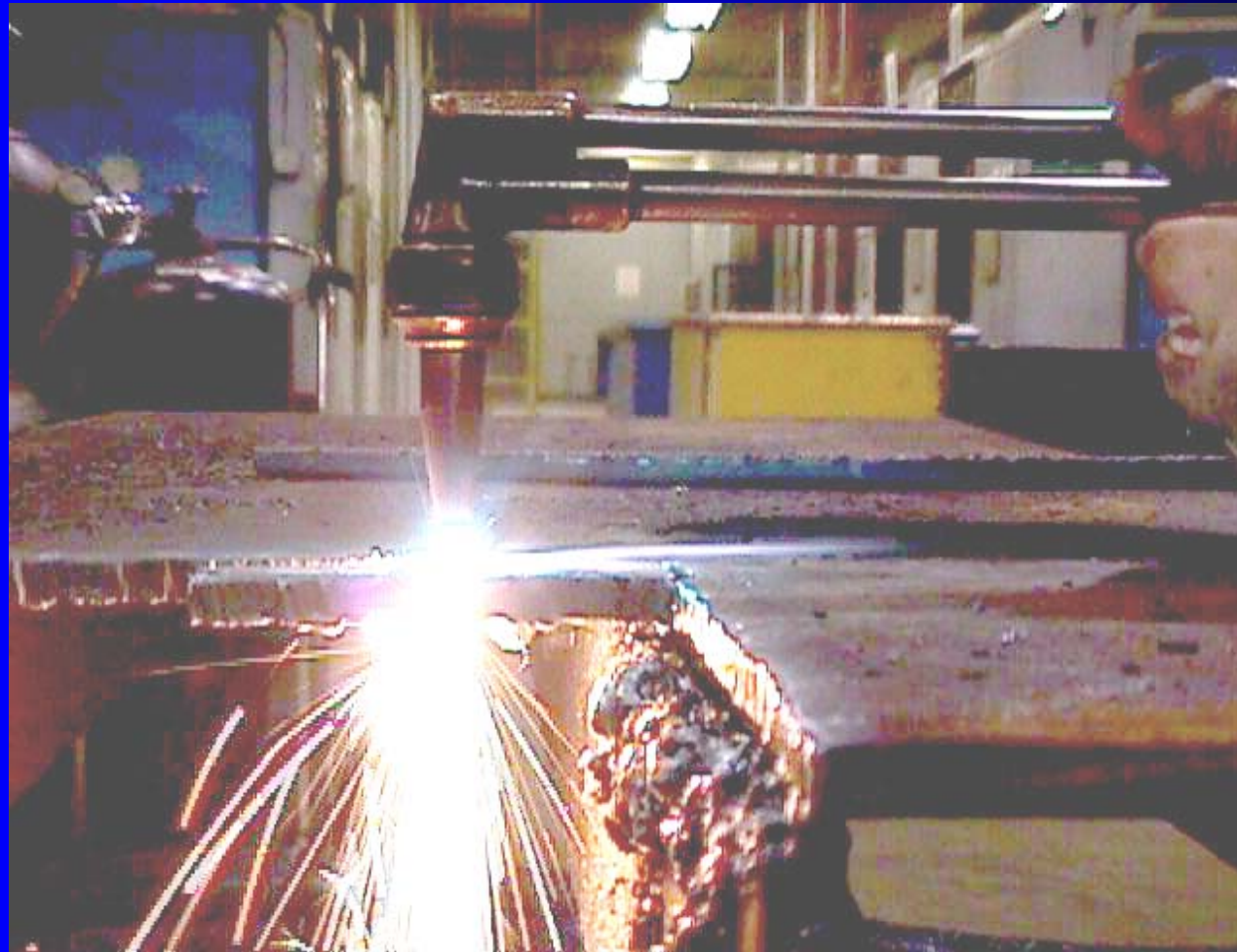


Oxyacetylene Cutting



By Matt Scott

Introduction

- OAC is a cutting process that rapidly oxidizes (burns) carbon steel like scissors cutting paper!
- By the end of the shift you will be able to:
 - Describe the process
 - Set up the torch
 - Make a cut

8 Steps to Making a Quality Cut

1. Safety Check
2. Select a tip based on metal thickness
3. Adjust gas pressures
4. Ensure the tip is clean
5. Set torch to neutral flame
6. Get Comfortable
7. Maintain a consistent *Coupling Distance*
8. Remove dross while metal is still hot

Step 1 – Safety

- At a Glance
 - Stop look and listen before using!
 - Did you ensure the cylinders were chained up and hoses were in good shape?
 - Did you scan the whole system to see if there was anything odd?
- SAFETY FIRST!!!!!!!!!!!!



