

# HOBART®

OM-251 341A

2011-08

## Processes



Oxy-Fuel Welding and Cutting

## Description



Accessory

# Medium-Duty Oxy-Acetylene Cutting and Welding Outfit 770 502



## OWNER'S MANUAL

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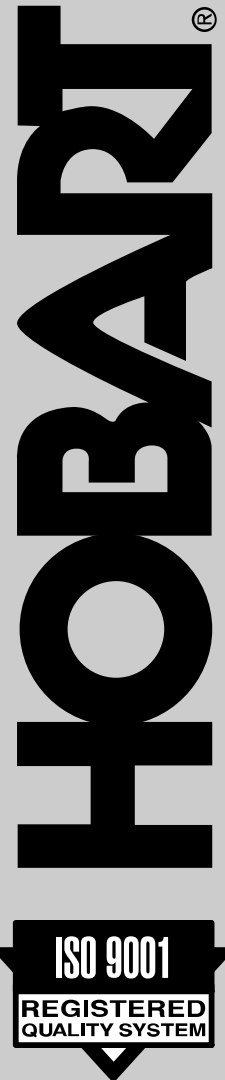
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Hobart is registered to the ISO 9001 Quality System Standard.

# SECTION 1 – SAFETY PRECAUTIONS - READ BEFORE USING

OXY FUEL 2011–07

## 1-1 Safety Precautions – Read Before Using

 Protect yourself and others from injury — read and follow these precautions.

## 1-2 Symbol Usage




**DANGER!** – Indicates a hazardous situation which, if not avoided, will result in death or serious injury. The possible hazards are shown in the adjoining symbols or explained in the text.



Indicates a hazardous situation which, if not avoided, could result in death or serious injury. The possible hazards are shown in the adjoining symbols or explained in the text.


**NOTICE** – Indicates statements not related to personal injury.

 Indicates special instructions.




This group of symbols means Warning! Watch Out! ELECTRIC SHOCK, MOVING PARTS, and HOT PARTS hazards. Consult symbols and related instructions below for necessary actions to avoid the hazards.


## 1-3 Oxy-Fuel Welding, Cutting, Brazing, And Heating Hazards

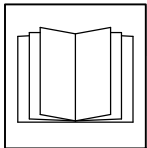
 The symbols shown below are used throughout this manual to call attention to and identify possible hazards. When you see the symbol, watch out, and follow the related instructions to avoid the hazard. The safety information given below is only a summary of the more complete safety information found in the Safety Standards listed in Section 1-5. Read and follow all Safety Standards.

 Only qualified persons should install, operate, maintain, and repair this equipment.

 During operation, keep everybody, especially children, away.

 Do not use this equipment unless you are trained in its proper use or are under competent supervision. Follow the procedures described in this booklet every time you use the equipment. Failure to follow these instructions may cause fire, explosion, asphyxiation, property damage, or personal injury. This equipment must be used in accordance with all Federal, State, and local regulations as well as DOT (Department of Transportation) and CGA (Compressed Gas Association) regulations. Contact your gas supplier for more information on the proper use of compressed gases.

 In this document, the phrase “welding and cutting” also refers to other oxy-fuel operations like brazing and heating.



### READ INSTRUCTIONS.

- Read and follow all labels and the Owner's Manual carefully before installing, operating, or servicing equipment. Read the safety information at the beginning of the manual and in each section.
- Use only genuine replacement parts from the manufacturer.
- Perform maintenance and service according to the Owner's Manuals, industry standards, and national, state, and local codes.



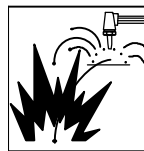
### FUMES AND GASES can be hazardous.

Welding and cutting produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.

- Keep your head out of the fumes. Do not breathe the fumes.
- If inside, ventilate the area and/or use local forced ventilation at the flame to remove welding and cutting fumes and gases. Some gases (natural gas and acetylene) are lighter than air and will col-

lect in high areas. Other gases (propane and butane) are heavier than air and will collect in low areas. Heavier-than-air gases are more difficult to diffuse and are more likely to accumulate.

- If ventilation is poor, wear an approved air-supplied respirator.
- Read and understand the Material Safety Data Sheets (MSDSs) and the manufacturer's instructions for metals, consumables, coatings, cleaners, and degreasers.
- Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Always have a trained watchperson nearby. Welding and cutting fumes and gases can displace air and lower the oxygen level, causing injury or death. Be sure the breathing air is safe.
- Do not weld or cut in locations near degreasing, cleaning, or spraying operations. The heat from welding or cutting flame can react with vapors to form highly toxic and irritating gases.
- Do not weld or cut on coated metals, such as galvanized, lead, or cadmium-plated steel unless the coating is removed from the affected area, the area is well ventilated, and while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded or cut.



### WELDING AND CUTTING can cause fire or explosion.

Welding and cutting on closed containers, such as tanks, drums, or pipes, can cause them to blow up. Sparks can fly off from the welding or cutting operations. The flying sparks, hot workpiece, and hot equipment can cause fires and burns. Check and be sure the area is safe before doing any welding or cutting.

