



CASH VALVE TYPE PBE-2 COMBINATION PRESSURE BUILDER/ECONOMIZER REGULATOR INSTALLATION, MAINTENANCE AND REPAIR PARTS INFORMATION

Before installation, these instructions must be read carefully and understood.

DESCRIPTION

The Type PBE-2 regulator is designed for cryogenic service and combines the pressure building and economizer functions into one unit. It is a direct acting, single seated, spring loaded diaphragm-type regulator. In the Type PBE-2, the economizer phase starts at the point at which the pressure build level is reached, thus assuring a smooth transition between the two functions.

SPECIFICATION DATA

Service: Cryogenic Liquids and Gases

Size: 1/2" only

Connections: Threaded female inlet and outlet

Temperature rating:

-320°F [-196°C] to +150°F [66°C]

Pressure Control Range: 10 to 400 psi (0.69 to 27.6 bar)

Maximum Initial Pressures: 400 psi (27.6 bar)

Capacity: For specific capacity information, consult the factory.

CONSTRUCTION

Bronze body, and spring chamber, stainless steel Economizer seat, and pressure spring. Teflon pressure buildup seat disc, and diaphragm gasket. Bronze internal trim and diaphragms.

All parts commercially cleaned for cryogenic service.

Also available in stainless steel.

GENERAL INSTALLATION INSTRUCTIONS

The Type PBE-2 regulator should be installed in the horizontal position with the spring chamber in the upright or inverted position. For other installation requirements consult the factory. For ease of operation and maintenance, it is suggested that manual shut-off valves be installed up-stream and downstream from the valve. Prior to installing the valve the piping should be thoroughly flushed out to remove any foreign material to ensure for the efficient and trouble free operation for which the valve was designed.

In a typical installation, the Type PBE-2 should be installed in the pressure build-up circuit before the pressure build-up coil and the safety relief valve. When installing the valve connect the pressure build-up supply line to the inlet connection identified on the valve body. The direction of flow is also identified by an arrow cast on the valve body. Connect the economizer line to the outlet connection at the bottom of the valve. Use a compatible sealant on the male pipe threads and do not overtighten the valve connections.

OPERATING INSTRUCTIONS

Adjusting the Delivery Pressure

The regulator's delivery pressure setting is adjusted by means of the adjusting screw (1) at the top of the spring chamber (4) after loosening the adjusting screw lock nut (2). To increase the delivery pressure, turn the adjusting screw clockwise (into the spring chamber). To decrease the delivery pressure, turn the adjusting screw counter-clockwise (out of the spring chamber). Tighten the adjusting screw lock nut after the adjustment has been made.

NOTE:

When adjusting the delivery pressure, allow a slight pressure to continually flow through the valve. Close tight to verify set pressure.



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MAINTENANCE INSTRUCTIONS

The following procedures are provided for servicing the recommended spare parts for the Type PBE-2 regulator. Repair parts can easily be installed without removing the regulator from the line.

CAUTION

Before attempting to replace any spare parts, be sure to shut off all pressure connections to the valve. With the valve closed however, system pressure could still be locked between the shut off valve and the inlet and/or outlet sides of the regulator. To avoid possible personal injury from the trapped liquid or gases be certain to relieve the pressure from ALL sides of the regulator before proceeding with any valve service.

Refer to the Type PBE-2 cut away view for parts identification.

Servicing the Pressure Spring (6), Diaphragms (8) and Diaphragm Gasket (9)

1. Loosen the lock nut (2) ¼ turn and turn the adjusting screw (1) counter-clockwise until the pressure spring (6) is no longer under tension.

NOTE:

When installing the adjusting screw during reassembly, turn the screw clockwise until the lock nut just touches the spring chamber. The pressure setting should then be very close to its original setting.

2. Remove the assembly bolts (10) and nuts (11) securing the spring chamber (4) to the valve body (14). During reassembly, tighten the screws evenly in an alternate diagonal pattern.
3. Lift the spring chamber (4) from the valve body, then remove the spring seat (5), pressure spring (6), and pressure plate (7).
4. Remove the diaphragms (8) and diaphragm gasket (9). It is recommended that the gasket be replaced whenever the diaphragms are replaced.
5. Remove the ball seat (12) and the seat spring (13) from the protruding piston pusher post. During reassembly, be sure the ball seat is centered properly on the pusher post of the piston.
6. Inspect all parts and replace if necessary. Reassemble the parts in reverse order. Then readjust the delivery pressure as outlined under Operating Instructions.

Servicing the Piston Assembly (18), Cylinder (15), Strainer Screen (16), and Bottom Plug Gasket (17)

1. Unscrew the bottom plug (20) from the valve body (14) and remove the bottom plug gasket (17). The piston spring (19) and piston assembly (18) will normally "drift" out with the bottom plug.

NOTE:

It is not necessary to relieve the load on the pressure spring (6) when removing parts through the bottom of the valve.

