



# Machine Cutting Torches Series 4700

## INSTRUCTIONS

Before Installing, Operating or Servicing Read and Comply With These Instructions



This symbol on the product  
means the product is listed by  
Underwriters Laboratories, Inc.

**October 2000**  
Supersedes July 1997

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## USER RESPONSIBILITY

This equipment will perform in conformity with the description thereof contained in this manual and accompanying labels and/or inserts when installed, operated maintained in accordance with the instructions provided. This equipment must be checked periodically. Defective equipment should not be used. Parts that are broken, missing, plainly worn, distorted or contaminated, should be replaced immediately. Should such repair or replacement become necessary, Controls Corporation of America (CONCOA) recommends that a telephonic or written request for service advice be made to the CONCOA Warranty Administrator in Virginia Beach, Virginia.

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

## CAUTION

**Protect yourself and others. Read and understand this warning. FUMES AND GASES can be dangerous to your health. HEAT RAYS (INFRARED RADIATION from flame or hot metal) can injure eyes.**

- a. Read and understand the instructions in this manual, and your employer's safety practices.
- b. Keep your head out of the fumes.
- c. Use enough ventilation, exhaust at the flame, or both, to keep fumes and gases from your breathing zone and the general area.
- d. Wear correct eye, ear and body protections.
- e. See American National Standard Z49.1, *Safety in Welding and Cutting*, latest edition. Published by the American Welding Society, P. O. Box 351040, Miami, FL 33135; OSHA Safety and Health Standard, 29 CFR 1910, available from U.S. Government Printing Office, Washington DC 20402, and the references below.

## SAFETY

- a. AWS publication C4.2-78 *Operator's Manual for OxyFuel Gas Cutting*, available from AWS
- b. NFPA Pamphlet 50-B *Cutting and Welding Processes*, available from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02210
- c. Keep equipment clean, in good condition and free of oil, grease and other combustibles.
- d. Check cylinder, valves, regulators, hoses, and torch connections regularly (see leak test instructions in Section II) to insure freedom from leaks.
- e. "Crack" oxygen cylinder valves before attaching regulators.
- f. Drain gas from regulators before opening cylinder valves.

- g. Open cylinder valves slowly.
- h. Purge oxygen and fuel lines individually before lighting torch. CAUTION: Never purge toward flames, lit cigarettes or other sources of ignition. Do not discharge fuel gas or oxygen toward people, clothing or other combustibles.
- i. Keep combustibles out of reach of heat, flames and sparks.
- j. Before inserting cutting tip in torch, check tip and torch head seat surfaces for dirt or damage that may cause leaks.
- k. Because of sparks and radiation from the flame, wear safety goggles with filter lenses of shade shown in the following table:

Oxygen Cutting	In.	MM	Shade No.
Light	Under 1	Under 25	3 or 4
Medium	1 to 6	25 to 150	4 or 5
Heavy	Over 6	Over 150	5 or 6

## I. INTRODUCTION

**1.1. Scope.** This manual provides installation, operation, and service information for the standard Series 4700 Machine Cutting Torches. Additional information covering cutting machine regulators and cutting tips with which the torches are used, is found in manuals for this equipment. All manuals should be read completely before commencing operation.

**1.2. Description.** The 4700 Series torches are designed for machine cutting with natural gas, propane, acetylene, MAPP® gas or propylene. They're called tip-mixing torches because preheat gases mix in the tip. The torches are available in 2-hose and 3-hose models (see table on following page). All style 4700 torches have B-size hose connection fittings.

**1.3. Cutting Tips.** Tips are available from your authorized distributor. The 4700 torches can be used with a variety of cutting tips, including light preheat, heavy preheat, and special applications. Your distributor can help you select the right tip for each application. Cutting Tip Guides contain additional tip operating data.

**1.4. Optional.** Check valves prevent the reverse flow of mixed gas. Regulator Check Valve 'B' size: 830-4199 (Oxy), 830-4200 (Fuel) Torch Check Valves 'B' size: 831-4146 (Oxy), 831-4138 (Fuel). Automatic flashback arrestors quench flashbacks, prevent backfeeding and cut off gas supply if excessive temperature occurs in the arrestor.