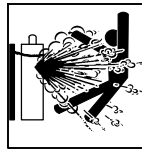
- Do not use this welding and cutting equipment with gases other than those for which it is intended. Oxygen is not flammable; however, the presence of pure oxygen will drastically increase the speed and force with which burning takes place. Oxygen must never be allowed to contact grease, oil, or other petroleum-based substances; therefore, be sure there is no oil or grease on the regulator, cylinder, valves, or equipment. Do not use petroleum-based pipe sealants. Do not use or store near excessive heat (above 125° F/51.5° C) or open flame. Do not refer to oxygen as air and do not use oxygen as a substitute for compressed air. Do not use oxygen to clean clothes or work area, for ventilation, or to operate pneumatic tools.
- Inspect all equipment before use. Do not use damaged, defective, or improperly adjusted welding and cutting equipment. Make sure levers and valves work properly, threads on equipment are clean (no grease or oil) and not deformed, gauges are intact and easy to read, regulator is clean and free of oil or dirt, and fittings are properly sized for the cylinder. Make sure hoses are clean (no grease or oil) and ferrules are properly installed so the fitting does not slip inside the hose. Be sure all connections are tight.

- It is recommended that a reverse-flow check valve or a flashback arrestor be installed between the torch handle and the regulator. Check valves do not prevent the propagation of a flame upstream (flashback) but are designed to prevent the unintentional backflow of gases into the cutting attachment, torch, hoses, or regulator which could cause an explosion or fire. Do not use a check valve for large heating or cutting tips. A flashback arrestor can be installed on the torch handle instead of a check valve. A flashback arrestor is a reverse flow check valve which also prevents the propagation of a flame upstream. If a flashback arrestor is installed, a check valve is not necessary. Using a flashback arrestor and a check valve may reduce gas flow and affect torch operation. To help prevent the reverse flow of gases, be sure the cylinders contain enough gas to complete the work.
- Perform work only in an area with a fireproof floor (concrete). Do not heat concrete because it may expand and explode violently.
- Perform work on a fireproof surface. Use heat resistant shields to protect nearby walls and flooring.
- Do not use if grease or oil is present on equipment or if equipment is damaged. Have equipment cleaned/repared by a qualified person.
- Do not open a cylinder valve quickly or the regulator may be damaged and cause a fire.
- Do not open acetylene cylinder valve more than one turn. (For all gases except acetylene, open cylinder valve fully to backseat the cylinder valve.) Keep cylinder wrench on the cylinder for quick shut-off.
- Do not slightly open or "crack" acetylene cylinder valve to blow debris from the valve outlet.
- Always purge gas from the system before lighting torch. Purge gas in a well-ventilated area and away from flame or sparks.
- Keep torch flame or sparks away from cylinder, regulator, and gas hose.
- Use only acetylene or propane gas and oxygen with this equipment.
- Do not use acetylene above 15 psi (103 kPa) static.
- Check oxy-fuel system for leaks with an approved leak detection solution or leak detector.
- Remove all flammables within 35 ft (10.7 m) of the welding or cutting operation. If this is not possible, tightly cover them with approved covers.
- Do not weld or cut where flying sparks can strike flammable material.
- Protect yourself and others from flying sparks and hot metal.
- Be alert that welding and cutting sparks and hot materials from welding and cutting can easily go through small cracks and openings to adjacent areas.
- Watch for fire, and keep a fire extinguisher nearby.
- Be aware that welding or cutting on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.
- Do not weld or cut on closed containers such as tanks, drums, or pipes, unless they are properly prepared according to AWS F4.1 (see Safety Standards).
- Do not weld or cut where the atmosphere may contain flammable dust, gas, or liquid vapors (such as gasoline).
- Wear oil-free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.
- Remove any combustibles, such as a butane lighter or matches, from your person before doing any welding or cutting.
- After completion of work, inspect area to ensure it is free of sparks, glowing embers, and flames.
- Follow requirements in OSHA 1910.252 (a) (2) (iv) and NFPA 51B for hot work and have a fire watcher and extinguisher nearby.



### **BUILDUP OF GAS can injure or kill.**

- Shut off compressed gas supply when not in use.
- Always ventilate confined spaces or use approved air-supplied respirator.



### **CYLINDERS can explode if damaged.**

Compressed gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Since gas cylinders are normally part of the welding or cutting process, be sure to treat them carefully.

- Protect compressed gas cylinders from excessive heat, mechanical shocks, physical damage, slag, open flames, and sparks.
- Install cylinders in an upright position by securing to a stationary support or cylinder rack to prevent falling or tipping. Do not lay acetylene cylinders on their sides or acetone will flow out of the cylinder and damage the equipment.
- Keep cylinders away from any arc welding, cutting, or other electrical circuits.
- Never drape a welding or cutting torch over a gas cylinder.
- Never weld or cut on a pressurized cylinder – explosion will result.
- Use only correct compressed gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition. Do not use compressed gas cylinder unless an approved gas regulator is attached to the gas valve.
- Turn face away from valve outlet when opening cylinder valve. Do not stand in front of or behind the regulator when opening the valve.
- Keep protective cap in place over valve except when cylinder is in use or connected for use.
- Use the right equipment, correct procedures, and sufficient number of persons to lift and move cylinders.
- Store compressed gas and oxygen cylinders in separate locations.
- Do not modify or repair cylinders or valves. Store leaking acetylene cylinders outdoors in a safe area. Identify leaking cylinders and return them to the supplier.
- Read and follow instructions on compressed gas cylinders, associated equipment, and Compressed Gas Association (CGA) publication P-1 listed in Safety Standards.



