

OPERATING INSTRUCTIONS



REGULATORS [ALL MODELS]

▼ **WARNING! READ CAREFULLY AND COMPLETELY BEFORE USING EQUIPMENT. KEEP FOR REFERENCE.**

NOTICE: throughout this publication, "Dangers", "Warning" and "Cautions" are used to alert the Technician to special instructions concerning a particular service or operation that may be hazardous if performed incorrectly or carelessly. Observe them carefully! These "Safety Alerts" alone cannot eliminate the hazards that they signal. Strict compliance to these special instructions when performing the service, plus "common sense" operation, are major accident prevention measures. OSHA 29 CFR 1910.252 D xii and xiv A states, "Management shall recognize its responsibility for the safe usage of cutting and welding equipment on its property and the supervisor shall be responsible for the safe handling of the cutting or welding equipment and the safe use of the cutting or welding process."

DEFINITIONS

- ▼ **DANGER:** Immediate hazards which CAN result in severe injuries or death, damages and losses.
- ▼ **WARNING:** Hazards or unsafe practices which COULD result in severe injuries or death, damages and losses.
- ▼ **CAUTION:** Hazards or unsafe practices which COULD result in injuries, property damage and losses.

▼ **WARNING:** We could not possibly know of and advise the service trade of all conceivable procedures by which a service might be performed and of the possible hazards and/or results of each method. We have not undertaken any such wide evaluation. Therefore, anyone who uses a service procedure and/or tool, which is not recommended by the manufacturer, first must completely satisfy themselves that neither they, the product's safety, nor the area in which the work is being performed, will be endangered by the service procedure selected.

▼ **WARNING: DO NOT OPERATE THIS EQUIPMENT UNLESS THE USER IS FULLY TRAINED IN THE SAFE USE AND OPERATION OF OXY-FUEL CUTTING AND WELDING EQUIPMENT.** This equipment should not be operated if the user is under the influence of any controlled substances, including but not limited to alcohol or drugs. The safe and effective use of this equipment depends on the Technician fully understanding and carefully following practical time-tested safety and operating instructions to prevent and avoid unnecessary painful injuries and costly property damages and losses due to improper equipment use. This equipment should not be operated if the user is under the influence of any controlled substances, including but not limited to alcohol or drugs.

▼ **WARNING:** For adequate personal safety the user must be fully aware at all times when using flame tools that the cutting attachment flame can reach almost 6000 °F and the work piece can reach high heats of almost 3000 °F, which produce flying sparks, molten metal slag, fumes and intense light rays, all of which can be hazardous without proper precautions and protection **before lighting the cutting attachment and starting to work.** Proper "head-to-toe" protection includes hair and head coverage, safety tempered lens eye goggles (shade 5 minimum), body coverage including gloves and shoes. Avoid wearing anything flammable or clothing that has been exposed to flammables (oil, grease, solvents, etc.). Sparks and molten materials have a way of finding the unprotected areas, so be properly prepared before starting work.

▼ **WARNING:** Adequate ventilation must be provided, especially in confined work areas to remove harmful fumes and provide an adequate air supply for the user and the equipment. **DO NOT BREATHE FUMES.** For safety sake, double check all the equipment for leaks BEFORE entering a confined work area. Any leak in a confined space can cause serious problems. (Important: Pure oxygen will rapidly increase burning of almost any ignited material, especially oil and grease and must never be allowed to saturate a confined work area. Oxy-Fuel/Vapor or Air-Fuel/Vapor concentrations in confined unventilated areas can also be hazardous and explosive if ignited.) DO NOT use a cutting torch on containers or pipes unless they are properly cleaned, purged and vented or if vapor gas fumes are present. Flammable gases and vapors can explode if ignited by using a cutting torch on a container or pipeline. Fuel gases have an odor; if the user smells gas **DO NOT use the equipment** until the source of the leak is located and stopped, and until the surrounding area is properly ventilated and safe to continue work. Some solvents and chemicals may become toxic and hazardous when heated - **DO NOT BREATHE FUMES.**

▼ **WARNING: CALIFORNIA PROPOSITION 65:** This product, when used for welding, soldering, brazing, cutting and other metal working or flame processes, produces fumes, particulates, residues and/or other by-products which contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. ▼ **WARNING:** This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

▼ **DANGER:** Never use a regulator to pressurize any tank, drum or container above its manufacturer's recommended pressures. Be aware that regulator pressure relief devices are designed to protect the regulator only. Downstream equipment should be protected with its own pressure relief device of proper size and capacity.

