

ACETYLENE TORCHES

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1. GENERAL

- 1.01 This section describes acetylene torches and associated equipment used in cable splicing and maintenance, and outlines the precautions that should be followed in using and handling the torches and equipment.
- 1.02 This section is reissued to revise testing procedures to ensure the safe operation of acetylene torches.
- 1.03 The F and G acetylene torches supersede and D and E acetylene torches, respectively, and are designed for use with the MC (10 cubic foot) or the B (40 cubic foot) tank. The tanks are not supplied with the torches.
- 1.04 The torch handles and regulators furnished may differ somewhat in shape (depending upon the supplier) from those illustrated in this section.

PROPRIETARY

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2. DESCRIPTION

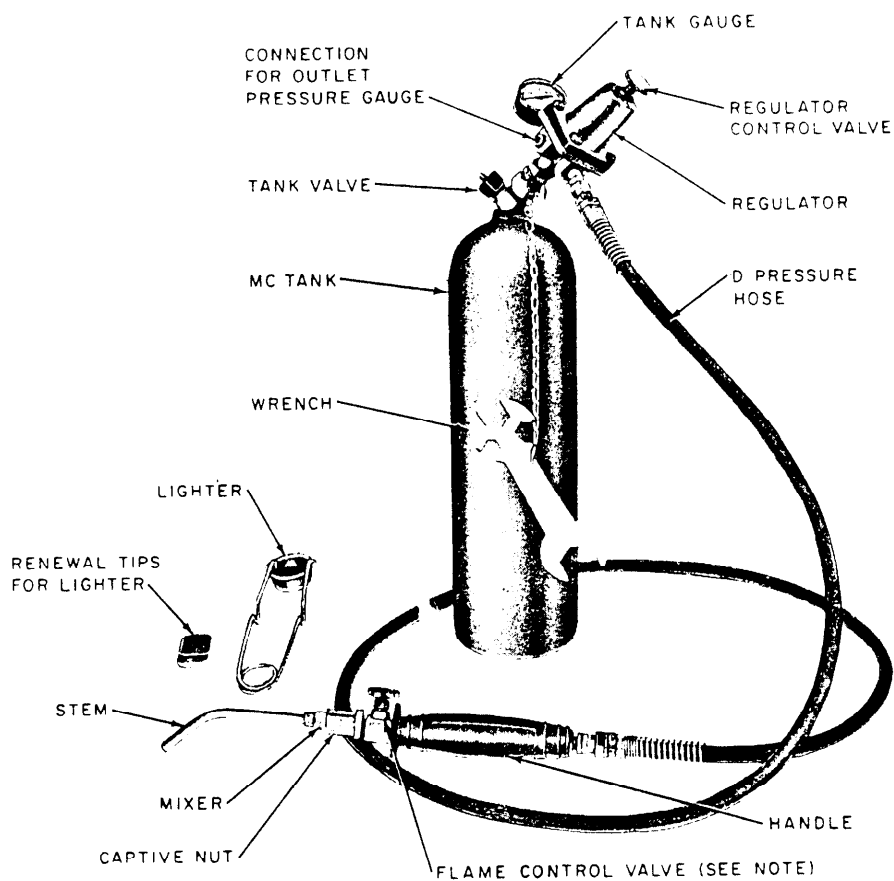
- 2.01 The F and G acetylene torches are similar except that the F torch is equipped with a flame control valve in the handle.
- 2.02 The regulator supplied with the F and G acetylene torches is equipped for connection to the MC tank. However, this regulator may be used with the B tank with the aid of an adapter which is furnished as an optional part.
- 2.03 Each acetylene torch weighs about 2-3/4 pounds and consists of the following:
- (a) An adjustable pressure regulator equipped for connection to the 10 cubic foot gas cylinder, a gauge for determining the amount of gas in the cylinder, and a brass or bronze adjusting screw.
 - (b) A torch handle and a torch stem with a mixer.
 - (c) A wrench that can be used for tightening all connections and for opening and closing the tank valve. The wrench is not required for connecting the stem and mixer to the handle.

Note 1: The wrench furnished with the F and G acetylene torches is designed to accommodate the connections of the D pressure hose and should not be confused with the wrench previously furnished with the D and E acetylene torches.

Note 2: The D pressure hose is not furnished with the F and G torches and must be ordered separately.

- (d) A friction-type lighter and a box of extra flints.

2.04 The F acetylene torch connected to an MC tank is illustrated in Fig. 1.



NOTE:

THE G TORCH, WHICH DOES NOT HAVE A FLAME CONTROL VALVE IN THE HANDLE, IS CONNECTED TO THE TANK IN A SIMILAR MANNER.

