OXY-FUEL SYSTEM SET-UP & SHUT-DOWN PROCEDURE CHECKLIST –

ACETYLENE FUEL GAS

Items needed for demonstrations:

- Fire extinguisher
- PPE (Personal Protective Equipment):
  - Lab coats/welding jackets
  - Leather gloves
  - Proper shade goggles or safety glasses for process being done
  - Clear safety glasses
  - Proper shade face shield for process being done (with safety glasses worn underneath)
- Oxygen cylinder
- Acetylene cylinder
- Open ended or crescent wrench

- **Oxy-Fuel Equipment for Heating / Welding / Brazing Torch:**
  - Oxygen pressure reducing regulator
  - Acetylene fuel gas pressure reducing regulator
  - Grade T twin hose
  - Oxy-Fuel Torch handle with built-in check valves and flashback arrestors (or add-on accessories)
  - Heating/welding/brazing nozzle for acetylene fuel gas (size to be determined based on gas being used and cylinder size available)

- **Oxy-Fuel Equipment for Cutting Torch:**
  - Oxygen pressure reducing regulator
  - Acetylene pressure reducing regulator
  - Grade T, R, or RM twin hose
  - Oxy-Fuel Torch handle
  - Cutting attachment
  - Appropriate cutting tip for acetylene (i.e. 1-1-101)
  - Striker

    Note: This demonstration can also be done with a straight cutting torch.

OXY-FUEL EQUIPMENT SET-UP: ACETYLENE

Inspection & Installation of Cylinders, Regulators and Hoses

Check each step once completed:	**Completed**
• Utilize all appropriate PPE throughout the demonstration:	
• Inspect all inlet and outlet valves, threads and seats on both the cylinders and the regulators: o Inspection includes: ▪ Valves free from oil, grease and dirt ▪ No dents/dings on cylinders or regulators	
• Clear both cylinder valves correctly: o Stand on the opposite side of the valve o Crack the valves by opening slightly for about 5 seconds	
• Install the regulators correctly: o Oxygen regulator on oxygen cylinder, acetylene regulator on acetylene cylinder o Tighten with open ended or adjustable wrench	
• Inspect hose fittings for damage and attach correctly: o Inspection includes: ▪ Hose fittings free of oil and grease ▪ No cracks, cuts, burns worn areas in hose ▪ Green hose attached to oxygen regulator; red hose to acetylene regulator ▪ Tighten both with appropriate wrench	
• Open gas cylinders utilizing specific techniques per gas: o Oxygen cylinder: ▪ Ensure adjusting mechanism on regulator is "backed out" ▪ Stand opposite of regulator valve ▪ Open slowly to stabilize ▪ Continue by opening cylinder valve completely o Acetylene cylinder: ▪ Repeat process EXCEPT only open cylinder valve **¾ turn to no more than max. of 1 full turn** ▪ Leave tool for opening valve in place for quick shut off	
• Purge both hoses by opening the regulator valves correctly per gas, one at a time: o Open first regulator valve and set to 5 PSI o Allow gas to flow for 5 seconds o Close first regulator valve before opening other gas valve	

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1) HEATING, WELDING, OR BRAZING TORCH SET-UP FOR ACETYLENE

Heating/Welding/Brazing Torch Inspection & Assembly

Check each step once completed:	**Completed**
• Inspect the torch handle and heating/welding/brazing nozzle thoroughly: o Inspection includes: Check for damage on valves, fittings and seating areas; ensure both o-rings are intact and in place on cone end of nozzle; ensure torch is free from oil and grease; make sure nozzle is free from slag or obstructions at flame end	
• Assemble the torch correctly: o Heating/welding/brazing nozzle: Hand-tightened (no use of wrench) onto handle	
• Attach the hoses correctly: o Green hose to oxygen fitting on handle; red hose to acetylene gas fitting on handle o Tighten both with appropriate wrench	

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Leak Check and Purging of Heating/Welding/Brazing Torch

Check each step once completed:	**Completed**
• Perform the leak check on the torch correctly: o Ensure adjusting mechanism completely backed out on both regulators o Starting with oxygen: Open cylinder valve slowly until high pressure gauge reading stabilizes, then shut off cylinder valve; monitor gauge for any pressure drop; no leak – open oxygen cylinder valve; adjust oxygen regulator to deliver 20 PSI o Repeat process with acetylene fuel cylinder valve and regulator with **PSI EXCEPTION**: ▪ **Acetylene gas regulator should be set to deliver only 10 PSI** o Close both oxygen and acetylene fuel gas cylinder valves o Turn adjusting mechanism counterclockwise one-half turn o Observe gauges on both regulators for a few minutes, if no changes in gauge readings – system is leak tight o Open cylinder valves again; any movement of needles on regulator gauges indicates possible leak: **If leak is observed – STOP - DO NOT USE!** ▪ Check all connections; if leak can't be found, have equipment inspected by a qualified technician	
• Purge the torch correctly: o Starting with oxygen: Open oxygen valve on torch handle and adjust oxygen regulator to required delivery range; close oxygen valve on torch handle; this will purge the oxygen hose o Repeat process for acetylene fuel gas side: Open acetylene fuel gas valve on torch handle for 3 to 5 seconds, then shut it off o Check both regulator pressures and reset if necessary	