▼ **WARNING:** Fire protection must be provided for the work area. The user must be fully aware of the impact of the torch flame, sparks and molten materials on both the immediate work area and surroundings including hoses and other equipment. (**Sparks can fly over 35 feet**). Remove all flammables where possible and carefully cover or shield anything that can possibly catch fire or explode (or both) with fireproof materials. Carefully check out the area after work is completed for places where sparks or molten material could light and smolder. A fire watch is recommended for at least one hour after work is completed. Always have the proper fire fighting equipment available for immediate use. It is a good idea to have a bucket of water available in the work area at all times. A water bucket is also handy for leak testing torches and hoses, cooling work, or catching molten metal and slag.

▼ **WARNING:** Keep hoses and everything that can burn or explode clear of sparks and hot metal.

A. BEFORE CONNECTING:

Select the regulator for proper gas service and pressures.

CYLINDERS:

Cylinders must be secured UPRIGHT. They must have ADEQUATE GAS SUPPLY TO AVOID DANGEROUS EMPTY CYLINDER CONDITIONS WHICH CAN RESULT IN REVERSE GAS FLOW. Always provide SAFE STORAGE - the valves must be closed when not in use or empty. Always use protective caps on the stored or empty cylinders. Acetylene cylinders need to be stored in an upright position if immediate use will be required. Otherwise 24 hours in an upright (valve up) position is recommended before use. NOTE: Most cylinders should be used in the upright position. If there are any questions, see the cylinder manufacturer's or equipment manufacturer's recommendations. Cylinder outlet valves shall be inspected for cleanliness and damage before connecting to the regulator inlet. **IF DAMAGED OR DIRTY, DO NOT USE; contact your gas supplier for instructions.** OSHA 29 CFR 1910-253 iii C states, "Before connecting a regulator to a cylinder valve, the valve shall be opened slightly and closed immediately. The valve shall be opened while standing on one side of the outlet; never in front of it. Never crack a fuel-gas cylinder valve near other welding work or near sparks, flame, or other possible sources of ignition."

▼ **WARNING: Keep cylinders clear of flames, electric arcs and other dangerous situations.**

▼ **DANGER: DO NOT** store cylinders and equipment in unventilated confined spaces, closed vehicles or trunks, rooms used for habitation or near any source of heat or ignition. Gas leaks can cause a fire or explosion when ignited.

B. TO CONNECT REGULATORS:

Regulators must be **CLEAN and OIL FREE**. The regulator inlet connections must be **WRENCH-TIGHT** and have **NO LEAKS**. The regulator must be turned OFF before opening the cylinder valve and CLOSED after the work is completed to avoid any leaks from the cylinder. Always OPEN the cylinder valve SLOWLY. (Read separate regulator instructions before use.) All connections to the regulators must be leak tested and free from leaks before use.

▼ **CAUTION:** Never stand in **FRONT** of or in **BACK** of the regulator when opening or closing the cylinder valve. Always stand to the side with the cylinder valve between you and the regulator. The oxygen cylinder valve should be **OPENED VERY SLOWLY** until the cylinder contents gauge stops moving and then opened sufficiently to provide adequate flow. The fuel gas/acetylene cylinder valve should be opened a maximum of 3/4 of a turn. Where a special wrench is required, it should be left in position on the stem of the valve while the cylinder is in use so that the fuel gas/acetylene flow can be quickly turned off in case of an emergency.

To **ADJUST** the **REGULATOR**, turn the **PRESSURE ADJUSTING SCREW CLOCKWISE** (to the right) to **INCREASE** the pressure and **COUNTERCLOCKWISE** (to the left) to **DECREASE** the pressure and turn OFF the regulator.

1. Attach the inlet connection nut to the cylinder valve - make sure the threads engage properly - to prevent leaks, tighten securely with wrench, but do not use excessive force - it can damage the nut and the valve threads. NOTE: (UNIWELD CO2 inlet connections use an O-ring seal, not a fiber washer).
2. Turn the pressure adjusting screw counterclockwise (to the left) until tension is fully released to shut off the regulator. NOTE: The regulator should always be shut off when not in use - this helps avoid gas loss if the cylinder or equipment valves leak or are not shut off properly.
3. ▼ **WARNING: DO NOT** try to exceed the maximum pressure psig rating on the regulator or the gauges. The gauge mechanisms can be damaged. **DO NOT** use acetylene over 15 psig. Turn the regulator adjusting screw clockwise (to the right) for proper delivery pressure. **EXAMPLE:** 125 psig rated delivery pressure regulator uses a 200 psi gauge and a 4000 psi gauge for 3000 psig maximum inlet rating at 125 °F. This provides a safety factor for the pressure gauge.

