



5X MORE  
PRECISE  
than standard  
regulators



# BR Series

Blockage Resistance Back Pressure Regulator

GAS, LIQUID & MIXED PHASE SERVICE: DESIGNED FOR SUPERCRITICAL APPLICATIONS

# Equilibrar Supercritical Back Pressure Regulators

## DESCRIPTION

The Equilibrar® B6R and BR models are variants of the popular Equilibrar back pressure regulators. This series integrates technology optimizing for supercritical applications. These features maintain high precision control while reducing the Joule-Thomson effect of supercritical process fluids passing through the outlet orifices.

Equilibrar has had great success in supercritical applications with the standard Research Series models, and these BR Series improvements were designed with the help and feedback from customers operating our units.

## UNIQUE REGULATOR TECHNOLOGY

- Dome-loaded pilot regulated design is 5X more precise than traditional spring loaded regulators
- Frictionless flexible diaphragm is the only moving part
- Load the Equilibrar back pressure regulator with a pilot setpoint and the Equilibrar does the rest
- Two modes of operation:
  - 1.) *Manual adjustment by mechanical pilot regulator*
  - 2.) *Computer automation by electronic pilot regulator*



Equilibrar® BR series model with custom tube stub connections option

Equilibrar® B6R model with custom feature for heating cartridge and PT



The key design feature of this regulator series is a downstream expansion cavity that provides a continuously increasing cross sectional area to eliminate convergence points for ice build-up. Additionally, this large thermal mass provides increased heat transfer area to heat the outlet fluid through several different means. Specially designed O-ring grooves reduce stress during rapid decompression which increases O-ring life. [Follow this link to watch how it works.](#)

The BR regulator series has several fitting options, including tube stub, NPT and an outlet flange.

## KEY PERFORMANCE ADVANTAGES

- Precision within 2%
- Pressure up to 6000 psig (413 Bar)
- Temperature up to 300°C (572°F)
- Blockage and freezing resistant
- Excellent performance in mixed phase conditions
- Suitable for ultrapure and aggressive chemicals
- Custom options for specific applications

Equilibrar® BR series model with custom outlet flange for direct mounting to collection vessel



## APPLICATIONS

There are hundreds of potential applications for the unique capabilities of the Equilibrar, designed for a variety of gas, fluid, and mixed flow applications where precision is a must.

By using unique combinations of sizes, diaphragms and O-ring materials, Equilibrar regulators have excellent performance in the harshest environments that include high temperature and aggressive chemicals.

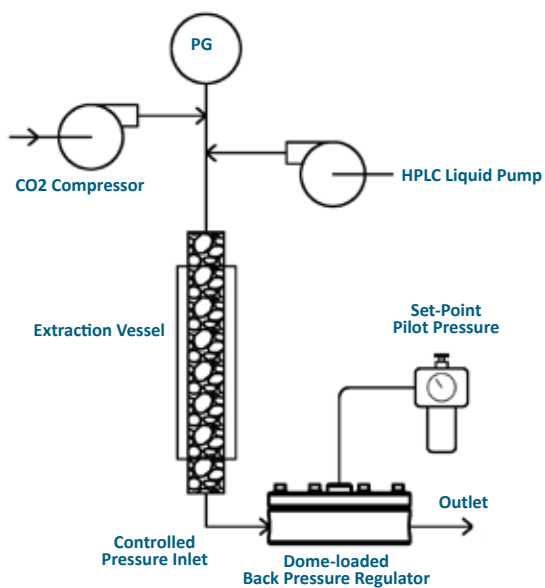
The BR Series represents only one tool to meet your application requirements. Schematics of example supercritical applications are shown on page 3. Please [contact an Equilibrar engineer](#) to discuss your application.

