

OXYGEN AND ACETYLENE WELDING AND CUTTING OUTFIT

HEAVY DUTY MODEL - 240300 acetylene CGA 300 / 240510 acetylene CGA 510

MEDIUM DUTY MODEL - 230300 acetylene CGA 300 / 230510 acetylene CGA 510

ASSEMBLY AND OPERATING INSTRUCTIONS

SAVE THIS MANUAL

You will need the manual for safety warnings and precautions, assembly instructions, operating and maintenance procedures, parts list and diagram. Keep your invoice with this manual. Write invoice number and date of purchase on the inside of the manual. Keep the manual and invoice in a safe and dry place for future reference.

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Operation Manual

Carefully read the operation manual prior to using, installing and maintaining the welding and cutting outfit for the purpose of preventing damages such as fire, electric shock and etc from occurring. Please keep the manual for the reference in the future.

SAFETY WARNING AND PRECAUTIONS

WARNING: When using the welding and cutting outfit, basic safety precautions should always be followed to reduce the risk of personal injury and damage to equipment.

Read all instructions before using this tool.

- ✓ **Keep work area clean.** Cluttered areas invite injuries.
- ✓ **Observe work area conditions.** Do not use tools, machines or power tools in damp or wet locations. Don't expose to rain. Keep work area well lighted. Do not use tools in the presence of flammable gases, liquid or dust.
- ✓ **Keep children away.** Children must never be allowed in the work area. Do not let them handle machines, tools or extension cords and compressed gas cylinders.
- ✓ **Store idle equipment.** When not in use, tools must be stored in a dry location to inhibit rust. Always lock up tools and keep them out of the reach of children.

- ✓ **Do not force tool.** It will do the job better and more safely at the rate for which it was intended. Do not use inappropriate attachments in an attempt to exceed the tool capacity.
- ✓ **Use the right tool for the job.** Do not attempt to force a small tool or attachment to do the work of a larger industrial tool. There are certain applications for which this welder was designed. Do not modify this tool and do not use this tool for a purpose for which it was not intended.
- ✓ **Dress properly.** Do not wear loose clothing or jewelry as they can be caught in moving parts. Protective, flame retardant, electrically non-conductive cloths and non-skid footwear are recommended when working. Wear restrictive hair covering to contain long hair.
- ✓ **Use eye and ear protection.** Always wear **ANSI** approved, arc shaded, impact safety face shield (welding helmet). Always use a full-face shield when welding. Always wear **ANSI** approved eyewear under face shield and while in the workplace. Wear a NIOSH approved dust mask or respirator when working around metal, chemical dusts, fumes and mists.
- ✓ **Do not over reach.** Keep proper footing and balance at all times. Do not reach over or across running machines.
- ✓ **Maintain tools with care.** Keep tools sharp and clean for better and safer performance. Follow instructions for lubricating and changing accessories. Inspect tool periodically and, if damaged, have them repaired by an authorized technician. The handles must be kept clean, dry, and free from oil and grease at all times.
- ✓ **Disconnect or turn off gases.** When not in use.
- ✓ **Stay alert.** Watch what you are doing. Use common sense. Do not operate any tool when tired.
- ✓ **Check for damaged parts.** Before using any tool, any part that appears damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment and binding of moving parts; any broken parts or mounting fixtures; and any other condition that may affect proper operation. Any part that is damaged should be properly repaired or replaced by a qualified technician. Do not use the tool if any switch does not turn on and off properly.
- ✓ **Guard against electric shock.** Prevent body contact with grounded surfaces such as pipes, radiators, ranges, and refrigerator enclosures.
- ✓ **Replacement parts and accessories.** When servicing, use only identical replacement parts. Use of any other parts will void warranty. Only use accessories intended for use with this tool. Approved accessories are available from Real Gear.
- ✓ **Do not operate tool if under the influence of alcohol or drugs.** Read warning labels on prescriptions to determine if your judgment or reflexes are impaired while taking drugs. If there is any doubt, do not operate the tool.
- ✓ **Maintenance.** For your safety, service and maintenance should be performed regularly by a qualified technician.

- ✓ **Use proper size and type gas supply hose.** If an addition gas supply hose it must be of the proper size and type to supply. The grade 'R' hose that is supplied is for acetylene use only. If another fuel gas is used contact your gas supplier to ensure the correct grade hose is used.