Steps 2 - Tip Selection

- The key in making a quality cut!!!!



Step 3 – Setting the Gas Pressure

Metal Thickness	Tip Size	Oxygen Pressure	Acetylene Pressure
1/8"	000	20-25	3-5
1/4"	00	20-25	3-5
3/8"	0	25-30	3-5
1/2"	0	30-35	3-5
3/4"	1	30-35	3-5
1"	2	35-40	3-6

Victor Cutting Equipment

Step 4 – Ensure the Tip is Clean

- Indicators of a clean tip are:
 - Preheat flames are sharp and the same length.
 - Outer flame does not shrink with the “oxygen blast”
 - Oxygen column stays straight with “oxygen blast” on. It does not spread out (diverge).



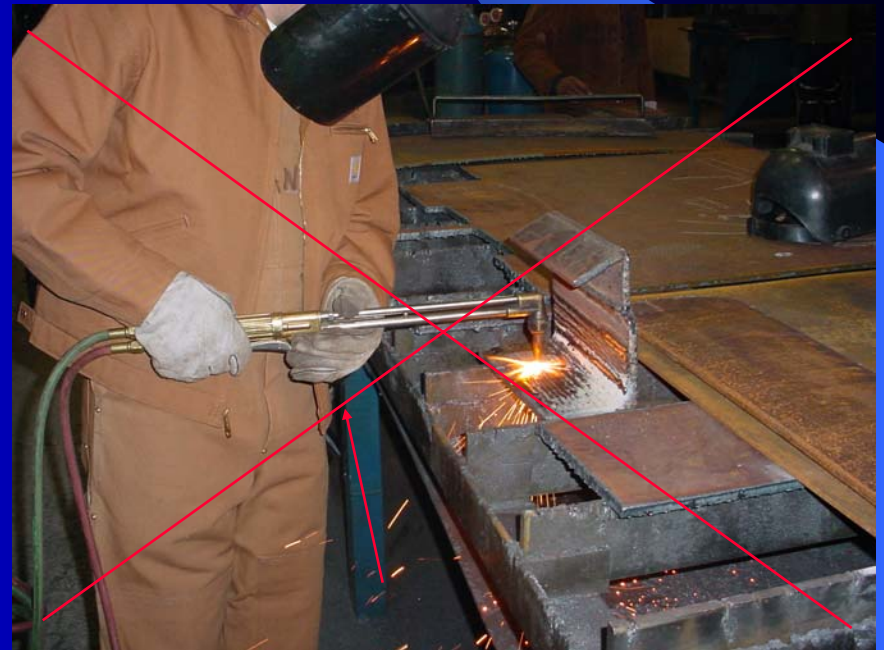
Step 5 - Set torch to Neutral Flame

- A neutral flame is when you have the same ratio of acetylene and oxygen burning
- Most efficient cutting flame setting
- Flame temperature is 5800 Fahrenheit



