



Regulators

INSTALLATION AND OPERATION INSTRUCTIONS

Before Installing or Operating, Read and Comply with These Instructions

Controls Corporation of America
1501 Harpers Road Virginia Beach, VA 23454
To Order Call 1-800-225-0473 or 757-422-8330 • Fax 757-422-3125
www.concoa.com

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Warning: An appropriately sized pressure relief device downstream of the regulator should be installed in your system to prevent damage to equipment and/or injury to personnel should an internal failure of the regulator occur.

Warning: Maximum allowable working pressure indicated on product labeling is for the regulator only. Ratings for peripherals/accessories may be less than the pressure indicated on the product label. Do not exceed the pressure ratings of the attached peripherals/accessories and the regulator's maximum allowable working pressure. Please contact your gas supplier for more information.

Warning: for regulators with tube fittings, select the appropriate tubing. Use seamless tubing with the proper consideration given to wall thickness and material. Please contact your gas supplier for more information.

USER RESPONSIBILITY

This equipment will perform in conformity with the description 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. Improperly working equipment should not be used. Parts that are broken, missing, worn, distorted or contaminated, should be replaced immediately. CONCOA recommends that a telephone or written request for service advice be made to CONCOA Customer Service in Virginia Beach, Virginia, PHONE: 1-800-225-0473, FAX: 1-757-422-3125, or E-MAIL: info@concoa.com.

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

SAFETY



Specific procedures for the safe use of regulators are listed below. The user can form habits that will prevent an accident due to confusion over changing service needs. Refer to CONCOA publications ADE 872, latest revision, *Safe Practices in Welding and Cutting*.

- a. Never subject the regulator to inlet pressure greater than its rated inlet pressure, as shown on regulator body.
- b. Never use the regulator for gases other than those for which it is intended.
- c. Check the cylinder valve outlet before attaching a regulator to a cylinder. Do not use the cylinder if oil, greas, or dirt is present

Do not allow oil, grease, or other combustibles to contaminate oxygen equipment or areas where oxygen is in use. Do not place a contaminated regulator into service.

The regulator relief valve only protects the regulator. Downstream equipment may require additional pressure relief devices.

- 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 shutoff 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 the remaining cylinder valves. In either case, when the flow to the shutoff valve stops, wait 60 seconds and then slowly open the shutoff 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 may be in the cylinder valve outlet by wiping with a clean, lint-free cloth. (See safety item c) 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 (see SERVICE section).
- 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 with an approved leak detection solution. Bubble indicate leak.
- p. No repair should ever be undertaken by anyone not having qualifications described in the SERVICE SECTION.

INTRODUCTION

1.1 SCOPE

This manual provides general information for the installation, operation and service of CONCOA Gas Pressure Regulators.

1.2 USE

The 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.

According to design and requirements of individual regulators, the following may be provided:

- a. A screw, knob or similar device to adjust pressure manually and (as in the vacuum regulator) by remote control; or to change factory pre-set pressure (as in the pipeline regulator).
- b. One or two stages of valves, seats, diaphragms, and auxilliary parts..
- c. Various types of 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.
- g. A flowmeter to measure gas flow.
- h. A flow adapter on fixed pressure regulator (See Table and Figure 1).

Orifice Size	Stock Number	Flow in Standard Cubic Ft/Hr (SCFH)*				
		Argon	Helium	CO ₂	AG-75	Nitrogen
0.010	830 1977	4	12	3.5	6.6	4.5
0.0135	830 1978	6.3	20	6	11	7.6
0.016	830 1979	8	25	7.5	14	9.5
0.018	830 1971	10	31.5	9.5	17.5	12
0.020	830 1984	11.4	36	10.5	20	13.5
0.021	830 1972	15	47.5	14.	26	18
0.025	830 1973	20	63.2	319	35	24
0.028	830 1985	22.5	72	21	40	27
0.0312	830 1974	30	95	28	52.5	36
0.035	830 1975	40	126.5	38	60	47.5
0.040	830 1976	50	158	47.5	88	60

