For Special and Indoor Applications.

The BD 273 gas pressure regulator is a product series for gas transmission and distribution in offtake stations in commercial and industrial facilities. It is a pilot-operated, spring-loaded regulator with superior accuracy and control capabilities which can withstand temperatures ranging from -20°C to 60°C. The BD 273 is supported by Honeywell’s global expertise and unmatched local support capabilities.

Proven Technology. Superior Performance.
Key Features

- The Model 273 Regulator is a pilot-operated regulator for superior accuracy and control.
- Use with confidence on natural and manufactured gases of non-aggressive nature, including nitrogen, carbon dioxide, propane, butane, etc.
- Versions available for special applications like indoor applications with no requirement for vent-line.
- Fixed factor billing model available (PFM) for applications that require accuracy to +/- 1% absolute pressure.

Characteristics

- Wide inlet pressure range 1-275 psi (0.07-19.0 bar) depending on orifice diameter.
- Maximum inlet pressure 275 psi (19.0 bar) without incorporated safety slam-shut valve.
- Maximum inlet pressure 150 psi (10.3 bar) with incorporated safety slam-shut valve.
- Maximum allowable operating pressure up to 22 psi or 1.5 bar depending on orifice diameter.
- Pilot-operated to accommodate changes in inlet pressure, increase accuracy and widen outlet pressure ranges.
- Various interchangeable orifices for ease of maintenance, custom ability and increased turndown ratio to accommodate a wide range of flow and pressure requirements.
- Outlet pressure range from 1.0 psi-60.0 psi (0.14-6.1 bar) over 3 pilot spring ranges.
- Pilot-loaded version available for higher outlet pressure set points and higher flow capacities.

Available Constructions

- 273PL—standard version
- 273PL-309LP UPCO/OPCO—with integral under and over-pressure slam-shut device (over pressure up to 8 psi or 560 mbar)
- 273PL-309LP2 UPCO/OPCO—with integral under and over-pressure slam-shut device (over pressure up to 2 psi or 1.5 bar)
- 273PL-309LP4 UPCO/OPCO—with integral under and over-pressure slam-shut device (over pressure up to 6 psi or 4.5 bar)
- 273SD-309 UPCO/OPCO—safety diaphragm version with integral over and under-pressure slam-shut device and internal vent limiting devices (indoor installations only)
- PFM Version—fixed factor billing or pressure factor metering version for outlet pressure accuracy of +/- 1% absolute pressure.

Technical Specifications

Pressure Ratings, Weights, Materials of Construction

- **Pressure Ratings**
  - Maximum Inlet Pressure: 275 psi (19.0 bar)
  - Maximum Allowable Operating Pressure: 150 psi (10.3 bar)

- **Temperature Rating**
  -40° to 60°C (40° to 140°F Fahrenheit)

- **Outlet Pressure Ranges**

<table>
<thead>
<tr>
<th>Range (imperial)</th>
<th>Range (metric)</th>
<th>Spring Number (colour)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0-5.0 psi</td>
<td>0.07-0.35 bar</td>
<td>1047 (purple)</td>
</tr>
<tr>
<td>3.0-30.0 psi</td>
<td>0.21-2.1 bar</td>
<td>TX/002 (silver)</td>
</tr>
<tr>
<td>30.0-60.0 psi</td>
<td>2.1-4.1 bar</td>
<td>TX/003 (blue)</td>
</tr>
</tbody>
</table>

- **Materials of Construction**
  - Screwed Body Casting: Cast Iron
  - Flanged Body Casting: Cast Iron, Ductile Iron, Cast Steel
  - Diaphragm Casings: Die Cast Aluminum
  - Main Diaphragm: Molded Nitrile Rubber with Nylon Reinforcing
  - Valve Head (Steel): Polyurethane
  - Diaphragm Plates: Steel
  - Office: Brass or Stainless Steel (5-type)
  - Pilot Supply Line (standard): Copper
  - Pilot Supply Line (optional): Stainless Steel
  - Top Cap: Aluminum
  - Springs: Steel
  - Lever: Steel
  - Pilot Regulator Body and Diaphragm Casting: Aluminum
  - Pilot Regulator Diaphragm: Molded Nitrile Rubber with Nylon Reinforcing