Fig. 1 - F Acetylene Torch Connected to MC Tank

- 2.05 The F acetylene torch connected to a B tank is illustrated in Fig. 2. Note the use of the adapter to connect the regulator to this tank.

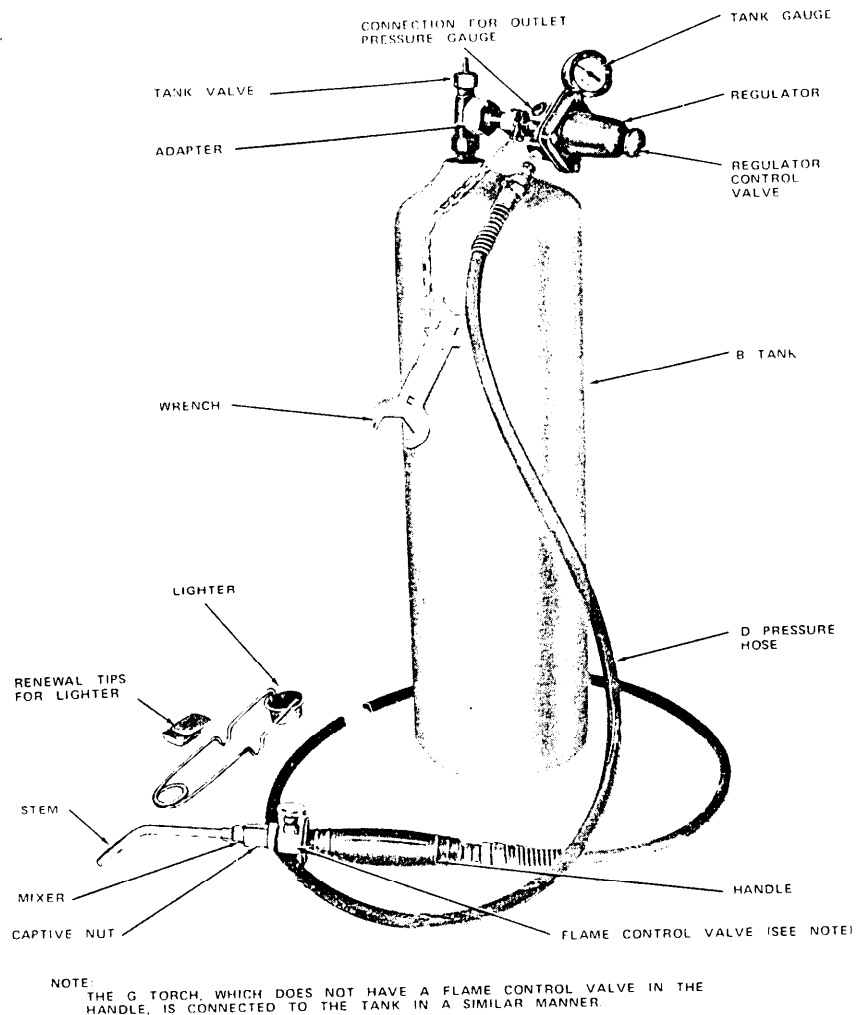


Fig. 2 - F Acetylene Torch Connected to B Tank

- 2.06 The following optional parts for the F and G acetylene torches are illustrated in Fig. 3

- (a) An adapter for connecting the regulator to a 40 cubic foot tank.
- (b) A coupling for connecting two lengths of hose.
- (c) A 15-pound outlet pressure gauge for determining the working pressure on the hose.
- (d) A soldering copper with either a pyramid or chisel tip.

