

**WAC 296-155-400 Gas welding and cutting. (1) Transporting, moving, and storing compressed gas cylinders.**

(a) You must ensure that valve protection caps are in place and secured.

(b) When cylinders are hoisted, you must secure them on a cradle, slingboard, or pallet. You must not hoist or transport them by means of magnets or choker slings.

(c) You must move cylinders by tilting and rolling them on their bottom edges. You must not intentionally drop, strike, or permit them to strike each other violently.

(d) When cylinders are transported by powered vehicles, you must secure them in a vertical position.

(e) You must not use valve protection caps for lifting cylinders from one vertical position to another. You must not use bars under valves or valve protection caps to pry cylinders loose when frozen. You must use warm, not boiling, water to thaw cylinders loose.

(f) Unless cylinders are firmly secured on a special carrier intended for this purpose, you must remove regulators and put valve protection caps in place before cylinders are moved.

(g) You must use a suitable cylinder truck, chain, or other steadying device to keep cylinders from being knocked over while in use. Such cylinders are not considered to be "in storage."

(h) When a job is finished, when cylinders are empty or when cylinders are moved at any time, you must close the cylinder valve.

(i) You must secure compressed gas cylinders in an upright position at all times except, if necessary, for short periods of time while cylinders are actually being hoisted or carried.

(j) **Oxygen.** You must separate oxygen cylinders in storage 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 1/2 hour.

**(2) Placing cylinders.**

(a) You must keep cylinders far enough away from the actual welding or cutting operation so that sparks, hot slag, or flame will not reach them. When this is impractical, fire resistant shields must be provided.

(b) You must place cylinders where they cannot become part of an electrical circuit. You must not strike electrodes against a cylinder to strike an arc.

(c) You must place fuel gas cylinders with valve end up whenever they are in use. You must not place them in a location where they would be subject to open flame, hot metal, or other sources of artificial heat.

(d) You must not take cylinders containing oxygen or acetylene or other fuel gas into confined spaces.

**(3) Treatment of cylinders.**

(a) You must not use cylinders, whether full or empty, as rollers or supports.

(b) No person other than the gas supplier is permitted to attempt to mix gases in a cylinder. No one except the owner of the cylinder or person authorized by the owner, is permitted to refill a cylinder. No one is permitted to use a cylinder's contents for purposes other than those intended by the supplier. All cylinders used must meet the department of transportation requirements, Specification for Cylinders, (49 C.F.R. Part 178, Subpart C).

(c) You must not use any damaged or defective cylinder.

(4) **Use of fuel gas.** You must thoroughly instruct employees in the safe use of fuel gas, as follows:

(a) Before a regulator to a cylinder valve is connected, you must open the valve slightly and close it immediately. (This action is generally termed "cracking" and is intended to clear the valve of dust or dirt that might otherwise enter the regulator.) The person cracking the valve must stand to one side of the outlet, not in front of it. You must not crack the valve of a fuel gas cylinder where the gas would reach welding work, sparks, flame, or other possible sources of ignition.

(b) You must always open the cylinder valve slowly to prevent damage to the regulator. For quick closing, you must not open valves on fuel gas cylinders more than 1 1/2 turns. When a special wrench is required, you must leave it in position on the stem of the valve while the cylinder is in use so that the fuel gas flow can be shut off quickly in case of an emergency. In the case of manifolded or coupled cylinders, at least one such wrench must always be available for immediate use. You must not place anything on top of a fuel gas cylinder, when in use, which may damage the safety device or interfere with the quick closing of the valve.

(c) You must not use fuel gas from cylinders through torches or other devices which are equipped with shutoff valves without reducing the pressure through a suitable regulator attached to the cylinder valve or manifold.

(d) Before a regulator is removed from a cylinder valve, you must always close the cylinder valve and release the gas from the regulator.

(e) If, when the valve on a fuel gas cylinder is opened, there is found to be a leak around the valve stem, you must close the valve and tighten the gland nut. If this action does not stop the leak, you must discontinue the use of the cylinder, and you must properly tag and remove it from the work area. In the event that fuel gas should leak from the cylinder valve, rather than from the valve stem, and the gas cannot be shut off, you must properly tag and remove the cylinder from the work area. If a regulator attached to a cylinder valve will effectively stop a leak through the valve seat, the cylinder need not be removed from the work area.

