (16.2)	150 (10.3)	400 (204)
				½, ¾ and 1 (15, 20 and 25)	Bronze	PTFE	235 (16.2)	150 (10.3)	400 (204)
					Monel	PTFE	235 (16.2)	150 (10.3)	400 (204)
					316 SST	PTFE	235 (16.2)	150 (10.3)	400 (204)
			Water/Air	¼ to 2 (8 to 50)	NBR	NBR	400 (27.6)	150 (10.3)	180 (82)
	Iron	Iron	Steam	¼, ⅜ and ½ (8, 10 and 15)	Monel	PTFE	150 (10.3)	125 (8.6)	400 (204)
					Bronze	PTFE	150 (10.3)	125 (8.6)	400 (204)
				¾ to 2 (20 to 50)	Monel	PTFE	200 (13.8)	125 (8.6)	400 (204)
					Bronze	PTFE	200 (13.8)	125 (8.6)	400 (204)
			Water/Air	¼ to 2 (8 to 50)	NBR	NBR	200 (13.8)	150 (10.3)	180 (82)
BBC	Bronze	Bronze	Heavy Oil	⅜, 1¼ and 1½ (10, 32 and 40)	NBR	303 SST	400 (27.6)	200 (13.8)	180 (82)
					Monel	303 SST	250 (17.2)	200 (13.8)	400 (204)
				½, ¾ and 1 (15, 20 and 25)	NBR	303 SST	400 (27.6)	200 (13.8)	180 (82)
					FKM	303 SST	400 (27.6)	200 (13.8)	180 (82)
					Monel	303 SST	250 (17.2)	200 (13.8)	400 (204)
	Iron	Iron	Heavy Oil	⅜ (10)	NBR	303 SST	200 (13.8)	150 (10.3)	180 (82)
					Monel	303 SST	150 (10.3)	125 (8.6)	400 (204)
				½, ¾ and 1 (15, 20 and 25)	NBR	303 SST	200 (13.8)	150 (10.3)	180 (82)
					FKM	303 SST	200 (13.8)	150 (10.3)	180 (82)
					Monel	303 SST	200 (13.8)	125 (8.6)	400 (204)
				1¼ and 1½ (32 and 40)	NBR	303 SST	200 (13.8)	150 (10.3)	180 (82)
					Monel	303 SST	200 (13.8)	125 (8.6)	400 (204)
B95	316 SST	316 SST	Steam	½ (15)	316 SST	PTFE	400 (27.6)	400 (27.6)	400 (204)
				¾ and 1 (20 and 25)	316 SST	PTFE	400 (27.6)	250 (17.2)	400 (204)
			Water/Air	½ (15)	NBR	NBR	720 (49.6)	600 (41.4)	180 (82)
				¾ (20)	NBR	NBR	720 (49.6)	250 (17.2)	180 (82)
				1 (25)	NBR	NBR	720 (49.6)	400 (27.6)	180 (82)
	Steel	Steel	Steam	½ (15)	316 SST	PTFE	400 (27.6)	400 (27.6)	400 (204)
				¾ and 1 (20 and 25)	316 SST	PTFE	400 (27.6)	250 (17.2)	400 (204)
			Water/Air	½ (15)	NBR	NBR	720 (49.6)	600 (41.4)	180 (82)
				¾ (20)	NBR	NBR	720 (49.6)	250 (17.2)	180 (82)
				1 (25)	NBR	NBR	720 (49.6)	400 (27.6)	180 (82)

TYPE B: WATER AND AIR SERVICE (UP TO 180°F (82°C))

Model overview

Type B Regulators are available in ¼ through 2 in. (8 to 50 mm) 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.

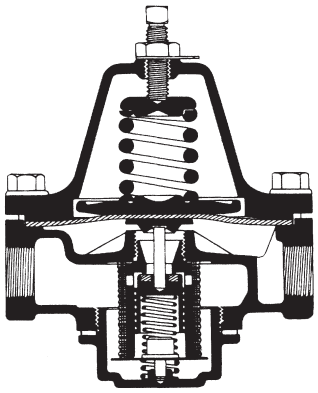
Each regulator is equipped with a pressure spring selected to provide the desired outlet or reduced delivery pressure setting. Depending on the adjusting spring installed, delivery pressures may be adjusted from a minimum of 2 psig (0.14 barg) to a maximum of 150 psig (10.3 barg). The range of adjustment or satisfactory working range of the individual springs that may be fitted to each valve size is listed in the spring range table on page 5.

The regulator is designed for systems with a maximum operating temperature of 180°F (82°C). In addition to the standard specifications indicated in the table, any combination of body material, piston cylinder and diaphragm is available to special order.

Application

Type B Water and Air Regulators are suitable for a variety of applications including paint spray equipment, dishwashers, air tanks and equipment, food, chemical and industrial process gases and many other applications.