WARNING: The warnings, cautions and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood, by the operator, that common sense and caution are factors, which cannot be built into this product, but must be supplied by the operator.

Warning: This product, when used for welding and similar applications, produces chemicals known to the State of California to cause cancer and birth defects (or other reproductive harm). California Heath & Safety Code 25249.5, et seq.

Warning: The brass components of this product contain lead, a chemical known to the State of California to cause birth defects (or other reproductive harm). California Heath & Safety Code 25249.5 et seq.

- ✓ **Maintain labels and nameplates on tool.** These carry important information.
- ✓ **Avoid breathing fumes or gases.** These gasses can cause serious health problems. Use an active ventilation system directly above the welding or cutting area. Keep your head out of the fumes.
- ✓ **Avoid eye and body damage.** Arc rays and infrared radiation can cause injury to the eyes and burn the skin. Wear ANSI approved eye and body protection. Do not allow viewing by visitors without proper eye and body protection.
- ✓ **Know proper welding and cutting practices.** Read and understand the manufacture's instructions, as well as your employer's safety practices.
- ✓ **Connect only to a code approved power source.** Connect only to a grounding power source conforming to the National Electrical Code and Local Codes.
- ✓ **Avoid fire and explosion.** Remove flammable and explosive material to a minimum of 35 feet from the welding or cutting area to prevent welding sparks or molten metal from starting a fire. Keep a type ABC fire extinguisher within easy reach. Thoroughly clean the object being welded of any paint, grease or other foreign material.
- ✓ **Avoid being burned.** Always wear ANSI approved welding gear: eye wear, leather gloves, leather apron and shoes.
- ✓ **Always keep welding hoses away from moving parts.** Examine the gas hoses for cuts, burns, or worn areas before each use. If any damage areas are found, replace the hose immediately.

- ✓ **Proper Cylinder care.** Secure cylinders to a cart, wall or post, to prevent them from falling. All cylinders should be used and stored in an upright position. Never drop or strike a cylinder. Do not use cylinders that have been dented or damaged. Cylinder caps should be used when moving or storing cylinders. Empty cylinders should be kept in specified areas and clearly marked empty.
- ✓ **Never use oil or grease on any inlet connector, outlet connector, or cylinder valve.**
- ✓ **Always use reverse flow check valves on the torch and regulators.** This greatly reduces the possibility of mixed gases in the regulator or hose.
- ✓ **Working pressure on the Acetylene Regulator should NEVER be set above 15PSI.**
- ✓ **There must be two 'O' rings on the connection end of all welding and cutting attachments.** The absence of either 'O' ring can lead to FLASHBACK within the torch handle or attachment.
- ✓ **BACKFIRE and FLASHBACK.** When the flame goes out with a load 'POP', it is called a backfire. Backfire can be caused by, a) operating the torch at lower pressures than required for the tip used. b) touching the tip against the work piece. c) overheating the tip. d) an obstruction in the tip. If a backfire occurs, shut off the torch valves at the handle, OXYGEN FIRST, and after remedying the cause, relight the torch. A FLASHBACK is a condition that results when the flame flashes back into the torch and burns inside with a shrill hissing or squealing noise. If a flashback occurs, shut off the torch valves at the handle, OXYGEN FIRST, IMMEDIATELY. Flashback generally indicates a problem that should be repaired. A clogged tip improper function of the valves, or incorrect acetylene/oxygen pressures could lead to flashback. Make sure to find the cause before relighting the torch.

Prevent accidental fires. Remove any combustible material from the work area. When possible, move the work to a location well away from combustible materials. If relocation is not possible, protect the combustibles with a cover made of fire resistant material. Designate someone to serve as a fire watch, equipped with a fire extinguisher, during the welding or cutting process and for at least one half hour after the process is complete.

WELDING SPARKS can cause fire or explosion. Do not operate welding or cutting in areas where flammable or explosive vapors are present. Always keep a fire extinguisher accessible while performing operations.

ARC RAYS can burn. Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing open arc welding. Use suitable clothing made from durable flame-resistant material to protect your skin and that of your helpers from the rays. Protect other nearby personnel with suitable non-flammable screening or warn them not to watch the arc nor expose themselves to the arc rays or to hot spatter or metal.