HOSES:

Before use, examine the hose for damage such as cuts, nicks, abrasions, pinholes, etc. Always connect the hose **WRENCH-TIGHT** to the regulator outlet (if regulator check valves/flashback arrestors are used, connect the hose **WRENCH-TIGHT** to the regulator outlet check valve/flashback arrestor), making sure that the **OXYGEN** hose connection (the **GREEN HOSE** with the **RIGHT HAND** threaded fittings (is always connected to the **OXYGEN** REGULATOR. The **FUEL GAS/ACETYLENE** REGULATOR has a **RED HOSE** and the outlet fittings of the regulator are **LEFT HAND** threaded matching the **LEFT HAND** threaded hose connections. NOTE: Blow out new or used hose with 5 psig from the regulator **BEFORE** connecting to the torch (vent gases safely). Check the connections for leaks using a proper leak testing solution. Torch check valves/flashback arrestors, if used are installed **WRENCH-TIGHT** between the welding torch and hose. Check used hoses for damage or cracks, especially bending areas near hose connections and leak test before using. Repair or replace any doubtful hose. **NOTE: Blow out new or used hose with 5 psig from regulators BEFORE connecting to the downstream service (vent gases safely). Check connections for leaks using a proper leak testing solution.**

▼ **CAUTION:** **AT NO TIME** during use should the operating pressure exceed the manufacturer's recommended **PRESSURE** settings or the working pressure of the hose.

PRESSURE RELIEF DEVICE:

▼ **WARNINGS:** The regular pressure relief device is designed to protect regulator outlet pressure gauge - **NOT DOWNSTREAM SYSTEMS**. All systems must have a proper capacity pressure relief device or other suitable means of excess pressure protection included downstream of the regulator when pressurizing a closed container or any system which requires excess pressure protection to avoid personal injury and equipment damage.

REGULATOR PLASTIC OR RUBBER PARTS:

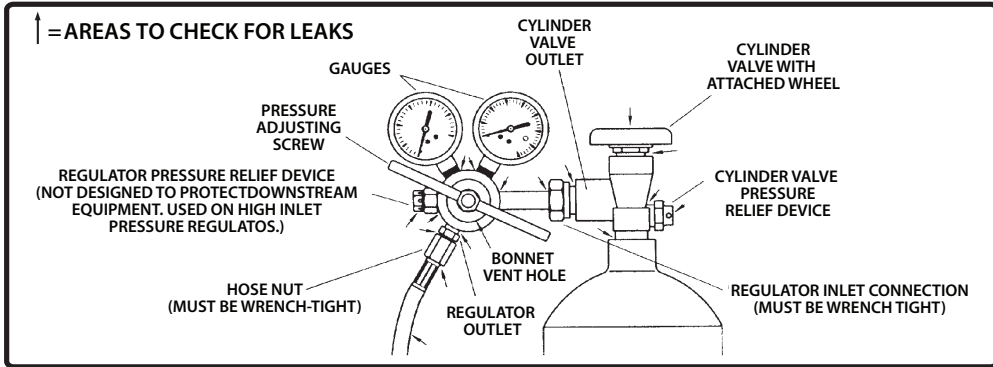
▼ **DANGER:** Regulator plastic parts such as gauge lenses and flowmeter tubes or rubber parts like diaphragms, O-rings, and high pressure seats should avoid contact with solvents. Solvents can damage these parts.

▼ **CAUTION FLOWGAUGE:** Flowgauge regulators must have the same outlet orifice size as printed on the gauge dial.

▼ **CAUTION FLOWMETER:** Uniweld flowmeter regulators must be preset to 50 psig to operate properly. All flowmeters must have a properly set pressure reducing regulator between the cylinder and flowmeter.

C. TO CHECK FOR LEAKS:

▼ **WARNING: DO NOT USE THE EQUIPMENT UNTIL ALL CONNECTIONS AND EQUIPMENT ARE LEAK FREE, ESPECIALLY IF SOMEONE ELSE HAS USED THE EQUIPMENT.** Properly pressurize the system. To check for leaks, close the cylinder valve and turn the pressure adjusting screw one turn counterclockwise (to the left). If the high pressure gauge reading drops, there can be a leak in the cylinder valve connection or high pressure gauge connection. If the low pressure gauge drops, there can be a leak in the equipment valves, hose connections, hose, low pressure gauge connection or check for diaphragm leak at the bonnet vent hole. Check for leaks using proper leak testing solution. If the high pressure gauge drops and then at the same time the low pressure gauge rises, there is a leak in the regulator seat. **DO NOT USE THE EQUIPMENT UNTIL THERE ARE NO LEAKS IN THE SYSTEM. (SEE FIGURE 1 BELOW.)**