### FOR MAXIMUM SAFETY USE FLASHBACK ARRESTORS

Regulator Mounted  
Model 78 Resettable  
801-0786 'B' Size (Oxy)  
801-0789 'B' Size (Fuel)

Regulator Mounted  
Model 53  
801-0536 'B' Size (Oxy)  
801-0539 'B' Size (Fuel)

Torch Mounted  
Model 460  
801-1466 'B' Size (Oxy)  
801-1469 'B' Size (Fuel)

UL Listed

Meets OSHA Requirements

Comply with ISO 5175

**I.4.1. Accessories.** Various accessories are available to make the Series 4700 torch more versatile. These include adjustable bevel adapter, preheat adapter and duplex tip holders. See pages 8 and 9 for stock numbers and descriptions.

**II. INSTALLATION**

Style 4700 torches have a height adjustment rack which is front-mounted as shipped. It may be removed or rotated to fit varying installations. Two screws hold the rack to the barrel. Four screws at the barrel ends allow rotation of the barrel to any four positions. Install torch in holder, attach hoses and wrench tighten hose connection nuts. Test all connections, valves and regulators for leaks at working pressure by brushing with an approved leak detecting solution.

The table below shows the minimum clearance and maximum reach for each torch. Minimum reach is 3/4 inch for all torches.

Torch Operating Dimensions

Inlet Type	Stock No. 823-1823	Effective Racking Length		Torch Length		Maximum Reach		Minimum Clearance	
		In	Cm.	In.	Cm.	In.	Cm.	In.	Cm.
		TIP MIX Style 4700							
2-Hose	4700	5	12.7	13 7/8	35.2	8 1/4	21.0	17 1/2	44.5
2-Hose	4701	10	25.4	18 7/8	47.9	13 1/4	33.7	22 1/2	57.2
3-Hose	4781	9 3/4	24.8	18 3/4	47.6	13	33.0	22 3/8	56.8
3-Hose	4783	15 3/4	40.0	24 3/4	62.9	19	48.3	28 3/8	72.1

**III. OPERATION**

Comply with all precautions in the SAFETY section at the front of this manual.

**III.1. Lighting and Flame Adjustment.**

NOTE

Prior to lighting torches, make sure you have on hand a properly operating spark lighter.

- a. With torch valves closed, open gas supply valves and set regulators to pressures listed in Cutting Tip Guides.

- b. Purge gas lines, one at a time by opening the torch valve, allowing gas to flow for several seconds to flush all possible combustible mixtures, and then close the torch valve. (See SAFETY section, item F and Cutting Tip Guides.)
- c. **Torches using acetylene as the fuel gas:**
  1. Open fuel gas valve 1/8 to 1/4 turn.
  2. Ignite the fuel gas with an approved lighter.
  3. Open fuel valve slowly until a stable flame is maintained at the end of the tip.
  4. Open the oxygen preheat valve slowly to obtain a neutral flame.
- d. **Torches using other fuel gases:**
  1. Open fuel gas valve slightly.
  2. Open preheat oxygen valve slightly.
  3. Ignite the gases with an approved lighter.
- e. Adjust the fuel and preheat-oxygen valves to produce the desired flame. If flames are too intense and cause excessive meltdown on the top edge of the cut, reduce the flame. If flames are inadequate and cause lost cuts, increase flame. In general the flame cones should be located just above the work surface.

#### **NOTE**

On two-hose style torches, preheat flames should be adjusted with cutting oxygen flowing: otherwise preheat oxygen may be insufficient when cutting oxygen is turned on. On all style torches, keep torch valves as nearly wide-open as possible and make the flame adjustments with regulators.

- f. Open cutting oxygen valve and adjust cutting oxygen pressure if necessary.

### **III.2. Temporary Shutdown**

On each torch:

- a. Close the cutting oxygen valve.
- b. Close the preheat oxygen valve.
- c. Close the fuel valve.

### **III.3. Extended Shutdown**

Before leaving the equipment unattended and when shutting down for extended periods, such as overnight:

- a. Close torch valves.
- b. Close oxygen and fuel supply valves.
- c. Open torch oxygen valve and drain line. Release oxygen regulator adjusting screw. Close torch oxygen valves.
- d. Open torch fuel valve and drain line. Release fuel regulator adjusting screw. Close torch fuel valve.

## **IV. SERVICE**

### **IV.1. GENERAL**

#### **IMPORTANT**

Repairs to torches require special tools, techniques and tests, and should be done only by trained personnel in properly equipped facilities. In general, torches should be repaired only at an authorized CONCOA repair stations. DO NOT attempt to repair torches unless you are properly qualified

## IV.2. SERVICE PROCEDURE

A unit which is not functioning properly should not be used until all required repairs have been completed and the unit has been tested to ascertain that it is in proper operating condition.

