

# MODEL PBE-H

## PRESSURE BUILD & ECONOMIZER REGULATOR

### OVERVIEW

The Model PBE has a compact body and functions in a dual role as a pressure building regulator and as an economizer relief regulator in one model. The pressure build feature controls the outlet pressure while the economizer feature operates to relieve any excess pressure in the system above set point from atmospheric to 250 psig (17.2 Barg).

### FEATURES

- The Economizer feature begins to open when pressure approaches 10 psig (0.7 barg) above set point.

### APPLICATIONS

Widely used for pressure control of liquified gas in storage tanks.



MODEL PBE-H



**LINE SIZES AVAILABLE**  
1/2" (DN15)



**END CONNECTIONS**  
FNPT



**COMMON APPLICATIONS**  
LIQUIFIED GAS IN STORAGE TANKS



**DESIGN PRESSURE**  
MAXIMUM PRESSURE DROP:  
395 psig (27.2 Barg)

### ⚠ CAUTION

THIS IS NOT A SAFETY DEVICE AND MUST NOT BE SUBSTITUTED FOR A CODE APPROVED PRESSURE SAFETY RELIEF VALVE OR RUPTURE DISC.

## STANDARD/GENERAL SPECIFICATIONS

|                                         |                                                                                                 |                                |                                                                                                                          |
|-----------------------------------------|-------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| <b>Body Size:</b>                       | 1/2" (DN15) with FNPT connections.<br>Inlet connection size is equal to outlet connection size. | <b>Range Spring:</b>           | SST. See Table 3.                                                                                                        |
| <b>Body Orientation:</b>                | <u>Globe</u> : Side inlet, side outlet.                                                         | <b>Cryogenic Construction:</b> | Cleaned for oxygen service per Cashco Spec. #S-1134. Mount in horizontal piping with adjusting screw oriented downwards. |
| <b>Body &amp; Spring Chamber Mat'l:</b> | ASTM B62 C83600.                                                                                | <b>Flow Capacities:</b>        | Max. Cv Comp. Diaph.: 3.0<br>Metal Diaph.: 2.3<br>For Capacities see Table 4.                                            |
| <b>Body Cap:</b>                        | ASTM B16 C36000                                                                                 | <b>Option-21:</b>              | <b>STRAINER:</b> Inlet filter to capture debris. When installed reduces capacity by approximately 40 %.                  |
| <b>Diaphragm:</b>                       | Metal – Phos. Bronze or 302 SST<br>Composition – Gylon 3522.<br>See Table 2.                    | <b>Option -31:</b>             | <b>BSPT END CONNECTIONS.</b> British Standard Tapered Pipe threads per ISO 7/1; used as an alternate to NPT ends.        |
| <b>Seat:</b>                            | PTFE                                                                                            | <b>Option-80:</b>              | <b>HIGH OUTLET PRESSURE.</b> Taller spring chamber for use with range spring 100 - 250 psig. (see dimensions tables.)    |
| <b>Gasket:</b>                          | PTFE - (used with metal diaphragm)                                                              |                                |                                                                                                                          |
| <b>Temperature Range:</b>               | -325 to +150°F (-198 to +66°C).                                                                 |                                |                                                                                                                          |
| <b>Maximum Design Pressure:</b>         | See Table 1.                                                                                    |                                |                                                                                                                          |

## TECHNICAL SPECIFICATIONS

| <b>TABLE 1</b><br><b>CONTAINMENT PRESSURE VS. TEMPERATURE RATINGS</b><br><b>PER ASME B31.3</b><br><b>See Table 2 for trim pressure/temperature limitations</b> |                         |       |             |            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-------|-------------|------------|
| Materials<br>Body/Spring Chamber                                                                                                                               | Inlet & Outlet Pressure |       | Temperature |            |
|                                                                                                                                                                | psi                     | (BAR) | °F          | °C         |
| BRZ/BRZ                                                                                                                                                        | 740                     | 51.0  | -325 to 150 | -198 to 66 |
|                                                                                                                                                                | 730                     | 50.3  | 200         | 93         |
|                                                                                                                                                                | 680                     | 46.8  | 250         | 121        |
|                                                                                                                                                                | 640                     | 44.1  | 300         | 149        |
|                                                                                                                                                                | 585                     | 40.3  | 400         | 200        |