- **Correction Factors for Other Gases**

<table>
<thead>
<tr>
<th>Gas Type</th>
<th>Specific Gravity</th>
<th>Correction Factor (CF)</th>
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</thead>
<tbody>
<tr>
<td>Air</td>
<td>1.00</td>
<td>0.77</td>
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<tr>
<td>Butane</td>
<td>2.01</td>
<td>0.56</td>
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<tr>
<td>Carbon Dioxide (Dry)</td>
<td>1.52</td>
<td>0.63</td>
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<tr>
<td>Carbon Monoxide (Dry)</td>
<td>0.97</td>
<td>0.79</td>
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<tr>
<td>Natural Gas</td>
<td>0.60</td>
<td>1.00</td>
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<tr>
<td>Nitrogen</td>
<td>0.97</td>
<td>0.79</td>
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<tr>
<td>Propane</td>
<td>1.53</td>
<td>0.63</td>
</tr>
<tr>
<td>Propane-Air Mix</td>
<td>1.20</td>
<td>0.71</td>
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</table>

For Other Conversion Factors

$$C_f = \frac{0.6}{SG \text{ of Gas}}$$
Outlet Pressure Spring Adjuster
10.0” (254mm)
5.7” (145mm)
7.5” (190.5mm)

Pre-Load (lock-up) Pressure Spring Adjuster

1/8” Vent Connection

External Control Line Connection—1/2” 8 3/4” (222mm)

1/8” Vent Connection

8 1/16” (244mm)

1/8” Connection (ECL Optional)

Over Pressure Shut-off Spring Adjustment

Under Pressure Shut-off Spring Adjustment

To Reset Valve
- Remove Blind
- Insert & Thread on spindle
- Pull back to reset

Indoor “Vent-less” Regulator
- Regulator assembly incorporates a regulator with integral over-pressure safety slam-shut device (OPCO)
- Regulator does not incorporate an internal relief valve (IRV)
- Both regulator and integral slam-shut device have internal vent-limiting devices to limit the gas expelled from the valve upon diaphragm failure to below 1 ft³/hr (0.0283 m³/hr)
- If there is an over-pressure condition above a pre-determined level downstream of the regulator assembly, the slam-shut device (OPCO) will completely shut-off the gas flow

The valve must be manually reset after an over-pressure shut-off condition
- The regulator and slam-shut device have vent connections. These are for atmospheric reference and do not require a vent line connection to the outside.
- Vent lines will actually restrict the performance of the regulator
- Refer to technical booklet-certified line pressure regulators for more information.

Body/Vent Orientations

Agency Approvals
- Measurement Canada Approved (P.F.M. applications)

Scr = Screwed, Fgd = Flanged

Overall Length

<table>
<thead>
<tr>
<th></th>
<th>Overall Length</th>
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<tbody>
<tr>
<td>273PL (Scr)</td>
<td>18.0” (457mm)</td>
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<tr>
<td>273PL-309LP (Scr)</td>
<td>23.5” (600mm)</td>
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<td>273PL-309LP2 (Scr)</td>
<td>24.0” (610mm)</td>
</tr>
<tr>
<td>273PL-309LP4 (Scr)</td>
<td>27.0” (686mm)</td>
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<tr>
<td>273PL (Fgd)</td>
<td>19.0” (483mm)</td>
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<tr>
<td>273PL-309LP (Fgd)</td>
<td>24.0” (610mm)</td>
</tr>
<tr>
<td>273PL-309LP2 (Fgd)</td>
<td>25.0” (635mm)</td>
</tr>
<tr>
<td>273PL-309LP4 (Fgd)</td>
<td>28.0” (711mm)</td>
</tr>
</tbody>
</table>

Body Position — C

Regulator

Safety Slam-Shut Valve (Over-Pressure Device)

Safety Device Reset Mechanism

Vent Limiting Device

For more information, refer to the technical booklet-certified line pressure regulators.
### Performance Capacities

<table>
<thead>
<tr>
<th>Orifice Diameter</th>
<th>20.0mm Accuracy</th>
<th>30.0mm Accuracy</th>
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<tbody>
<tr>
<td>SCMH</td>
<td>SCFH</td>
<td>SCMH</td>
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<td>27372</td>
<td>1150</td>
<td>27308</td>
<td>2500</td>
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</tbody>
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### Internal to External Impulse Conversion (E.C.L.)