▼ **WARNING: DO NOT use leaking or damaged equipment, or equipment that does not operate properly. Have the equipment repaired safely or replace it and avoid user hazard.**

▼ **WARNING: To avoid and prevent injuries, death, property damage and destruction, the user must always be fully alert and be aware of hazardous conditions. Medications that cause drowsiness should not be used when using this equipment.**

▼ **CAUTION:** The user must at all times practice good reasonable "common sense" operating procedures and precautions when using gas torch equipment.

▼ **CAUTION: The regulator must be repaired by Uniweld or an Authorized repair station, using Uniweld parts. Special technical training is required to service or repair cutting, welding and ancillary equipment. NOTE: Per OSHA standards (29CFR 1910.252) only properly instructed skilled personnel shall perform repairs on regulators.**



SAFETY BULLETIN

COMPRESSED GAS ASSOCIATION, INC. • 4221 Walney Road, 5th Floor, Chantilly VA 20151-2923.

USE OF OXY-FUEL GAS WELDING AND CUTTING APPARATUS

Oxy-fuel gas welding & cutting apparatus equipment can be used safely. However, FAILURE TO TAKE BASIC SAFETY PRECAUTIONS CAN RESULT IN SERIOUS PERSONAL INJURY AND MATERIAL LOSS.

Following the DOs AND DO NOTs listed below could reduce the likelihood of serious accident.

- DO** – Carefully read equipment manufacturer’s operating instructions prior to using the equipment. If you do not have operating instructions, obtain a copy from the equipment manufacturer (or their local distributor) or obtain a copy of general instructions.
- DO** – Have a qualified person demonstrate the proper operating procedures before attempting to install or use the equipment unless you are already familiar with the equipment.
- DO** – Follow the equipment manufacturer’s operating instructions at all times. Deviation from these instructions could result in injury and/or property damage.
- DO** – Inspect oxygen regulators prior to installing them on cylinders. Inlet connections must be clean. If there is evidence of oil, grease or other contaminants on the nut, nipple or filter, have the regulator inspected and cleaned by a qualified repair facility before using.
- DO** – Inspect the oxygen cylinder valve outlet connection before attaching the regulator to ensure that there is no oil, grease or other contaminant present. Return the cylinder to the supplier if any contamination is evident or if the valve is damaged.
- DO** – Back off the pressure adjusting screw of the regulator before opening the cylinder valve to release spring force.
- DO** – Open the cylinder valves very slowly. Opening oxygen valves quickly could result in a violent reaction if contaminants are present.
- DO** – Stand with the cylinder between yourself and the regulator (cylinder valve outlet facing away) when opening the cylinder valve.
- DO** – Use protective clothing and appropriate eye protection when operating oxy/fuel gas apparatus. Severe injury can result from sparks, splashing metal and intense light.
- DO** – Purge hose lines individually prior to lighting the torch tip. This will ensure that no oxy/fuel gas mixture is present in the hoses that could cause explosion or fire upon ignition of the torch.
- DO** – Ensure that the work area is kept free of combustible materials. Sparks can ignite material such as paper, rags, woods and plastics causing serious fire damage. Sparks can fly 35 feet or more.
- DO** – Ensure that the work area is adequately ventilated. Welding, cutting and heating processes can enrich or deplete the oxygen concentration of the air. An oxygen deficient atmosphere can cause suffocation in seconds while an oxygen enriched atmosphere is a severe risk for accelerated fire or explosion.
- DO** – Have equipment inspected periodically and have repairs made by a qualified repair facility.
- DO** – Ensure that, when used, hose line check valves and flashback arrestors are inspected and tested regularly and at the interval recommended by the manufacturer, so that they function as intended.
- DO NOT!** – Attempt to repair or substitute parts on equipment, particularly regulators. Special tools, cleaning procedures and techniques are needed to safely repair oxy/fuel gas welding and cutting apparatus. Repairs should be made by qualified personnel using the parts and procedures specified by the equipment manufacturer.
- DO NOT!** – Change regulators from one gas service to another or replace a pressure gauge with one taken from any other service. Contamination, resulting in fire or explosion, can take place.
- DO NOT!** – Use oxygen in place of compressed air to supply pneumatic equipment, tools, hoses or blow guns. Serious fire or explosion can result.
- DO NOT!** – Blow dirt off clothing with oxygen. The fabric can become saturated and burst into flames if touched off by a source of ignition such as a spark, flame or cigarette.
- DO NOT!** – Enter an unventilated, confined space without first assuring that the oxygen concentration is at a safe level. Use an oxygen analyzer to measure the concentration.
- DO NOT!** – Use acetylene at operating pressures above 15 psig (100 kPa). This is a maximum working pressure permitted by Federal Regulations.
- DO NOT!** – Empty an oxygen cylinder below 25-50 psig (170-340 kPa). If the oxygen cylinder is allowed to become completely empty, it will lose its positive pressure and fuel gas or other contamination may enter the cylinder creating a hazardous situation.
- DO NOT!** – Transfill or refill oxygen or fuel gas cylinders – return them to the gas supplier for proper testing and filling. Special procedures and requirements are necessary to safely fill cylinders.
- DO NOT!** – Leave pressure in a regulator when not in use. Close the cylinder valve, drain the hose to a safe location and back off the regulator pressure adjusting screw to release spring force.
- DO NOT!** – Smoke in the presence of oxygen or fuel gases. Smoking can be an uncontrolled source of ignition causing fire or explosion.

