

## INTEROFFICE MEMORANDUM

### Department of Insurance and Finance

November 24, 1992

**TO:** Gary Beck, Appeals Specialist

**FROM:** Marilyn Schuster, Manager  
Standards and Technical Resources

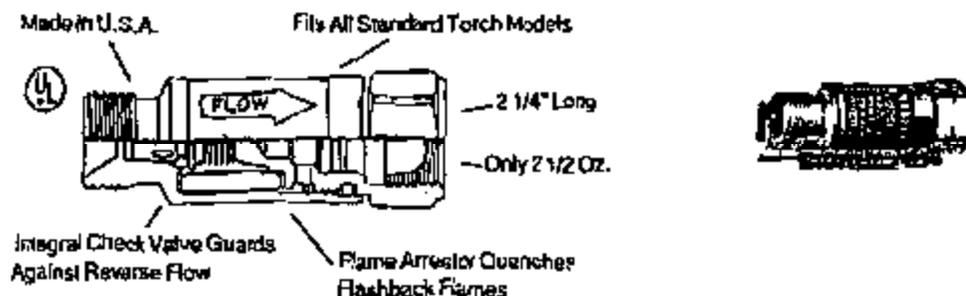
**SUBJECT:** Backflow and Flashback Devices on Welding Torches (437-02-290)

**QUESTION 1:** What do you look for on a cutting torch to tell if it has a backflow preventer or flashback preventer on it and does 437-02-290(1) allow either a backflow or flashback device?

**ANSWER:** A hose line backflow OR flashback device must be installed between the hose and the torch. Either device is allowed under 437-02-290(1).

#### FLASHBACK ARRESTOR

A flashback arrestor is 2 to 2 ½ inches long and about 1 ½ inches in diameter and comes in several different colors.

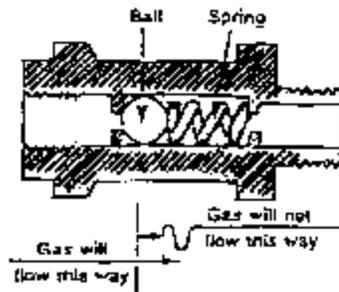


The flashback arrestor is designed to prevent the backflash of a flame through the torch into the hoses and regulator which can cause the torch and hoses to blow up and cause severe injury to the operator.

Most modern-day flashback arrestors also contain check valves intended to prevent backflow of gases in addition to protection from flashbacks.

## BACKFLOW PREVENTER

A backflow preventer is sometimes called a reverse flow valve or check valve.



Reverse Flow Check Valves

A backflow device is designed to prevent gases from the torch from mixing and flowing back into the hose lines which is a dangerous situation. A backflow device will not always stop a flashback from reaching the hoses, regulator and cylinders. For this reason, a flashback arrestor is the safest and preferred method of protection.

There must be two arrestors or backflow devices. One on the fuel line and one on the oxygen line.



Torches such as the Victor torch with a "C" in the model number have built-in backflow devices.

Look for a "C" after the model number, such as 315-C, J100-C, etc.

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QUESTION 2: Do check valves or backflow devices also work as a flashback preventer or is the flashback preventer something different?

ANSWER: No. A backflow device only prevents gases from flowing back into the torch and hose lines.

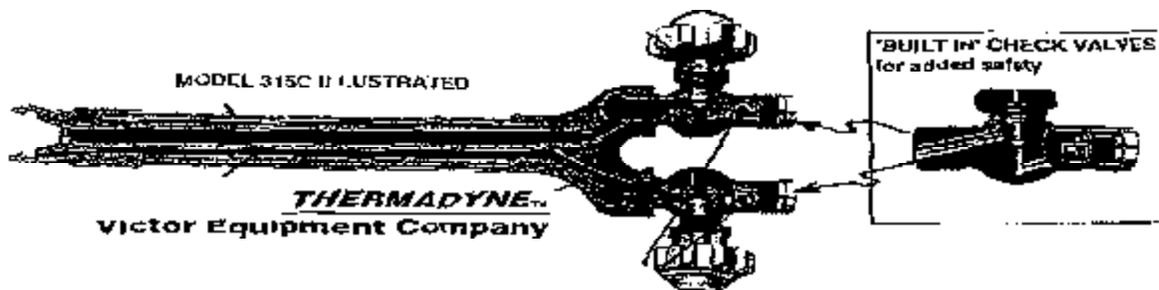
A flashback preventer prevents a flame from being pulled back into the torch and hose lines.

Both devices serve different safety functions. This is why a combination flashback and backflow device is preferred.

QUESTION 3: 29 CFR 1910.253(e)(3)(ii) states that there must be backflow protection, flashback protection, and back pressure protection. Does a check valve or backflow preventer work as a flashback preventer?

ANSWER: No. A check valve or backflow device does only one thing, it prevents the backflow of gas into the hose lines, cylinders and regulator. 29 CFR 1910.253(e) refers to rigid and semi-rigid piping installed within a building rather than a single tank application and is based on NFPA A-51.

NFPA A-51 states, "These standards do not apply to single cylinders of oxygen and fuel gas, their regulators, hoses and torches. For single systems (portable welding systems) see ANSI Std Z49.1.



# TECHNICAL BULLETIN



TB-3 — 1983

COMPRESSED GAS  
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## HOSE LINE FLASHBACK ARRESTORS

Hose line flashback arrestors can be used with oxy-fuel gas welding, heating, cutting and allied processes. Usually: (1) they are installed in the gas system between the outlet of the regulator and the inlet of the hose leading to the torch; (2) the inlet and outlet connections are “B” size right hand thread (CGA-022) for oxygen service and “B” size left hand thread (CGA-023) for fuel gas service; and (3) they are about 2" in diameter with a body length of about 2" and an overall length of about 3 ½”.

The flashback arrestors are intended to prevent a flashback in the hose from reaching the regulator; the devices also often contain check valves intended to prevent the backflow of gas. The subject flashback arrestors are not a substitution for the station outlet protective equipment (Sf, So, or Pf) required in NFPA-51 “Standard for the Design and Installation of Oxygen-Fuel Gas Systems for Welding and Cutting.” They may, if listed or approved, be used in conjunction with other approved devices to meet the requirements of NFPA-51.

Many years of field experience have shown the various oxy-fuel gas torches to be reliably safe pieces of equipment when operated in accordance with instructions recommended by the manufacturer. Under certain circumstances, the user’s failure to follow these instructions can cause the backflow of unwanted gas and/or a flashback into the upstream gas regulator.

Hose line flashback arrestors could provide a certain measure of protection. To maintain this protection, a routine inspection program must be followed to assure that they have not become damaged or inoperative during use. Hose line flashback arrestors should be considered as an optional accessory installed by the equipment owner and used at his own risk. For example, the user should verify that the device will not restrict the gas flow below that required for the process, and that it is designed for the intended pressure and gas service.

Safe use of oxy-fuel gas equipment can only be assured by the observance of proper operating procedures recommended by the welding equipment manufacturers, industry associations and regulatory bodies on safe practices.

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