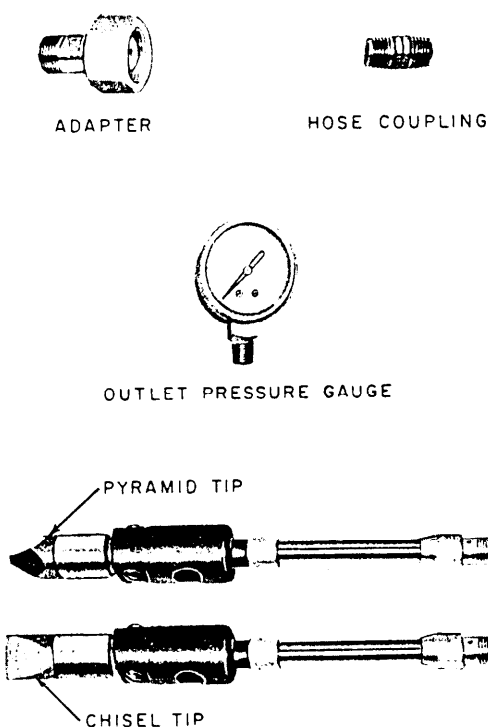


Fig. 3 - Optional Parts for F and G Acetylene Torches

3. PRECAUTIONS

3.01 The following precautions should be observed in using and storing acetylene torches:

- (a) The F and G acetylene torches should be used only with acetylene gas. Do not use these torches with MAPP gas or MAPP torches with acetylene gas.
- (b) Always keep the tank upright.
- (c) Do not use the torch for underground work, in central office cable vaults, in splicing pits at main frames, in a CEV (Controlled Environment Vault), or in other locations where open flames are forbidden.
- (d) Ventilate aerial tents while the torch is in operation. Secure the tent flaps so that they will not blow onto or near the splicing work.

- (e) Always use the friction-type lighter to light the torch. Do not use matches.
- (f) Wear eye protection at all times when using an acetylene torch.
- (g) Do not direct the flame of the torch against the strand as this may weaken the strand and cause it to break. When working on the far side of a cable, be careful not to direct the flame toward the body.
- (h) Do not allow the torch to contact flammable material such as conductors, muslin, paraffin, etc.
- (i) Never store the tank in manholes.
- (j) Keep the tank away from fire and heat. Protect the tank in storage against extremes of temperature, from accumulations of ice and snow, from damage which might be caused by passing or falling objects, and from direct rays of the sun.
- (k) If the tank valve should become so difficult to turn, due to water freezing at the valve, that it cannot be opened with normal pressure on the wrench, the tank should be brought into a warm room to thaw.
- (l) Always extinguish the torch before it is set aside.
- (m) Frequently inspect the D pressure hose for cracks. DO NOT attempt to patch cracks and holes in a hose by taping. Replace damaged hose immediately.

4. INSPECTION

- 4.01 Test the apparatus before it is first used and weekly while in use. Inspect the tanks for defects when received and thereafter while they are in use.
- 4.02 Large leaks may be detected by the odor of the escaping gas. The apparatus should be tested for leaks as follows:
 - (1) Connect the torch to the tank and turn off the flame control valve in the handle of the F torch. On the G acetylene torch, remove the stem and place a B cable cap (1 inch size adequate for most models) over the open end of the handle and past the captive nut. Tighten the screw of clamp to form a gas-tight seal.
 - (2) Open the tank valve about 1/2 turn and then open the regulator control valve by turning it clockwise.

(3) Paint all connections, except the connection between the mixer and handle, with soap solution and check for leaks.

(4) Immerse the hose in water to test for leaks.

4.03 If the hose leaks or appears to be worn or cracked, it must be replaced.

4.04 No attempt should be made to repair a leak in the torch other than to tighten the connections (refer to paragraph 5.02 (3) for tightening hose connections). If there is any evidence of a defect such as leak or a dent in the tank more than 1/4 inch deep, the tank shall be returned in accordance with local routine to the supplier. If there is a leak, the tank shall be placed outdoors away from fire and other sources of ignition, the valve opened, and the tank allowed to discharge. After the tank has been discharged, the valve should be closed and the tank tagged "defective" or "damaged" and then returned.

4.05 A leak around the valve spindle on the tank can generally be stopped by turning the nut around the spindle to compress the packing.

5. OPERATION

5.01 Before attaching the regulator, open the tank valve slightly for an instant and close again. This will blow out dust or dirt which may be lodged in the valve outlet. Never open the valve near open flames, sources of sparks, or other possible sources of ignition.

5.02 Assemble and adjust the F acetylene torch as follows:

(1) Connect the regulator to the connection on the tank, tightening the nut clockwise with the wrench.

(2) ALWAYS KEEP THE ACETYLENE TANK IN AN UPRIGHT POSITION.

(3) Attach the hose to the outlet end of the regulator and to the torch handle; tighten the nuts counterclockwise finger tight, and then tighten 1/8 to 1/4 turn with a standard regulator wrench.

WARNING: EXCESSIVE TIGHTENING OF THE HOSE CONNECTION WILL CAUSE THE THREADED PORTION AT THE CRIMPED END OF THE SWIVEL NUT TO FRACTURE.

(4) Open the tank valve about 1/4 turn and open the regulator control valve by turning it clockwise until the acetylene starts to flow (approximately five turns of the control valve.)

