

REGO Cryo-Flow Products Operating Instructions for ECL Series Cryogenic Economizers Suitable for use on Ar, N₂, O₂, N₂O, CO₂, He, H₂, Compressed Air, and Mixtures of these gases Maximum Allowable Pressure 28 bar

WARNING: Installation and use of this product must be in compliance with all Engineered Controls International, Inc. 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 an economizer is less than 15 years in most applications. Only qualified personnel should perform installation, maintenance and inspections; and all instructions read and understood before installation, operation and maintenance. It is required to pass these instructions to the end user of the products. **CAUTION:** Contact or vapor inhalation of N₂O, CO₂, Ar, N₂, He, and H₂ can cause serious injury or death! Vent gases outdoors in air currents that will insure dispersion to prevent exposure to people and livestock. H₂ gas must be kept far enough from any open flame or other source of ignition to prevent fire or explosion! While O₂ gas is not flammable, it is an accelerator, therefore keeping it from open flames and materials that may promote auto ignition - such as hydrocarbon fuels and oil - is highly advised.

NOTE: All REGO products are mechanical devices that will eventually become inoperative due to wear, contaminants, corrosion and aging of components made of materials such as metal and rubber. As a general recommendation, replace economizers in 15 years or less depending on the type of service and environment. The environment and conditions of use will determine the safe service life of these products. Periodic inspection and maintenance are essential.

Because REGO products have a long and proven record of quality and service, dealers may forget the hazards that may occur because a economizer is used beyond its safe service life. The environment surrounding the economizer determines the useful life of that economizer. Therefore the dealer knows more about this environment, and the effect that environment will have on the life of an economizer.

Installation:

1. Refer to REGO Cryo-Flow Products catalog for sizing and selection information.
2. Apply a pipe joint compound suitable for use of the gas service (such as PTFE tape) to the male threads on the piping.
3. Clean dirt and foreign material from all piping and fittings.
4. Be sure the inlet and outlet of the economizer is correctly installed in-line according to the designed flow pattern and markings on the economizer body.
5. Pressure gauges must also be suitable for this service.
6. Position Economizers 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 economizers 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 up stream, protect the lowest design pressure element from the highest overall system pressure.

The ECL Series Economizers have a design that specifically utilizes the gas pressure in a liquid cryogenic cylinder otherwise lost to the atmosphere through a pressure relief valve. They are also applicable

in cryogenic lines, vaporizers and converters. Maximum inlet pressure of 28 bar will maintain delivery pressure between 1.5 and 20.7 bar. This economizer may be set for flowing or lock-up (no flow) pressures.

Economizer Series	Service	Setting Pressure	Operating Pressure Range	
		BAR	BAR	PSIG
ECL19	N ₂ O, CO ₂ , Ar, N ₂ , O ₂ , He, H ₂ Air, Mixes	1.3	.7-5.2	10-75
ECL22		1.5	.7-5.2	10-75
ECL100		6.9	3.4-10.3	50-150
ECL140		9.7	3.4-10.3	50-150
ECL325		22.4	10.3-24.1	150-350

The pressure stated on the economizer's bonnet and in the table below is for the lock-up pressures. Setting the economizer under flowing conditions will decrease the maximum obtainable of the spring's pressure range. If set under flowing conditions, shut the flow off downstream to check the lock-up pressure. If this lock-up pressure is above the desired maximum allowed system pressure, reduce the inlet flow to reduce the lock-up pressure. If this is not possible, then the economizer is too small for the application, and a larger volume economizer is necessary.

To set the economizer's outlet pressure:

1. Loosen the lock nut by turning counterclockwise.
2. To increase pressure, turn the adjusting screw clockwise. To decrease pressure, turn the adjusting screw counterclockwise.
3. After achieving the desired pressure, cycle the economizer several times by operating the downstream flow control device. Readjust if necessary.
4. While holding the adjusting screw from turning, tighten the lock nut by turning clockwise.

Maintenance and Inspection:

Periodically check for:

1. Any signs of corrosion due to salt water, 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 economizer;
4. Proper operation as foreign matter may affect the performance of the economizer.

Keep all equipment clean, and replace damaged equipment immediately.

Hazards:

- These economizers are suitable for use in gas service. However, when used in gas service where the application involves confining gas between the economizer and a shut-off valve, either upstream or downstream of the economizer, a relief valve of appropriate size to the system must be install.
- Piping systems that confine gas without appropriate protection against over pressurization
- Never uncouple the economizer from the piping system until all pressure has been released from the lines

General Warning:

All REGO products are mechanical devices that will eventually become inoperative due to wear, contaminants, corrosion, and aging components. Periodic inspection and maintenance are essential. The safe useful life of this product varies on environment, the frequency of inspection, and maintenance program that is used.

For more information, refer to REGO Cryo-Flow Products catalog or www.regoproducts.com/cryoflow.

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