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Lighting the Heating/Welding/Brazing Torch, Adjusting the Flame, Setting a Neutral Flame, and Shutting Down	
Check each step once completed:	**Completed**
• Light the heating/welding/brazing torch correctly: o Hold torch in one hand, spark lighter in the other o Point torch away from people, equipment and flammable materials o Open torch fuel valve about 1/8 turn o Ignite gas with spark lighter o Continue opening fuel valve until smoke and soot disappeared	
• Adjust the flame correctly to get a bright neutral flame: o Slowly open oxygen valve on torch until neutral flame achieved	
• Shut down the torch flame properly: o Oxygen valve shut off first o Acetylene fuel gas valve shut off last	
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Shut-Down of Heating/Welding/Brazing Torch System	
Check each step once completed:	**Completed**
• Shut down and bleed the pressure from the system correctly: o Close both cylinder valves on gas supply o Open fuel gas valve on torch, bleed the pressure, close fuel gas valve o Same with oxygen valve (open valve on torch, bleed, close valve) **** CAUTION: Never have both valves open at the same time as it could cause a reverse flow of gases!** o Release tension on adjusting screws ▪ Turn counterclockwise until they move freely ▪ Wait a few minutes and check inlet gauges to ensure no pressure remains in system	
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2) CUTTING TORCH SET-UP FOR ACETYLENE

Cutting Torch Inspection & Assembly

Check each step once completed:	Completed
• Inspect the torch handle and cutting attachment thoroughly: o Inspection includes: Check for damage on valves, fittings and seating areas; ensure both o-rings are intact and in place on cone end of cutting attachment; ensure torch is free from oil and grease; make sure cutting tip is free from slag or obstructions	
• Assemble the torch correctly: o Cutting attachment: hand-tightened onto handle (no use of wrench) o Cutting tip: tightened with wrench for proper seating	
• Attach the hoses correctly: o Green hose to oxygen fitting on handle; red hose to acetylene fitting on handle o Tighten both with appropriate wrench	

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Leak Check and Purging of Cutting Torch

Check each step once completed:	Completed
• Perform the leak check on the torch correctly: o Ensure adjusting mechanism is completely backed out on both regulators o Starting with oxygen: Open cylinder valve slowly until high pressure gauge reading stabilizes, then shut off cylinder valve; monitor gauge for any pressure drop; no leak – open oxygen cylinder valve fully; adjust oxygen regulator to deliver 20 PSI o Repeat process with acetylene cylinder valve but only open ¾ to 1 full turn and regulator with **PSI EXCEPTION:** ▪ Acetylene regulator should be **set to deliver only 10 PSI** o Close both oxygen and acetylene cylinder valves o Turn adjusting mechanism counterclockwise one-half turn o Observe gauges on both regulators for few minutes; if no changes in gauge readings – system is leak tight o Open cylinder valves again; any movement of needles on regulator gauges indicates possible leak; **if leak is observed – STOP - DO NOT USE!** ▪ Check all connections; if leak can't be found, have equipment inspected by a qualified technician	
• Purge the torch correctly: o Starting with oxygen: Open oxygen valve on torch handle and adjust oxygen regulator to required delivery range; depress cutting lever for 3 to 5 seconds; close oxygen valve on torch handle; this will purge oxygen hose o Repeat process for acetylene side: Open acetylene valve on torch handle for 3 to 5 seconds, then shut it off o Check regulator pressures and reset if necessary	

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Lighting the Cutting Torch, Adjusting the Flame, Setting a Neutral Flame, and Shutting Down	
Check each step once completed:	**Completed**
• Light the cutting torch correctly: o Hold torch in one hand, spark lighter in other o Point torch away from people, equipment and flammable materials o Open torch fuel valve about 1/8 turn o Ignite gas with spark lighter o Continue opening fuel valve until smoke and soot disappeared	
• Adjust the flame correctly to get a bright neutral flame: o Slowly open preheat oxygen valve on torch until neutral flame achieved o Depress cutting oxygen lever; readjust if necessary o ***Neutral flame = inner and outer cones are almost of equal length***	
• Shut down the torch flame properly: o Oxygen preheat valve shut off first o Acetylene valve shut off last	
Notes: _____	

Shut-Down of Cutting Torch System	
Check each step once completed:	**Completed**
• Shut down and bleed the pressure from the system correctly: o Close both cylinder valves on gas supply o Open fuel gas valve on torch, bleed the pressure, close fuel gas valve o Same with oxygen valve (open valve on torch, bleed, close valve) **** CAUTION: Never have both valves open at the same time as it could cause a reverse flow of gases!** o Release tension on adjusting screws ▪ Turn counterclockwise until they move freely ▪ Wait a few minutes and check inlet gauges to ensure no pressure remains in the system	
Notes: _____	