### **LIGHT RAYS can burn eyes and skin.**

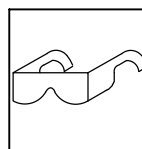
Light rays from the welding and cutting process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Sparks fly off from the weld.

- Wear approved face protection (helmet or shield) fitted with a proper shade of filter lenses to protect your face and eyes from light rays and sparks when welding, cutting, or watching (see ANSI Z49.1 and Z87.1 listed in Safety Standards).
- Wear approved safety glasses with side shields under your helmet.
- Use protective screens or barriers to protect others from flash, glare and sparks; warn others not to watch the welding or cutting.
- Wear protective clothing made from durable, flame-resistant material (leather, heavy cotton, or wool) and foot protection.



### **HOT PARTS can burn.**


- Do not touch hot parts bare handed.
- Allow cooling period before working on equipment.
- To handle hot parts, use proper tools and/or wear heavy, insulated welding gloves and clothing to prevent burns.




### **FLYING METAL or DIRT can injure eyes.**

- Welding, chipping, wire brushing, and grinding cause sparks and flying metal. As welds cool, they can throw off slag.
- Wear approved safety glasses with side shields even under your welding helmet.

## 1-4 California Proposition 65 Warnings

 **Welding or cutting equipment produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code Section 25249.5 et seq.)**

 **This product contains chemicals, including lead, known to the state of California to cause cancer, birth defects, or other reproductive harm. *Wash hands after use.***

## 1-5 Principal Safety Standards

*Safety in Welding, Cutting, and Allied Processes*, ANSI Standard Z49.1, from Global Engineering Documents (phone: 1-877-413-5184, website: [www.global.ihs.com](http://www.global.ihs.com)).

*Safe Practices for the Preparation of Containers and Piping for Welding and Cutting*, American Welding Society Standard AWS F4.1, from Global Engineering Documents (phone: 1-877-413-5184, website: [www.global.ihs.com](http://www.global.ihs.com)).

*Safe Handling of Compressed Gases in Cylinders*, CGA Pamphlet P-1, from Compressed Gas Association, 4221 Walney Road, 5th Floor, Chantilly, VA 20151 (phone: 703-788-2700, website: [www.cganet.com](http://www.cganet.com)).

*Safety in Welding, Cutting, and Allied Processes*, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 5060 Spectrum Way, Suite 100, Ontario, Canada L4W 5NS (phone: 800-463-6727, website: [www.csa-international.org](http://www.csa-international.org)).

*Safe Practice For Occupational And Educational Eye And Face Protection*, ANSI Standard Z87.1, from American National Standards Institute, 25 West 43rd Street, New York, NY 10036 (phone: 212-642-4900, web-

site: [www.ansi.org](http://www.ansi.org)).

*Standard for Fire Prevention During Welding, Cutting, and Other Hot Work*, NFPA Standard 51B, from National Fire Protection Association, Quincy, MA 02269 (phone: 1-800-344-3555, website: [www.nfpa.org](http://www.nfpa.org)).

OSHA, Occupational Safety and Health Standards for General Industry, Title 29, Code of Federal Regulations (CFR), Part 1910, Subpart Q, and Part 1926, Subpart J, from U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954 (phone: 1-866-512-1800) (there are 10 OSHA Regional Offices—phone for Region 5, Chicago, is 312-353-2220, website: [www.osha.gov](http://www.osha.gov)).

U.S. Consumer Product Safety Commission (CPSC), 4330 East West Highway, Bethesda, MD 20814 (phone: 301-504-7923, website: [www.cpsc.gov](http://www.cpsc.gov)).

*Applications Manual for the Revised NIOSH Lifting Equation*, The National Institute for Occupational Safety and Health (NIOSH), 1600 Clifton Rd, Atlanta, GA 30333 (phone: 1-800-232-4636, website: [www.cdc.gov/NIOSH](http://www.cdc.gov/NIOSH)).

# SECTION 2 – SPECIFICATIONS

## 2-1. Equipment Included With The Kit

**⚠ Use only acetylene or propane gas and oxygen with this equipment.**

**⚠ Flashback arrestor/check valves are factory installed on the torch handle. Do not remove these components.**

- 1 Grade T Oxy-Fuel Hose
- 2 Regulator – Fuel (Red)
- 3 Regulator – Oxygen (Green)
- 4 T-Handle (Two)
- 5 Cutting Attachment w/Tip
- 6 Welding (Brazing) Tip
- 7 Torch Handle

*☞ Torch handle is equipped with flashback arrestor/check valves.*

- 8 Tank Wrench
- 9 Spark Lighter
- 10 Tip Cleaner
- 11 Welding Goggles

## 2-2. Specifications

Description	Fuel Gas	Cutting Capacity	Welding Capacity	Eye Protection	Hoses	Warranty
Medium Duty Oxy-Fuel Cutting and Welding Equipment	Acetylene Propane (with Optional Propane Tips)	Cuts Materials to 1/2 in. (12 mm) Thickness with Supplied Tips  Cuts Materials to 6 in. (15 cm) Thickness with Optional Tips	Welds Materials to 3/32 in. (2.4 mm) Thickness with Supplied Tips  Welds Materials to 1-1/4 in. (32 mm) Thickness with Optional Tips	Oxy-Fuel Goggle Flip Front No. 5 Shade 2 x 4-1/4 in. (51 x 108 mm)	Type T 3/16 in. ID x 20 ft (4.8 mm x 6 m)	Two-Year Limited