TYPE B
Pressure regulator/water and air

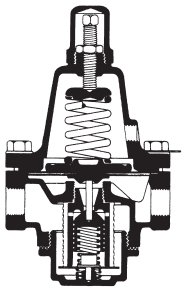


Service	Maximum initial pressure, psig (barg)	Maximum reduced pressure, psig (barg)	Body material		Piston and cylinder	Seat disc material	Diaphragm material	Maximum operating temperature, °F (°C)
			Iron	Bronze	Brass	NBR	NBR	
Water or air	200 (13.8)	150 (10.3)	X		X	X	X	180 (82)
	400 (27.6)	150 (10.3)		X	X	X	X	180 (82)

TYPE B: STEAM SERVICE (UP TO 400°F (204°C))

These valves are designed for steam operating temperatures up to 400°F (204°C) and are available in ¼ to 2 in. (8 to 50 mm) sizes with either iron or bronze bodies. Iron body valves have a SST-filled PTFE seat and are for systems with initial pressures up to 200 psig (13.8 barg); bronze bodies are for initial pressures up to 235 psig (16.2 barg).

Valves will normally be equipped as indicated in the table but other combinations of body material, piston-cylinder and diaphragm are available to special order.

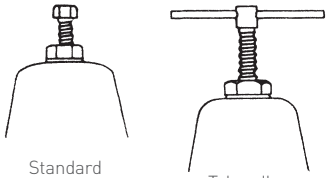


Type B steam with differential construction interior

Application

The 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.

Type B Steam Regulators can also be furnished with a differential pressure control feature which may be desirable in steam/oil atomizing service.



Standard adjusting screw

T-handle

Options

Optional differential pressure control

The Type B Steam Regulator can be factory modified to serve as a constant differential pressure control valve by incorporating a ¼ in. (8 mm) side tap in the spring housing.

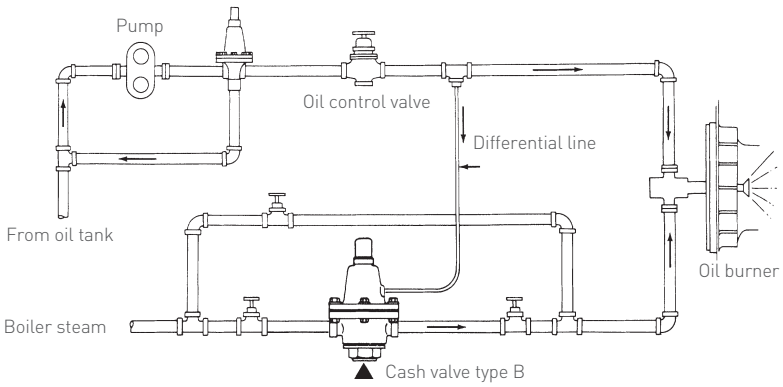
In a typical steam-oil atomizing installation, fluid loading pressure is introduced above the diaphragm of the regulator and steam is delivered through the valve at a regulated pressure higher than the loading pressure, with the difference in pressure being determined by the diaphragm spring setting. The outlet steam pressure is maintained automatically 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 and a gasket above the diaphragm to ensure a good seal between the spring housing and the valve body.

Service	Maximum initial pressure, psig (barg)	Maximum reduced pressure, psig (barg)	Body material		Piston and cylinder	Seat disk material	Diaphragm material			Maximum operating temperature, °F (°C)
			Iron	Bronze	Brass	PTFE	Bronze	Monel®	316 SST[1]	
Saturated steam	150 (10.3)	125 (8.6)	X		X	X	X	X		400 (204)
	200 (13.8)	125 (8.6)	X		X	X	X	X		400 (204)
	235 (16.2)	150 (10.3)		X	X	X	X	X	X	400 (204)

1. Available for sizes ½ to 1 in. (15 to 25 mm) only.

TYPICAL STEAM-OIL ATOMIZING INSTALLATION



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STANDARD SPRING RANGES, psig (barg)

