OPERATING INSTRUCTIONS

CUTTING TORCHES [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.

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.

SAFETY PRECAUTIONS:

WARNING: The user must have proper **VENTILATION. DO NOT BREATHE FUMES.** A torch flame consumes ambient oxygen from the air as well as the cylinder supplied torch oxygen. In other words, free oxygen from the air is burned as well as the oxygen from the cylinder. Without good ventilation, asphyxiation can occur. Use proper **FIRE PREVENTION** protection measures. Equipment must be kept oil free.

CONNECTING EQUIPMENT:

(Use proper cutting tips for each type torch and fuel gas) **(See Charts)**. Carefully check the cutting tips, cutting torch head, all connection nuts, hose fittings and hose for damaged or missing parts. Blow out new hoses with 5 psi before connecting to torch (vent gases safely). For equipment safety, all connections from gas cylinders to cutting tip must be leak-free. Connections include: regulator-to-cylinder, regulator-to-hose and hose-to-torch. The cutting tip must be firmly seated in the cutting torch head by wrench tightening the nut. **DO NOT USE TIPS WITH DAMAGED SEATS OR PLUGGED HOLES.** Make leak test after setting pressures (See Page 5), using detergent solution or water bucket. If leakage is detected, close cylinder valves and regulators, recheck connections for dirt or damage, correct, retighten and retest. **DO NOT USE EQUIPMENT UNTIL ALL CONNECTIONS ARE LEAK FREE. NOTE:** For used hose, check for damage and use water bucket test on doubtful areas, especially bending areas at hose connections.

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 to one side of the outlet; never in front of it. Never crack 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.

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.
CAUTION: Always CLOSE the CYLINDER VALVES when the torch is not in use.

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.

TORCH:
Hoses must be connected to the two torch inlets (Oxygen - RIGHT HAND threaded, Fuel Gas or Acetylene - LEFT HAND threaded). If torch check valves/flashback arrestors are used, the check valves and flashback arrestor should be installed WRENCH-TIGHT on the torch first, then the hoses are connected WRENCH-TIGHT to the torch check valves/flashback arrestors. This may require two wrenches making sure the GREEN oxygen hose with the RIGHT HAND threaded fittings is connected to the OXYGEN INLET and/or CHECK VALVE or FLASHBACK ARRESTOR. The RED hose with the LEFT HAND threaded fittings must be connected to the FUEL GAS or ACETYLENE INLET and/or CHECK VALVE/FLASHBACK ARRESTOR. All connections to the torch must be leak tested and free from leaks before use.

VISUAL INSPECTION AND MAINTENANCE:
Visual inspection and periodic maintenance is required on all welding/cutting/heating equipment. Visual inspection and replacement of soft seals such as O-rings on welding/brazing/heating tips can be done by the end-user. Maintenance should only be done through your local distributor or an authorized repair station. If you have any questions, contact your local authorized welding distributor.

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 with the torch valves closed. 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. **(See Regulator Instruction Sheet.)**

WARNING: Fuel gases and acetylene 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. Use a proper leak testing solution, then look for bubbles - bubbles indicate leaks. **DO NOT OPERATE** this equipment with any LEAKS.

WARNING: PURGE the OXYGEN system and the FUEL GAS/ACETYLENE system **BEFORE** each torch lighting and use to vent out any mixed gases which could cause a flashback when ignited (vent safely). **Also purge after changing cylinders** (see page 4 - Purging). It is important to have the work area well ventilated to remove fumes and unburned gases. Good ventilation is necessary to supply fresh air for the operator and the equipment. **DO NOT BREATHE FUMES.**

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. 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.

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

IF YOU HAVE NOW TESTED FOR LEAKS FROM THE CYLINDER TO THE TORCH HANDLE AND ARE NOW POSITIVE THAT THERE ARE NO LEAKS, YOU ARE READY TO PROCEED TO THE TIP SELECTION, ETC.

TIP SELECTION:
Use the proper cutting tip for each type cutting attachment and fuel gas. **(See Cutting Tip Data Chart on page 5)**
A. Carefully check the cutting tips, cutting attachment head, torch handle head and adaptor O-Rings, all connection nuts, hose fittings and hose for damaged or missing parts, dirt, oil or grease, etc. and clean and correct as necessary before connecting equipment. Use proper operating pressure and clean, efficient tips. Select the proper size and type of tip to fit the cutting attachment, job and fuel gas/acetylene. DO NOT use DAMAGED or PLUGGED TIPS - repair or replace them. Examine all tips before use, new or used, to make sure the seating seals are clean, smooth and undamaged.
B. CAREFULLY PURGE THE OXYGEN AND FUEL GAS/ACETYLENE SYSTEMS BEFORE EACH LIGHTING AND USE (vent gases safely).