2. Remove the strainer screen (16) from the cylinder (15).
3. Unscrew the cylinder by turning in a counter-clockwise direction and lift it out of the valve body. Depending on how the valve is installed, the seat spring (13) may come out when the cylinder is removed. Inspect the cylinder for wear and replace if necessary.
4. Examine the bottom plug gasket (17), and the piston assembly (18), and replace if necessary.

NOTE:

The piston assembly (18) consists of the piston, pusher post and seat disc and is offered only as a complete assembly.

5. Reassemble the parts in reverse order. When installing the piston assembly (18) in the valve body, be sure the pusher post and seat spring are properly positioned within the cylinder. After placing the valve in service, check and adjust the delivery pressure setting as outlined under Operating Instructions.

REPAIR PARTS INFORMATION

Refer to the Type PBE-2 cut away view for parts identification.

SPECIFICATIONS

Each Type PBE-2 valve is supplied with a pressure spring selected to provide a desired pressure setting. The range of adjustment or satisfactory "working range" of individual springs is shown in the table below. Every Type PBE-2 regulator has the "set" pressure and range of adjustment stamped on a tag fastened to the valve. The ranges shown in the table are recommended for best performance.

HOW TO ORDER

To order repair parts, refer to the cut away view of the Type PBE-2 to identify the part required. When ordering, please use the part names listed and provide the valve serial number stated on the identification tag. Also state the following

"Repair Parts for Type PBE-2 Cryogenic Service" and provide:

1. Valve size
2. Service
3. Inlet pressure
4. Outlet or delivery pressure range and setting
5. Part description
6. Quantity of each part
7. Valve assembly or serial number stated on the metal identification tag under the adjusting screw lock nut

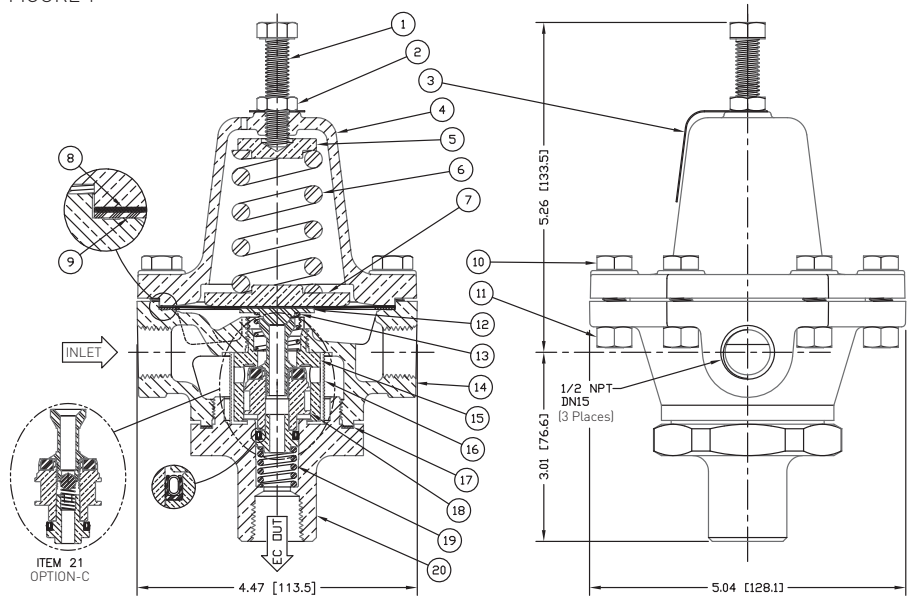
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BILL OF MATERIALS

Item No.	Description	Materials	Quantity
1	Adjusting screw	SST	1
2	Lock nut	SST	1
3	Name plate	Aluminum	1
4	Spring chamber	Bronze	1
5	Spring button	Brass	1
6	Pressure spring	SST	1
7	Pressure plate	Brass	1
8	Diaphragm	Bronze	5
9	Gasket	Teflon	1
10	Screw	SST	6
11	Nut	SST	6
12	Ball seat	303 SST	1
13	Spring	SST	1
14	Body	Bronze, SST	1
15	Cylinder	Brass	1
16	Screen	Monel	1
17	Gasket	Teflon	1
18	Piston sub	-	1
18A	Pusher post	303 SST	1
18B	Piston sub	SST	1
18C	Ball	SST	1
18D	Spring	SST	1
18E	Seal	Teflon/SST	1
18F	Adapter	Brass	1
19	Piston spring	SST	1
20	Bottom plug	Brass	1
21	Piston sub	-	1
21A	Pusher post	303 SST	1
21B	Piston sub	-	1
21AA	Seat disc	Teflon	1
21BB	Piston	303 SST	1
21C	Seal	Teflon/SST	1
21D	Adapter	303 SST	1

FIGURE 1



SPRING RANGES

Maximum Working Pressure (psi)

10-30
20-75
25-125
100-200
150-250
200-400

DIMENSION

Size	A	Dimensions B	C	Shipping Weight (lbs)
1/2"	4-1/2"	5-1/4"	3"	9

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