Loveland Fire Rescue Authority
410 East 5th Street Loveland, Colorado 80537
(970) 962-2471 Fax (970) 962-2922 TDD (970) 663-5144
www.cityofloveland.org

PETROGEN TORCH OPERATIONS 1.1

Developed by Ricky Summer
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TASK SKILL DESCRIPTION AND DETAIL

This heading includes information about the following:

- This guide is intended to create a basic knowledge for set up and operation of the Petrogen cutting system we use at LFRA.
- The tasks role would be Rescue.
- The tasks role in the tactical and strategic elements of an incident
- How to do the task

Step 1: Determine what torch is needed.

Petrogen (Oxy-Gasoline cutting system)
Basic Light up Procedure

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Step 2: 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, and a laminated sheet of this chart in the Petrogen bag.

CUTTING TIP & OXYGEN PRESSURE CHART

ENGLISH				METRIC			
INCHES STEEL	TIP NO.	POUNDS/INCH² GASOLINE	POUNDS/INCH² OXYGEN	MM. STEEL	TIP NO.	KPA GASOLINE	KPA 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	490-560
10-12	7	18- 20	80-100	250-300	7	130- 140	560-700
12-14	8	20	120+	300-350	8	140	800+

For this exercise we are going to cut 4" steel, so we will use a tip size #3 with 35-40 psi of oxygen, and 10-20 psi of gasoline (Coleman White Gas).

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Step 3: Set the oxygen pressure.

Notice that the gauge on the right indicates the total amount of pressure still in the cylinder, while the gauge on the left indicates the amount of pressure to the torch. Here the oxygen pressure is set to 40 psi. When opening the oxygen cylinder, always open the valve fully.

Step 4: Set the gasoline (Coleman White Gas) pressure.

To insure good performance, keep the gasoline tank pressurized to 10-20 lbs. Here the gauge is set to 20 psi. Be sure to open the fuel valve fully when using this system.

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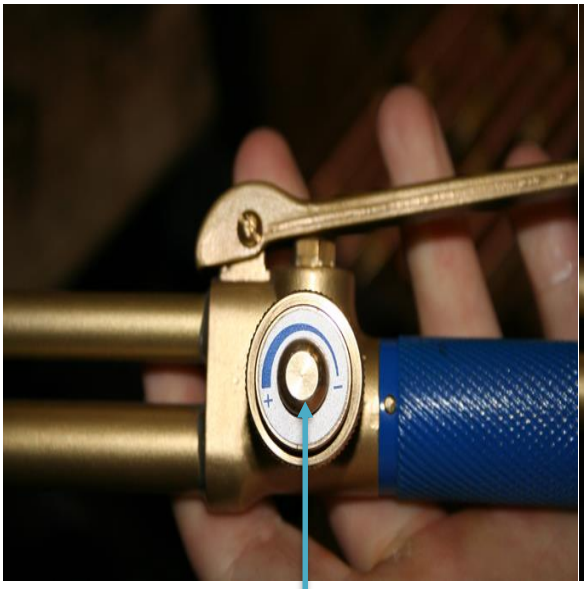
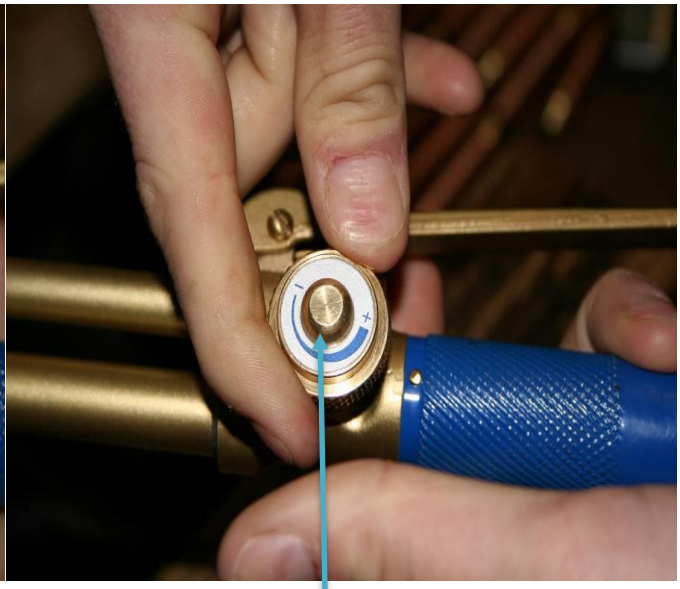
Step 5: Turn the preheat oxygen knob open ½ turn. Instructions are in the torch bag.