*Flows at 30 PSIG

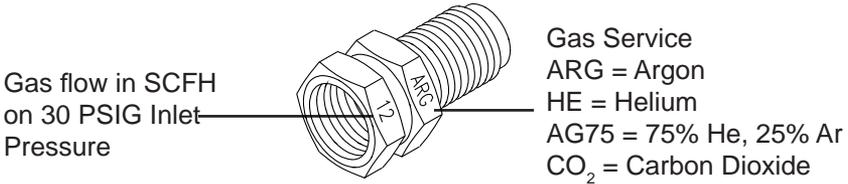


Figure 1. Flow Adapter Markings

INTRODUCTION

Figure 2 shows typical regulator parts and connections to a cylinder; connect regulator as follows:

- a. A observe precautions in SAFETY Section
- b. Before connecting regulator to a cylinder or pipeline, slightly engage adjusting screw (turn in clockwise) to drain regulator, then release screw (counter clockwise). This will decrease chance of seat ignition in an oxygen regulator.
- c. Connect regulator inlet connection to cylinder or pipeline and tighten it firmly but not excessively, with a suitable wrench.
- d. Connect and similarly tighten hose nut to regulator outlet and attach downstream equipment as needed.

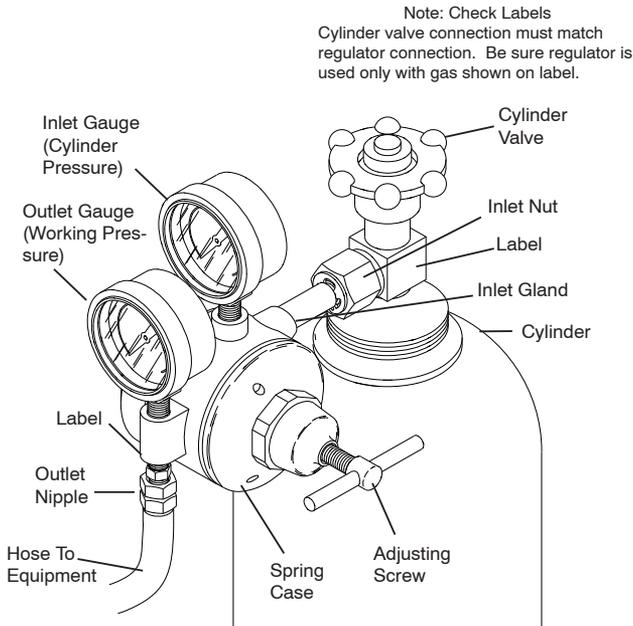


Figure 2. Typical Regulator and Connection to Cylinder

OPERATION

3.1 PREPARING FOR OPERATION

With regulator connected to cylinder or pipeline downstream equipment installed and valves closed, and the adjusting screw released, 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. Open the cylinder or upstream valve slowly to avoid a sudden pressure surge that may damage internal regulator parts.

CAUTION

Gas will flow from outlet of fixed-pressure regulator when valve is opened.

Inlet gauge, if any, will show supply pressure. Stand to one side to avoid injury in case of regulator failure.

- d. Slowly turn adjusting screw clockwise until the outlet gauge indicates the desired pressure.
- e. To reduce pressure, allow gas to discharge from regulator towards a safe area, and turn adjusting screw counterclockwise, until desired pressure is indicated on the gauge. Stop gas discharge.
- f. To prevent explosive gas mixtures, in hose or in downstream equipment attached to regulator outlet, purge gas line by opening equipment discharge valves and closing them after purging is completed. (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 connections with a leak detection solution (See SAFETY Section; item O). If no bubbles appear, system is ready for 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 drain the line towards a safe area.
- c. After gas is drained completely, release adjusting screw and close downstream valve.

SERVICE

4.1 GENERAL

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

Maintenance should only be attempted by qualified or properly trained individuals.

Defective parts should only be replaced with either a replacement part manufactured or sold by CONCOA or an equivalent.

Except for inspection, troubleshooting, and repairs indicated in this manual, it is recommended that all servicing be done by a service facility authorized by CONCOA. Contact the CONCOA Customer Service Department in Virginia Beach or the nearest CONCOA District Sales Office for assistance.