| <b>TABLE 2</b><br><b>TRIM MATERIAL COMBINATIONS</b> |                               |         |            |
|-----------------------------------------------------|-------------------------------|---------|------------|
| Part                                                | Trim Designation Number       |         |            |
|                                                     | B9B                           | B9S     | B9G        |
| Diaphragm                                           | Phos. Bronze                  | 302 SST | Gylon 3522 |
| Diaphragm Gasket                                    | PTFE                          | PTFE    | N/A        |
| Diaphragm Stop                                      | Brass                         |         |            |
| Piston                                              | Brass                         |         |            |
| Seat Disc                                           | PTFE                          |         |            |
| Piston Spring                                       | 17-7PH SST                    |         |            |
| Piston Post                                         | 316 SST                       |         |            |
| Pusher Plate                                        | 303 SST                       |         |            |
| Pusher Plate Gasket                                 | PTFE                          | PTFE    | N/A        |
| Pressure Plate                                      | Brass                         |         |            |
| Range Spring                                        | SST                           |         |            |
| Spring Button                                       | SST                           |         |            |
| Adjusting Screw & Lock Nut                          | SST                           |         |            |
| Temperature Range                                   | -325 to 150°F<br>-198 to 66°C |         |            |
| Maximum Working Pressure                            | 250 psi<br>17.2 BAR           |         |            |

| <b>TABLE 3</b><br><b>RANGE SPRINGS / MAX. PRESSURE DROP</b> |            |                   |        |
|-------------------------------------------------------------|------------|-------------------|--------|
| Range Spring                                                |            | Max Pressure Drop |        |
| psig                                                        | barg       | psid              | bard   |
| 2-15                                                        | (.14-1.0)  | 200               | (13.8) |
| 10-40                                                       | (.69-2.8)  | 395               | (27.2) |
| 30-80                                                       | (2.1-5.5)  | 395               | (27.2) |
| 70-150                                                      | (4.8-10.3) | 395               | (27.2) |
| 100-250                                                     | (6.9-17.2) | 395               | (27.2) |

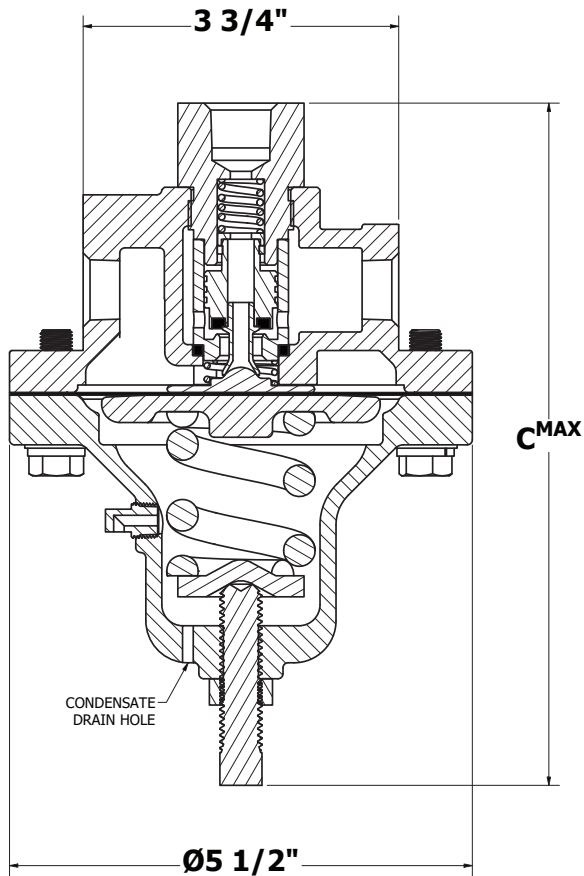
| <b>TABLE 4</b><br><b>CAPACITY - Cv (F<sub>L</sub> = 0.95)</b> |        |                 |      |      |                       |      |      |  |
|---------------------------------------------------------------|--------|-----------------|------|------|-----------------------|------|------|--|
| Flowing Pressure                                              |        | Metal Diaphragm |      |      | Composition Diaphragm |      |      |  |
|                                                               |        | % Droop         |      |      | % Droop               |      |      |  |
| psig                                                          | (Barg) | 10%             | 20%  | 30%  | 10%                   | 20%  | 30%  |  |
| 5                                                             | (0.3)  | 0.17            | 0.23 | 0.28 | 0.06                  | 0.07 | 0.20 |  |
| 10                                                            | (0.7)  | 0.16            | 0.19 | 0.20 | 0.24                  | 0.50 | 0.71 |  |
| 15                                                            | (1.0)  | 0.33            | 0.38 | 0.44 | 0.37                  | 0.67 | 1.00 |  |
| 25                                                            | (1.7)  | 0.27            | 0.37 | 0.50 | 0.29                  | 0.62 | 0.94 |  |
| 35                                                            | (2.4)  | 0.22            | 0.40 | 0.64 | 0.30                  | 0.60 | 1.00 |  |
| 50                                                            | (3.4)  | 0.22            | 0.37 | 0.54 | 0.20                  | 0.43 | 0.66 |  |
| 75                                                            | (5.2)  | 0.26            | 0.53 | 0.74 | 0.28                  | 0.56 | 0.88 |  |
| 100                                                           | (6.9)  | 0.50            | 0.84 | 1.13 | 0.37                  | 0.78 | 1.16 |  |
| 125                                                           | (8.6)  | 0.45            | 0.84 | 1.21 | 0.46                  | 0.90 | 1.36 |  |
| 150                                                           | (10.3) | 0.45            | 0.81 | 1.17 | 0.57                  | 1.24 | 1.76 |  |
| 175                                                           | (12.1) | 0.42            | 0.82 | 1.20 | 0.83                  | 1.39 | 1.79 |  |
| 200                                                           | (13.8) | 0.48            | 0.91 | 1.28 | 0.69                  | 1.40 | 1.80 |  |
| 225                                                           | (15.5) | 0.53            | 0.92 | 1.22 | 0.82                  | 1.46 | 1.73 |  |
| 250                                                           | (17.2) | 0.48            | 0.88 | 1.26 | 0.75                  | 1.45 | 1.80 |  |