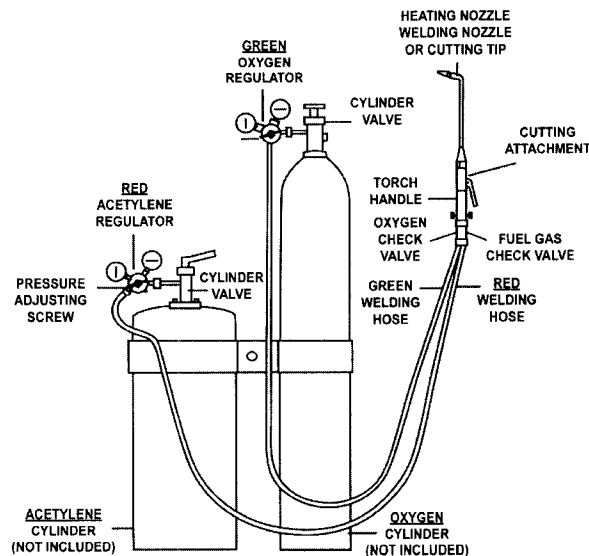
HOT METAL can burn. Welding and cutting operations cause sparks and hot metal to temperatures that can cause severe burns! Use protective gloves and clothing when performing any metal working operations. Make sure that all persons in the welding area are protected from heat, sparks and ultraviolet rays. Use additional face shields and flame resistant barriers as needed. Never touch work piece until completely cooled.

I. UNPACKING

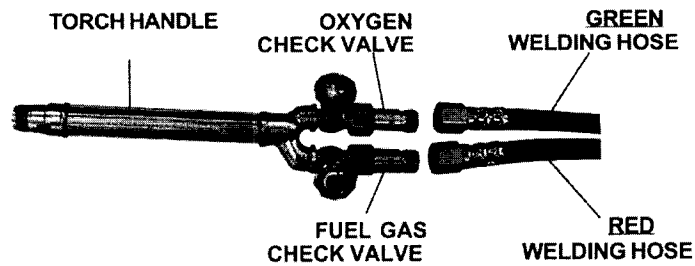
When unpacking, please check to ensure that all the components are included. If any parts are missing or broken, please contact the local store you purchased it at or contact us on the web at www.realgearusa.com .

NOTE: The following instructions are for acetylene gas use only. Contact your local gas supplier for instructions on the use of other fuel gases.

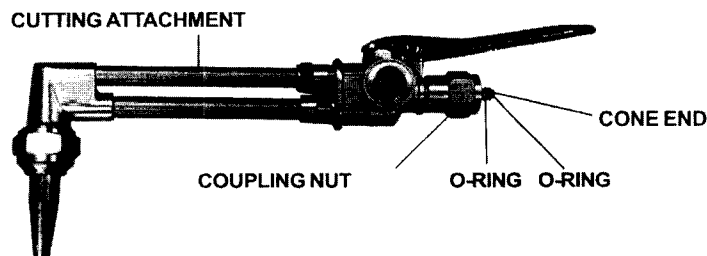
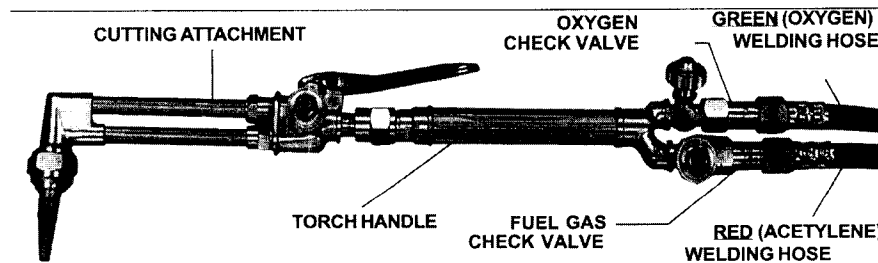
- ✓ **Make sure to secure the compressed gas cylinders at all times.**
- ✓ **While standing to one side,** 'crack' each cylinder valve. 'Cracking' is to quickly open and close the valve, allowing gas to escape and clear the valve of any foreign material. **WARNING,** if oil or grease is found, discontinue using the cylinder and immediately contact your gas supplier.
- ✓ **Attach the Green oxygen regulator** to the oxygen cylinder. Then attach the **Red Acetylene regulator** to the acetylene cylinder, Make sure they are tightened in the right directions. The oxygen is clockwise, but with acetylene there are CGA510 counter clockwise or CGA300 clockwise.