Spring Material	Size, in. (mm)	1	2	3	4	5	6
Steel	¼ (8)	2 to 25 (0.1 to 1.7)	2 to 60 (1.4 to 4.1)	30 to 100 (2.1 to 6.9)	50 to 150 (3.4 to 10.3)	- - - -	- - - -
	⅜ (10)	2 to 30 (0.1 to 2.1)	2 to 70 (1.4 to 4.8)	40 to 110 (2.8 to 7.6)	90 to 150 (6.2 to 10.3)	- - - -	- - - -
	½ (15)	2 to 30 (0.1 to 2.1)	10 to 50 (0.7 to 3.4)	30 to 125 (2.1 to 8.6)	50 to 150 (3.4 to 10.3)	- - - -	- - - -
	¾ (20)	2 to 20 (0.1 to 1.4)	10 to 35 (0.7 to 2.4)	30 to 75 (2.1 to 5.2)	50 to 110 (3.4 to 7.6)	105 to 150 (7.2 to 10.3)	- - - -
	1 (25)	2 to 20 (0.1 to 1.4)	10 to 45 (0.7 to 3.1)	20 to 60 (1.4 to 4.1)	55 to 100 (3.8 to 6.9)	90 to 150 (6.2 to 10.3)	- - - -
	1¼ (32)	2 to 15 (0.1 to 1.0)	10 to 30 (0.7 to 2.1)	20 to 50 (1.4 to 3.4)	45 to 100 (3.1 to 6.9)	90 to 150 (6.2 to 10.3)	- - - -
	1½ (40)	2 to 15 (0.1 to 1.0)	10 to 30 (0.7 to 2.1)	20 to 50 (1.4 to 3.4)	45 to 100 (3.1 to 6.9)	90 to 150 (6.2 to 10.3)	- - - -
	2 (50)	2 to 20 (0.1 to 1.4)	10 to 60 (0.7 to 4.1)	20 to 100 (1.4 to 6.9)	90 to 150 (6.2 to 10.3)	- - - -	- - - -
Steel for United Brass Customer Construction option	½ (15)	0 to 45 (0 to 3.1)	5 to 120 (0.34 to 8.3)	20 to 150 (1.4 to 10.3)	- - - -	- - - -	- - - -
	¾ (20)	0 to 45 (0 to 3.1)	5 to 120 (0.34 to 8.3)	20 to 150 (1.4 to 10.3)	- - - -	- - - -	- - - -
	1 (25)	0 to 45 (0 to 3.1)	5 to 120 (0.34 to 8.3)	20 to 150 (1.4 to 10.3)	- - - -		- - - -
	1¼ (32)	0 to 45 (0 to 3.1)	5 to 120 (0.34 to 8.3)	20 to 150 (1.4 to 10.3)	- - - -	- - - -	- - - -
	1½ (40)	0 to 45 (0 to 3.1)	5 to 120 (0.34 to 8.3)	20 to 150 (1.4 to 10.3)	- - - -	- - - -	- - - -
	2 (50)	0 to 45 (0 to 3.1)	5 to 120 (0.34 to 8.3)	20 to 125 (1.4 to 8.6)	- - - -	- - - -	- - - -

MATERIALS OF CONSTRUCTION

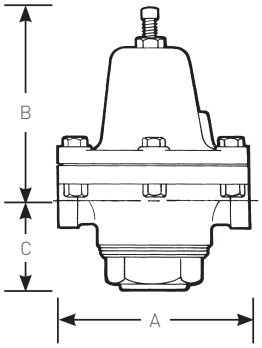
Part description	Materials
Adjusting screw cap[1]	Brass
Cap gasket[1]	Fiber
Body	Iron or bronze
Spring chamber	Iron or bronze
Adjusting spring	Steel
Pressure plate	Cast iron or bronze
Diaphragm	NBR, bronze, Monel® or 316 SST[3]
Diaphragm gasket[2]	Aramid fiber
Pusher post button	Brass
Cylinder	Brass
Piston	Brass
Pusher post	Brass
Seat disk	NBR or SST-filled PTFE
Piston spring	302 Stainless steel
Strainer screen	Monel®
Bottom gasket	Aramid fiber or PTFE
Bottom plug	Brass

NOTES

1. For pressure loaded valves only
2. For use with metal diaphragms only
3. Available for sizes ½ to 1 in. (15 to 25 mm) steam service only

DIMENSIONS

Type B valve size, in. (mm)	Dimensions, in. (mm)			Shipping weight, lbs (kg)	
	A	B	C	Iron	Bronze
¼ (8)	3.03 (76.9)	3.32 (84.2)	1.75 (44.4)	2¾ (1.3)	3 (1.4)
⅜ (10)	3.87 (95.2)	4.75 (121)	1.62 (40.9)	5 (2.3)	5½ (2.3)
½ (15)	4.47 (114)	5.17 (131)	2.05 (52.0)	7½ (3.4)	8 (3.6)
¾ (20)	5.13 (129)	4.63 (118)	1.86 (47.2)	9 (4.1)	10 (4.5)
1 (25)	5.88 (149)	6.25 (159)	2.13 (57.5)	12 (5.4)	16 (7.3)
1¼ (32)	6.19 (157)	6.63 (168)	2.63 (66.8)	18 (8.2)	20 (9.1)
1½ (40)	6.25 (159)	6.0 (152)	2.63 (66.8)	18 (8.2)	20 (9.1)
2 (50)	9.19 (233)	8.5 (216)	3.5 (88.9)	32 (14.5)	37 (16.8)



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B SERIES

The capacity of any regulator is governed by two factors:

1. Pressure differential or the difference between the inlet and outlet pressure.
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 (barg)	Outlet pressure, psig (barg)	Gallons inlet per minute by size, in.							
		¼	⅜	½	¾	1	1¼	1½	2
25 (1.7)	15 (1)	0.6	1.0	2.6	4.0	5.7	9.2	10.4	16.0
	10 (0.7)	0.6	1.2	2.9	4.5	6.4	10.4	11.7	18.0
50 (3.4)	40 (2.8)	0.8	1.4	3.5	5.5	7.9	12.7	14.3	22.0
	25 (1.7)	0.8	1.6	3.8	6.0	8.6	13.8	15.6	24.0
	10 (0.7)	0.8	1.6	3.8	6.0	8.6	13.8	15.6	24.0
75 (5.2)	65 (4.5)	1.0	2.0	4.8	7.5	10.7	17.3	19.5	30.0
	50 (3.4)	1.1	2.1	5.1	8.0	11.4	18.4	20.4	32.0
	25 (1.7)	1.3	2.3	5.8	9.0	12.9	20.7	23.4	36.0
	10 (0.7)	1.3	2.3	5.8	9.0	12.9	20.7	23.4	36.0
100 (6.9)	90 (6.2)	1.5	2.7	6.7	10.5	15.0	24.2	27.3	42.0
	75 (5.2)	1.6	3.0	7.4	11.5	16.4	26.5	29.9	46.0
	50 (3.4)	1.7	3.2	8.0	12.5	17.9	28.8	32.5	50.0
	25 (1.7)	1.8	3.4	8.3	13.0	18.6	29.9	33.8	52.0
125 (8.6)	100 (6.9)	1.5	2.9	7.0	11.0	15.7	25.3	28.6	44.0
	75 (5.2)	1.7	3.3	8.0	12.5	17.9	28.8	32.5	50.0
	50 (3.4)	2.0	3.6	9.0	14.0	20.0	32.2	36.4	56.0
	25 (1.7)	2.0	3.6	9.0	14.0	20.0	32.2	36.4	56.0
150 (10.3)	140 (9.7)	1.5	2.9	7.0	11.0	15.7	25.3	28.6	44.0
	100 (6.9)	1.9	3.5	8.6	13.5	19.3	27.0	35.1	54.0
	75 (5.2)	2.0	3.8	9.3	14.5	20.7	33.4	37.7	58.0
	50 (3.4)	2.2	4.0	9.9	15.5	22.2	35.7	40.3	62.0
	25 (1.7)	2.2	4.0	9.9	15.5	22.2	35.7	40.3	62.0
200 (13.8)	150 (10.3)	1.9	3.5	8.6	13.5	19.3	31.1	35.1	54.0
	100 (6.9)	2.2	4.0	9.9	15.5	22.2	35.7	40.3	62.0
	75 (5.2)	2.5	4.6	11.2	17.5	25.0	40.3	45.5	70.0
	50 (3.4)	2.7	4.9	12.2	19.0	27.2	43.7	49.4	76.0
	25 (1.7)	2.7	4.9	12.2	19.0	27.2	43.7	49.4	76.0
250 (17.2)	150 (10.3)	2.1	3.9	9.6	15.0	21.5	34.5	39.0	60.0
	100 (6.9)	2.5	4.6	11.2	17.5	25.0	40.3	45.5	70.0
	75 (5.2)	2.8	5.2	12.8	20.0	28.6	46.0	52.0	80.0
	50 (3.4)	2.9	5.5	13.4	21.0	30.0	48.3	54.6	84.0
	25 (1.7)	2.9	5.5	13.4	21.0	30.0	48.3	54.6	84.0
300/400 (20.7/27.6)	150 (10.3)	2.5	4.6	11.2	17.5	25.0	40.3	45.5	70.0
	100 (6.9)	3.5	6.5	16.0	25.0	35.8	57.5	65.0	100.0
	75 (5.2)	4.2	7.8	19.2	30.0	42.9	69.0	78.0	120.0
	50 (3.4)	4.2	7.8	19.2	30.0	42.9	69.0	78.0	120.0

NOTES

1. Capacities are based on a 20% droop.
2. To obtain capacities for regulators using metal diaphragms, multiply the table values by 0.7