- (5) Soap test all fittings as previously described in paragraph 4.02.
- (6) The line pressure is increased by turning the regulator control valve clockwise and decreased by turning it counterclockwise. (The outlet pressure gauge, if provided, shows the working pressure in pounds per square inch.)
- (7) Open the valve in the torch handle and light the torch with the friction-type lighter.
- (8) Turn the valve in the handle to obtain the desired size of flame.
- (9) If necessary to extinguish the flame during the work operation, do so by closing the valve in the torch handle.
- (10) After completion of the work, extinguish the flame by closing the tank valve, allowing the acetylene to burn from the hose and regulator. Close the regulator control valve by turning it counterclockwise to the limit of its travel and then close the valve in the torch handle.

5.03 Assemble and adjust the G acetylene torch as follows:

- (1) Connect the regulator to the connection on the tank, tightening the nut clockwise with the wrench.
- (2) ALWAYS KEEP THE ACETYLENE TANK IN AN UPRIGHT POSITION.
- (3) Attach the hose to the outlet end of the regulator and to the torch handle; tighten the nuts counterclockwise finger tight, and then 1/8 to 1/4 turn with a standard regulator wrench.

WARNING: EXCESSIVE TIGHTENING OF THE HOSE CONNECTION WILL CAUSE THE THREADED PORTION AT THE CRIMPED END OF THE SWIVEL NUT TO FRACTURE.

- (4) Open the tank valve about 1/4 turn.
- (5) Turn the regulator control valve clockwise until the acetylene starts to flow (approximately five turns of the control valve).
- (6) Soap test all fittings as previously described in paragraph 4.02.
- (7) Light the torch with a friction-type lighter.
- (8) Turn the control valve to obtain the desired size of flame.

- (9) If necessary to extinguish the flame during the work operation, do so by closing the regulator control valve.
- (10) After completion of the work, extinguish the flame by closing the tank valve, allowing the acetylene to burn from the hose and regulator. Then close the regulator control valve by turning it counterclockwise to the limit of its travel.

6. ACETYLENE TANKS

- 6.01 The acetylene gas is supplied in MC and B tanks at a pressure of 250 pounds per square inch at 70°F. The MC tank is illustrated in Fig. 1 and the B tank in Fig. 2. The tanks are tested by the supplier in accordance with Federal regulations for such equipment and are marked to indicate that they have been tested. The markings on the tanks shall not be tampered with or removed.
- 6.02 The tanks should always be considered full and handled carefully; they are not built to withstand abuse. They should not be dropped, struck, or otherwise damaged.
- 6.03 Each tank is equipped with a fusible plug, which melts at a temperature slightly above that of boiling water, to minimize the possibility of an explosion should the tank become heated.
- 6.04 Acetylene is a colorless, nonpoisonous gas having a distinctive odor which aids in determining whether the gas is escaping. The gas is dissolved in liquid acetone and in this condition is nonexplosive. However, free acetylene is highly flammable and care should be exercised in handling tanks and using torches. Acetylene burns at a high temperature reaching a maximum of 2800°F at the end of the blue flame.

7. REPLACEMENT PARTS

- 7.01 The following replacement parts may be used with the F and G acetylene torches, as well as with the superseded D and E acetylene torches:

Regulator

Torch Stem

Handle for F Torch

Handle for G Torch

Wrench

Lighter

Lighter Flints (box of 6)

Pyramid Tip for Soldering Copper

Chisel Tip for Soldering Copper

Cylinder Gauge

D Pressure Hose (Section 081-330-104)

8. SUPERSEDED D AND E ACETYLENE TORCHES

- 8.01 The superseded D and acetylene torches are similar to the F and G acetylene torches, respectively, except that the superseded torches are each supplied with separate regulators. The D Acetylene torch is equipped with 12-1/2 feet of hose and is designed for use with the B tank, while the E acetylene torch is equipped with 6 feet of hose and is designed for use with the MC tank.
- 8.02 The D and E acetylene torches should be assembled and connected to the acetylene tank in a manner similar to that of the F and G acetylene torches.
- 8.03 The D acetylene torch, illustrated in Fig. 4, should be adjusted as follows:
- (1) Open the tank valve about 1/4 turn and set the regulator.