CAUTION: Cutting tips must be installed WRENCH-TIGHT.

WARNING: REDUCING the FLAME SIZE on a tip that is TOO LARGE for the job can cause BACKFIRE and/or FLASHBACK.

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

CAUTION: Use Uniweld Tip cleaners to keep the tips clean, effective and efficient for every job. DO NOT use DAMAGED or PLUGGED TIPS. If user is using a cutting tip, select the proper size for work. (See Cutting Tip Orifice Drill Size Chart below).

CUTTING TIP ORIFICE DRILL SIZE (In Number Drills)

	V-Style Type Seats 1-101, 3-101, 5-101		A-Style Type Seats 144(4 Preheats) 164(6 Preheats)			H-Style Type Seats 6290A, 6290S		
Cutting Tip Size	CUT OXY	PRE HEAT	CUT OXY	144	164	CUT OXY	(A)	(S)
000	71	74	-	-	-	68	72	71
00	67	74	68	65	66	64	72	71
0	60	74	62	63	65	60	72	69
1	56	71	56	60	61	56	72	65
2	53	68	54	59	60	52	72	59
3	50	68	52	57	59	48	69	58
4	45	64	49	56	57	42	69	56
5	39	61	45	56	56	35	55	55
6	31	58	41	55	56	30	55	55
7	28	56	34	55	55			
8	20	53	30	55	55			

PRESSURE SETTINGS, FLAME ADJUSTMENT AND CUTTING PROCEDURE:

1. Make sure all torch valves are closed. Set correct regulator pressure for each gas (EXAMPLE: not less than 5 psi Acetylene and 30-35 psi Oxygen for tip size 0 or 1 with approx., 25' of hose). See cutting chart. NOTE: the correct pressure settings are "working pressures" needed at the torch. Compensate for pressure drops by increasing regulator pressure as necessary. Hose over 25' requires increased pressure, about 3 psi per 25' of hose.

2. Check pressures with gas flow conditions and also purge the oxygen passages by briefly opening and closing the preheat valve and cutting oxygen lever. Check pressure and purge fuel gas passages by briefly opening and closing the torch fuel gas valve. Vent gases safely. **PURGE OXYGEN PASSAGES BEFORE EACH TORCH LIGHTING AND USE TO EXPEL MIXED GASES WHICH CAN CAUSE A BACKFIRE OR FLASHBACK WHEN IGNITED.**

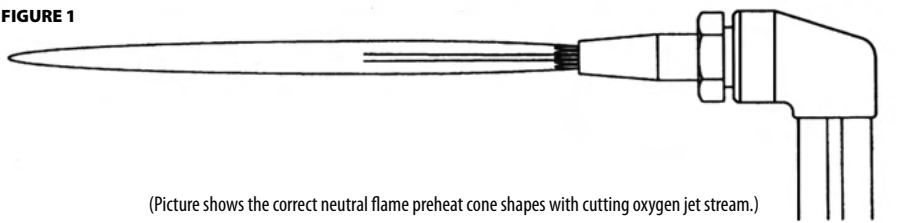
3. Open torch fuel gas valve about one-half turn and quickly cup and light the tip with a spark lighter and adjust flame until it just leaves the end of the tip, then adjust flame to return to end of tip without smoke. This is the correct gas flow for the tip to maintain a stable preheat flame. A "NO-SMOKE" flame indicates adequate gas flow.

4. Open the preheat oxygen valve slowly until the white feathers of preheat flames disappear into a sharp blue-white flame cone. These are the correct neutral flame cones. (See Figure 1).

5. Press down and hold the cutting oxygen while slightly increasing the preheat oxygen to remove the feathers and restore the correct flame cones.

6. To start the cut, hold the preheat flame cones steady just above an edge or spot until it glows bright orange. Press the cutting oxygen lever down slowly. If the metal is not hot enough, the cutting action will not start (release lever and re-preheat to restart the cut). Move the torch along steadily to avoid overheating and melting until cut is completed.

FIGURE 1



(Picture shows the correct neutral flame preheat cone shapes with cutting oxygen jet stream.)