(f) If a leak should develop at a fuse plug or other safety device, you must remove the cylinder from the work area.

(g) Cylinders not having fixed hand wheels must have keys, handles, or nonadjustable wrenches on valve stems while in service. In multiple cylinder installations one and only one key or handle is required for each manifold.

(5) **Fuel gas and oxygen manifolds.**

(a) Fuel gas and oxygen manifolds must bear the name of the substance they contain in letters at least 1-inch high which must be either painted on the manifold or on a sign permanently attached to it.

(b) You must place fuel gas and oxygen manifolds in safe, well ventilated, and accessible locations. You must not located them within enclosed spaces.

(c) Manifold hose connections, including both ends of the supply hose that lead to the manifold, must be such that the hose cannot be interchanged between fuel gas and oxygen manifolds and supply header connections. You must not use adapters to permit the interchange of hose. You must keep hose connections free of grease and oil.

(d) When not in use, you must cap manifold and header hose connections.

(e) You must not place anything on top of a manifold, when in use, which will damage the manifold or interfere with the quick closing of the valves.

(6) **Hose.**

(a) Fuel gas hose and oxygen hose must be easily distinguishable from each other. The contrast may be made by different colors or by surface characteristics readily distinguishable by the sense of touch. Oxygen and fuel gas hoses must not be interchangeable. You must not use a single hose having more than one gas passage.

(b) When parallel sections of oxygen and fuel gas hose are taped together, you must not cover more than 4 inches out of 12 inches by tape.

(c) You must inspect all hose in use, carrying acetylene, oxygen, natural or manufactured fuel gas, or any gas or substance which may ignite or enter into combustion, or be in any way harmful to employees, at the beginning of each working shift. You must remove defective hose from service.

(d) You must test hose which has been subject to flashback, or which shows evidence of severe wear or damage, to twice the normal pressure to which it is subject, but in no case less than 300 p.s.i. You must not use defective hose, or hose in doubtful condition.

(e) Hose couplings must be of the type that cannot be unlocked or disconnected by means of a straight pull without rotary motion.

(f) Boxes used for the storage of gas hose must be ventilated.

(g) You must keep hoses, cables, and other equipment clear of passageways, ladders and stairs.

(7) **Torches.**

(a) You must clean clogged torch tip openings with suitable cleaning wires, drills, or other devices designed for such purpose.

(b) You must inspect torches in use at the beginning of each working shift for leaking shutoff valves, hose couplings, and tip connections. You must not use defective torches.

(c) You must light torches by friction lighters or other approved devices, and not by matches or from hot work.

(8) **Regulators and gauges.** Oxygen and fuel gas pressure regulators, including their related gauges, must be in proper working order while in use.

(9) **Oil and grease hazards.** You must keep oxygen cylinders and fittings away from oil or grease. You must keep cylinders, cylinder caps and valves, couplings, regulators, hose, and apparatus free from oil or greasy substances and you must not handle them with oily hands or gloves. You must not direct oxygen at oily surfaces, greasy clothes, or within a fuel oil or other storage tank or vessel.

(10) **Additional rules.** For additional details not covered in this Part, applicable portions of American National Standards Institute, Z49.1-1973, Safety in Welding and Cutting, applies.

You must also protect employees from exposure to hexavalent chromium during the stainless steel welding process. See WAC 296-62-08003, Hexavalent chromium for specific criteria.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 16-09-085, § 296-155-400, filed 4/19/16, effective 5/20/16; WSR 06-16-106, § 296-155-400, filed 8/1/06, effective 9/1/06. Statutory Authority: Chapter 49.17 RCW. WSR 94-15-096 (Order 94-07), § 296-155-400, filed 7/20/94, effective 9/20/94. Statutory Authority: RCW 49.17.040 and 49.17.050. WSR 86-03-074 (Order 86-14), §

296-155-400, filed 1/21/86; Order 74-26, § 296-155-400, filed 5/7/74, effective 6/6/74.]