B SERIES AIR CAPACITY INFORMATION

Inlet pressure, psig (barg)	Outlet pressure, psig (barg)	Air capacity inlet in SCFM by size, in.							
		¼	⅜	½	¾	1	1¼	1½	2
25 (1.7)	15 (1)	4.7	7.0	16.5	23.5	37.6	56.4	65.8	105.8
	10 (0.7)	5.0	7.5	17.5	25.0	40.0	60.0	70.0	112.5
50 (3.4)	40 (2.8)	7.0	10.5	24.5	35.0	56.0	84.0	98.0	157.5
	25 (1.7)	8.2	12.3	28.7	41.0	65.6	98.4	114.8	184.5
	10 (0.7)	8.2	12.3	28.7	41.0	65.6	98.4	114.8	184.5
75 (5.2)	65 (4.5)	7.5	11.3	26.3	37.5	60.0	90.0	105.0	168.8
	50 (3.4)	8.5	12.8	29.8	42.5	68.0	102.0	115.0	191.3
	25 (1.7)	11.0	16.5	38.5	55.0	88.0	132.0	154.0	247.5
	10 (0.7)	11.0	16.5	38.5	55.0	88.0	132.0	154.0	247.5
100 (6.9)	90 (6.2)	9.0	13.5	31.5	45.0	72.0	108.0	126.0	203.0
	75 (5.2)	12.0	18.0	42.0	60.0	96.0	144.0	168.0	270.0
	50 (3.4)	15.0	22.5	52.5	75.0	120.0	180.0	210.0	337.5
	25 (1.7)	15.0	22.5	52.5	75.0	120.0	180.0	210.0	337.5
125 (8.6)	100 (6.9)	13.0	19.5	45.5	65.0	104.0	156.0	182.0	293.0
	75 (5.2)	15.0	22.5	52.5	75.0	120.0	180.0	236.0	338.0
	50 (3.4)	18.0	27.0	63.0	90.0	144.0	216.0	252.0	405.0
	25 (1.7)	18.0	27.0	63.0	90.0	144.0	216.0	252.0	405.0
150 (10.3)	140 (9.7)	15.0	22.5	52.5	75.0	120.0	180.0	210.0	338.0
	100 (6.9)	18.0	27.0	63.0	90.0	144.0	216.0	252.0	405.0
	75 (5.2)	23.0	34.5	80.5	115.0	184.0	276.0	322.0	518.0
	50 (3.4)	25.0	37.5	87.5	125.0	200.0	300.0	350.0	563.0
	25 (1.7)	25.0	37.5	87.5	125.0	200.0	300.0	350.0	563.0
200 (13.8)	150 (10.3)	19.0	28.5	66.5	95.0	152.0	228.0	266.0	428.0
	100 (6.9)	23.0	34.5	80.5	115.0	184.0	276.0	322.0	518.0
	75 (5.2)	27.0	40.5	94.5	135.0	216.0	324.0	378.0	608.0
	50 (3.4)	29.0	43.5	101.5	145.0	232.0	348.0	406.0	653.0
	25 (1.7)	29.0	43.5	101.5	145.0	232.0	348.0	406.0	653.0
250 (17.2)	150 (10.3)	25.0	37.5	87.5	125.0	200.0	300.0	350.0	563.0
	100 (6.9)	33.0	49.5	115.5	165.0	264.0	396.0	462.0	743.0
	75 (5.2)	37.0	55.5	129.5	185.0	296.0	444.0	518.0	833.0
	50 (3.4)	37.0	55.5	129.5	185.0	296.0	444.0	518.0	833.0
	25 (1.7)	37.0	55.5	129.5	185.0	296.0	444.0	518.0	833.0
300/400 (20.7/27.6)	150 (10.3)	34.0	51.0	115.0	170.0	272.0	408.0	476.0	765.0
	100 (6.9)	37.0	55.5	129.5	185.0	296.0	444.0	518.0	833.0
	75 (5.2)	43.0	64.5	150.5	215.0	344.0	516.0	602.0	968.0
	50 (3.4)	43.0	64.5	150.5	215.0	344.0	516.0	602.0	968.0

NOTES

1. Capacities are based on a 20% droop.
2. To obtain capacities for regulators using metal diaphragms, multiply the table values by 0.7

B SERIES STEAM CAPACITY INFORMATION (WITH PTFE SEAT)

Inlet pressure, psig (barg)	Outlet pressure, psig (barg)	Steam lbs per hour by size, in.							
		¼	⅜	½	¾	1	1¼	1½	2
25 (1.7)	15 (1)	25	38	88	126	202	302	353	567
	10 (0.7)	25	38	88	126	202	302	353	567
50 (3.4)	40 (2.8)	36	55	129	183	294	440	514	826
	25 (1.7)	42	63	137	210	336	504	588	945
	10 (0.7)	42	63	137	210	336	504	588	945
75 (5.2)	65 (4.5)	39	59	139	197	316	473	553	889
	50 (3.4)	53	78	185	263	421	631	736	1184
	25 (1.7)	68	102	239	342	546	820	956	1537
	10 (0.7)	69	102	239	342	546	820	956	1537
100 (6.9)	90 (6.2)	49	91	154	231	371	560	654	1050
	75 (5.2)	84	126	294	420	672	1008	1176	1890
	50 (3.4)	85	129	300	427	683	1025	1196	1922
	25 (1.7)	85	129	300	427	683	1025	1196	1922
125 (8.6)	100 (6.9)	88	133	266	441	706	1008	1165	1985
	75 (5.2)	111	165	385	550	881	1320	1540	2477
	50 (3.4)	115	172	400	573	916	1375	1603	2577
	25 (1.7)	115	172	400	573	916	1375	1603	2577
150 (10.3)	140 (9.7)	63	95	126	210	350	525	616	994
	125 (8.6)	112	168	392	560	896	1344	1568	2520
	100 (6.9)	116	174	405	578	924	1387	1618	2603
	75 (5.2)	137	204	479	683	1093	1639	1912	3074
	50 (3.4)	137	204	479	683	1093	1639	1912	3074
200 (13.8)	150 (10.3)	130	195	454	648	1037	1555	1814	2916
	125 (8.6)	153	230	535	763	1221	1831	2136	3434
	100 (6.9)	179	267	626	893	1429	2143	2500	4019
	75 (5.2)	179	267	626	893	1429	2143	2500	4019
225 (15.5)	150 (10.3)	190	287	671	956	1532	2297	2681	4308
	125 (8.6)	214	322	750	1072	1715	2572	3002	4823
	100 (6.9)	230	344	804	1147	1835	2752	3212	5162
	75 (5.2)	230	344	804	1147	1835	2752	3212	5162
250 (17.2)	150 (10.3)	196	294	686	980	1568	2352	2744	4410
	125 (8.6)	253	379	888	1267	2027	3039	3546	5699
	100 (6.9)	253	379	888	1267	2027	3039	3546	5699