7. Correct full gas flows to the tip must be maintained to avoid flame backfiring (loud popping) or flashback (squealing) inside the torch which can be caused by a plugged, dirty, damaged or loose tip. **TO STOP THE INSIDE BURNING, QUICKLY TURN OFF THE PREHEAT OXYGEN VALVE,** then the torch fuel gas vale. **THE FLAME CANNOT BURN INSIDE THE TORCH WITHOUT OXYGEN.** Cool the torch and check preheat gas flows and pressures before relighting, check tip for plugged holes or seat damage. (Clear and clean holes with proper size tip cleaner). **DO NOT** use a tip with damaged seat or plugged holes. Contact your supplier if the problem continues. **INCLUDE TIP USED WITH TORCH TO BE CHECKED AND REPAIRED, BECAUSE THE TIP CAN BE THE PROBLEM.**

8. For piercing holes or cutting into confined spaces, the tip must be tilted over at an angle to start the cut and avoid metal spatter from plugging the tip when the cutting action starts. (Return tip upright and raise up slightly after cut starts).

9. DO NOT choke down or starve the preheat flames to try to reduce the heat for cutting thin sections - use full correct flames with the tip tilted over so the preheat flames hit the surface at an angle (which is increased or decreased as needed to vary the heat). Move the tip fast enough to avoid overheating and excess melting. Use the correct size tip for metal thickness (to avoid overheating and melting) using proper size tip and pressures.

10. When cutting operations are finished, **SHUT OFF THE PREHEAT OXYGEN VALVE FIRST,** then torch fuel gas valve, (shutting off fuel gas first can cause backfire or flashback. Close cylinder valves. Release cutting preheat oxygen valve pressure, then close off oxygen regulator. Next release torch fuel gas valve pressure and close off fuel gas regulator. (Release gases safely away from sources of ignition). Close all valves tightly. Closing regulators help avoid gas loss if cylinder valve or torch valves leak. **DO NOT** store cylinders and equipment in confined unventilated spaces and rooms used for habitation, or in closed vehicle or near sources of heat or ignition.

CUTTING TIP DATA CHART

Metal Thickness	TORCH & TIP TYPES: V-Style Seat 2 Taper — 1-101 3-101 5-101 GPM-N-P 1-303MP	TORCH & TIP TYPES: A-Style Seat 3 Taper — 144 164	TORCH & TIP TYPES: H-Style Seat 2 Flat — Use Upper PSIG 6290	Oxygen PSIG	Oxygen SCFH	Acetylene Fuel Gas PSIG	Acetylene Fuel Gas SCFH	Speed IPM
1/8″	000	00	000	20-25	25	5	5	28-32
1/4″	00	0	00	20-25	35	5	5	25-30
3/8″	0	1	00	25-30	60	5	8	24-28
1/2″	0	1	0	30-35	65	5	10	20-24
3/4″	1	2	1	30-40	85	5	13	17-20
1″	2	2	1	35-50	140	6	16	15-20
1-1/2″	2	3	2	40-50	160	7	18	12-17
2″	3	3	3	40-55	180	9	22	12-15
2-1/2″	3	4	3	45-55	230	10	26	10-13
3″	4	5	4	45-60	280	10	30	9-12
4″	5	5	4	45-60	350	12	34	8-11
5″	5	6	4	50-65	420	12	38	7-9
6″	6	6	5	50-70	450	12	40	6-8
8″	6	6	5	55-75	600	14	44	5-6
10″	7	7	6	55-85	700	14	50	4-5
12″	8	8	6	55-95	900	14	55	3-5

11. To avoid dangerous reverse flow of gases due to unbalanced pressures, **DO NOT ALLOW CYLINDERS (ESPECIALLY OXYGEN) TO BECOME COMPLETELY** EMPTY DURING USE. For additional protection, install Uniweld reverse flow check valves on torches and regulators. Check for adequate gas supplies before starting a job. **PURGE OXYGEN AND FUEL GAS PASSAGES BEFORE EACH TORCH LIGHTING AND USE TO AVOID FLASHBACK WHEN IGNITED.** Check valves are designed to stop reverse flow of gases - not flashback.

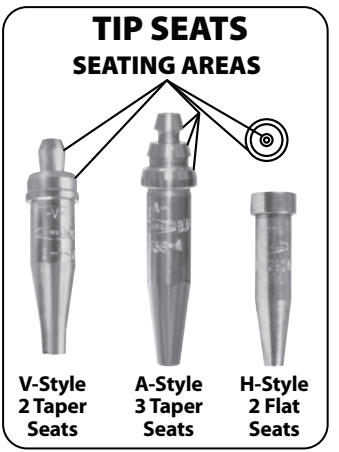
WARNING: Reverse flow of gases is caused by unequal, unbalanced pressures in the gas system between the cylinder and torch tip. **THIS UNSAFE CONDITION CAN BE CAUSED BY EITHER THE OXYGEN OR FUEL CYLINDER EMPTYING IN USE** and allowingthe higher pressure to reverse flow into the low side due to the restrictive action of the torch tip. If ignited, the flashback flame can go as far as the gases are mixed, including the hose, regulator and cylinder. The use of Uniweld Reverse Flow Check valves on the torch or regulator is strongly recommended to reduce the possibility of mixing gases in the hoses, regulator and cylinders. To avoid pressure unbalance and cylinder contamination, DO NOT allow cylinders to become completely empty while in use, especially the oxygen cylinders, check for adequate gas supplies before starting work.

