TECH SHEET

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Flashback Arrestors

Welding Caution

Oxy-fuel welding involves two different compressed flammable gases (oxygen and acetylene), rubber hoses, gas regulators, and a torch head with either a heating torch tip or cutting tip. The shape and temperature of the flame is controlled by regulating the pressure of the flammable gases being burned at the torch tip. Flashback arrestors are safety devices similar to check valves which are installed in-line between the gas supply hoses and the torch head to prevent the flame from burning back into the torch head (flashback) or from explosions (backfires). These conditions can occur with an imbalance of pressure in the torch head due to a loss in pressure of one of the two gases, such as when a compressed cylinder becomes empty or if gas valves are not opened/closed properly during torch start-up/shutdown. It can also be caused if the torch tip becomes clogged with molten metal or is held too close to the object being worked.

Backfires

A backfire during welding or cutting is a momentary backward movement of the flame into the torch tip. It is usually accompanied by a loud pop or bang as the flame extinguishes and reignites quickly. In the case of a severe backfire, the flame may burn back into the hoses. Occasionally, backfire flames can burn through the hoses (especially oxygen hoses) and cause severe injury. This momentary regression of the flame into the tip or torch can cause serious damage to the equipment and potentially cause an explosion in the cylinder regulators.

Flashbacks

A flashback is an occurrence initiated by a backfire, caused when the flame continues to burn inside the equipment instead of being reestablished at the tip. It is usually recognized by a whistling or squealing sound. A flashback is a potentially hazardous situation because it results in very rapid internal heating and possible destruction of the equipment. The equipment will heat up rapidly, and sparks may begin flowing from the tip. The flashback should be extinguished by turning off the torch valves as quickly as possible. Some manufacturers recommend shutting

off either the fuel or oxygen first. Check your specific manufacturer's recommendations for the proper valve shutdown sequence. The most important concern is to get both valves closed quickly and to understand any shutdown sequence before an incident occurs.

Flashback Arrestors

To reduce backfires and flashbacks, flashback arrestors should be used, and hose lines should be purged before lighting the oxy-fuel gas torch. Purging flushes out any combustible oxygen-fuel gas or air-fuel gas mixtures in the hoses. Caution should be taken when purging the hoses. Never point the torch at an ignition source or purge the hoses in a confined space.

To protect operators and equipment, it is recommended that all oxyacetylene welding equipment be protected by installing flashback arrestors. Once a flashback starts, an arrestor is the

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only device that will stop a hose fire. Arrestors provide protection in three ways:

- A filter that stops the flame from traveling back to the regulator
- A check valve that stops the reverse flow of gases
- A cutoff valve that stops the flow of gases

For maximum protection, flashback arrestors should be installed at the end of the hose, next to the regulators. Arrestors are inexpensive protection for gas welding equipment and the operators who use them. They are available through welding supply companies.

For Additional Information

EMC Insurance Companies: www.emcins.com

- Tech Sheets – Fire Protection Plan