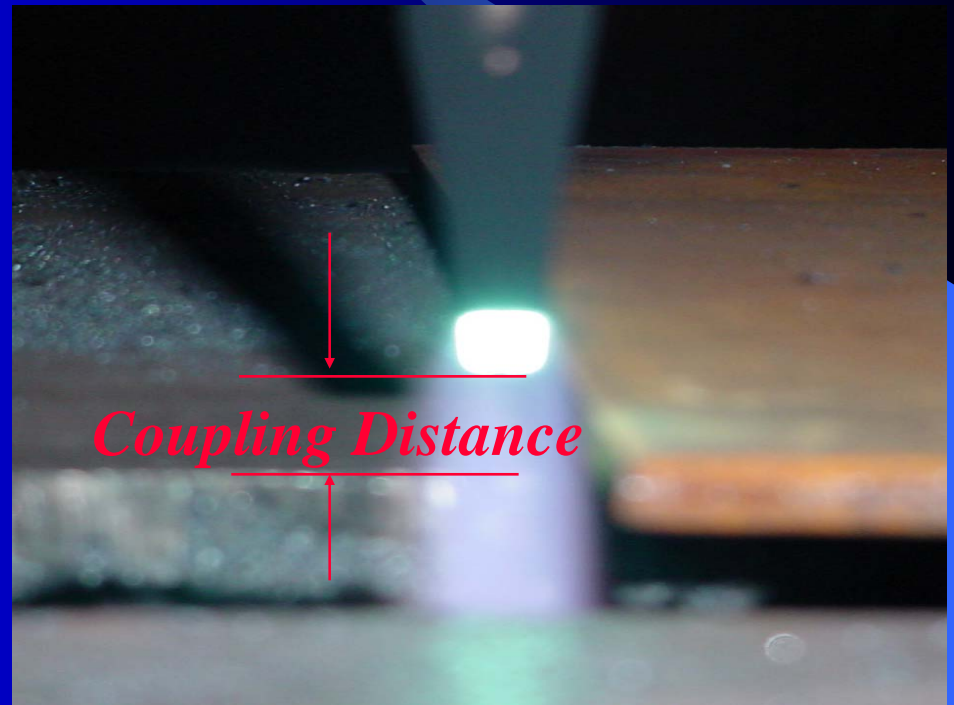
Step 6 – Get Comfortable

- Steady yourself when cutting



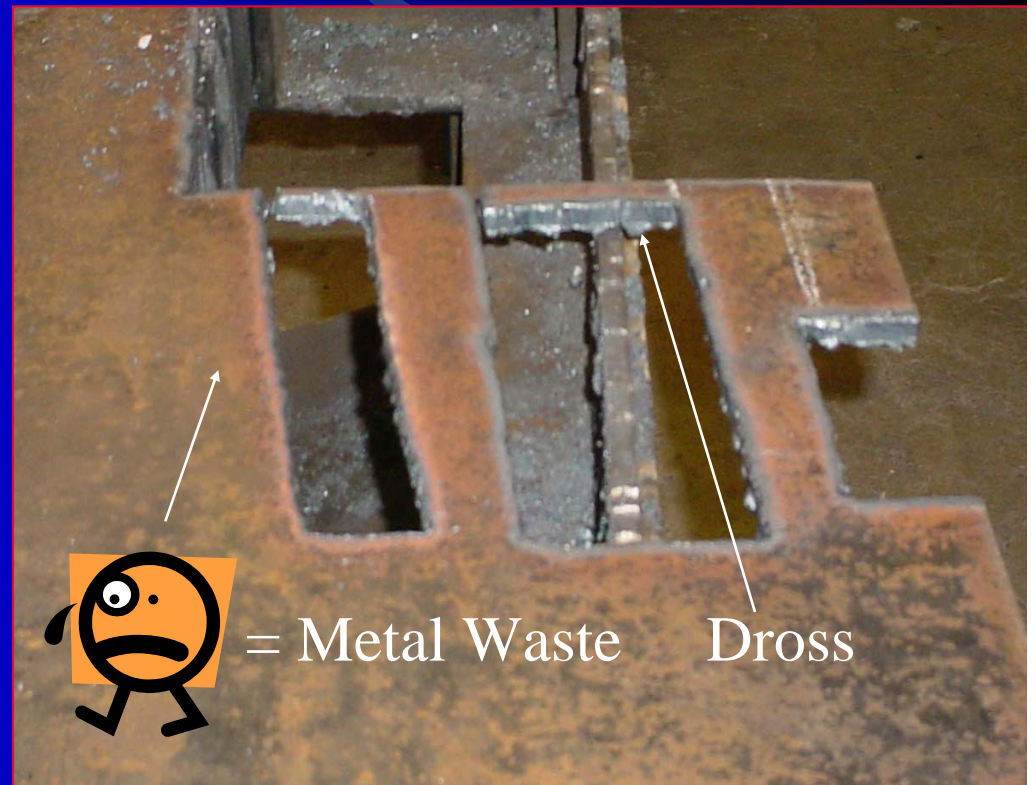
Step 7 - Maintain a Consistent Coupling Distance

- *Coupling Distance* is defined as the distance the blue flames are above the metal (also known as *Stand Off* in PAC)
- This distance should be 1/8" – 3/8"



Step 8 – Post Cut Clean Up

- Remove dross immediately after Cutting...It's easier at this point.
- Your Cut quality is based on the 7 prior steps. Work at those and you'll have less GRINDING!