NOTES

1. Capacities are based on a 20% droop.

TYPE B SELECTION GUIDE

Example:	B	F	A	W	S	S	B	B	S	01	A	D	1

Model
B B valve

Material of construction
Z Bronze
F Iron

Valve size
A ¼ in. (8 mm)
B ⅜ in. (10 mm)
C ½ in. (15 mm)
D ¾ in. (20 mm)
E 1 in. (25 mm)
F 1¼ in. (32 mm)
G 1½ in. (40 mm)
H 2 in. (50 mm)

Service
W Water/air
S Steam

Body style/connection style
S Side inlet/side outlet - straight thru w/ NPTF connections

Spring chamber style
S Standard
D w/ Pressure screw cap and differential connection

Diaphragm material
B NBR (water/air)
Z Bronze (steam)
M Monel® (steam)
G 316 SST (steam, sizes ½ to 1 in. (15 to 25 mm) only)

Seat material
B NBR (water/air)
T PTFE (steam)

Pressure screw style
S Standard
T T-handle

Variation
01 Standard

Design revision
A Indicates 2nd design revision

Spring material
D Steel

Spring Range
Refer to table on page 5

HOW TO ORDER

To order, specify Cash Valve type by specific series designation (i.e. Type B).
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 PTFE tape or other sealant compound. NPTF threads are interchangeable with NPT threads and are standard on all Cash Valve products.
2. Type B Valves are also available with special modifications. Consult the factory for details.

TYPE B95

Model overview

The Type B95 is a fully automatic pressure reducing valve which is ideal for use in the pressure build-up circuit for either liquid or gas service and is also available in a cryogenic version.

Type B95 valves are designed for operating temperatures from 0 to 400°F (-17 to 204°C)[1], depending on construction, and are available in ½, ¾ and 1 in. (15, 20 and 25 mm) sizes with either carbon steel or stainless steel bodies with NPTF threaded connections. They offer the option of either NBR or 316 SST diaphragms, with a PTFE or NBR seat.

They are suitable for inlet pressures up to 720 psig at 180°F (49.6 barg at 82°C) or up to 400 psig at 400°F (240 barg at 204°C). In addition to the standard specification, they offer an optional closing cap, T-handle and are also available with a drilled and tapped spring chamber for differential service.

Application

Type B95 Valves are suitable for use on air, water, steam, oil and other liquids and also for cryogenic liquids and gases.

1. Cryogenic service temperature range not included.

Service	Maximum initial pressure, psig (barg)	Maximum reduced pressure, psig (barg)	Body material		Piston and cylinder	Seat disk material		Diaphragm material		Maximum operating temperature, °F (°C)
			316 SST	Carbon steel	303 SST	NBR	PTFE	NBR	316 SST	
Steam	400 (27.6)	400 (27.6)	X		X		X		X	400 (204)
	400 (27.6)	400 (27.6)		X	X		X		X	400 (204)
Water and Air	720 (49.6)	600 (41.4)	X		X	X		X		180 (82)
	720 (49.6)	600 (41.4)		X	X	X		X		180 (82)

STANDARD SPRING RANGES, psig (barg)

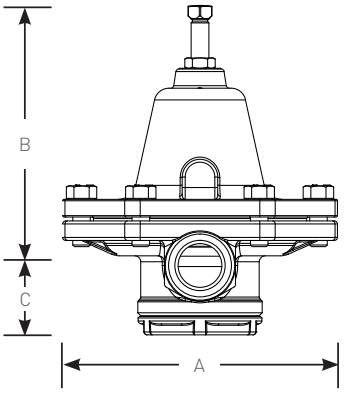
Service	Spring Material	Size, in. (mm)	1	2	3	4	5	6	7
Water and Air, Steam	Steel	½ (15)	2 to 30 (0.1 to 2.1)	10 to 50 (0.7 to 3.4)	30 to 125 (2.1 to 8.6)	50 to 150 (3.4 to 10.3)	- - - -	- - - -	- - - -
		¾ (20)	2 to 20 (0.1 to 1.4)	10 to 35 (0.7 to 2.4)	30 to 75 (2.1 to 5.2)	50 to 110 (3.4 to 7.6)	105 to 150 (7.2 to 10.3)	- - - -	- - - -
		1 (25)	2 to 20 (0.1 to 1.4)	10 to 45 (0.7 to 3.1)	20 to 60 (1.4 to 4.1)	55 to 100 (3.8 to 6.9)	90 to 150 (6.2 to 10.3)	- - - -	- - - -
Water and Air	SST	½ (15)	10 to 30 (0.7 to 2.1)	20 to 75 (1.4 to 5.2)	25 to 125 (1.7 to 8.6)	100 to 200 (6.9 to 13.8)	150 to 250 (10.3 to 17.2)	250 to 400 (17.2 to 27.6)	200 to 600 (13.8 to 41.4)
		¾ (20)	10 to 30 (0.7 to 2.1)	20 to 70 (1.4 to 4.8)	30 to 100 (2.1 to 6.9)	50 to 150 (3.4 to 10.3)	100 to 225 (6.9 to 15.5)	150 to 250 (10.3 to 17.2)	- - - -
		1 (25)	10 to 35 (0.7 to 2.4)	20 to 60 (1.4 to 4.1)	50 to 100 (3.4 to 6.9)	50 to 150 (3.4 to 10.3)	100 to 250 (6.9 to 17.2)	200 to 400 (13.8 to 27.6)	- - - -
Steam	SST	½ (15)	10 to 30 (0.7 to 2.1)	20 to 75 (1.4 to 5.2)	25 to 125 (1.7 to 8.6)	100 to 200 (6.9 to 13.8)	150 to 250 (10.3 to 17.2)	250 to 400 (17.2 to 27.6)	- - - -
		¾ (20)	10 to 30 (0.7 to 2.1)	20 to 70 (1.4 to 4.8)	30 to 100 (2.1 to 6.9)	50 to 150 (3.4 to 10.3)	100 to 225 (6.9 to 15.5)	150 to 250 (10.3 to 17.2)	- - - -
		1 (25)	10 to 35 (0.7 to 2.4)	20 to 60 (1.4 to 4.1)	50 to 100 (3.4 to 6.9)	50 to 150 (3.4 to 10.3)	100 to 250 (6.9 to 17.2)	- - - -	- - - -