**** CGA GRANTS PERMISSION TO REPRODUCE THIS SAFETY BULLETIN ****

Other information references and notes have been omitted in this bulletin reproduction, but are available from CGA upon request

D. TO TURN ON:

Turn on the cylinder valve properly. Adjust the regulator to meet the specifications of the downstream equipment used. Turn pressure adjusting screw clockwise to increase pressure and turn pressure adjusting screw counterclockwise to reduce pressure and shut off. Do not exceed manufacturer's recommended pressure settings. Now the user is ready to operate downstream equipment. In flow condition, if the pressure drop is too great, the user may want to increase the pressure by turning the pressure adjusting screw clockwise (to the right) to the manufacturer's recommended pressure setting for that piece of equipment. **AT NO TIME should the user exceed the manufacturer's recommended pressure setting or the WORKING pressure of the hose.**

▼ **CAUTION:** Provide adequate gas supplies. Use maximum pressure on large heating tips; avoid backfire and flashback conditions from low gas flows. Fuel gas/acetylene flame must have excessive smoking cleared to provide adequate gas flow - increase fuel/acetylene regulator pressure enough to clear some from flame. Shut off oxygen first to avoid backfire - flame cannot burn back without oxygen. Large tips may require manifolding cylinders for adequate gas supply(s).

D. TO SHUT DOWN:

After work is completed, the downstream equipment should be turned off, the cylinder valve(s) should be closed, the downstream equipment should be safely vented. Then the regulator pressure adjusting screw should be turned counterclockwise (to the left) until spring pressure is relieved. Close all downstream valves, and secure the equipment. Now shutdown is completed.

WARRANTIES EXPRESSED OR IMPLIED INCLUDING WARRANTIES OR MERCHANTABILITY AND FITNESS OF PURPOSE ARE NULL AND VOID IF THE EQUIPMENT IS ALTERED, DAMAGED OR MISUSED IN ANY WAY OR IF THE EQUIPMENT IS NOT REPAIRED BY UNIWELD OR A UNIWELD AUTHORIZED REPAIR STATION USING UNIWELD PARTS. (IMPROPER PARTS OR REPAIRS MAY VOID WARRANTIES AND LISTING). REGULATORS UL LISTED. NOTE: Per OSHA standards (29 CFR 1910.252) only properly instructed skilled personnel shall perform repairs on equipment.

▼ **WARRANTY CLAUSE:** We believe the information contained herein to be considered reliable. However, the technical information is given by Uniweld without charge and the user shall employ such information at his own discretion and risk. We assume no responsibility for results or damages incurred from the use of such information in whole or in part.



**IF YOU HAVE QUESTIONS REGARDING THE SAFE AND PROPER OPERATION OF THIS EQUIPMENT,
PLEASE CONTACT OUR TECHNICAL SERVICE CENTER 1.800.323.2111
MON. - FRI. (Excluding Holidays) 8:15 to 4:45 pm EST**

Additional technical information is available from The American Welding Society, 550 N.W. LeJeune Road, Miami, Florida 33126; Rubber Manufacturer's Association (Hoses), 1400 K Street, N.W, Suite 900, Washington, DC 20005; National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101, American National Standards Institute, 25 West 43rd Street, New York, NY 10036; Compressed Gas Association, Inc., 4221 Walney Road, 5th Floor, Chantilly, VA 20151-2923; and Code of Federal Regulations 29 1910.251 through 1910.257.

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