- ✓ **IMPORTANT**, the pressure adjusting screw on the acetylene regulators and the pressure adjusting screw on the oxygen regulator should be turned 'out' counter clockwise to relieve pressure on the regulator diaphragms before opening the cylinder valve. If this is not done, pressure from the cylinders may damage the diaphragms and render the regulators inoperable.
- ✓ **Connect the green and red hoses** to the proper connection on the torch handle, and the proper connection on the regulators. **WARNING**, if any traces of oil or grease are found, do not use. Contact your gas supplier immediately.



- ✓ Connect the cutting attachment to the torch handle. Always check the cone end for damage, grease or oil. **WARNING**, make sure the two 'O' rings are not damaged or missing, otherwise gases will mix inside the torch handle and result in flashback or backfires.



| TYPE MFA HEATING NOZZLES | | |
|--------------------------|---------------------------------------|--|
| Tip Size | Oxygen Pressure p.s.i.g. Min / Max | Acetylene Pressure p.s.i.g. Min / Max |
| 4 | 8 / 12 | 6 / 10 |
| 6 | 10 / 15 | 8 / 12 |
| 8 | 20 / 30 | 10 / 15 |
| 10 | 30 / 40 | 12 / 15 |

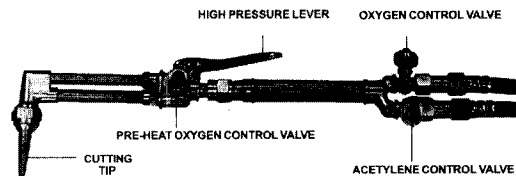
- ✓ Check connections for leaks. Adjust the acetylene regulators and oxygen regulators to their normal operating pressures. Use an approved leak detection solution to check for leaks at the hose and cylinder connections. If leaks are found, tighten the nuts more securely. If leak still persists, discontinue use and contact your gas supplier.

WARNING, NEVER set the acetylene regulator to a delivery pressure above 15 PSI.

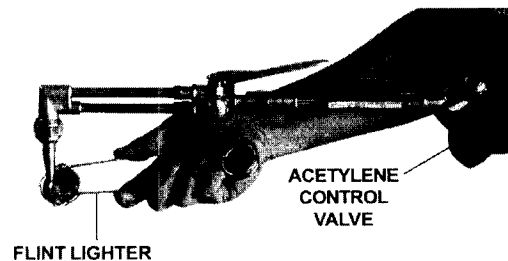
| WELDING NOZZLE FLOW DATA | | | |
|---------------------------|----------|---------------------------------------|--|
| Metal Thickness inches | Tip Size | Oxygen Pressure p.s.i.g. Min / Max | Acetylene Pressure p.s.i.g. Min / Max |
| 1/8 | 000 | 20 / 25 | 3 / 5 |
| 1/4 | 00 | 20 / 25 | 3 / 5 |
| 3/8 - 1/2 | 0 | 25 / 35 | 3 / 5 |
| 3/4 | 1 | 30 / 35 | 3 / 5 |
| 1 | 2 | 35 / 40 | 3 / 6 |
| 2 | 3 | 40 / 45 | 3 / 8 |
| 3 | 4 | 40 / 50 | 5 / 11 |
| 4 | 5 | 45 / 55 | 6 / 13 |

| WELDING NOZZLE FLOW DATA | | | |
|---------------------------|----------|---------------------------------------|--|
| Metal Thickness inches | Tip Size | Oxygen Pressure p.s.i.g. Min / Max | Acetylene Pressure p.s.i.g. Min / Max |
| up to 1/32 | 000 | 3 / 5 | 3 / 5 |
| 1/64 - 3/64 | 00 | 3 / 5 | 3 / 5 |
| 1/32 - 5/64 | 0 | 3 / 5 | 3 / 5 |
| 3/64 - 3/32 | 1 | 3 / 5 | 3 / 5 |
| 1/16 - 1/8 | 2 | 3 / 5 | 3 / 5 |
| 1/8 - 3/16 | 3 | 4 / 7 | 3 / 6 |
| 3/16 - 1/4 | 4 | 5 / 10 | 4 / 7 |
| 1/4 - 1/2 | 5 | 6 / 12 | 5 / 8 |