MATERIALS OF CONSTRUCTION

Part description	Materials
Adjusting screw	SST
Spring housing	316 SST or steel
Spring button	316 SST
Spring	Steel
Pressure plate	Cast iron
Diaphragm	NBR, 316 SST
Diaphragm gasket	Aramid fiber
Diaphragm	316 SST
Body	316 SST or Carbon steel
Cylinder	303 SST
Seat disc	PTFE or SST
Body seat	303 SST
Bottom plug gasket	Aramid fiber
Piston	303 SST
Pusher post	303 SST
Piston spring	SST
Bottom plug	316 SST

DIMENSIONS

Type B95 valve size, in. (mm)	Dimensions, in. (mm)		
	A	B	C
½ (15)	5.04 (128)	5.59 (142)	1.58 (40.1)
¾ (20)	5.80 (147)	5.71 (145)	1.46 (37.1)
1 (25)	6.60 (168)	6.71 (170)	1.62 (41.2)



TYPE B95 SELECTION GUIDE

Example:	B95	D	C	W	S	S	B	B	S	01	-	D	1

Model
B95 B95 valve

Material of construction
D Carbon steel body and chamber
G 316 SST body and chamber

Valve size
C ½ in. (15)
D ¾ in. (20)
E 1 in. (25)

Service
W Water/air
S Steam

Body style/connection style
S Side inlet/side outlet - straight thru w/ NPT connections

Spring chamber style
S Standard
K w/ Pressure screw cap and differential connection

Diaphragm material
B NBR (water/air)
G 316 SST (steam)

Seat material
B NBR (water/air)
T PTFE (steam)

Pressure screw style
S Standard

Variation
01 Standard

Design revision
(-) Indicates original design

Spring material
D Steel
E SST

Spring range
Refer to table on page 11

NOTE

1. Steel springs are furnished as standard. Stainless springs furnished for higher ranges and for all cryogenic valves.
2. Stainless steel valves available with 200-400 psig range. Consult factory.
3. For steam service, we recommend a max. differential pressure of 150 psig to prevent seat erosion.

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 psig higher than the pressure regulator's delivery setting.

TYPE BBC: HEAVY OIL OR VISCOUS FLUIDS

Model overview

Type BBC is available in ⅜ through 1½ in. (10 to 40 mm) sizes with either a cast iron or bronze body. These valves are suited to systems with a maximum operating temperature of 180°F (82°C) when fitted with an NBR or FKM[1] diaphragm and a maximum operating temperature of 400°F (204°C) with a Monel® metal diaphragm. A stainless steel piston and seat are standard.

Depending on the setting of the adjusting spring installed, delivery pressures may be adjusted from a minimum of 2 psig (0.14 barg) to a maximum of 200 psig (13.8 barg).

Valves will normally be equipped as indicated in the table but other combinations of body material, piston-cylinder and diaphragm are available to special order.

The Type BBC incorporates a radical departure from the conventional regulator valve design, featuring a 'universal joint' type seating arrangement which ensures free valve operation. This design ensures that there are no small ports or close tolerances which would prevent dependable performance. The working parts are accessible easily without removing the valve from the line. The standard regulator is fitted with a square head adjusting screw and lock nut arrangement. A T-handle or handwheel may also be fitted for a small additional charge.

Application

The Type BBC is designed for heavy oil service (Bunker C and other grades) as well as for dirty liquids or fluids with a high viscosity.

