INSTRUCTIONS for

C-57-R CUTTING TORCH

Cutting Range using acetylene .......... 1/8" - 12" (3 - 300 mm)
Cutting Range using other fuel gases .... 1/8" - 4" (3 - 100 mm)
Cutting Nozzles .................................. 1500 series
Torch-Hose Connections ........ ORS-B-size (41/64" - 18 fem.)
Torch Overall Length .......................21-in. (532 mm)
Weight ............................................... 4-lbs. (1.8 kg)

--- CAUTION ---

These INSTRUCTIONS are for experienced operators. If you are not fully familiar with the principles of operation and safe practices for oxy-fuel gas equipment, we urge you to read ESAB’s free booklet "Precautions and Safe Practices for Welding, Cutting and Heating", Form 2035. Do NOT permit untrained persons to install, operate or maintain this equipment. Do NOT attempt to install or operate this equipment until you have read and fully understand these instructions. If you do not fully understand these Instructions, contact your supplier for further information.

The cutting torch covered by these instructions are listed by Underwriter’s Laboratories only when used in combination with cutting nozzles and parts manufactured by ESAB Welding and Cutting Products to the specifications on file with Underwriter’s Laboratories, Inc., and when they are used in the gas service for which they are designed and listed. The use of other cutting nozzles and parts that cause damage or failure to the equipment will void the manufacturer's warranty.

OPERATION INSTRUCTIONS

CONNECTING

1. Attach regulators to the oxygen and fuel gas cylinders. Follow all instructions supplied with the regulators.
2. Attach oxygen and fuel gas hoses to the regulators and to the torch, after making sure all metal seating surfaces are clean. Tighten all connection nuts with a wrench.
3. Attach nozzle to torch head, and tighten connection nut with a wrench.
4. Check valve packing nuts for tightness.

ADJUSTING GAS PRESSURES

Low-Pressure Fuel Gas: Be sure the torch fuel gas valve is closed. Open the supply valve.

Medium-Pressure Fuel Gas: Open the fuel gas valve about one turn. Turn in the pressure-adjusting screw on the fuel gas regulator until its delivery-pressure gauge registers the desired pressure (see cutting chart on page 4). Then immediately close the fuel gas valve.

Oxygen: Open the cutting oxygen valve by depressing its valve lever fully. Turn in the pressure-adjusting screw on the oxygen regulator until its delivery-pressure gauge registers the desired pressure (see cutting chart on page 4). Then release the cutting oxygen lever.

NOTE: When gaugeless regulators are used, do not open torch valves. Merely turn in the pressure-adjusting screws to the desired pressures as indicated on the scales of regulator caps.

TESTING FOR LEAKS

Every cutting outfit should be thoroughly tested for leaks after it is first hooked up, and at regular intervals thereafter. After all connections have been made, make sure all valves on the torch are closed. Then turn in the regulator pressure-adjusting screws until the oxygen delivery-pressure gauge registers 60 psi and the fuel gas delivery-pressure gauge registers 10 psi. Using Leak Test Solution suitable for oxygen service, such as P/N 998771 (8 oz. container), check for leaks at the cylinder valves, the cylinder-to-hose connections, and the hose-to-torch connection. If this does not stop the leakage, close the appropriate cylinder valve, open the corresponding torch valve to remove all pressure from the line, and finally release the regulator pressure-adjusting screw by turning it counterclockwise. Then break the leaky connection, wipe metal seating surfaces with a clean, dry cloth, and examine them for nicks and scratches. Remake the connection(s) and retest. Do not try to light the torch until you are satisfied that all connections are gas-tight.

After lighting the torch and adjusting the flames, use leak test solution to check the leakage at all torch valves and at the nozzle nut.

Be sure this information reaches the operator. You can get extra copies through your supplier.
LIGHTING AND FLAME ADJUSTMENT

1. Open the preheat oxygen valve on the torch about two turns.
2. Open the fuel gas valve on the torch about 1/8 turn (about two turns if using low pressure fuel gas) and light the gas at the nozzle with a friction lighter. DO NOT USE A MATCH. Use of a match could seriously burn your hand.
3. If using acetylene, open the fuel gas valve until preheat flames leave the end of the nozzle and then close just enough to open cutting oxygen valve and then readjust the preheat flames to the shortest length by opening the preheat oxygen valve gradually.

The above procedure usually provides adequate preheat for the nozzle in use. If desiring to change the preheat flames, always hold the cutting oxygen valve open while readjusting the preheat oxygen and fuel gas valves.

SHUTTING OFF

Release the cutting oxygen valve lever. Then close the fuel gas valve, and finally the preheat oxygen valve.

If operations are to be released from the torch, hoses, and regulators by doing the following:

1. Close each cylinder or station valve.
2. Open torch valves.
3. After relieving the gases, back out the pressure adjusting screw of each regulator and close the torch valves.

OPERATING PRECAUTIONS

Backfire: Improper operation of the torch may cause the flames to go out with a loud ‘pop’. Such a backfire may be caused by contact of nozzle with the work, by the use of incorrect gas pressures, or by leakage at the cutting nozzle seats due to dirt or nicks on seats or to a loose nozzle nut.

Flashback: Under certain exceptional circumstances, the flame may not ‘pop’ out (backfire) but instead burn back inside the torch with a shrill hissing or squeal. This is called a ‘flashback’. A flashback should never occur if (1) the equipment is in good condition; (2) preheat ports on cutting nozzles or welding tips are cleaned frequently; and (3) operating pressures are correct. Should a flashback occur, IMMEDIATELY shut off the torch. Allow it to cool off for at least a minute. Then check your nozzle or tip, gas pressures, readjust regulators if necessary, and relight the torch. If flashback recurs, send the cutting torch with nozzle to your distributor for repair.

