

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

ALTERNATE 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
- Alternate fuel gas cylinder
- Open ended or crescent wrench

- **Oxy-Fuel Equipment for Heating / Welding / Brazing Torch:**
 - Oxygen pressure reducing regulator
 - Alternate 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 alternate 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
 - Alternate fuel gas pressure reducing regulator
 - Grade T twin hose
 - Oxy-Fuel Torch handle
 - Cutting attachment
 - Appropriate cutting tip for alternate fuel gas (i.e. 1-GPN)
 - Striker

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

OXY-FUEL EQUIPMENT SET-UP: ALTERNATE FUEL

Inspection & Installation of Cylinders, Regulators and Hoses

<i>Check each step once completed:</i>	Completed
<ul style="list-style-type: none"> • Utilize all appropriate PPE throughout the demonstration. 	
<ul style="list-style-type: none"> • Inspect all inlet and outlet valves, threads and seats on both the cylinders and the regulators. <ul style="list-style-type: none"> ○ Inspection includes: <ul style="list-style-type: none"> ▪ Valves free from oil, grease and dirt ▪ No dents/dings on cylinders or regulators 	
<ul style="list-style-type: none"> • Clear both cylinder valves correctly: <ul style="list-style-type: none"> ○ Stand on the opposite side of the valve ○ Crack the valves by opening slightly for about 5 seconds 	
<ul style="list-style-type: none"> • Install the regulators correctly: <ul style="list-style-type: none"> ○ Oxygen regulator on oxygen cylinder, alternative regulator on alternative fuel gas cylinder ○ Tighten with open ended or adjustable wrench 	
<ul style="list-style-type: none"> • Inspect hose fittings for damage and attach correctly: <ul style="list-style-type: none"> ○ Inspection includes: <ul style="list-style-type: none"> ▪ Hose fittings free of oil and grease ▪ No cracks, cuts, burns worn areas in hose ▪ Green hose attached to oxygen regulator; red hose to alternative fuel gas regulator ▪ Tighten both with appropriate wrench 	
<ul style="list-style-type: none"> • Open gas cylinders utilizing specific techniques per gas: <ul style="list-style-type: none"> ○ Oxygen cylinder: <ul style="list-style-type: none"> ▪ Ensure adjusting mechanism on regulator is “backed out” ▪ Stand opposite of regulator valve ▪ Open slowly to stabilize ▪ Continue by opening cylinder valve completely ○ Alternate fuel gas cylinder: <ul style="list-style-type: none"> ▪ Repeat process ▪ Leave tool for opening valve in place for quick shut off 	
<ul style="list-style-type: none"> • Purge both hoses by opening the regulator valves correctly per gas, one at a time: <ul style="list-style-type: none"> ○ Open first regulator valve and set to 5 PSI ○ Allow gas to flow for 5 seconds ○ Close first regulator valve before opening other gas valve 	

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

Heating/Welding/Brazing Torch Inspection & Assembly

<i>Check each step once completed:</i>	Completed
<ul style="list-style-type: none"> • Inspect the torch handle and heating/welding/brazing nozzle thoroughly: <ul style="list-style-type: none"> ○ 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 	
<ul style="list-style-type: none"> • Assemble the torch correctly: <ul style="list-style-type: none"> ○ Heating/welding/brazing nozzle: Hand-tightened (no use of wrench) onto handle 	
<ul style="list-style-type: none"> • Attach the hoses correctly: <ul style="list-style-type: none"> ○ Green hose to oxygen fitting on handle; red hose to alternate fuel gas fitting on handle ○ Tighten both with appropriate wrench 	

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Leak Check and Purging of Heating/Welding/Brazing Torch

<i>Check each step once completed:</i>	Completed
<ul style="list-style-type: none"> • Perform the leak check on the torch correctly: <ul style="list-style-type: none"> ○ Ensure adjusting mechanism completely backed out on both regulators ○ 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 ○ Repeat process with alternate fuel cylinder valve and regulator with PSI EXCEPTION: <ul style="list-style-type: none"> ▪ Alternate fuel gas regulator should be set to deliver only 10 PSI ○ Close both oxygen and alternate fuel gas cylinder valves ○ Turn adjusting mechanism counterclockwise one-half turn ○ Observe gauges on both regulators for a few minutes, if no changes in gauge readings – system is leak tight ○ Open cylinder valves again; any movement of needles on regulator gauges indicates possible leak: If leak is observed – STOP - DO NOT USE! <ul style="list-style-type: none"> ▪ Check all connections; if leak can't be found, have equipment inspected by a qualified technician 	
<ul style="list-style-type: none"> • Purge the torch correctly: <ul style="list-style-type: none"> ○ 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 ○ Repeat process for alternate fuel gas side: Open alternate fuel gas valve on torch handle for 3 to 5 seconds, then shut it off ○ Check both regulator pressures and reset if necessary 	