- To modify to E.C.L., remove the 4 bolts that secure the diaphragm casing to the regulator body. Remove the throat extension and o-rings. Ensure that the o-rings and the throat extension are kept away from debris.
- Remove the valve seat by taking out the cotter pin that secures it to the valve extension.
- Secure the throat seal down the valve extension, ensuring that it bottoms out against the diaphragm casing. Secure with the circlip.
- Replace the valve seat and new cotter pin. Replace throat extension and o-rings.
- Bolt body back to the diaphragm casing with the 4 original bolts.
- Remove one of the brass fittings from the bottom of the diaphragm casing.
- Connect ½" compression fitting and external control line to this boss.
- The sensing point at the termination of the control line should be a minimum of 5 times the nominal pipe diameter at the outlet of the regulator.

### Sectional Drawing and Spares Kit

**Spares Kit for Model 272PL Regulator—** BS/USA 128

- **Part Number**
- **O-Ring**
- **Bullet**

**Regulator Spares Kit**

- **Part Number**
- **O-Ring**
- ** Bullet**

**O-Ring Kit**

- **Part Number**
- **O-Ring**
- **_bullet**

**Regulator Body**

- **Part Number**
- **O-Ring**
- **_bullet**

**Diaphragm Plate**

- **Part Number**
- **O-Ring**
- **bullet**

**Cotter Pin**

- **Part Number**
- **O-Ring**
- **bullet**

**Retaining Clip**

- **Part Number**
- **O-Ring**
- **bullet**

**Note 1:** For Inlet pressures higher than 10 bar (150 psi), please contact your local representative to validate product suitability.

**Note 2:** For Outlet pressure above 2 bar (30 psi), please contact your local representative to validate product suitability.
## Part Numbering System

### Internal Relief
- C: Constant Loaded

### OPCO Type
- 2: 309LP OPCO
- 3: 309LP UPCO/OPCO
- 4: 309LP2 OPCO
- 5: 309LP2 UPCO/OPCO
- 6: 309LP4 OPCO
- 7: 309LP4 UPCO/OPCO

### OPCO Spring
- 861: A
- 1171: F
- 1172: G
- 1173: H
- 1174: I
- 1175: J
- 1254: C
- 1030: K
- 1031: L
- 1032: M
- 1033: N

### Orifice Diameter
- 20.0mm: G
- 30.0mm: I

### Body/Vent Orientation
- B1: E
- D1: M

### Connections Size
- H: 1¼" x 1¼"
- I: 1½" x 1½"
- J: 1¼" x 2"
- K: 1½" x 1½"
- L: 1½" x 2"
- M: 2" x 2"

### Connection Type
- N: NPT
- B: BSPT
- P: BSPP
- 1: ANSI150RF
- 2: ANSI150FF
- 6: PN16RF
- 7: PN16FF

### Material
- C: Cast Iron
- D: Ductile Iron
- S: Cast Steel

### Impulse
- 2: 309LP OPCO
- 3: 309LP UPCO/OPCO

### Optional Features
- T: Stainless Steel Pilot Feed Line
- I: Test Point on Inlet
- O: Test Point on Outlet
- E: Casting Engraving
- B: Test Point on Both Inlet & Outlet
- F: Inlet Filter Strainer
- Z: Blanking Plate

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For More Information
To learn more about Honeywell’s Low Pressure Gas Regulators, visit www.honeywellprocess.com or contact your Honeywell account manager.

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