

WAC 296-24-68209 Protective equipment, hose, and regulators.

(1) **General.** You must install and use only in the service for which it is approved and as recommended by the manufacturer.

(2) **Pressure relief devices.** You must protect service piping systems by pressure relief devices set to function at not more than the design pressure of the systems and discharging upwards to a safe location.

(3) **Piping protective equipment.**

(a) The fuel-gas and oxygen piping systems, including portable outlet headers must incorporate the protective equipment shown in Figures Q-1, Q-2, and Q-3.

When only a portion of a fuel-gas system is to be used with oxygen, only that portion need comply with (3)(a) of this section.

(b) You must install approved protective equipment (designated P_F in Figs. Q-1, Q-2, and Q-3) in fuel-gas piping to prevent:

- (i) Backflow of oxygen into the fuel-gas supply system;
- (ii) Passage of a flash back into the fuel-gas supply system; and
- (iii) Excessive back pressure of oxygen in the fuel-gas supply system. The three functions of the protective equipment may be combined in one device or may be provided by separate devices.

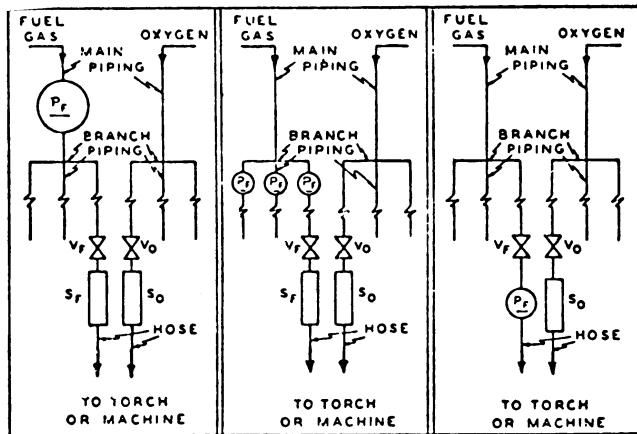


Fig. Q-1

Fig. Q-2

Fig. Q-3

LEGEND

- P_F —Protective equipment in fuel gas piping
- V_F —Fuel gas station outlet valve
- V_O —Oxygen station outlet valve
- S_F —Backflow prevention device(s) at fuel gas station outlet
- S_O —Backflow prevention device(s) at oxygen station outlet

(c) You must locate the protective equipment in the main supply line, as in Figure Q-1 or at the head of each branch line, as in Figure Q-2 or at each location where fuel-gas is withdrawn, as in Figure Q-3. Where branch lines are of 2-inch pipe size or larger or of substantial length, you must locate protective equipment (designated as P_F) as shown in either Q-2 and Q-3.

(d) You must provide backflow protection by an approved device that will prevent oxygen from flowing into the fuel-gas system or fuel from flowing into the oxygen system (see S_F , Figs. Q-1 and Q-2).

(e) You must provide flash-back protection by an approved device that will prevent flame from passing into the fuel-gas system.

(f) You must provide back-pressure protection by an approved pressure-relief device set at a pressure not greater than the pressure rating of the backflow or the flashback protection device, whichever

is lower. You must locate the pressure-relief device on the downstream side of the backflow and flashback protection devices. The vent from the pressure-relief device must be at least as large as the relief device inlet and you must install it without low points that may collect moisture. If low points are unavoidable, you must install drip pots with drains closed with screw plugs or caps at the low points. The vent terminus must not endanger personnel or property through gas discharge; must be located away from ignition sources; and must terminate in a hood or bend.

(g) If pipeline protective equipment incorporates a liquid, you must maintain the liquid level, and a suitable anti-freeze may be used to prevent freezing.

(h) You must withdraw fuel gas for use with equipment not requiring oxygen upstream of the piping protective devices.

(4) Station outlet protective equipment.

(a) You must provide a check valve pressure regulator, hydraulic seal, or combination of these devices at each station outlet, including those on portable headers, to prevent backflow, as shown in Figures Q-1, Q-2, and Q-3 and designated as S_F and S_O .

(b) When approved pipeline protective equipment (designated P_F) is located at the station outlet as in Figure Q-3, no additional check valve, pressure regulator, or hydraulic seal is required.

(c) You must install a shutoff valve (designated V_F and V_O) at each station outlet and you must locate it on the upstream side of other station outlet equipment.

(d) If the station outlet is equipped with a detachable regulator, the outlet must terminate in a union connection that complies with the Regulator Connection Standards, 1958, Compressed Gas Association.

(e) If the station outlet is connected directly to a hose, the outlet must terminate in a union connection complying with the Standard Hose Connection Specifications, 1957, Compressed Gas Association.

(f) Station outlets may terminate in pipe threads to which permanent connections are to be made, such as to a machine.

(g) You must equip station outlets with a detachable outlet seal cap secured in place. You must use this cap to seal the outlet except when a hose, a regulator, or piping is attached.

(h) Where station outlets are equipped with approved backflow and flashback protective devices, as many as four torches may be supplied from one station outlet through rigid piping, provided each outlet from such piping, is equipped with a shutoff valve and provided the fuel-gas capacity of any one torch does not exceed 15 cubic feet per hour. This rule does not apply to machines.

(5) Hose and hose connections.

(a) Hose for oxy-fuel gas service must comply with the Specification for Rubber Welding Hose, 1958, Compressed Gas Association and Rubber Manufacturers Association.

(b) The generally recognized colors are red for acetylene and other fuel-gas hose, green for oxygen hose, and black for inert-gas and air hose.

(c) When parallel lengths of oxygen and acetylene hose are taped together for convenience and to prevent tangling, you must cover not more than 4 inches out of 12 inches by tape.

(d) Hose connections must comply with the Standard Hose Connection Specifications, 1957, Compressed Gas Association.

(e) You must clamp or otherwise securely fasten connections in a manner that will withstand, without leakage, twice the pressure to which they are normally subjected in service, but in no case less than a pressure of 300 p.s.i. You must use oil-free air or an oil-free inert gas for the test.

(f) You must repair or replace hose showing leaks, burns, worn places, or other defects rendering it unfit for service.

(6) Pressure-reducing regulators.

(a) You must use pressure-reducing regulators only for the gas and pressures for which they are intended. The regulator inlet connections must comply with Regulator Connection Standards, 1958, Compressed Gas Association.

(b) When regulators or parts of regulators, including gages, need repair, the work must be performed by skilled mechanics who have been properly instructed.

(c) You must mark gauges on oxygen regulators "USE NO OIL."

(d) You must inspect union nuts and connections on regulators before use to detect faulty seats which may cause leakage of gas when the regulators are attached to the cylinder valves. You must destroy damaged nuts or connections.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. WSR 15-24-100, § 296-24-68209, filed 12/1/15, effective 1/5/16; Order 73-5, § 296-24-68209, filed 5/9/73 and Order 73-4, § 296-24-68209, filed 5/7/73.]