If so advised, the unit should be sent to a service facility authorized by CONCOA, adequately packaged, in the original shipping container if possible, and shipped prepaid, with a statement of observed deficiency. The gas service that the equipment has been subjected to must be clearly identified. All equipment must be purged before shipment to protect the transporter and service personnel. The purging is especially important if the equipment has been in hazardous or corrosive gas service. 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 routine schedule.

4.2 TROUBLE INDICATIONS

Typical symptoms in the accompanying table indicate regulator malfunctions requiring repair. Replace immediately with a clean, repaired and tested, or new regulator.

TROUBLE SHOOTING

SYMPTOMS

1. Gas leakage at the regulator outlet when the adjusting screw is turned fully counterclockwise.
2. With no flow through the system (downstream valves closed), outlet pressure increases steadily above the set pressure.
3. Gas leakage from spring case or bonnet.
4. Excess drop in outlet pressure with regulator flow open.
5. Gas leakage from any pipe thread joint.
6. Gas leakage from relief valve.
7. Inconsistent repeat reading
8. Inlet or outlet pressure gauge does not return to zero with no pressure applied to the regulator.

PROBABLE CAUSE

1. Seat leak or creep, have regulator repaired.
2. Seat leak or creep, have regulator repaired.
3. Diaphragm failure, have regulator repaired.
4. Blockage in seat assembly or inlet filter. Have regulator repaired.
5. Loose fitting, remove connection clean, reapply Teflon tape and retighten.
6. Possible faulty relief valve, replace. Possible seat leak or creep, have repaired.
7. Seat sticking, have regulator repaired. Possible bad pressure gauge.
8. Gauge has suffered physical damage, replace gauge.

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Warranty Information

This equipment is sold by CONTROLS CORPORATION OF AMERICA under the warranties set forth in the following paragraphs. Such warranties are extended only with respect to the purchase of this equipment directly from CONTROLS CORPORATION OF AMERICA or its Authorized Distributors as new merchandise and are extended to the first Buyer thereof other than for the purpose of resale.

For a period of one (1) year from the date of original delivery (90 days in corrosive service) to Buyer or to Buyer's order, this equipment is warranted to be free from functional defects in materials and workmanship and to conform to the description of this equipment contained in this manual and any accompanying labels and/or inserts, provided that the same is properly operated under conditions of normal use and that regular periodic maintenance and service is performed or replacements made in accordance with the instructions provided. The foregoing warranties shall not apply if the equipment has been repaired: other than by CONTROLS CORPORATION OF AMERICA or a designated service facility or in accordance with written instructions provided by CONTROLS CORPORATION OF AMERICA, or altered by anyone other than CONTROLS CORPORATION OF AMERICA, or if the equipment has been subject to abuse, misuse, negligence or accident.

CONTROLS CORPORATION OF AMERICA's sole and exclusive obligation and Buyer's sole and exclusive remedy under the above warranties is limited to repairing or replacing, free of charge, at CONTROLS CORPORATION OF AMERICA's option, the equipment or part, which is reported to its Authorized Distributor from whom purchased, and which if so advised, is returned with a statement of the observed deficiency, and proof of purchase of equipment or part not later than seven (7) days after the expiration date of the applicable warranty, to the nearest designated service facility during normal business hours, transportation charges prepaid, and which upon examination, is found not to comply with the above warranties. Return trip transportation charges for the equipment or part shall be paid by Buyer.

CONTROLS CORPORATION OF AMERICA SHALL NOT BE OTHERWISE LIABLE FOR ANY DAMAGES INCLUDING BUT NOT LIMITED TO: INCIDENTAL DAMAGES, CONSEQUENTIAL DAMAGES, OR SPECIAL DAMAGES, WHETHER SUCH DAMAGES RESULT FROM NEGLIGENCE, BREACH OF WARRANTY OR OTHERWISE.

THERE ARE NO EXPRESS OR IMPLIED WARRANTIES WHICH EXTEND BEYOND THE WARRANTIES HEREINABOVE SET FORTH. CONTROLS CORPORATION OF AMERICA MAKES NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE EQUIPMENT OR PARTS THEREOF.

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