EQUILIBAR®
PRECISION FLUID CONTROL

# LPR2

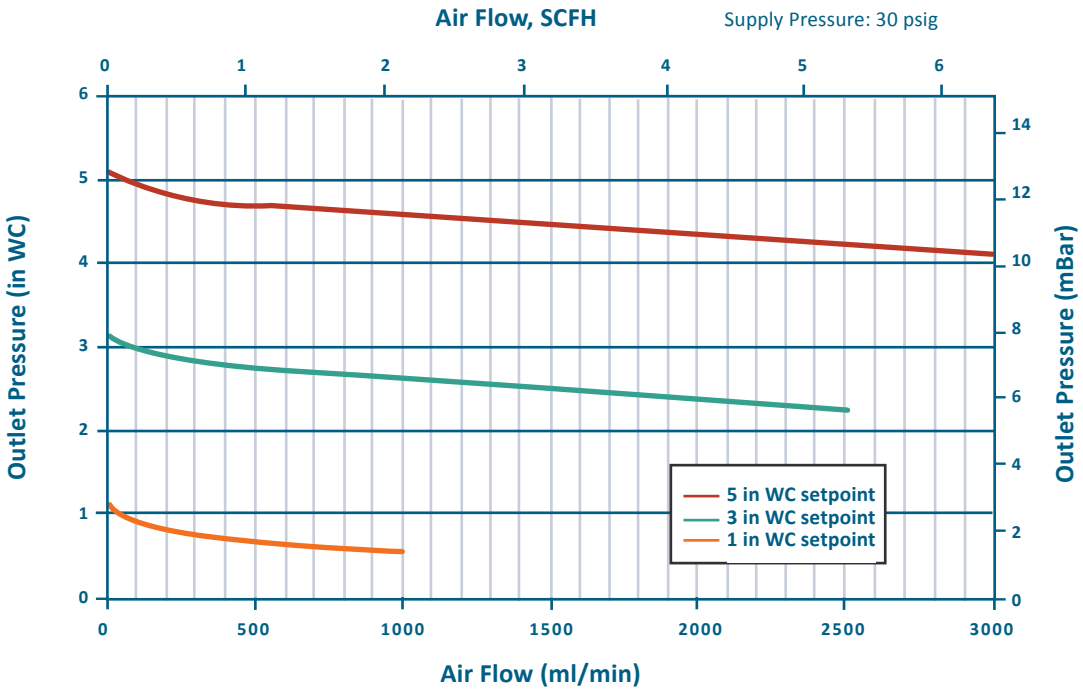
## Pressure Reducing Regulators

FOR VERY LOW PRESSURE APPLICATIONS

# Performance Specifications

The Equilibar® LPR2 is a manually adjustable pressure reducing regulator for air and inert gases in applications that are static or require ultra low flow rates. The LPR2 accepts a 5-30 psig regulated gas supply and regulates the pressure to a reduced value based on the setting of the adjustable hand knob. It is an ultra sensitive regulator, with sensitivity to 0.01 in WC. The LPR2 is a non-relieving regulator. A small bleed to atmosphere orifice is integrated in the 'full bleed' model (**B**) for applications that do not consume downstream gas. The 'limited bleed' model (**NB**) has no bleed orifice added but does have a small amount of gas consumption as leaks.

