

Heavy Rescue II

TORCHES

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Types of Torches

Types of Torches

- Acetylene
- Mapp
- Petrogen
- Exothermic
- Plasma



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Applications

Applications



- Steel Cutting
- Collapse
- Rigging
- Impalements
- Another tool in the cache

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Acetylene Tote Weld

- 2 regulators
 - O2
 - Acetylene
- Cutting tip
- Striker
- Welding goggles
- O2 cylinder
- Acetylene cylinder



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Safety Facts

- Wear Goggles.
- Wear Protective Clothing, Turnouts, & Gloves.
- Adequate Ventilation.
- Keep Combustibles Away.
- Purge Before and After each use.



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Hoses

- Oxygen
 - Green hose
- Gas
 - Red
 - Has a notch
 - Left hand threads

Right hand thread (no notch) →



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Tools for Torch

- Welding Goggles
- Striker
- Multi Purpose Wrench

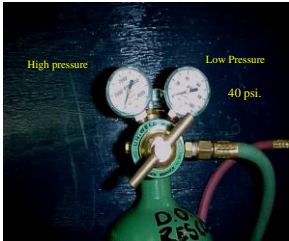


Goggles

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O2 Regulator

- Oxygen Pressures
 - High Pressure
 - 22-2400 psi.
 - Low Pressure
 - 3-60 psi.
 - 40 psi. is normal operating pressure
- Tank Minimums
 - Not to drop below 100psi.
 - Will cause rust on inside



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Acetylene Gas

- Fuel Container with preset regulator.
- High Flame Temperature.
 - 6,000 df
- Extremely Volatile
- Dissolved in Acetone



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Acetylene Gas

MTT Torch

- 10-15 Min. operating Time
- Regulator set at 5-10psi
- Not to exceed 15psi



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Tip Cleaning

- Tips should be checked after each use.
- Tips should be cleaned as needed.
- 6 gas ports



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Adjustment of Fuel

- Acetylene is first on, when lighting.
 - First on last off
- Turn gas knob no more than a 1/8 of a turn when lighting.
- After lighting, slowly increase O2 until you get 1/4 inch Blue pointed flame cones.



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A Steady Cut

- Brace your body to steady your cut.
- Try not to use one hand
- Use two hands to hold the torch, so you can make smooth and accurate cuts.



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Edge Cut

- Start at the edge.
- Make sure cones do not touch the metal.
- Once metal is red hot, use O2 trigger to blow the melting metal out of the way.



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Tip Angles

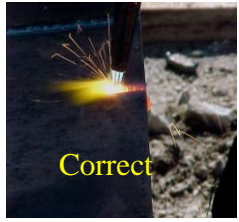
- Make sure that the angle of the tip is pointed toward the direction that you are cutting.
- This preheats the cutting surface.



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Tip Angles

- Remember you preheat the metal before cutting.



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Tip Angles

- Note the way the steel is being blown out of the cut by the O₂.
 - And the preheating of the steel in front of your cut.



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Plunge Cut

- Start at 90deg.
- Cones should not touch.
- When metal is hot angle your tip so you don't get blowback of molten metal into your tip.
- After starting your hole you will need to continue it around to complete the cut.



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Petrogen Oxy-Gasoline Cutting Systems

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Basic Light Up Procedure

- Begin by inspecting all fittings for tightness.
- Select the correct tip size for the steel to be cut.
The tip chart can be found on the side of the gasoline tank.

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Light Up cont.

Example.. To cut 4 inch steel, use a tip size #3 with 35-40 psi of oxygen, and 10-20 psi of gasoline.



CUTTING TIP & OXYGEN PRESSURE CHART							
ENGLISH				METRIC			
INCHES STEEL	TIP NO.	POUNDS/INCH GASOLINE	PSI OXYGEN	MM STEEL	TIP NO.	KPA GASOLINE	PSI OXYGEN
0-1/4	0	10-20	12-17	0-7	0	70-140	80-120
1/4-1	1 & 81	10-20	17-25	7-25	1 & 81	70-140	120-180
1-2	2	10-20	25-35	25-50	2	70-140	180-250
2-4	3 & 83	10-20	35-40	50-100	3 & 83	80-140	250-280
4-6	4	12-20	40-50	100-150	4	80-140	280-350
6-8	5	14-20	50-60	150-200	5	100-140	350-420
8-10	6	16-20	70-80	200-250	6	110-140	400-560
10-12	7	18-20	80-100	250-300	7	130-140	560-700
12-14	8	20	120+	300-350	8	140	800+

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Light Up cont.

Set the oxygen pressure

- Gauge on the right indicates the total amount of pressure still in the bottle.
- Gauge on the left indicates the amount of pressure to the torch.
- When opening the oxygen bottle, always open the valve fully.



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Light Up cont

Set the gasoline pressure.

- Keep the gasoline tank pressurized 10-20 lbs.
- Open the fuel valve fully when using the Petrogen system.
- Open valve slowly



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Light Up cont.

Turn the preheat oxygen knob open 1/2 turn.



Use the + and - to index 1/2 turn.

Here the pre-heat oxygen is set at 1/2 turn

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Light Up cont.

- Turn the gasoline control knob approximately 1/4 turn. The torch is easier to light rich than lean, so increase the fuel slightly past 1/4 if necessary for easy light up.



Use the + and - on the sticker to index 1/4 turn.

- Use the material you will be cutting to help you see the mist of gasoline.



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Light Up cont.

- Place the sparker directly in front of the tip and ignite the gasoline/oxygen mist.

Avoid leaving the sparker in front of the tip too long before lighting, as the gasoline mist will soak the flint and you will have to wait for the wet flint to dry.



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Light Up cont.

- Before making any adjustments, place the tip directly to the steel, holding it at a 45 degree angle so that you can observe the steel's reaction to the preheat flame.

Touching the tip to the steel instantly brings the tip up to proper operating temperature.



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Light Up cont.

Adjust the flame using only gasoline.



• Flame is too rich, and the steel directly under the preheat flame is not quickly becoming cherry red. Reduce the gasoline.



• Flame is too lean. It has a wispy sound like it wants to go out, the steel directly under the preheat flame is not cherry red. Increase the gasoline.

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Light Up cont.

- A well adjusted flame produces a hot cherry bead on the steel, has a strong sound.
- The flame may have a yellowish tint if the gasoline is old, dirty, or if the hose is brand new.



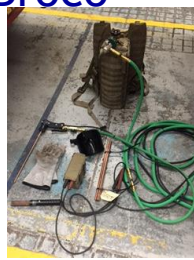
This is a well adjusted flame



Here the steel is becoming molten

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Broco



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O2 and Regulator

- Attach regulator to O2 tank
- Regulator is preset to 65 psi



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Battery

- Make sure battery is charged
- Red wire connects to strike plate
- Black wire connects to torch head



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Torch Head and Rods

- Broco Exothermic cutting rods
- Hollow center for O2
- Handle has O2 trigger
- Attach rods to torch head

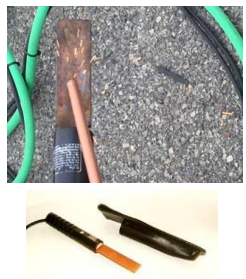


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MTT Torch

Strike Plate

- Connected to battery
- Used to ignite exothermic rod
- Keep clean as residue builds up over use



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Light Up

- Depress O2 trigger on torch handle
- With O2 flowing slide rod across the strike plate at an angle
- Once lit go to work



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Cutting

- Keep Rod to the work
- A lot of spark and slag
- Do Not burn Rod down to the handle



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