

SAFE WORK PRACTICES

GAS WELDING & CUTTING – LEAKING, OVERHEATING CYLINDERS, OPERATING FAULTS *Page 1 of 2*

**This information does not take precedence over OH&S. All employees should be familiar with the Saskatchewan Employment Act and the OH&S Regulations.*

Leaking:

1. Check regularly and every time equipment is set up for gas leaks at cylinder valves, regulators and torch connections.
2. Return cylinder to supplier with protection cap in place when empty. Do not ship a leaking cylinder.
3. Close the valve on a cylinder if a leak is found around the valve stem.
4. Temporarily stop a leak through the cylinder valve by attaching a regulator.
5. Take a leaking cylinder out-of-doors, well away from any source of ignition if the leak cannot be stopped. Clearly tag it. Call the supplier and follow their instructions.
6. Post sign on cylinders warning not to approach within 6 meters (20 ft) with a cigarette or other source of ignition.
7. Open the cylinder valve slightly and allow gas to escape slowly.

Acetylene Cylinder Overheating: Acetylene cylinders may become hot from severe backfire or accidental heating. To prevent an accident:

- Remove source of heat.
- Shut cylinder valve, detach regulator.
- Clear all other workers away.
- Call supplier.
- Cool cylinder with a large supply of water, from behind a protective barrier.
- If the cylinder valve safety device opens and gas ignites, cool with water. Do not try to extinguish the flames. So gas does not ignite, remove all sources of ignition from the area if this can be done safely.
- Periodically stop cooling.
- Check if water dries off the cylinder or if it remains wet.
- When the cylinder remains wet on removal of the water, remove cylinder to an open space.
- Open valve and continue to cool cylinder with water until cylinder is empty.

Operating Faults: Minor “explosions” known as backfires and flashbacks may occur during welding and cutting. Common causes are:

- Torch nozzle obstructed or held too close to work.
- Pressures exceed capacity of cutting nozzle or welding tip – gas at higher pressure flows into lower pressure line.

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- A leak from regulator, hose or connection causes a drop of pressure in a line. Gas from the higher pressure line back feeds into it.
- Leaking valves allow gas to seep through and mix when the equipment is not in use.
- Lighting up with both torch control valves open, but on cylinder closed.
- Fuel gas may back feed into the oxygen line regulator and cylinder when an oxygen cylinder becomes empty. If the regulator is then placed on a new oxygen cylinder, and the cylinder valve is opened too rapidly, the pressure can increase the temperature of the mixed gas enough to ignite it.

Back Fire: (Return of the flame into the torch with a popping sound.) The flame is either extinguished or reignited at the nozzle.

What to do:

1. Close oxygen torch valve.
2. Close fuel gas torch valve.
3. Check cylinder pressures.
4. Check and adjust regulator settings.
5. Cool torch and clean nozzle or tip.

Flashbacks: (Return of the flame through the torch into the hoses and the regulators.) They are caused by oxygen and fuel gas in the same supply line. Flashbacks will damage equipment. A serious flashback or several minor ones can make equipment unsafe.

What to do:

1. Close oxygen torch valve.
2. Close fuel gas torch valve.
3. Close fuel and oxygen gas cylinder valves.
4. Extinguish fire.
5. Inspect torch, hose, regulators and cylinders. If cylinder is hot, cool as described above.

Non-Return Valve: (A device designed to prevent the back flow of gases.) When fitted to the torch end of the hose it reduces the chance of oxygen and fuel gas mixing, but may not stop a flashback reaching the hose, regulator and cylinder. For this reason, a flash arrestor is preferred.

Flashback Arrestor: (A device designed to prevent the back flow of gas and stop the flashback flame.) Prevents the flashback from reaching the regulator and cylinder. Fit small flashback arrestors between the torch and hose. Install larger units at the regulator outlets. Maintain regularly to ensure satisfactory performance. Use of flashback arrestors does not reduce the need to follow safe operating procedures.