NOTE: Check valves on regulators stay cleaner and give longer service than torch check valves.
Check valves are not designed to stop a flashback.

CHECK VALVES/FLASHBACK ARRESTORS:

CAUTION: The decision to use or not use check valves/flashback arrestors must be made by the end user or his supervisor. Check valves/flashback arrestors need to be inspected and maintained on a regular basis. **SEE PROCEDURE in the TORCH CHECK VALVE/FLASHBACK ARRESTOR INSTRUCTION SHEET.** Flashback arrestors are designed to stop a flashback and stop the reverse flow of gases. Flashback arrestors will not work properly if they are damaged by too many flashbacks which may clog the flashback stopping element. Flashback arrestors must be inspected and tested monthly and replaced as necessary. Check valves must be tested after a flashback and replaced as necessary. **A CHECK VALVE IS NOT A FLASHBACK ARRESTOR.**

NOTE: Data is based on 25 ft. of 1/4" hose up to size 5 tip (3/8" hose may be required for size 6 and larger). Increase pressures approximately 3 psig per 25 ft. hose added and increase working pressure 2-3 psig for check valves. Acetylene delivery pressure should not exceed 15 psig under flow conditions.



NOTE: Additional data available in INFORMATION SECTION on page 6

Check Valves:
Provide added protection against reverse flow of gases, but no flame flashback.

CHECK VALVES

Flashback Arrestors:
Help prevent reverse flow of gases and quench backfires and flashbacks at torch and regulators.

FLASHBACK ARRESTORS

WARNING: Check valves and flashback arrestors are not substitutes for following the correct common sense procedures. It is the user's responsibility to follow correct procedures.

TO SHUT DOWN:

When the cutting operations are finished, **SHUT OFF THE CUTTING ATTACHMENT PREHEAT OXYGEN VALVE FIRST, THEN THE TORCH FUEL GAS/ACETYLENE VALVE. (NOTE: SHUTTING OFF THE FUEL GAS/ACETYLENE FIRST CAN CAUSE BACKFIRE).** Close the cylinder valves. Release torch oxygen valve pressure, then close valve. Then shut off the oxygen regulator by turning the pressure adjusting screw counterclockwise (to the left) until all the spring pressure is relieved. Next release torch fuel gas/acetylene valve pressure, then close valve. Then shut off the fuel gas/acetylene regulator by turning the pressure adjusting screw counterclockwise (to the left) until all the spring pressure is relieved. (Release the gas safely away from any sources of ignition). Close all valves tightly and secure the equipment. Now the shutdown is complete.

INFORMATION:

CUTTING OXYGEN TIP AND TORCH GUIDE
Type 101 etc. V-Style Tip, Tube Mix, lower psig (oxygen)
Type 144 etc. A-Style Tip, Tip Mix mid psig (oxygen)
Type 6290 etc. H-Style Tip, Head Mix upper psig (oxygen)

ACETYLENE/FUEL GAS TIPS AND CUTTING ATTACHMENTS GUIDE (Cutting Attachments use 5 psig and up.)
V-Style Type (2 taper seats) Tips, Tube Mix:
Series 1-101 etc.: 780 Series Cutting Attachment, 830, 850 Series straight cutting torches, etc.
Series 3-101 etc.: 3-780 Series CA350, CA250 Cutting Attachment, etc.
Series 5-101 etc.: 76A, CA550 Series Cutting Attachment

A-Style Type (3 taper seats) Tips, Tip Mix:
Series 144, 164 etc.: CA98, CA370, 77A Series Cutting Attachment, 30, 50, 54 and 56 Series straight cutters, etc.
Series 144, 164 etc.: CA330, CA730 Cutting Attachment - Canada - CLA

H-Style Type (2 Flat seats) Tips, Head Mix:
Series 6290 etc.: CA79, CA43* Series Cutting Attachment, 40 Series straight cutters, etc.
*Uses 5 psig or more acetylene and fuel gas or under 1 psig natural gas.