- (2) The line pressure is increased by turning the regulator control valve clockwise and decreased by turning it counterclockwise. The control valve has two flat-bottom grooves on which the letters A, B, C, and D are marked at intervals of two turns in the thread. At A, the gas begins to flow; at B, there is about 5 pounds pressure in the line; at C, 10 pounds; and at D, 15 pounds. The valve should be set to give the desired operated pressure.
- (3) Open the valve in the torch handle and light the torch with the lighter.
- (4) Turn the valve in the handle to obtain the desired size of flame.
- (5) If necessary to extinguish the flame during the work operation, do so by closing the valve in the torch handle.
- (6) After completion of the work, close the tank valve and then turn the regulator control valve clockwise sufficiently to move the valve point off the seating surface (about 1/4 turn beyond A).

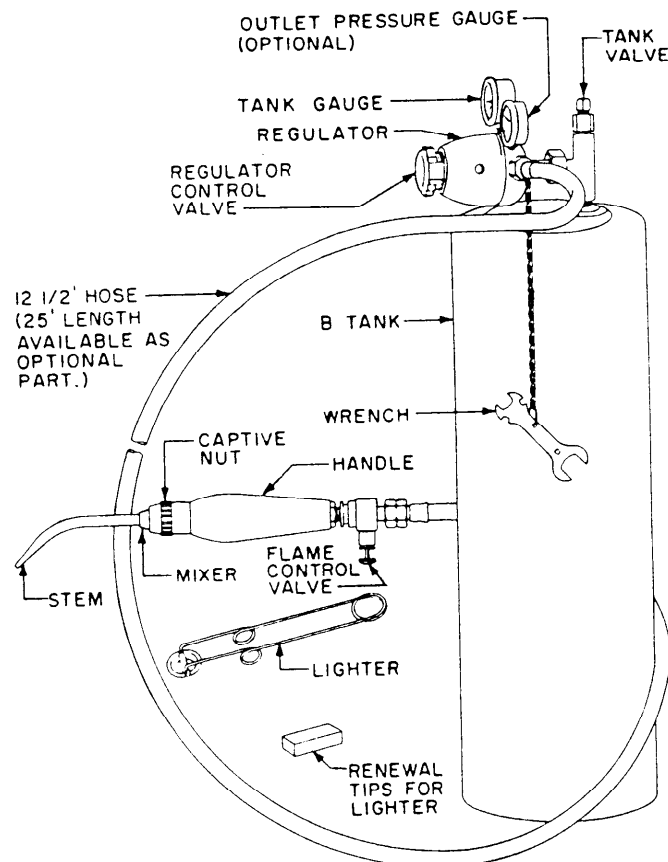


Fig. 4 - D Acetylene Torch Connected to B Tank

8.04 The E acetylene torch, illustrated in Fig. 5, should be adjusted as follows:

- (1) Turn the control valve on the regulator counterclockwise one turn beyond the letter A. Then open the tank valve about 1/4 turn.
- (2) Turn the control valve clockwise to A and light and torch with the lighter.
- (3) Turn the control valve to obtain the desired size of flame.
- (4) If necessary to extinguish the flame during the work operation, do so by closing the regulator control valve.
- (5) After completion of the work, extinguish the flame by closing the tank valve, allowing the gas to burn from the hose and regulator. Then close the regulator control valve.

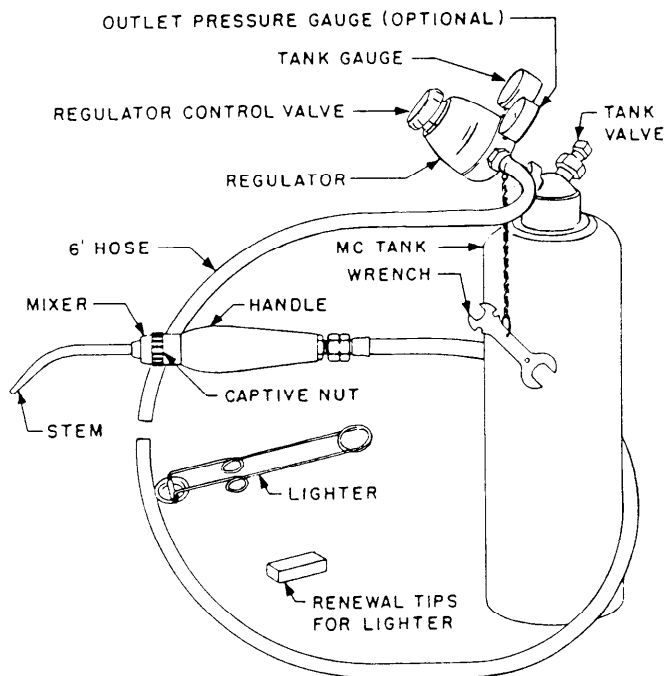


Fig. 5 - Acetylene Torch Connected to MC Tank