WAC 296-24-68205 Manifolding of cylinders. (1) **Fuel-gas manifolds.**

(a) You must approve manifolds either separately for each component part or as an assembled unit.

(b) Except as provided in (1)(c) of this section you must limit fuel-gas cylinders connected to one manifold inside a building to a total capacity not exceeding 300 pounds of liquefied petroleum gas or 3,000 cubic feet of other fuel-gas. More than one such manifold with connected cylinders may be located in the same room provided the manifolds are at least 50 feet apart or separated by a noncombustible barrier at least 5 feet high having a fire-resistance rating of at least one-half hour.

(c) You must locate fuel-gas cylinders connected to one manifold having an aggregate capacity exceeding 300 pounds of liquefied petroleum gas or 3,000 cubic feet of other fuel-gas outdoors, or in a separate building or room constructed in accordance with WAC 296-24-68211 (6)(h) and (i).

(d) Separate manifold buildings or rooms may also be used for the storage of drums of calcium carbide and cylinders containing fuel gases as provided in WAC 296-24-68203(3). Such buildings or rooms must have no open flames for heating or lighting and must be well-ventilated.

(e) You must provide high-pressure fuel-gas manifolds with approved pressure regulating devices.

(2) **High-pressure oxygen manifolds (for use with cylinders having a department of transportation service pressure above 200 p.s.i.g.).**

(a) You must approve manifolds either separately for each component or as an assembled unit.

(b) You must not locate oxygen manifolds in an acetylene generator room. You must separate oxygen manifolds from fuel-gas cylinders or combustible materials (especially oil or grease), a minimum distance of 20 feet or by a noncombustible barrier at least 5 feet high having a fire-resistance rating of at least one-half hour.

(c) Except as provided in WAC 296-24-68205 (2)(d) you must limit oxygen cylinders connected to one manifold to a total gas capacity of 6,000 cubic feet. More than one such manifold with connected cylinders may be located in the same room provided the manifolds are at least 50 feet apart or separated by a noncombustible barrier at least 5 feet high having a fire-resistance rating of at least one-half hour.

(d) An oxygen manifold, to which cylinders having an aggregate capacity of more than 6,000 cubic feet of oxygen are connected, should be located outdoors or in a separate noncombustible building. You must locate such a manifold, if located inside a building having other occupancy, in a separate room of noncombustible construction having a fire-resistance rating of at least 1/2 hour or in an area with no combustible material within 20 feet of the manifold.

(e) An oxygen manifold or oxygen bulk supply system which has storage capacity of more than 13,000 cubic feet of oxygen (measured at 14.7 p.s.i.a. and 70°F), connected in service or ready for service, or more than 25,000 cubic feet of oxygen (measured at 14.7 p.s.i.a. and 70°F), including unconnected reserves on hand at the site, must comply with the provisions of the Standard for Bulk Oxygen Systems at Consumer Sites, NFPA No. 566-1965.

(f) You must provide high-pressure oxygen manifolds with approved pressure-regulating devices.

(3) **Low-pressure oxygen manifolds (for use with cylinders having a department of transportation service pressure not exceeding 200 p.s.i.g.).**

(a) Manifolds must be of substantial construction suitable for use with oxygen at a pressure of 250 p.s.i.g. They must have a minimum bursting pressure of 1,000 p.s.i.g. and you must protect them by a safety relief device which will relieve at a maximum pressure of 500 p.s.i.g.

Note: DOT-4L200 cylinders have safety devices which relieve at a maximum pressure of 250 p.s.i.g. (or 235 p.s.i.g. if vacuum insulation is used).

(b) Hose and hose connections subject to cylinder pressure must comply with WAC 296-24-68209(5). Hose must have a minimum bursting pressure of 1,000 p.s.i.g.

(c) You must test the assembled manifold including leads and prove them to be gas-tight at a pressure of 300 p.s.i.g. The fluid used for testing oxygen manifolds must be oil-free and not combustible.

(d) The location of manifolds must comply with WAC 296-24-68205 (2)(b), (c), (d) and (e).

(e) You must conspicuously post the following sign at each manifold:

Low-Pressure Manifold
Do Not Connect High-Pressure Cylinders
Maximum Pressure—250 P.S.I.G.

(4) **Portable outlet headers.**

(a) You must not use portable outlet headers indoors except for temporary service where the conditions preclude a direct supply from outlets located on the service piping system.

(b) You must equip each outlet on the service piping from which oxygen or fuel-gas is withdrawn to supply a portable outlet header with a readily accessible shutoff valve.

(c) Hose and hose connections used for connecting the portable outlet header to the service piping must comply with WAC 296-24-68209(5).

(d) You must provide master shutoff valves for both oxygen and fuel-gas at the entry end of the portable outlet header.

(e) You must provide portable outlet headers for fuel-gas service with an approved hydraulic back-pressure valve installed at the inlet and preceding the service outlets, unless an approved pressure-reducing regulator, an approved backflow check valve, or an approved hydraulic back-pressure valve is installed at each outlet. Outlets provided on headers for oxygen service may be fitted for use with pressure-reducing regulators or for direct hose connection.

(f) You must provide each service outlet on portable outlet headers with a valve assembly that includes a detachable outlet seal cap, chained or otherwise attached to the body of the valve.

(g) Materials and fabrication procedures for portable outlet headers must comply with WAC 296-24-68207 (1), (2) and (5).

(h) You must provide portable outlet headers with frames which will support the equipment securely in the correct operating position and protect them from damage during handling and operation.

(5) **Manifold operating procedures.**

(a) You must install cylinder manifolds under the supervision of someone familiar with the proper practices with reference to their construction and use.

(b) You must approve all component parts used in the methods of manifolding described in (1)(a) through (e) of this section as to materials, design and construction either separately or as an assembled unit.

(c) You must use all manifolds and parts used in methods of manifolding only for the gas or gases for which they are approved.

(d) When acetylene cylinders are coupled, you must install approved flash arresters between each cylinder and the coupler block. For outdoor use only, and when the number of cylinders coupled does not exceed three, one flash arrester installed between the coupler block and regulator is acceptable.

(e) Each fuel-gas cylinder lead should be provided with a backflow check valve.

(f) The aggregate capacity of fuel-gas cylinders connected to a portable manifold inside a building must not exceed 3,000 cubic feet of gas.

(g) You must manifold acetylene and liquefied fuel-gas cylinders in a vertical position.

(h) The pressure in the gas cylinders connected to and discharged simultaneously through a common manifold must be approximately equal.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. WSR 15-24-100, § 296-24-68205, filed 12/1/15, effective 1/5/16; Order 73-5, § 296-24-68205, filed 5/9/73 and Order 73-4, § 296-24-68205, filed 5/7/73.]