## 2-3. Cutting Tip And Gas Pressure Guide

Cutting Tip Selection Guide			
Tip Size	Material Thickness	Fuel Gas Pressure	Oxygen Pressure
00	1/4 in. (6 mm)	3 – 5 psi (21 – 34 kPa)	20 – 25 psi (138 – 172 kPa)
0	1/2 in. (13 mm)	3 – 5 psi (21 – 34 kPa)	25 – 30 psi (172 – 207 kPa)
1	9/16 in. (14mm)	3 – 5 psi (21 – 34 kPa)	30 – 35 psi (207 – 241 kPa)
2	3/4 in. (19 mm)	3 – 6 psi (21 – 41 kPa)	35 – 40 psi (241 – 276 kPa)
3	1-1/2 in. (38 mm)	4 – 8 psi (28 – 55 kPa)	40 – 45 psi (276 – 310 kPa)

## 2-4. Welding (Brazing) Tip And Gas Pressure Guide

Welding (Brazing) Tip Selection Guide			
Tip Size	Material Thickness	Fuel Gas Pressure	Oxygen Pressure
000	28 – 22 Gauge	3 – 5 psi (21 – 34 kPa)	3 – 5 psi (21 – 34 kPa)
00	22 – 16 Gauge	3 – 5 psi (21 – 34 kPa)	3 – 5 psi (21 – 34 kPa)
0	16 – 14 Gauge	3 – 5 psi (21 – 34 kPa)	3 – 5 psi (21 – 34 kPa)
1	14 – 12 Gauge	4 – 6 psi (28 – 41 kPa)	3 – 5 psi (21 – 34 kPa)
2	12 – 10 Gauge	4 – 6 psi (28 – 41 kPa)	3 – 5 psi (21 – 34 kPa)
3	1 / 8 – 3/16 in. (3 – 5 mm)	5 – 7 psi (34 – 48 kPa)	3 – 5 psi (21 – 34 kPa)

# SECTION 3 – INSTALLATION

## 3-1. Installing Regulators On Cylinders



**⚠** Do not slightly open or “crack” fuel cylinder valve to blow debris from the valve outlet.

**⚠** Do not use petroleum-based pipe sealants.

**⚠** Use only acetylene or propane gas and oxygen with this equipment.

**ℹ** Brass to brass connections generally do not require pipe sealant.

- 1 Oxygen Regulator (Green Label)
- 2 Fuel Regulator (Red Label)

**ℹ** The hex nut on the fuel regulator has notches on the corners. The hex nut corners are smooth on the oxygen regulator.

Install the two-piece fitting of the oxygen regulator (green) on the corresponding fitting on the oxygen cylinder. The oxygen cylinder has right-hand (clockwise) threads. Use supplied wrench to tighten hex nut.

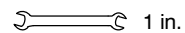
Install the two-piece fitting of the fuel regulator (red) on the fuel cylinder (acetylene or propane only). The fuel cylinder has left-hand (counterclockwise) threads. Use supplied wrench to tighten hex nut.

**ℹ** Contact the gas supplier if the regulator fittings do not match the cylinder fittings.

- 3 Working Pressure Gauge
- 4 Cylinder Pressure Gauge

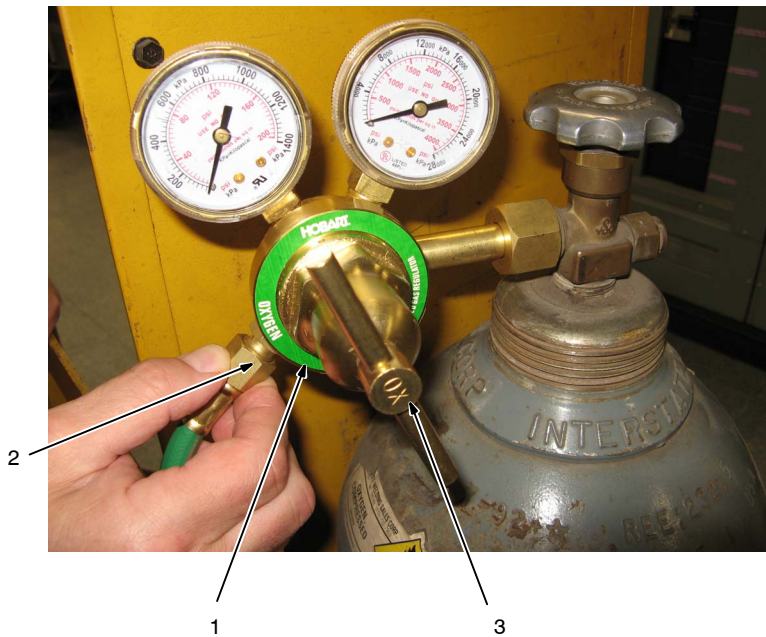
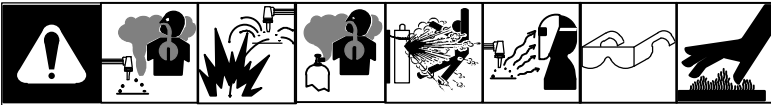
Each regulator has two gauges. The gauge closest to the cylinder shows the pressure in the cylinder. The other gauge shows the outlet pressure going to the torch handle.