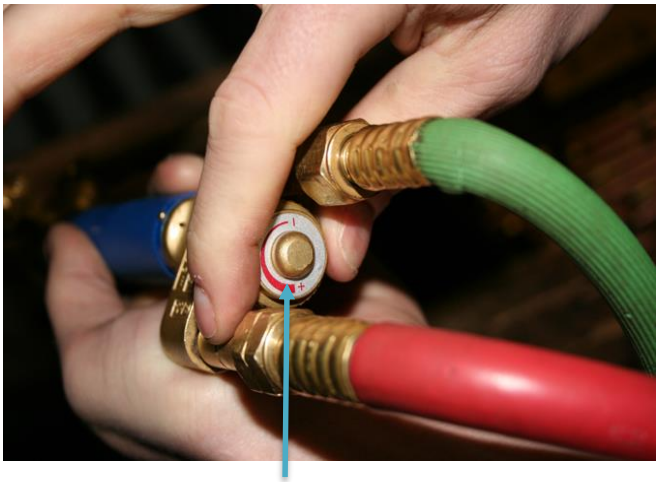


Use the + and – to index ½ turn.



Here the pre-heat oxygen is set at ½ turn.

Step 6: Turn the gasoline control knob approximately ¼ turn. The torch is easier to light rich than lean, so increase the fuel slightly past ¼ turn if necessary for easy light up.



Use the + and – to index ¼ turn.

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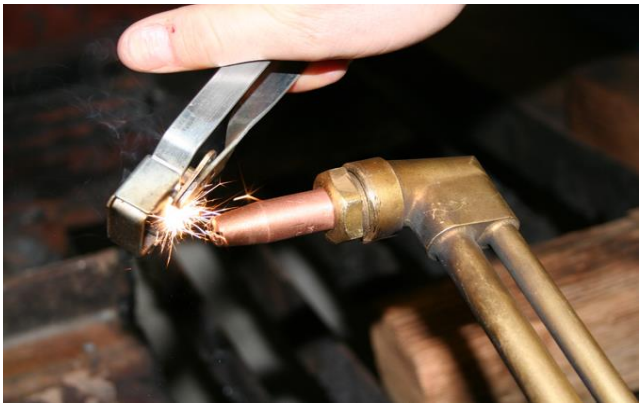
Use the material you will be cutting to help you see the mist of gasoline.

Step 7: 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.

Step 8: Before making any adjustments, place the tip directly to the steel, holding it at a 45* angle so that you can observe the steels reaction to the preheat flame.

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

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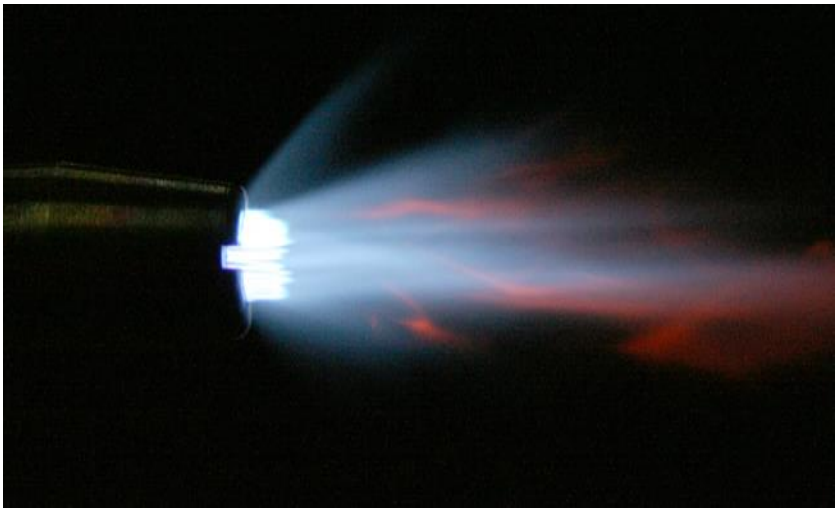
Step 9: Initially adjust the flame using only gasoline.

This flame is too rich, as it has a large yellow/orange tint. Reduce the gasoline.

This flame is too lean, it has a wispy sound, weak color, and it wants to go out. Increase the gasoline.

This is a well-adjusted flame.



The flame is adjusted correctly when the steel is the hottest directly under the preheat flame. Some yellow/orange tint is acceptable, and should not alter performance.

- Counter-indications for completing the task if applicable?
  - Time it takes to perform the task.
  - Low Fuel.
  - Low Oxygen.

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TASK SKILL INSTRUCTIONAL REQUIREMENTS AND IMPLEMENTATION

This heading includes information about the following:

- Associated PPE required for instructing the task?
  - Leather welders coat, SOT coveralls, Tech Gen, leather gloves, Cutting goggles.

- Evaluation criteria for observing knowledge, skills and abilities?
  - Basic knowledge of set up and operations.
  - Understand the different torch functions.
  - Understand fuel and oxygen supply.

- Safety criteria when preforming this task?
  - Site control.
  - Monitor the atmosphere before and during operations.
  - Situation/Hazard Evaluation.
  - Haz Mat concerns.
  - Proper PPE use, equipment in good working condition, and potential fire hazards.

REFERENCE INFORMATION

This heading includes information about the following:

- NFPA chapter and section reference to this task and professional standards
- National USAR Rescue FOG.