Common Vocabulary

- Dross
- Kerf
- Working Pressure vs. Cutting Pressure
- Flashback vs. Backfire
- Oxygen vs. Air

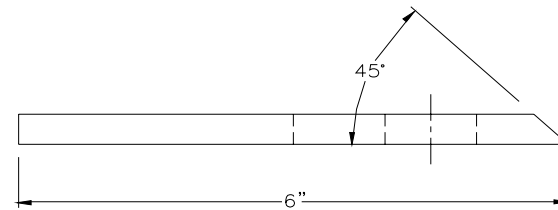
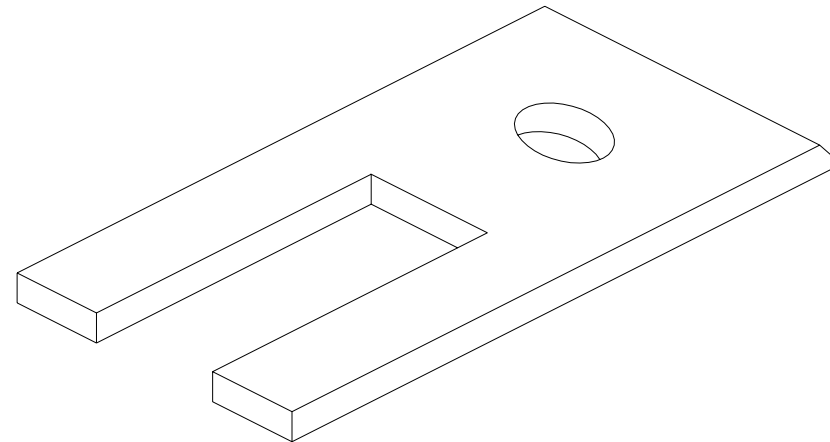
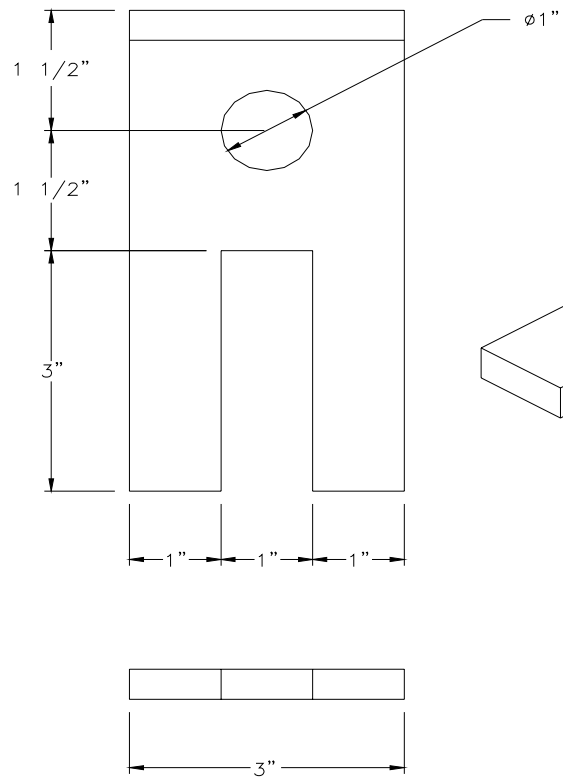
Other Metal Removing Processes