Tools Needed:



Pipe Sealant

### 3-2. Installing Hoses On Regulators



**⚠ Use only industrial grade hose. Grade T hose (supplied with kit) is acceptable for all fuel gases. Grade R hose is for acetylene only.**

- 1 Regulator
- 2 Hose
- 3 Adjustment Handle

Connect green hose to the regulator on the oxygen cylinder. Connect red hose to the regulator on the fuel gas cylinder.

**ℹ** The fuel fittings have left-handed threads.

Use supplied wrench to tighten fittings.

**NOTICE** – Before opening the cylinder valves, turn regulator adjusting screws all the way out to release pressure on the regulator diaphragm. Pressure may damage the regulators.

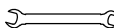
Stand with the oxygen cylinder valve between you and the regulator. Slowly open the oxygen cylinder valve 1/4 turn until the tank pressure stabilizes, then fully open the oxygen valve to seat it in the open position.

Tighten the adjustment handle (on the regulator adjustment screw) to bring the pressure up to 5 psi (34 kPa). Allow oxygen to flow through hose for about 10 seconds. Stop oxygen flow by turning adjustment handle counterclockwise.

Stand with the fuel cylinder valve between you and the regulator. Slowly open the fuel cylinder valve 1/4 turn until the tank pressure stabilizes, then open the fuel valve to a maximum of one full turn (acetylene) or fully open (all other fuel gases). Leave wrench on cylinder so cylinder can be shut off quickly.

Tighten the adjustment handle (on the regulator adjustment screw) to bring the pressure up to 5 psi (34 kPa). Allow fuel gas to flow through hose for about 10 seconds. Stop fuel gas flow by turning adjustment handle counterclockwise.

Tools Needed:

 11/16 in.

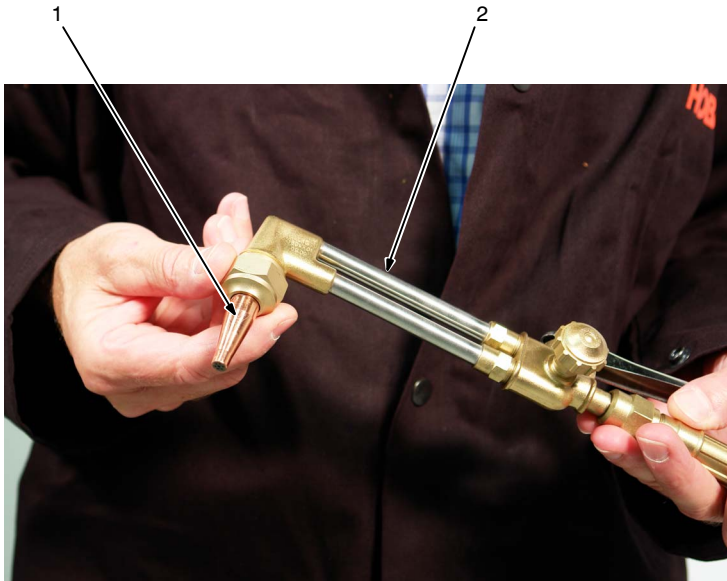


Pipe Sealant





### 3-5. Installing Cutting Tip On Cutting Attachment



**⚠ Do not use petroleum-based pipe sealants.**

Cutting tips are available in different sizes to accommodate various metal thicknesses. Use the table in Section 2-3 to select the correct tip, and to determine the correct fuel and oxygen pressures.

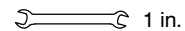
**☞** A No. 0 cutting tip is already installed in the cutting attachment.

- 1 Cutting Tip
- 2 Cutting Attachment

Install correct cutting tip in cutting attachment.

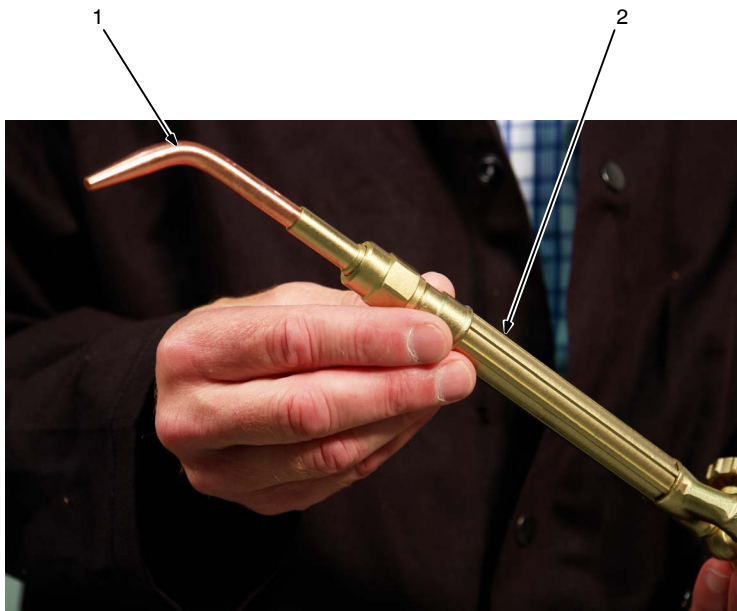
Use supplied wrench to tighten connections.