# BR Series Ordering Information

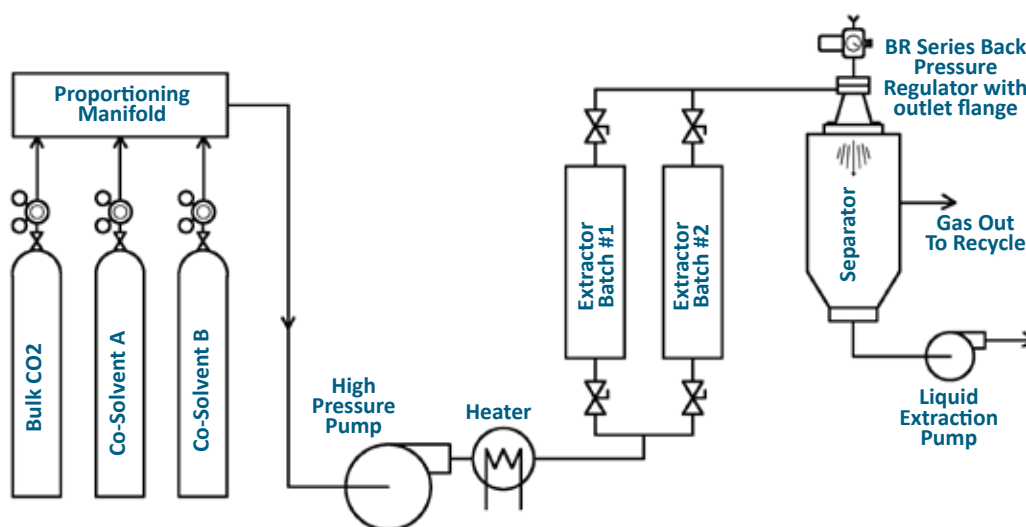
PART NUMBER	INLET & OUTLET PORT	PILOT PORT	WETTED MATERIALS	MAX PRESSURE	MAX TEMPERATURE	CV RANGE
B6R-2E	1/4" NPT	1/8" NPT	Stainless Steel 316/316L, EPDM, Polyimide	6000 psi	150°C	1E-5 to 0.64
B6R-2K	1/4" NPT	1/8" NPT	Stainless Steel 316/316L, Kalrez, Polyimide	6000 psi	300°C	1E-5 to 0.64
B6R-3E	3/8" NPT	1/8" NPT	Stainless Steel 316/316L, EPDM, Polyimide	6000 psi	150°C	1E-5 to 0.64
B6R-3K	3/8" NPT	1/8" NPT	Stainless Steel 316/316L, Kalrez, Polyimide	6000 psi	300°C	1E-5 to 0.64

Equilibar also offers custom supercritical back pressure regulators with special features such as heating cartridge, thermocouple ports, or flanged outlets for connection to a collection vessel.

Contact an [application engineer](#) for assistance.



Schematic example of how the **Equilibar® B6R** can be used to control pressure precisely in a Supercritical Extraction Reactor.



Schematic of Super Critical Extraction process using the Equilibar BR Series model with custom outlet flange for direct mounting to collection vessel.

## PATENTS

These regulators are subject to one or more of [these patents](#): US6,886,591, US7,080,660, US7,673,650, US8,215,336, DE60322443D1, GB1639282, FR1639282, CH1639282

# About Equilibar

Equiblar 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

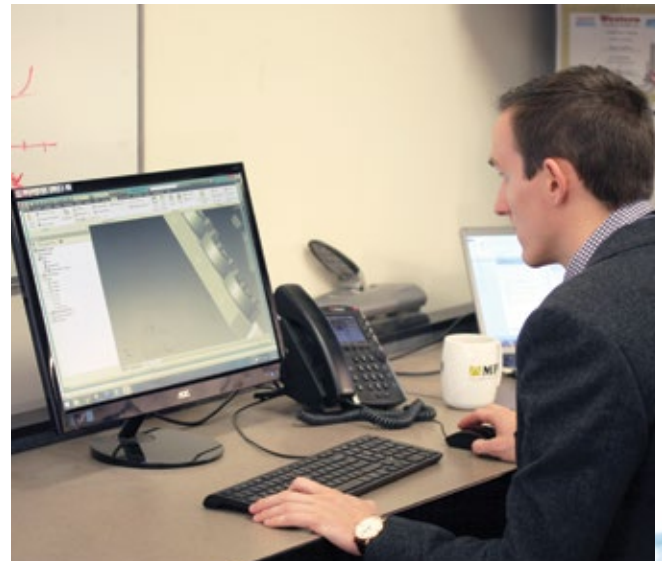
Unlike mass-market regulator distributors, we focus on working with you, the scientist or engineer with a complex pressure control scenario.

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.



Made in the  
**USA**

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