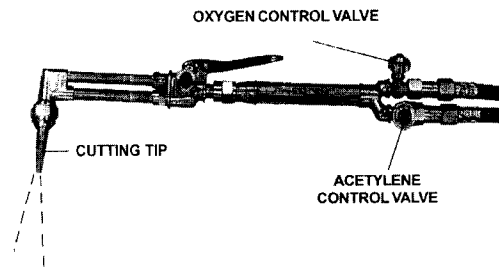
- ✓ **To determine** the proper acetylene regulator pressure and oxygen regulator pressure for neutral flame adjustment refer to tables in this manual.
- ✓ **Open the oxygen control valve** on torch handle. Open the pre-heat oxygen valve on cutting attachment. Adjust the oxygen regulator to the desired working pressure. Then, close the oxygen control valve.
- ✓ **Open the acetylene control valve** on the torch handle. Adjust the acetylene regulator to the desired working pressure. Then, close the acetylene control valve.



- ✓ **Hold the torch handle** in one hand and the flint striker in the other hand.



- ✓ **Open the acetylene control valve** about ¼ turn, and ignite the acetylene gas coming out of the nozzle or tip with the flint striker. **WARNING, always point the nozzle or tip away from people when lighting.**
- ✓ **Slowly open the acetylene control valve** further until the smoke subsides and the flame jumps away from the end of the nozzle or tip slightly.
- ✓ **Slowly open the oxygen control valve** until a brilliant neutral flame is reached.
- ✓ **Once the welding or cutting job is completed,** turn off the oxygen control valve first. Then, turn off the acetylene control valve. **NOTE, reversal of this procedure may cause damage to the torch handle.**



- ✓ **Shut off both cylinder valves.**
- ✓ **Drain the gas** from the oxygen regulators by opening the oxygen control valve. Then, complete this same procedure with the acetylene regulator.
- ✓ **Release the pressure** on the acetylene and oxygen regulators by turning their pressure adjusting screws counter clockwise.

INSPECTION, MAINTENANCE AND CLEANING

WARNING, Make sure the welding and cutting kit is cool to the touch and disconnected from the oxygen and acetylene cylinders before performing any inspection, maintenance or cleaning procedures.

BEFORE EACH USE, inspect the general condition of the kit. Check for loose screws, misalignment, binding of moving parts, cracked or broken parts, damaged hose, and other conditions that may affect its safe operation. If a problem occurs, have the problem corrected before further use. **DO NOT USE DAMAGED EQUIPMENT.**

TO CLEAN, use a clean cloth. **DO NOT immerse** any part of the tool in liquid. **DO NOT USE solvents** or other flammable agents to clean the tool. Use the top cleaner to clean out dirt or debris from the nozzles or tips. Make sure to use the correct size tip cleaner.

LIMITED WARRANTY

Statement of Limited Warranty, Real Gear makes every effort to ensure that its products meet high quality standards and warrants to the original end user (purchaser). This warranty is void if Real Gear or its authorized service centers finds that the equipment has been subjected to improper installation, care, unauthorized modification, tampering, inadequate maintenance, improper storage or abnormal use. This limited warranty is not transferable from the original purchaser to a second owner. In no event is Real Gear liable or responsible for any injury, damage, or loss resulting either directly or indirectly from the use or misuse of this product. This warranty is expressly in lieu of all other warranties, expressed or implied, including the warranties of merchantability and fitness.

Welding and Cutting Outfits - Limited 1 year warranty

This does not apply to consumable parts, tips, and nozzles, tip cleaners, striker and hose.

One (1) Year, from the date of purchase, that the torch handle, cutting attachment, oxygen, and acetylene regulator are free of defects in material and workmanship.

To take advantage of this warranty, the product or part must be returned to Real Gear or its authorized service centers with transportation charges prepaid. Proof and date of purchase, with an explanation of the complaint, must accompany the merchandise. If our inspection verifies a defect, we will either repair or replace the product at our election or we may elect to refund the purchase price if we cannot readily or quickly provide purchaser with a replacement. Real Gear will return repaired products at our expense, but if Real Gear determines there is no defect, or that the defect resulted from causes not within the scope of our warranty, then the purchaser must pay the cost for the return of the product.

This warranty gives the purchaser specific legal rights and they may also have other rights, which vary from state to state.

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