Tools Needed:



Pipe Sealant

### 3-6. Attaching Welding/Brazing Tip To Torch Handle



**⚠ Do not use petroleum-based pipe sealants.**

Welding/brazing tips are available in different sizes to accommodate various metal thicknesses. Use the table in Section 2-3 to select the correct tip, and to determine the correct fuel and oxygen pressures.

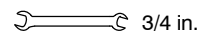
**☞** A No. 0 welding/brazing tip with mixer is supplied with the kit.

- 1 Welding/Brazing Tip With Mixer
- 2 Torch Handle

Attach welding/brazing tip to torch handle.

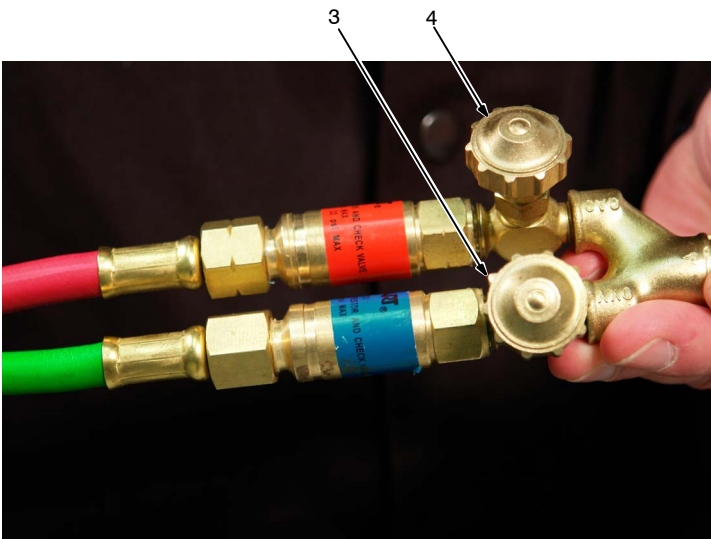
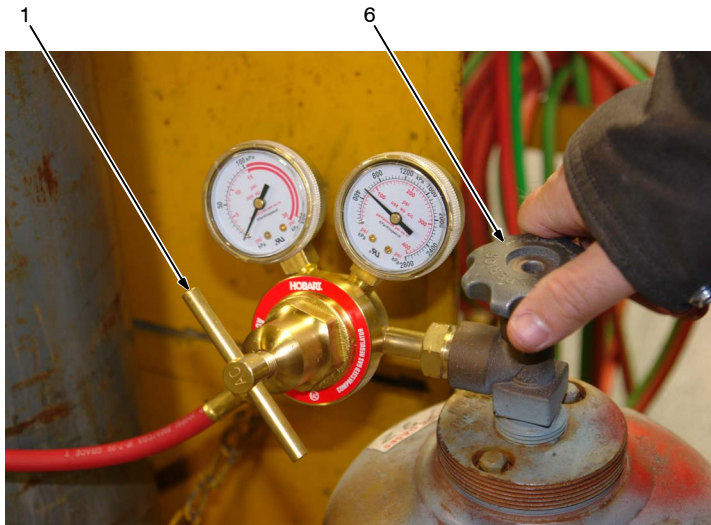
Use supplied wrench to tighten connections.

Tools Needed:



Pipe Sealant

### 3-7. Leak Testing The System



**⚠** Leak test the system before lighting the torch. Repeat this procedure every time the equipment is set up or a cylinder is changed.

- 1 Fuel Regulator Adjustment Handle
- 2 Oxygen Regulator Adjustment Handle
- 3 Torch Handle Fuel Valve
- 4 Torch Handle Oxygen Valve
- 5 Oxygen Cylinder Valve
- 6 Fuel Cylinder Valve

Turn the fuel and oxygen regulator adjustment handles to the Off position (counterclockwise).

Close the fuel and oxygen valves on the torch handle.

Slowly open the oxygen cylinder valve one turn and adjust pressure to 20 psi (138 kPa) by turning adjustment handle clockwise.

Slowly open the fuel cylinder valve and adjust pressure to 10 psi (69 kPa).

Using an approved leak detection solution or leak detector, check every connection from the cylinder valve to the torch tip. Correct all leaks before using equipment.

Close cylinder valves.

Tools Needed:

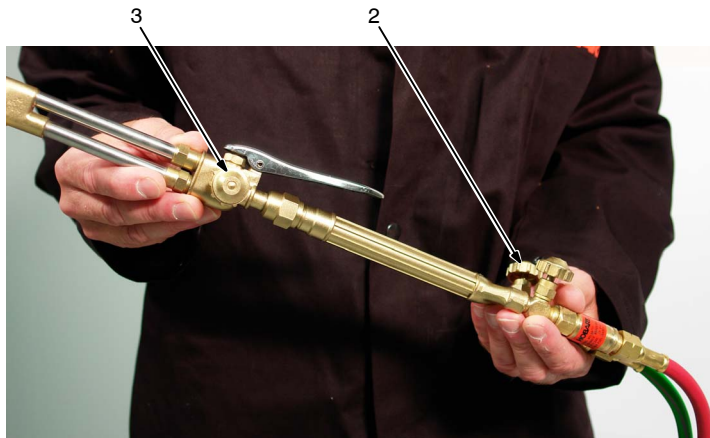
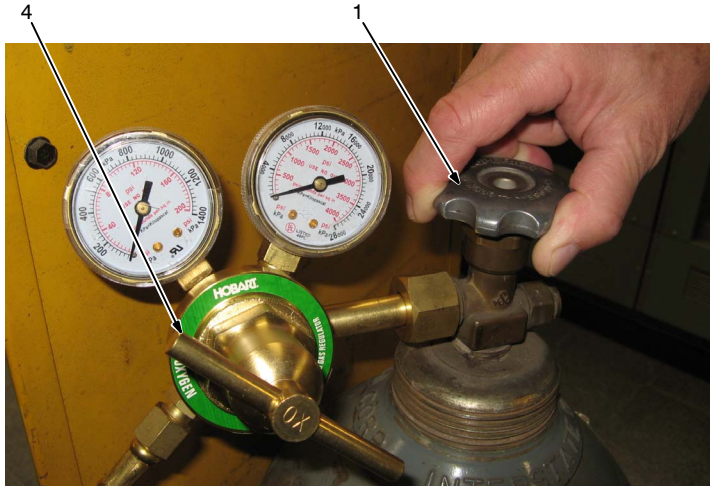
 11/16, 3/4, 1 in.



Pipe Sealant

# SECTION 4 – OPERATION

## 4-1. Purging Oxygen From The System And Adjusting Oxygen Pressure



**⚠** Always purge gas from the system before lighting the torch.

**ℹ** Purging the system is necessary to remove mixed gas from the equipment.

**ℹ** See Sections 2-3 and 2-4 for oxygen and fuel pressure recommendations.

### Purging Oxygen And Setting Pressure

- 1 Oxygen Cylinder Valve
- 2 Torch Handle Oxygen Valve
- 3 Preheat Oxygen Valve
- 4 Oxygen Regulator Adjustment Handle

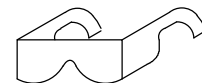
Slowly open the oxygen cylinder valve until valve is fully open.

Open oxygen valve on torch 1/4 turn for five to ten seconds. (If using welding attachment, also open preheat oxygen valve.) While the oxygen is flowing, turn the adjustment handle on the oxygen regulator to achieve the desired working pressure.

Close the oxygen valve and the preheat oxygen valve on the torch handle.

Purge fuel from the system and adjust fuel pressure according to Section 4-2.

Tools Needed:



## 4-2. Purging Fuel From The System And Adjusting Fuel Pressure



**⚠ Always purge gas from the system before lighting the torch.**

**☞ Purging the system is necessary to remove mixed gas from the equipment.**

**☞ See Sections 2-3 and 2-4 for oxygen and fuel pressure recommendations.**

**☞ Purge oxygen from the system according to Section 4-1.**

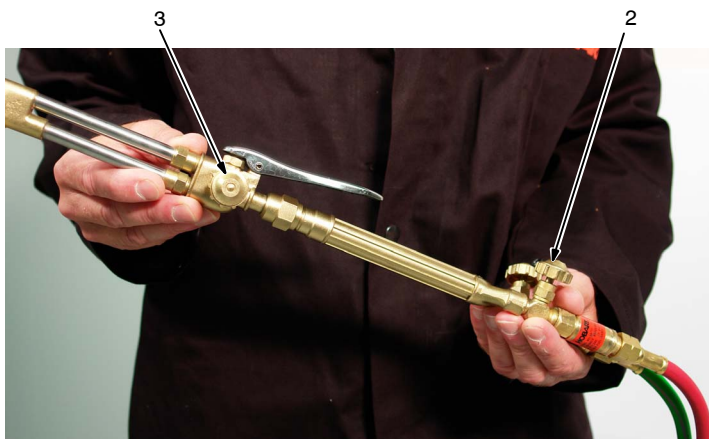
### **Purging Fuel And Setting Fuel Pressure**

- 1 Fuel Cylinder Valve
- 2 Torch Handle Fuel Valve
- 3 Preheat Oxygen Valve
- 4 Fuel Regulator Adjustment Handle

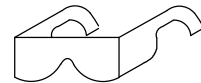
Slowly open the fuel cylinder valve one turn maximum (for acetylene). Fully open fuel cylinder valve for all other fuel gases.

Open fuel valve on torch 1/4 turn for five to ten seconds. (If using welding attachment, also open preheat oxygen valve.) While the fuel is flowing, turn the adjustment handle on the fuel regulator to achieve the desired working pressure.

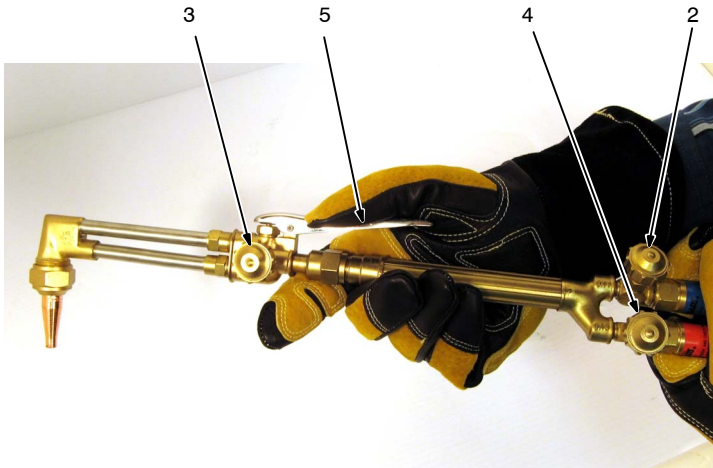
Close the fuel valve and the preheat oxygen valve on the torch handle.



