MICHIGAN MILLERS® INSURANCE
Backing the Best in Business

Preventing Welding Flashback

SAFETY TALKS TOOLKIT

Oxy-acetylene torches have been used for many years for cutting, welding, brazing, and heating of metals. The equipment used today is safe, but every year, hundreds of employees are injured or die as a result of improper use. Knowledge and precautions can prevent fires and violent explosions.

Gas Pressure: One cause of fires and explosions is high acetylene pressure. When more than 15 pounds of pressure is used, acetylene becomes unstable and decomposes explosively. This is the major reason for using other fuel gases such as MAPP, propylene, propane, and natural gas which may be safely used at higher operating pressures.

Burn back: If your oxygen cylinder is low or empty, reverse flow of gas may occur. The fuel gas, being at a higher pressure, can travel up the oxygen line and mix with gas in the hose, regulator and cylinder. If you light your torch without purging the lines, a burn back may occur with explosions in the hose, regulator, or cylinder.

Backfire: The same thing can happen with high oxygen pressure and low fuel gas pressure if a backfire occurs, which is usually caused by holding the cutting torch too close to your work. This causes gas starvation of the cutting flame and results in the flame being sucked into the torch head. Usually you will hear a popping sound that turns to a whistle when this happens.

Flashback: When a backfire takes place in a mixing chamber, unless you shut off the oxygen valve, the flame burning in the torch head may ignite gases in the hoses and result in a flashback. A flashback is an explosion that progresses through the torch, hoses, regulators, and into the cylinders. Consequence can range from a burst hose to a violent explosion of the regulator and cylinders.

There are several things you can do to help prevent flashbacks, fires and explosions:

1. If using acetylene, keep the pressure below 15 pounds.
2. Purge your hoses before lighting the torch.
3. Never light your torch with a mixture of fuel and oxygen. After purging the lines, light the torch with only the fuel gas valve open.
4. Check valves should be installed on both torch inlets and operating properly. Check valves can stop the reverse flow of gases, but will not prevent flashbacks.
5. To prevent flashbacks, flashback arrestors must be installed on the outlets of both regulators, and/or torch inlets.

Check the Torch: How can you tell if the torch you are using has flashback arrestors and check valves? If you look at the torch you will notice a small cylindrical valve on each inlet with the hoses screwed onto this valve instead of hooked directly to the torch. Most of these valves are combination flashback/check valves and will be indicated as such on the valve body. Often, combination valves are also installed on regulator outlets.

Before welding, take time to inspect the equipment you will be using to be sure check valves and flashback arrestors have been installed. This precaution can prevent a deadly cylinder explosion.