Carbon Arc and Plasma Arc




Process Name	Oxyacetylene Cutting	Air Carbon Arc Cutting	Plasma Arc Cutting
AWS Abbreviations	OAC	CAC-A	PAC
Heating Mechanism	Heats metal via gas.	Heats metal via electric arc (electrode is made of graphite and coated with copper for strength and conductivity).	Heats metal via ionized plasma gas.
Metal removal mechanism	Removes metal/dross with industrial grade oxygen.	Removes metal/dross with compressed air.	Removes metal/dross by the secondary gas (air).
Capability	Cuts only ferrous metal (relies on the rapid oxidation of steel).	Will cut any conductive metal (will deposit carbon and this may be detrimental).	Cuts any conductive metal.
Equipment	Cylinders Regulators Flashback arrestors Hoses Torches Tips	Power Source Compressed air Arc Air Torch Electrodes	Power Source Compressed air Torch consumables
Safety	Cylinder care/storage #5 filter lens Flying sparks Flashbacks/backfires Ventilation	Electrical shock #12 filter lens Flying sparks UV/IR Ventilation Noise	Electrical Shock #10 Filter lens Flying sparks UV/IR Ventilation Noise

WLD FFA-5
Advance OAC Mild Steel



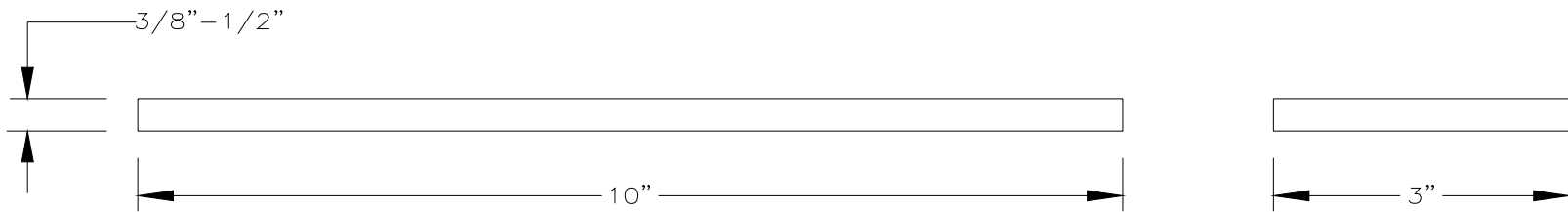
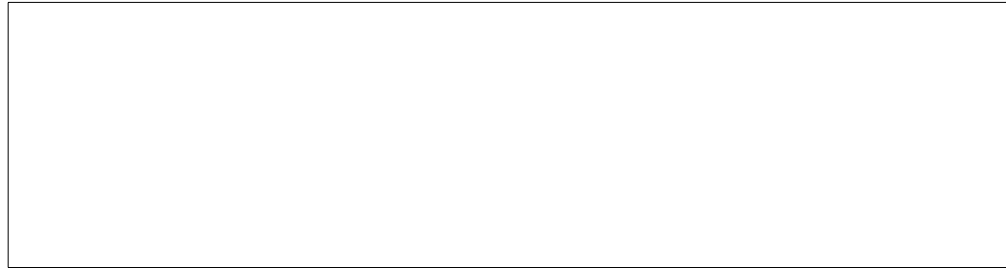
Inch	MM
1/16"	1.6
1/8"	3.2
1/4"	6.4
1/2"	12.7
1"	25.4

Part	No. Required	Size (WxHxL)	S.I. Conversion

 Portland Community College Welding Technology			
Tolerance (Unless otherwise Specified)		WLD FFA-5	
Dimensional $\pm 1/16''$ Angle $\pm 5^\circ$		Size:	Qc No. Rev.
Drawn By: John Deering		Approve	Date Sheet
Chk By:	Date: 05/10/04		

Oxyacetylene Straight Cutting
Track Torch

* USE THIS MATERIAL FOR THE LAP JOINT
WELDING PROJECTS.



Inch	MM
1/16"	1.6
1/8"	3.2
1/4"	6.4
1/2"	12.7
1"	25.4



Portland Community College
Welding Technology

Tolerance (Unless otherwise Specified)
Dimensional $\pm 1/16$ " Angle $\pm 5^\circ$

WLD 111-04

Drawn By:
John Deering

Size:

QC NO.

Rev.

Chk By:

Date: 10/01/03

Approve

Date

Sheet

Part	No. Required	Size (LxWxH)	S.I. Conversion

Where to Get More Information

- Owners Manual
- Welding Principles and Applications
by Larry Jeffus
- PCC Welding