Notes: _____



Lighting the Heating/Welding/Brazing Torch, Adjusting the Flame, Setting a Neutral Flame, and Shutting Down	
Check each step once completed:	Completed
<ul style="list-style-type: none"> • Light the heating/welding/brazing torch correctly: <ul style="list-style-type: none"> ○ Hold torch in one hand, spark lighter in the other ○ Point torch away from people, equipment and flammable materials ○ Open torch fuel valve about 1/8 turn ○ Ignite gas with spark lighter ○ Continue opening fuel valve until smoke and soot disappeared 	
<ul style="list-style-type: none"> • Adjust the flame correctly to get a bright neutral flame: <ul style="list-style-type: none"> ○ Slowly open oxygen valve on torch until neutral flame achieved 	
<ul style="list-style-type: none"> • Shut down the torch flame properly: <ul style="list-style-type: none"> ○ Oxygen valve shut off first ○ Alternate fuel gas valve shut off last 	
Notes: _____ _____ _____ _____	
Shut-Down of Heating/Welding/Brazing Torch System	
Check each step once completed:	Completed
<ul style="list-style-type: none"> • Shut down and bleed the pressure from the system correctly: <ul style="list-style-type: none"> ○ Close both cylinder valves on gas supply ○ Open fuel gas valve on torch, bleed the pressure, close fuel gas valve ○ Same with oxygen valve (open valve on torch, bleed, close valve) <ul style="list-style-type: none"> ** CAUTION: Never have both valves open at the same time as it could cause a reverse flow of gases! ○ Release tension on adjusting screws <ul style="list-style-type: none"> ▪ Turn counterclockwise until they move freely ▪ Wait a few minutes and check inlet gauges to ensure no pressure remains in system 	
Notes: _____ _____ _____ _____	



CUTTING TORCH SET-UP FOR ALTERNATIVE FUEL	
Cutting Torch Inspection & Assembly	
Check each step once completed:	Completed
<ul style="list-style-type: none"> • Inspect the torch handle and cutting attachment thoroughly: <ul style="list-style-type: none"> ○ 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 	
<ul style="list-style-type: none"> • Assemble the torch correctly: <ul style="list-style-type: none"> ○ Cutting attachment: hand-tightened onto handle (no use of wrench) ○ Cutting tip: tightened with wrench for proper seating 	
<ul style="list-style-type: none"> • Attach the hoses correctly: <ul style="list-style-type: none"> ○ Green hose to oxygen fitting on handle; red hose to alternative fuel gas fitting on handle ○ Tighten both with appropriate wrench 	
Notes: _____ _____ _____	
Leak Check and Purging of Cutting Torch	
Check each step once completed:	Completed
<ul style="list-style-type: none"> • Perform the leak check on the torch correctly: <ul style="list-style-type: none"> ○ Ensure adjusting mechanism is completely backed out on both regulators ○ 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 ○ Repeat process with alternative fuel cylinder valve and regulator with PSI EXCEPTION: <ul style="list-style-type: none"> ▪ Alternative fuel gas regulator should be set to deliver only 10 PSI ○ Close both oxygen and alternative fuel gas cylinder valves ○ Turn adjusting mechanism counterclockwise one-half turn ○ Observe gauges on both regulators for few minutes; if no changes in gauge readings – system is leak tight ○ Open cylinder valves again; any movement of needles on regulator gauges indicates possible leak; if leak is observed – STOP - DO NOT USE! <ul style="list-style-type: none"> ▪ Check all connections; if leak can't be found, have equipment inspected by a qualified technician 	
<ul style="list-style-type: none"> • Purge the torch correctly: <ul style="list-style-type: none"> ○ 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 ○ Repeat process for alternative fuel gas side: Open alternative fuel gas valve on torch handle for 3 to 5 seconds, then shut it off ○ Check regulator pressures and reset if necessary 	
Notes: _____ _____ _____	



Lighting the Cutting Torch, Adjusting the Flame, Setting a Neutral Flame, and Shutting Down	
<i>Check each step once completed:</i>	Completed
<ul style="list-style-type: none"> • Light the cutting torch correctly: <ul style="list-style-type: none"> ○ Hold torch in one hand, spark lighter in other ○ Point torch away from people, equipment and flammable materials ○ Open torch fuel valve about 1/8 turn ○ Ignite gas with spark lighter ○ Continue opening fuel valve until smoke and soot disappeared 	
<ul style="list-style-type: none"> • Adjust the flame correctly to get a bright neutral flame: <ul style="list-style-type: none"> ○ Slowly open preheat oxygen valve on torch until neutral flame achieved ○ Depress cutting oxygen lever; readjust if necessary ○ Neutral flame = inner and outer cones are almost of equal length 	
<ul style="list-style-type: none"> • Shut down the torch flame properly: <ul style="list-style-type: none"> ○ Oxygen preheat valve shut off first ○ Alternative fuel gas valve shut off last 	
Notes: _____ _____ _____ _____	
Shut-Down of Cutting Torch System	
<i>Check each step once completed:</i>	Completed
<ul style="list-style-type: none"> • Shut down and bleed the pressure from the system correctly: <ul style="list-style-type: none"> ○ Close both cylinder valves on gas supply ○ Open fuel gas valve on torch, bleed the pressure, close fuel gas valve ○ Same with oxygen valve (open valve on torch, bleed, close valve) <ul style="list-style-type: none"> ** CAUTION: Never have both valves open at the same time as it could cause a reverse flow of gases! ○ Release tension on adjusting screws <ul style="list-style-type: none"> ▪ Turn counterclockwise until they move freely ▪ Wait a few minutes and check inlet gauges to ensure no pressure remains in the system 	
Notes: _____ _____ _____ _____	