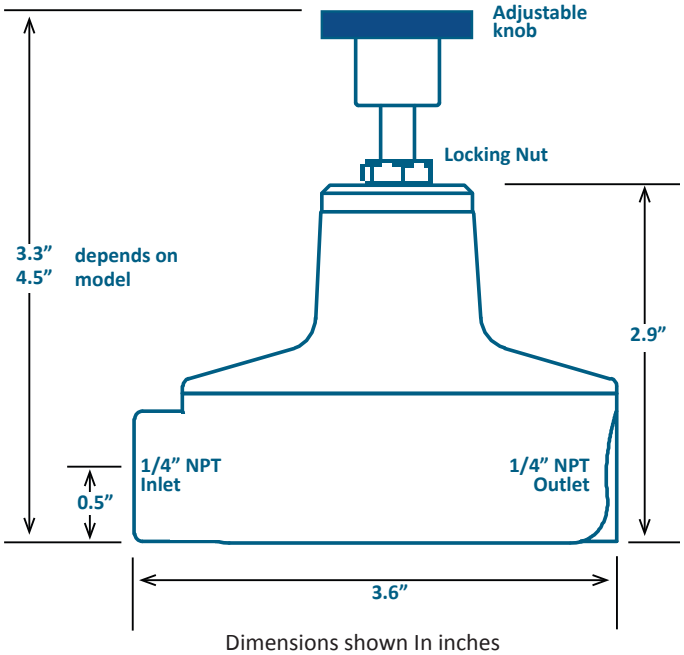
## LPR2 PERFORMANCE GRAPH




## PERFORMANCE AND SPECIFICATIONS

| | |
|---|---|
| **FLOW CAPACITY** | 3 SLPM (6 SCFH) with 30 psig supply and 5 in WC (0.18 psi) [12.45 mbar] setpoint |
| **SUPPLY PRESSURE** | 5 – 30 psig [0.34 – 2.07 bar] |
| **OUTPUT RANGES** | 0.25 - 7 in WC (0.01-0.25 psi) [0.62-17.4 mbar]<br>1 - 10 in WC (0.04-0.36 psi) [2.49-24.9 mbar]<br>1 - 28 in WC (0.04-1.01 psi) [2.49-69.7 mbar] |
| **CONSUMPTION** | < 30 ml/min (limited bleed unit (**NB**))<br>Approx. 250 ml/min (full bleed unit (**B**)) |
| **SENSITIVITY** | ±0.01 in WC (0.0004 psi) [0.025 mbar] |
| **24-HOUR STABILITY** | ±0.3 in WC (0.01 psi) [0.75 mbar] observed during 24-hour break in period. Stability improves with time. Please contact Equilibar engineers for more information. |
| **TEMPERATURE RANGE** | -20 to 170°F (-29 to 77°C) |
| **PORTS** | ¼" NPT inlet & outlet |
| **WEIGHT** | Approximately 1.3 lbs (0.59 kg) |

## DIMENSIONAL DRAWING




Dimensions shown In inches

# Applications

The LPR2 is designed to be used as a very low pressure reducing regulator or as a pilot regulator for controlling the setpoint of an Equilibar dome loaded back pressure regulator (BPR) at very low pressure setpoints. For processes that require ultra low back pressure control of high temperature fluids, high flow fluids, multiphase fluids or corrosive chemicals, the combination of an LPR2 and an Equilibar BPR can work together for optimum control.

## ULTRA LOW PRESSURE REDUCING REGULATOR

The LPR2 can function as a standard pressure reducing regulator to accurately control applications to pressures below 1 psig. The unit can pass up to 1 SCFH for ultra low flow applications. For inert gas applications, the unit can be built without a bleed orifice to help reduce consumption and increase savings.

Equilibar recommends setting the filter regulator to supply a 5-30 psig [0.34 - 2.07 bar] pressure to the LPR2. See Figure 1.

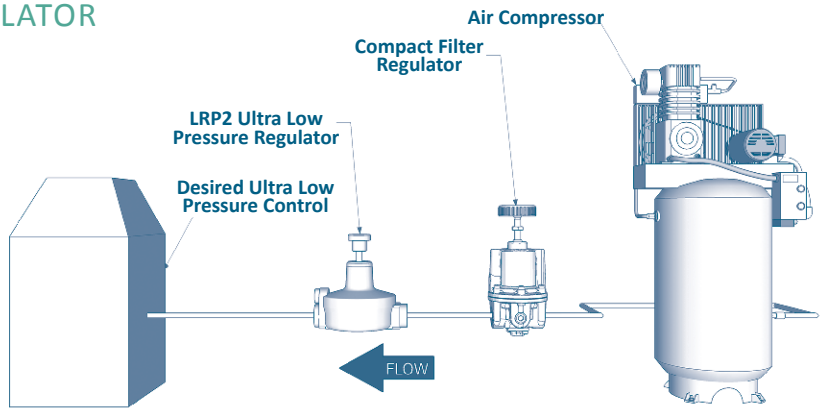



**Figure 1: An** LPR2 is used to control pressure in a low pressure application downstream of an air compressor

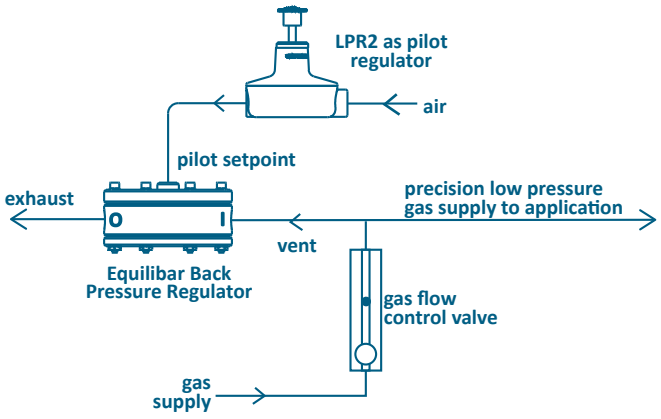



**Figure 2: An** LPR2 is used as a pilot regulator for an Equilibar back pressure regulator in a low pressure gas supply application

## PRECISION ULTRA LOW PRESSURE GAS SUPPLY APPLICATION

**PROBLEM**: There are very few commercial regulators capable of precisely controlling gas pressure below 0.5 psig in applications with significant flow rate variations.

