

SAFETY WITH OXYGEN/FUEL GAS EQUIPMENT



Would you like to reduce your repairs on oxygen/fuel cutting and welding equipment? There are 2 big reasons why your equipment has to be sent out for repair: (1) lack of knowledge (2) and/or carelessness. Carelessness is the biggest reason for repairs. And the hardest thing to change. Whereas the lack of knowledge is dangerous for the operator and others, it's a much easier problem to solve.

Canadian Standards Association had produced a very readable booklet on safety in the welding department: C.S.A W117-2-12 book. It's a great reference book for your library. And it's very easy to purchase.

So, speaking from the repair bench, here are some of the rules we see that aren't known or getting missed.

Torches



1. Lighting the torch. There is no one correct procedure to lighting, adjusting and extinguishing the torch flames. The reason is Manufacturers have their own design for mixing the gases. It can be an injector type or positive-pressure mixer type. For that reason, it's important to follow the manufacturer's instructions. Below is a link for 2 of the manufacturer's videos.

The link for Victor: <https://www.youtube.com/watch?v=Hzkd1BltL58>

The link for Harris: <https://www.youtube.com/watch?v=OReUnBkmdYo>

2. Purge those hose lines: the first time it's used in the day; when the cylinder has been changed; and end of the day. It's a good, simple and safe habit. Not doing it, is like playing Russian Roulette.

Welding Hoses



1. The welding hose that meets all requirements for all fuel gases (acetylene, propane, propylene, etc) is T grade. It is both oil resistant and flame resistant.
2. Quick disconnects are great labor saving devices but ...check daily for external leaks. If you have leaks, it can lead to a hazardous build-up of flammable concentrations.
3. Quick disconnects are not to be used in confined spaces because of the potential risk of leakage or accidental disconnect.
4. Make sure your hose has adequate flow for your needs. This is especially true when you're heating or cutting thick steel.

Here is a link for calculating the pressure drop of fitted hose

https://www.esabna.com/euweb/oxy_handbook/589oxy24_11.htm

5. Check your hose at least once a week for:

- Cracking
- Deep cracks
- Exposed braiding
- Burns
- Separation of hose layers
- Bulges
- Sponginess



6. You already know that Flash back arrestors or check valves have to be installed on your equipment. But, here's what gets forgotten: they do restrict the flow of gases. In some situations, you may not get the needed gas flow. This lack of proper gas flow can cause instability in your system.

(Here's a footnote: some manufacturers build the arrestors into the torch. Putting on another set of arrestors on your torch is going to restrict your gas flow.)

Regulators



1. Oxygen regulator pressure gauges should have a bold marking on the pressure gauge: USE NO OIL
2. Regulators should be refurbished every 5 years. There are parts that degrade over time. Springs and pressure gauges lose their mechanical properties.
3. Check the regulators on annual basis. You are looking for:
 - Scratches or damage on the inlet and outlet connections. These are brass fittings and are easily damaged.
 - Pressure gauges. Look for off-zero pointers, broken lenses, bent dials or cases.
 - Traces of contaminants such as oil or grease
 - Use leak detection fluid to check for leaks when the regulator is fully pressurized.
 - When the regulator is fully pressurized, verify that there's no creeping of the delivery pressure.
 - And Verify that the regulator can be adjusted to maximum delivery pressure.

Cylinders



1. Cylinders showing damage, corrosion or fire damage are not to be used.
2. Don't use a pry bar to lift a cylinder that's frozen to the ground.
3. On noncombustible gases, it's a good thing to clean the valve by cracking open the cylinder valve. But, a fuel gas cylinder should never be cracked due to the potential for ignition.
4. Acetylene cylinder valve should never be open more than 1 complete revolution. You want to have the ability to quickly shut it off in an emergency.
5. The maximum withdrawal rate from a cylinder should not exceed 1/7th of the cylinder capacity per hour. Excessive depletion will make the acetylene unstable.
6. Empty cylinders need to be marked and segregated from the fulls.

We realize some of the above things require experience with oxygen/fuel equipment: knowing who made your equipment; does it have built-in flash back arrestors; what to do when you change fuel gases, etc. If we can help you, please give us a call.

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