



REGO IS A LEADING MANUFACTURER OF GAS AND CRYOGENIC VALVES, REGULATORS AND RELIEF VALVES FOR GAS AND CRYOGENIC STORAGE/DISTRIBUTION SYSTEMS.

**INSTALLATION & OPERATING INSTRUCTIONS
FOR CB504 SERIES CRYOGENIC
COMBINATION PRESSURE BUILD/ECONOMIZER**

WARNING: Installation and use of this product must be in compliance with all RegO® instructions as well as requirements and provisions of all applicable national and local standards, codes, regulations and laws. Inspect regularly. Replace as required. The safe useful life of a regulator is less than 15 years in most applications. Only qualified personnel should perform installation, maintenance and inspections. Instructions shall be read and understood before installation, operation and maintenance. It is required to pass these instructions to the end user of the products.

CAUTION: Avoiding the inhalation of, or skin contact with compressed and cryogenic gases is advised. Many of these gases can cause asphyxiation, serious injury, or death. See MSDS for specific information regarding the safe handling of the service gas. Evacuation of gas should take place in a well-ventilated area to ensure dispersion. Keep gases far away from open flames or other sources of ignition to prevent fire or explosion.

NOTE: Suitable for use on Argon (Ar), Nitrogen (N₂), Oxygen (O₂), Nitrous Oxide (N₂O), Carbon Dioxide (CO₂), Helium (He), Hydrogen (H₂), Compressed Air, and mixtures of these gases. Maximum allowable pressure 550 PSIG (38 bar).

Series	Service	Adjusting Pressure Range	
		BAR	PSIG
CB504B	N ₂ O, CO ₂ , Ar, N ₂ , O ₂ , He, H ₂ , Air, Mixes	6.9-13.8	100-200

Installation:

1. Refer to RegO® catalog for sizing and selection information.
2. Check "PB IN" port to ensure screen/filter is installed and properly positioned.
3. Clean dirt and foreign material from all piping and fittings, inside and out.
4. Apply a pipe joint compound suitable for the gas service (such as PTFE tape) to the male threads on the piping. Take care not to apply any compound, or tape, to the first thread, in order to avoid minute particles from breaking off and lodging on seat.
5. Be sure the inlet and outlet of the Pressure Builder Economizer are correctly installed in-line according to the designed flow pattern and markings on the regulator body.
6. Position Pressure Builder Economizer to protect vents from the elements of ice, snowdrifts, rain, dirt, bugs, paint or other foreign material.
7. Follow all local and national codes and standards for pressure testing and leak testing the installation.

Operation:

Note: RegO® regulators are pressure accessories according to the European Pressure Equipment Directive (97/23/EC). Should the design pressure of the downstream system(s) be lower than the pressure that can occur upstream, protect the lowest design pressure element from the highest overall system pressure.

The CB Series Combination Pressure Builder/Economizers are designed specifically to maintain pressure on cryogenic liquid within cryogenic containers, and to utilize the excess built-up gas pressure that would otherwise be lost to the atmosphere through a pressure relief valve. The dual function Pressure Builder/Economizer is rated for a maximum inlet pressure of 27.5 bar. It can be adjusted to build pressure to 6.9-13.8 bar, and will preferentially draw off head vapor when there is excess pressure and divert it to the gas USE valve when gas is being withdrawn from the container. The Pressure Builder/Economizer is factory set to build tank pressure to the pressure stated on the Pressure Builder/Economizer's label. The adjustable range is stamped around the bonnet flange and appears in the table on this page. The Pressure Builder/Economizer can be adjusted on the container or off the container for more accuracy:

Pressure Builder Economizer Adjustment On Container

1. Fill the container to approximately 2/3 - 3/4 full with the appropriate liquid product.
2. Decrease the container pressure by opening the VENT valve. Close the valve when the pressure drops to at least 1.5 bar less than the desired pressure setting.
3. Open the pressure building VALVE and observe the container pressure until it stabilizes (when the rate that the pressure rises dramatically slows). Wait half an hour and note the pressure. This is the regulator pressure setting.
4. Turn the PRESSURE BUILDER adjusting screw clockwise to increase pressure and counterclockwise to decrease. If you increase the setting repeat step #3. If you decrease the setting close the pressure building valve and repeat step #2.
5. Repeat these steps until the desired pressure has been reached.

Pressure Builder Adjustment Off of the Container

1. Connect the "PB IN" and "EC OUT" port of the PRESSURE BUILDER Economizer to a regulated pressure source that is clean, dry, and inert, e.g. nitrogen. To the "PB OUT" port connect a tee with a pressure gauge attached to one branch and a valve to the other branch. The valve will exhaust to atmosphere.
2. With the exhaust valve fully open, slowly open the pressure source valve. (The pressure source should be adjusted to 1.5-3 bar higher than the desired pressure setting of the pressure building regulator.) Close the exhaust valve. The reason for this sequence is to blow debris out before they have a chance to become lodged on the regulator seat.
3. Check all of the joints in the setup for leaks. Stop any that are found.
4. Crack open the exhaust valve and close it. The downstream pressure gauge will indicate the pressure setting of the pressure building regulator.
5. To make an adjustment loosen the locknut on the adjusting screw by turning it counterclockwise. The pressure can be increased by turning the adjusting screw clockwise. The pressure can be decreased by cracking the exhaust valve, turning the adjusting screw counterclockwise, and then closing the exhaust valve.
6. After adjustment repeat steps 4 and 5 as many times as necessary to obtain the proper setting.
7. While holding the adjusting screw from turning, tighten the locknut by turning clockwise.
8. Before reinstalling on the liquid cylinder insure that the inlet screen/filter is properly positioned and that there is no debris or thread sealant in the ports.

There is no procedure for adjusting the economizer setting since it is automatic.

Maintenance and Inspection:

Periodically check for:

1. Any signs of corrosion due to water, salt, industrial pollutants, chemicals, and roadway contaminants;
2. Any physical damage that would prevent proper sealing and usage or that may cause product failure under pressure;
3. Leaks in the end connections of the regulator;
4. Proper operation as foreign matter may affect the performance of the regulator.

Keep all equipment clean, and replace damaged equipment immediately.

Hazards:

These Pressure Builder/Economizers are suitable for use in liquid or gas service. However when used in liquid service where the application involves confining liquid between the unit and the shut-off valve, upstream of the Pressure Builder/Economizers, a relief valve of appropriate size to the system must be installed, or the piping must be of sufficient construction to withstand the increase in pressure due to vaporization of the trapped liquid. All cryogenic fluids produce large volumes of gas when they vaporize.

Never uncouple the unit from the piping system until all pressure has been released from the lines.