**SOLUTION**: The LPR2 can be used in conjunction with an Equilibar back pressure regulator (BPR) and a flow control valve to provide precision and responsiveness in a gas supply system. The BPR exhausts excess gas not required by the process to maintain precision pressure supply. By venting any gas flow not required by the application, this system can accommodate forward or reverse gas flow at the application without loss of accuracy. See Figure 2.

## MATERIALS OF CONSTRUCTION

| | |
|---|---|
| **BODY** | Cast zinc |
| **CAP** | 6061 Aluminum with polyurethane O-ring |
| **DIAPHRAGM** | Polyethylene |
| **DIAPHRAGM ASSEMBLY** | Zinc/Nitrile |
| **PIN** | Stainless Steel |
| **VENT SCREEN** | Monel |
| **SPRING** | Zinc-Plated Steel / Carbon Steel |
| **DIAPHRAGM PISTON** | Zinc-Plated Steel |
| **SPACER** | PVC |

## PART NUMBERING SCHEME

| EXAMPLE | | | | |
|---|---|---|---|---|
| **LPR2** | **-** | **B** | **-** | **7** |
| LPR2 | - | | - | |
| 1 | | 2 | | 3 |

| | |
|---|---|
| **1** | **MODEL** |
| **LPR2** | Ultra-Low Pressure Precision Regulator |
| **2** | **BLEED OPTION** |
| **NB** | limited bleed - **No Bleed** orifice added |
| **B** | full bleed - **Bleed** orifice added |
| **3** | **PRESSURE RANGE** |
| **7** | 0.25 - 7 in WC (0.01-0.25 psi) [0.62-17.4 mbar] |
| **10** | 1 - 10 in WC (0.04-0.36 psi) [2.49-24.9 mbar] |
| **28** | 1 - 28 in WC (0.04-1.01 psi) [2.49-69.7 mbar] |

# About Equilibar

Equilibar provides innovative and robust pressure control technology for researchers and engineers worldwide. We are proud to design, manufacture and test our patented back pressure regulators in our factory overlooking the Blue Ridge Mountains near Asheville, NC.

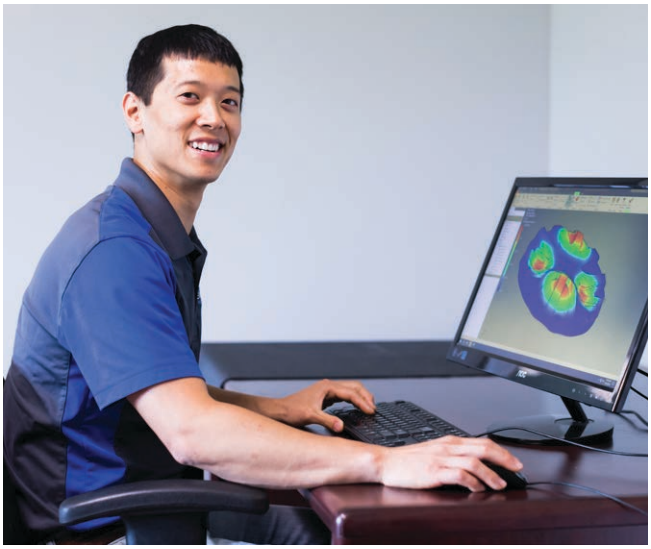
## APPLICATION ENGINEERING– WHAT SETS US APART

Unlike mass-market regulator distributors, we focus on working with you, the scientist or engineer with a complex pressure control scenario.

Our application engineers work collaboratively with clients to identify the optimal model, trim, and diaphragm for each application's unique challenges. No matter where you are on the globe, you can stay in close contact with your engineer by email, telephone, videoconferencing or fax.

After installation, your application engineer will support you with start-up information and fine-tuning as needed.

Each application is reviewed by our engineering team to ensure quality performance of our products.



Our engineers offer custom designed solutions for the most difficult pressure control challenges. Feel free to contact us to discuss your situation.

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Made in the USA

Equilibar's quality system is **ISO 9001:2015** certified.