Gas equipment improperly operated or maintained can be hazardous.

### CAUTION

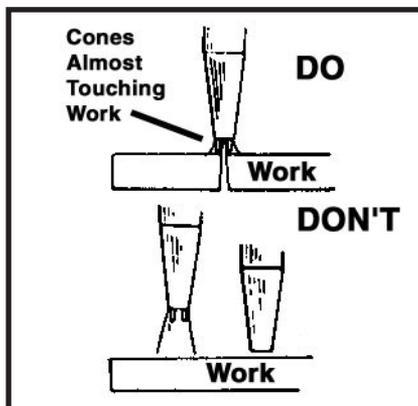
**No such maintenance or repair should ever be undertaken or attempted by anyone not having such qualifications.**

Except for inspection and troubleshooting as indicated in this manual, it is recommended that all other servicing be done by a service facility authorized by CONCOA. Contact the CONCOA Authorized Distributor from who you purchased the regulator or the nearest CONCOA Regional Sales Office for assistance.

If so advised, the unit should be sent to a service facility authorized by CONCOA, adequately packaged, in the original shipping container, if possible, and shipped prepaid with a statement of observed deficiency. Return trip transportation charges are to be paid by Buyer. In all cases other than where warranty is applicable, repairs will be made at current list price for the replacement part(s) plus a reasonable labor charge.

## IV.3. CUSTOMER SERVICE

In the event of equipment failure, contact CONCOA Customer Service: 1-757-422-3125 or toll-free in the US and Canada 1-800-225-0473, FAX 1-757-422-3125, or via E-MAIL at e-mail@concoa.com. Please be prepared to provide the model number and serial number of the equipment involved and details regarding its application.



*Tip-to-Work Height*

## ACCESSORIES

Stock No. 831-2100  
Adjustable Angular Torch Head

Adjustable Angular Torch heads permit bevel and straight line cutting without the



need to angle the torch. Total angular adjustment on either side of the vertical plane is 125°. The additional 35° from the horizontal enables cutting from below the work level when necessary. Indexing marks of 5° increments are forged in the face of the adapter body to facilitate adjustment at any required degree. Tip sizes up to number 6 can be used with this attachment.

Stock No. 813-4404  
Preheat Beveling Adapter -Stinger® Style

When a cutting torch is used for bevel cutting, the glancing angle at which preheat



flames strike the work causes considerable loss of heat input efficiency. To offset this loss of heat, a Preheat Bevel Adapter is recommended. **Adapters are only for propane or natural gas. Not for use with acetylene, MAPP or propylene.**

The adapter is not supplied with a cutting tip insert. Tip inserts for the proper bevel widths must be order as required.

813 4404 - CONCOA Stinger Style Bevel Adapter					
Style 275			Style 375		
Propane and Natural Gas Straight Bore Tips			Propane and Natural Gas Divergent Type Tips		
Bevel Cut Thickness (Inches)	Tip No.	Insert Stock No.	Bevel Cut Thickness (Inches)	Tip No.	Insert Stock No.
3/16	00	813 2720	3/8	0	813 3760
1/4 - 3/8	0	813 2760	5/8 - 1/2	1	813 3761
1/2	1	813 2761	1	2	813 3762
1	2	813 2762	1 1/2	3	813 3763
1 1/2	3	813 2763	2 1/2	4	813 3764
2 1/2	4	813 2764			

## Tip Selection

Acetylene	
Style	Description
45	High Speed Machine Cutting Straight Line Cutting - Trimming General Purpose Cutting - Light Preheat General Purpose Contour - Light Preheat General Purpose Cutting - Heavy Preheat
119	
124	
138	
144	
164	
MAPP/Propylene	
245	General Purpose Hand or Machine Cutting High Speed Machine Cutting
345	
Natural Gas/Propane	
275	General Purpose Hand or Machine Cutting High Speed Machine Cutting
375	

Stock No. 831-2925  
 Duplex Tip Holders



The Adjustable Duplex Tip Holder permits 2 parallel cuts to be made simultaneously with one CONCOA cutting torch. Easily adjusted to cut metal strips between 1 ¼" and 12 " wide (3.2 and 30.5 cm), it can be used for work to 3" (7.6 cm) plate thickness.

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## Warranty Information

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

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

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

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

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



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