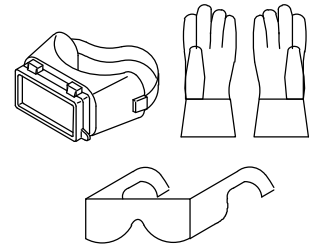
Tools Needed:



## 4-3. Lighting And Using The Cutting Torch



### Tools Needed:



**⚠ Always purge gas from the system before lighting torch. See Sections 4-1 and 4-2.**

☞ See Sections 2-3 and 2-4 for oxygen and fuel pressure recommendations.

☞ See Sections 4-1 and 4-2 for information on adjusting oxygen and fuel pressure.

- 1 Spark Lighter
- 2 Oxygen Valve
- 3 Preheat Oxygen Valve
- 4 Fuel Valve
- 5 Cutting Lever

### Lighting The Torch

Hold the spark lighter near the torch tip.

Slowly open the fuel valve on the torch handle 1/4 turn and quickly squeeze the spark lighter to light the flame.

Slowly open the oxygen valve on the torch to the desired pressure.

Continue to open the fuel valve until the black sooty smoke disappears and the flame begins to move away from the tip. Slowly open the preheat oxygen valve on the cutting attachment; a white-hot feather (flame) appears.

Slowly add oxygen until the feather begins to disappear into the bright cone at the end of the tip. This produces a neutral flame (ratio of fuel to oxygen is 1:1).

### Using The Cutting Torch

Hold the torch tip about 1/4 in. (6 mm) from the metal to be cut.

Heat the metal until it is bright red (about 1550° F or 843° C).

Slowly depress the cutting lever on the cutting attachment. Let the oxygen stream burn through the metal, then completely depress the lever to begin the cutting process.

### When Finished Cutting

**NOTICE** – Shut down the torch in the correct sequence or the torch may be damaged. Oxygen must be released from the

system first or residual fuel in the handle or fuel hose may burn. Fuel cannot burn without oxygen.

When finished cutting, release the cutting lever. Close the oxygen preheat valve on the torch handle first and then close the fuel valve on the torch handle.

Close valves at fuel and oxygen cylinders.

Open the fuel valve on the torch handle to relieve pressure; both gauges on the fuel regulator should show no pressure. Close the fuel valve on the torch handle.

Turn fuel regulator adjustment handle counterclockwise until there is no pressure on the regulator diaphragm.

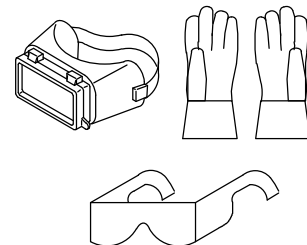
Open the preheat oxygen valve on the torch handle to relieve pressure; both gauges on the oxygen regulator should show no pressure. Close the preheat oxygen valve and oxygen valve on the torch handle.

Turn oxygen regulator adjustment handle counterclockwise until there is no pressure on the regulator diaphragm.

## 4-4. Lighting And Using The Brazing Tip



### Tools Needed:



**⚠ Always purge gas from the system before lighting torch. See Sections 4-1 and 4-2.**

**⚠ Do not allow the flame to touch the brazing tip or allow the brazing tip to overheat.**

☞ See Sections 2-3 and 2-4 for oxygen and fuel pressure recommendations.

☞ See Sections 4-1 and 4-2 for information on adjusting oxygen and fuel pressure.

- 1 Spark Lighter
- 2 Oxygen Valve
- 3 Fuel Valve

### Lighting The Torch

Hold the spark lighter near the torch tip.  
Slowly open the fuel valve on the torch

handle about 1/8 turn and quickly squeeze the spark lighter to light the flame.

Slowly open the oxygen valve on the torch to neutralize the flame.

Open the fuel valve on the torch handle another 1/8 turn and then increase the oxygen to neutralize the flame.

Continue this procedure until the maximum amount of fuel gas is used and the desired flame is present.

### When Finished Welding/Brazing

**NOTICE** – Shut down torch in correct sequence or the torch may be damaged. Oxygen must be released from the system first or residual fuel in the handle or fuel hose may burn. Fuel cannot burn without oxygen.

When finished welding/brazing, close the oxygen valve on the torch handle first and

then close the fuel valve on the torch handle.

Close valves at fuel and oxygen cylinders.

Open the fuel valve on the torch handle to relieve pressure; both gauges on the fuel regulator should show no pressure. Close the fuel valve on the torch handle.

Turn fuel regulator adjustment handle counterclockwise until there is no pressure on the regulator diaphragm.

Open the oxygen valve on the torch handle to relieve pressure; both gauges on the oxygen regulator should show no pressure. Close the oxygen valve on the torch handle.

Turn oxygen regulator adjustment handle counterclockwise until there is no pressure on the regulator diaphragm.

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