MAINTENANCE INSTRUCTIONS

For all repairs other than those covered below, send the apparatus to your welding equipment distributor. Improperly repaired apparatus is hazardous. Parts shown in the illustration on page 3 that require brazing operation are provided for experienced and qualified persons engaged in the repair of this apparatus.

Preheat Valves: Leakage around either valve stem can usually be corrected by tightening the packing nut slightly.

If either preheat valve fails to shut off completely, remove the valve stem assembly from the torch. With a clean cloth, wipe the ball in the end of the stem. Then reinsert valve stem assembly. If then the valve does not shut off completely, send the torch to a repair station for reseating of the body.

After installing a new valve stem assembly, tighten the packing nut until the valve stem can be turned only with great difficulty, and set the unit aside, for three or four hours at least, to set the packing. Then back off the packing nut until the valve stem turns readily.

Cutting Valve Leakage: If leakage develops in the cutting valve, replace cutting valve seat (32Z01).

To Replace Cutting Valve Seat

1. Remove (4) four screws (6110-1849) from the handle (4689) and slide the handle forward as far as possible. Remove the thumb piece (3634) from the lever (923640) and the pusherpin (923634) from the pusher rod guide (923635).
2. Mark the location of the pusher rod guide on the cutting oxygen tube (923633). Loosen the two set screws (6133-0907) on the pusher rod guide and slide the guide forward as far as possible.
3. Using a spanner wrench (5190125) remove the cutting valve assembly by unscrewing the lockscREW (57K02). Replace both 0-rings (85W11 and 14K07) and the seat (32Z01).
4. Replace the cutting valve assembly back in the torch and tighten the lockscREW with the spanner wrench.
5. Locate the pusher rod guide on the markers made previously, tighten the two set screws and replace the pusher pin in the guide.
6. Slide the handle back and replace the thumb piece on the lever. Locate the handle over the four screw holes and replace the screws.

Cleaning the Injector:

1. Remove the mixing chamber plug (35Z60 and the injector locking screw (35Z59) from the mixer body (21Z74).
2. If gentle tapping of the mixer body does not cause the injector to fall out, screw a No. 10-32 machine screw into the end of the injector and pull it out.
3. Clean the recess in the mixer body with a clean cloth.
4. Clean the injector orifice with a No. 70 drill, wipe with a clean cloth.
5. Examine the injector carefully. If it is nicked or marred, on the seating surface, replace it with a new injector.
6. Insert the injector into the mixer body, and lock it securely in place with locking ring.
7. Replace O-ring if necessary, and then install the mixer chamber plug. Tighten plug firmly with a screwdriver.

Cleaning Cutting Nozzles: If the cutting nozzle does not produce straight, uniform flames, or if any of the nozzle orifices become clogged, clean them by hand with the correct size twist drills shown in the table on page 4, or with ESAB tip cleaners. (The relationship between ESAB tip cleaners and drill sizes is shown on the tip cleaner case.)

For longer life, nozzles should be cleaned periodically in a solution of OXWELD nozzle cleaning compound (Part No. 761F00) made up and used as directed on the jar in which it is packed.

PARTS INFORMATION

All parts including those that require brazing by a trained repairman are illustrated and listed below. When ordering parts, please give both part number and description (including size where appropriate). Parts may be ordered from your welding equipment distributor or from ESAB Welding and Cutting Products, Customer Service Department, Florence, SC.

C-57-R Cutting Torch (75° head) w/ORS "B" -size hose fittings (illustrated) (Ser. A) .................. P/N 02X32
C-57 Cutting Torch (75° head) w/Std. "B" -size hose fittings (Ser. A) ................................. P/N 602527
GENERAL NOTES:
1. Pressures given are measured at the torch; therefore, pressure drop through hose should be considered when setting pressure at the regulator. Generally, 1/4-in. hoses up to 25-ft. long are adequate for cutting steel up to 4-in. thick. If longer hoses are required and if cutting thicker steel, 3/8-in. hoses should be used. If using low-pressure fuel gas, 3/8-in. fuel gas hose should be used for all cutting operations.
2. The tables shown average values based on typical conditions. The type and quality of steel, its surface condition, the purity of oxygen, etc. will always have a bearing on the end results.

NOTE: If using the C-57-R for fuel gases other than acetylene, see your ESAB representative.

**Acetylene Cutting Nozzles**

<table>
<thead>
<tr>
<th>Size</th>
<th>Part No.</th>
<th>Thickness, in.</th>
<th>Steel Thickness, mm</th>
<th>Gas Pressure, psig</th>
<th>Gas Consumption, ft³/hr</th>
<th>Cleaning Drill Size</th>
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<td>Oxygen</td>
<td>Acetylene</td>
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**1502 Series (Medium Preheat)**

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<th>Gas Pressure, psig</th>
<th>Gas Consumption, ft³/hr</th>
<th>Cleaning Drill Size</th>
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*Not recommended for low-pressure acetylene.

**1511 Series Gouging Nozzles**

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**1507 Series Rivet Washing Nozzles**

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*The cutting oxygen throat diameter is 0.055-in. on P/N 08Z90 and 0.125-in. on P/N 66Z40.

ESAB Welding & Cutting Products
PO Box 10045, Florence SC 29501-9435

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