NOTE

If downstream pressure control is critical to the safety of the installation, the downstream side should be protected by a safety relief valve set to relieve at the maximum safe limit, but at least 10 psig (0.69 barg) higher than the pressure regulator's delivery setting.

Specifications

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

Service	Maximum initial pressure, psig (bar)	Maximum reduced pressure, psig (barg)	Body material		Piston and seat	Diaphragm material			Maximum operating temperature, °F (°C)
			Iron	Bronze	SST	NBR	Monel®	FKM[1]	
Heavy Oil	200 (13.8)	150 (10.3)	X		X	X		X	180 (82)
	400 (27.6)	200 (13.8)		X	X	X		X	180 (82)
	150 (10.3)	125 (8.6)	X		X		X		400 (204)
	250 (17.2)	200 (13.8)		X	X		X		400 (204)

1. Not UL approved.

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STANDARD SPRING RANGES, psig (barg)

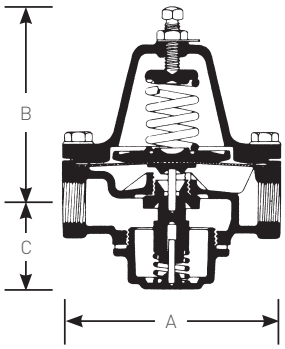
Spring Material	Size, in. (mm)	1	2	3	4	5	6
Steel	⅜ (10)	2 to 15 (0.1 to 1.0)	10 to 50 (0.7 to 3.4)	40 to 80 (2.8 to 5.5)	75 to 150 (5.2 to 10.3)	125 to 200 (8.6 to 13.8)	- - - -
	½ (15)	2 to 35 (0.1 to 2.4)	20 to 50 (1.4 to 3.4)	40 to 120 (2.8 to 8.3)	100 to 200 (6.9 to 13.8)	- - - -	- - - -
	¾ (20)	2 to 15 (0.1 to 1.0)	10 to 30 (0.7 to 2.1)	20 to 75 (1.4 to 5.2)	60 to 125 (4.1 to 8.6)	100 to 200 (6.9 to 13.8)	- - - -
	1 (25)	2 to 15 (0.1 to 1.0)	10 to 40 (0.7 to 2.8)	30 to 60 (2.1 to 4.1)	50 to 100 (3.4 to 6.9)	90 to 150 (6.2 to 10.3)	125 to 200 (8.6 to 13.8)
	1¼, 1½ (32, 40)	2 to 20 (0.1 to 1.4)	10 to 30 (0.7 to 2.1)	20 to 100 (1.4 to 6.9)	90 to 150 (6.2 to 10.3)	100 to 175 (6.9 to 12.1)	100 to 200 (6.9 to 13.8)

MATERIALS OF CONSTRUCTION

Part description	Materials
Adjusting spring	Steel
Spring housing	Cast iron or bronze
Pressure plate	Cast iron
Diaphragm	NBR or Monel®
Diaphragm gasket (for metal diaphragms only)	Aramid fiber
Body	Cast iron or bronze
Pusher post seat	Brass
Body seat	303 Stainless steel
Bottom plug gasket	Aramid fiber
Piston	303 Stainless steel
Pusher post	Monel®
Piston spring	Monel®

DIMENSIONS

Type BBC valve size, in. (mm)	Dimensions, in. (mm)			Shipping weight, lbs (kg)	
	A	B	C	Iron	Bronze
⅜ (10)	3.88 (98.4)	4.50 (114)	1.75 (44.5)	5 (2.3)	5½ (2.3)
½ (15)	4.47 (114)	5.13 (130)	2.48 (62.9)	7½ (3.4)	8 (3.6)
¾ (20)	5.13 (130)	4.63 (118)	1.88 (47.6)	9 (4.1)	10 (4.5)
1 (25)	5.81 (148)	6.25 (159)	2.13 (54.0)	12 (5.4)	16 (7.3)
1¼ (32)	6.19 (157)	6.13 (156)	2.63 (66.7)	18 (8.2)	20 (9.1)
1½ (40)	6.19 (157)	6.13 (156)	2.63 (66.7)	18 (8.2)	20 (9.1)



TYPE BBC SELECTION GUIDE

Example:	BBC	F	B	W	S	S	B	E	S	01	A	D	1

Model
BBC BBC valve

Material of construction
Z Bronze
F Iron

Valve size
B ⅜ in. (10 mm) **E** 1 in. (25 mm)
C ½ in. (15 mm) **F** 1¼ in. (32 mm)
D ¾ in. (20 mm) **G** 1½ in. (40 mm)

Service
O Oil

Body style/connection style
S Side inlet/side outlet - straight thru w/ NPT connections
B Side inlet/side outlet - straight thru w/ BSPT connections

Spring chamber style
S Standard

Diaphragm material
B NBR (oil up to 180°F)
M Monel® (oil 180 to 400°F)
V FKM (oil up to 180°F, not UL approved)

Seat material
E 303 Stainless steel

Pressure screw style
S Standard
T T-handle

Variation
01 Standard

Design revision
A Indicates 2nd design revision

Spring material
D Steel

Set pressure
Refer to table on page 14

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