Pressures are set at regulators with 25' ft. -1/4" hose up to size 5 tip (3/8" hose for size 6 and larger) increase pressure approx., 3 psig per 25' hose added and 2-3 psig for check valves. use suitable oxygen manifold for large oxygen usage. For acetylene flows exceeding 1/7 (approx. 15%) of a cylinder contents per hour, a suitable acetylene manifold system must be used.

WARRANTY CLAUSE
Uniweld believes the information contained herein to be reliable. However, technical information is given by Uniweld without charge and user shall employ such information at his own discretion and risk. Uniweld assumes no responsibility for results or damages incurred from the use of such information in whole or in part.WARRANTIES EXPRESSED OR IMPLIED INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS OF PURPOSE ARE NULL AND VOID IF EQUIPMENT IS ALTERED, DAMAGED OR MISUSED IN ANY WAY OR IF THE EQUIPMENT IS NOT REPAIRED BY A UNIWELD OR AN AUTHORIZED REPAIR STATION USING UNIWELD PARTS. (IMPROPER PARTS OR REPAIRS MAY VOID WARRANTIES AND LISTINGS). REGULATORS UL LISTED. NOTE: Per OSHA standards (29CFR 1910.252) only properly instructed skilled personnel shall perform repairs on equipment.

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 safety 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.

SAFETY BULLETIN

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

USE OF RUBBER WELDING HOSE

RUBBER WELDING HOSE can be used safely if proper procedures are used. Adhering to the "DOs" and "DO NOTs" listed below will reduce the possibility of incurring serious injury.

DO– Blow powder or other residue out of the new hose and blow out hose that has been left open to dust, dirt, etc. before attaching the hose to a torch or other equipment.
DO– Examine hose before each use, especially for cracks in the hose next to the regulator and equipment connections.
DO– Wipe off hose frequently and inspect for burns and other damage. Never use solvent to wipe off hose.
DO– Replace hose when worn, weathered, damaged or when the fabric braid shows. Splice only with proper fittings and ferrules or replace with new hose.
DO– Select welding hose that meets Rubber Manufacturers Association and Compressed Gas Association standards in the size and grade suitable for both the conditions and gases being used. Be sure hose is fitted in accordance with CGA E-1 Standard Connections for Regulator Outlets, Torches and Fitted Hose for Welding and Cutting Equipment.
DO– Make sure all connections are tight and leak free before each use. Test for leaks with soapy water, leak check solution, a water bucket or static pressure test, especially where hoses connect to regulator and equipment fittings. An occasional total immersion of hose is recommended (at maximum working pressure).
DO– Purge each hose line separately in a well ventilated area before lighting the torch each time that the equipment is to be used. This prevents the mixing of gases in the hose lines and will warn the operator if one of the gases is not turned on or if the cylinder is empty. Dangerous mixing of gases in a hose can be caused by a cylinder emptying during use, causing unbalanced pressures.
DO NOT! – Pull hose with torch. Grasp hose to adjust the free length and position it for proper use.
DO NOT! – Use hose to pull equipment.
DO NOT! – Let hose put strain on fittings attached to torch or regulators. This can weaken fittings, crack hoses, pull over cylinders or damage valves. Reposition cylinders if more hose length is needed. Cracked hoses can break and leak from strain.
DO NOT! – Allow sparks or flame from cutting and welding operations to fall on or make contact with welding hose. Fire or explosion can result from careless work habits.
DO NOT! – Drag hose over hot metal or sharp edges.
DO NOT! – Use acetylene at operating pressures above 15 psig (100 kPa). This is a maximum working pressure permitted by Federal Regulations.
DO NOT! – Let hose fittings, connections or Grade R hose come in contact with oil, grease or their contaminants.
DO NOT! – Use hose with more than one splice per 50 foot (15M) section. Select fittings with adequate inside diameter to avoid flow restrictions.
DO NOT! – Bend, kink or pinch hose to shut off gases.
DO NOT! – Leave pressure in hoses when equipment is not being used - i.e. lunchtime, overnight, weekends, etc. Close cylinder valves, drain hoses in a well ventilated area and close both regulator and equipment valves. Hoses can be weakened and attacked by solvents in fuel gases. Leaks could develop in unattended equipment and result in fire or explosion.
DO NOT! – Repair worn or cut hoses with tape or other temporary materials. Instead, splice with proper fittings and ferrules or replace with new hose.
DO NOT! – Reuse hose that has been subjected to burnback, flashback or external burn damage.

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 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.

UNIWELD PRODUCTS, INC.
2850 Ravenswood Road Fort Lauderdale, FL 33312 U.S.A.
www.uniweld.com • info@uniweld.com

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