## NOTES

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## DIMENSIONS & WEIGHT



| SIZE<br>INCH | INCHES           |                             | ASSEMBLED WEIGHT (lbs) |
|--------------|------------------|-----------------------------|------------------------|
|              | C <sup>MAX</sup> | C <sup>MAX</sup> +OPTION-80 | NON-FLANGED            |
| 1/2"         | 8 1/8            | 9 11/16                     | 14                     |
| SIZE<br>DN   | MILLIMETERS      |                             | ASSEMBLED WEIGHT (kgs) |
|              | C <sup>MAX</sup> | C <sup>MAX</sup> +OPTION-80 | NON-FLANGED            |
| 15           | 226              | 246                         | 6                      |

## MODEL PBE-H PRODUCT CODER

04/20/22

**A****6** **4** - **3** **POS**  
**6 & 7** **7** - **POS**  
**10** **POS**  
**11** **POS**  
**12** **0** **0** **0** **0** **0** **B**

| POSITION 6 & 7 -<br>TRIM<br>DESIGNATION NO. |      |
|---------------------------------------------|------|
| Desig.                                      | CODE |
| B9B                                         | BB   |
| B9G                                         | BG   |
| B9S                                         | BS   |

| POSITION 10 -<br>END CONNECTION       |      |
|---------------------------------------|------|
| Description                           | CODE |
| FNPT                                  | 1    |
| -31 Opt. BSPT                         | B    |
| BSPT - Screwed Tapered<br>Pipe Thread |      |

| POSITION 11 - RANGE SPRING                                  |              |      |
|-------------------------------------------------------------|--------------|------|
| psig                                                        | (Barg)       | CODE |
| 2 - 15                                                      | (.14 - 1.0)  | A    |
| 10 - 40                                                     | (.69 - 2.8)  | C    |
| 30 - 80                                                     | (2.1 - 5.5)  | D    |
| 70 - 150                                                    | (4.8 - 10.3) | E    |
| 100 - 250 *                                                 | (6.9 - 17.2) | F    |
| * Includes Opt-80 for High Outlet Pressure<br>construction. |              |      |

**\* For information on ATEX see  
pages 8 & 9 on the IOM.**

| POSITION 12 - OPTION |        |      |
|----------------------|--------|------|
| Description          | Option | CODE |
| None                 | ---    | 0    |
| Strainer             | -21    | F    |

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