Castolin Eutectic®
Eutectic Castolin

Tri-Safe® Model II Regulator

INSTRUCTIONS
and
PARTS

USER RESPONSIBILITY

This equipment will perform in conformity with the description thereof contained in this manual and accompanying labels and/or inserts when installed, operated, maintained, and repaired in accordance with the instructions provided. This equipment must be checked periodically. Defective equipment should not be used. Parts that are broken, missing, plainly worn, distorted, or contaminated, should be replaced immediately. Should such repair or replacement become necessary, it is recommended that a telephone or written request for service advice be made to the Authorized Distributor from whom the equipment was purchased.

This equipment or any of its parts should not be altered without the prior written approval of Eutectic Corporation. The user of this equipment shall have the sole responsibility for any malfunction which results from improper use, faulty maintenance, damage, improper repair, or alteration by anyone other than Eutectic Corporation.

SAFETY

Specific procedures for the safe use of regulators are listed below. The user can form habits thereby that will prevent an accident due to confusion over changing service needs.

A. Never subject the regulator to inlet pressure greater than its rated inlet pressure, as shown on the regulator label.
B. Never use the regulator for gases other than those for which it is intended.
C. All connections to the regulator must be clean. Remove oil or grease, from external surfaces of the regulator and metal connecting parts. Ordinary dirt can be wiped off with a clean, lint-free cloth.
D. To minimize heat effects, avoid use of piping or tubing between cylinder and oxygen regulator. If unavoidable, it should be as short as practicable and equipped with a shut off valve located just before the regulator. Keep the shutoff valve closed when pressurizing. If regulator is connected to a manifold, open the valve of the cylinder closest to the regulator first, then open remaining cylinder valves. In either case, when the flow to the shutoff valve stops, wait 60 seconds and then slowly open the shut off valve. DRAIN OXYGEN REGULATOR OF GAS BEFORE PRESSURIZING.
E. Do not allow oil, oil-bearing materials, or other combustibles that can ignite readily in the presence of oxygen, to contaminate the inside or outside of oxygen regulators. Clean oil or grease, if any, from external surfaces as described in step C. Do not place an internally contaminated regulator into oxygen service.
F. Use oxygen regulator with equipment suitable for and used only for oxygen service.

G. Never use a pipeline or station regulator on a high-pressure compressed-gas cylinder or manifold.

H. Never discharge fuel gas from a cylinder valve near welding or cutting work, sparks, flame, or any other possible source of ignition.

I. Before attaching regulator, remove any dirt or foreign matter that maybe in the cylinder valve outlet by wiping with a clean, lint-free cloth. Valves on other than combustible-gas cylinders may be opened momentarily to blow outlet clean.

J. Never pressurize a regulator that has loose or damaged parts or is in questionable condition. Never loosen a connection or attempt to remove a part until gas pressure has been relieved. Under pressure, gas can dangerously propel a loose part.

K. Before transporting cylinders that are not secured on a cart designed for such transport, remove regulators and recap the cylinders.

L. Keep cylinder handwheel or wrench on open cylinder valve at all times, for prompt emergency shutoff.

M. Do not attempt to clean or change parts of oxygen gauge. Have regulator repaired by Eutectic Corporation (see Section IV).

N. The regulator relief valve, if any, is designed to protect the regulator only, and nothing else. Be sure that equipment connected to the regulator outlet is provided with relief devices to protect such downstream equipment against possible overpressure.

O. Check regulator and **ALL** connections for leaks after installation, periodically thereafter, and after any service in which parts or connections were loosened. Brush on a soap solution of 1/4 oz. of liquid soap per gallon of water (2 ml/liter). Bubbles indicate leak.

P. No repair should ever be undertaken by anyone not having qualifications described in Subsection **4.1.**

I. INTRODUCTION

1.1 SCOPE

This manual provides general information for the installation, operation, and service of Eutectic Tri-Safe° Model II Regulators.

1.2 USE

These regulators are designed to control and reduce high gas pressure from a cylinder or pipeline, in one or two stages, to the working pressure required for the equipment using it. Tri-Safe regulators are equipped with the following:

A. Large adjusting knob to control delivery pressure manually.

B. Two stage pressure regulation, with encapsulated valve seat mechanisms.

C. Standard CGA inlet and outlet connections.

D. Built-in inlet filters, to prevent entry of solid foreign matter.

E. Gauges, to indicate inlet and outlet pressures.

F. A built-in relief valve, to protect the regulator.

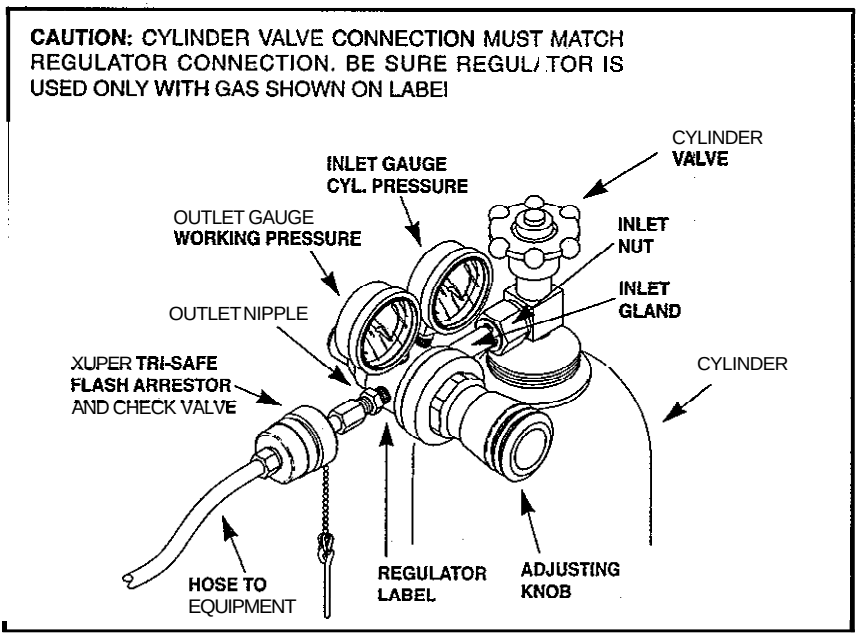

Figure 1. Typical Regulator and Connection to Cylinder

II. INSTALLATION

Figure 1 shows typical regulator parts and connections to a cylinder; connect regulator as follows:

A. Observe precautions in SAFETY Section.

B. Before connecting regulator to a cylinder or pipeline, slightly engage adjusting knob (turn in, clockwise) to drain regulator, then release knob (counter clockwise).

C. Connect regulator inlet connection to cylinder or pipeline and tighten it firmly but not excessively, with a suitable wrench.

D. At this point, it is recommended that a Eutectic Tri-Safe Flashback Arrestor be installed on the regulator outlet fitting. This is necessary in order to protect the regulator and cylinder in the event a fiashback occurs.

E. Connect and tighten hose nut to flashback arrestor fitting and attach downstream equipment as needed.

III. OPERATION

3.1 PREPARING FOR OPERATION
Once installation of equipment has been completed, (see II INSTALLATION) prepare for operation as follows:

A. Observe precautions in SAFETY Section.

B. Before pressurizing an oxygen regulator, make sure it has been drained of residual gas.

C. While standing off to one side, open the cylinder or upstream valve. The cylinder valve should be opened slowly to avoid a sudden pressure surge in the regulator.

D. Slowly turn adjusting knob clockwise until the outlet gauge indicates the desired pressure.

E. To reduce pressure, allow gas to discharge from equipment towards a safe area, and turn adjusting knob counter clockwise, until desired pressure is indicated on the gauge. Close gas control valve on equipment.

F. Prior to lighting torch, purge gas line by opening equipment discharge valves and closing them after purging is complete. (Adequate purging time depends on length and size of hose). if more than one regulator is used, close one valve before opening next one to avoid unsafe or unwanted mixture of gases.

CAUTION

Do not purge oxidizing or flammable gases in the presence of flame, lit cigarettes, or other sources of ignition, or towards person.

G. Test connectidns with soap solution (see SAFETY Section; item O). If no bubbles appear, system is ready to use.

3.2 SHUTTING DOWN

Close cylinder valve whenever the regulator is not in use. To shut down for extended periods (more than 30 minutes):

A. Close cylinder or upstream valve.

B. Open downstream valve to purge the line towards a safe area.

C. After gas is drained completely, release adjusting knob and close downstream valve.

IV. SERVICE

4.1 GENERAL

SERVICE PROCEDURE

A unit which is not functioning properly should not be used until all required repairs have been completed and the unit has been tested to ascertain that it is in proper operating condition.

Inspection, troubleshooting, and repair of this equipment as indicated in this manual, may ordinarily be undertaken by a competent individual having at least general experience in the maintenance and repair of equipment of this nature.

CAUTION

No such maintenance should ever be undertaken or attempted by anyone not having such qualifications.

Defective parts should be replaced with an original replacement part sold by Eutectic Corporation.

Except for inspection, troubleshooting, and repairs indicated in this manual, it is recommended that all other servicing be done by Eutectic Corporation.

When returning a unit for service repair, the unit should be adequately packaged, in the original shipping container, if possible, and shipped prepaid, with a statement of the observed deficiency. Return trip transportation charges are to be paid by Buyer. In all cases other than where warranty is applicable, repairs will be made at current list price for the replacement part(s) plus a reasonable labor charge.

Test regulator for leaks on a regular schedule.

4.2 TROUBLE INDICATIONS

Typical symptoms in the accompanying table indicate possible regulator malfunctions which may require repair. If any of these symptoms are detected, replace regulator immediately.

SYMPTOMS
1. Gas leakage at the regulator outlet when the adjusting screw is completely released.
2. With no flow through the system (downstream valves closed and adjusting knob in), working pressure increasing steadily above set pressure.
3. Gas leakage from spring case (adjusting knob end of regulator).
4. Gas leakage from any joint.
5. Excessive drop in working pressure with regulator flow open.
6. Gas leakage from relief valve.
GAUGES:
7. Gas leakage
8. No return to zero
9. inconsistent repeat reading

THREE YEAR LIMITED WARRANTY

Each new Tri-Safe[S] Model II Regulator is warranted only to the original purchaser to be free from defects in material or workmanship under normal use and service. The obligation of Eutectic Corporation under this warranty being limited to the repair without charge, F.O.B. its factory, or the replacement without charge, F.O.B. its factory, of any part of parts thereof which shall within three years from the date of the sale of such regulator to the original purchaser be returned to Eutectic Corporation, with transpoltation charges prepaid, and which on examination shall disclose to Eutectic's satisfaction to have been thus defective. A copy of the original invoice must accompany each monitor subject to warranty repairs. There are no warranties express or implied, oral or written, in fact, by operation of law or otherwise except as herein expressly stated. In no event shall Eutectic be liable for any direct, indirect, special, or consequential damages such as loss of anticipated profits or their economic loss in connection with or arising out of the existence, furnishing, functioning, or the Customer's use of any item of equipment or services provided. Eutectic's liability in connection with the sale being expressly limited to the repair or replacement of defective parts.

EUTECTIC CORPORATION
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Date of Purchase _____