

**Acetylene Generators
New Rules
4-29-11**

NOTE 1: Print this section in Division 2Q

NOTE 2: Reference 2H, 3F and 3J to this section rather than reprint it in the other subdivisions.

437-002-3253(xx) Acetylene generators.. (currently 253(f))

437-002-3253(a) Approval and marking. (currently 253(f)(1)).

(A) You must use generators that are:

(i) Of approved construction.

(ii) Plainly marked with the:

(i) Maximum weight and size of carbide necessary for a single charge.

(II) Manufacturer's name and address

(III) Name or number of the type of generator.

(iii) Use the size carbide marked on the generator nameplate.

437-002-3253(b) Rating and pressure limitations. (253 (f)(2)).

(A) You must: (253(f)(2)(i))

(i) Limit the total hourly output rate for which it is approved and marked.

NOTE: Unless specifically approved for higher ratings, carbide-feed generators shall be rated at 1 cubic foot (0.028 m³) per hour per pound of carbide required for a single complete charge.

(ii) Operate relief valves regularly. 253(f)(2)(ii)

(iii) Set relief valves to open at a pressure not in excess of 15 psig.
253(f)(2)(ii)

(iv) Set hydraulic back pressure valves to open at a pressure not in excess of 20 psig. 253(f)(2)(ii)

(v) Ensure that all non-automatic generator water overflows are visible.
253(f)(2)(iii)

(B) You must not: 253(f)(2)(iii)

(i) Use non-automatic generators to generate acetylene at pressures exceeding 1 psig.

437-002-3253(c) Location - You must maintain ample free, unobstructed operation and maintenance space around the generator to permit ready adjustment and charging. (currently 253(f)(3))

437-002-3253(--) Stationary acetylene generators (automatic and non-automatic)
(currently (253(f)(4))

(a) You must: 253(f)(4)(i)(A)

(A) Arrange the foundation so:

(i) The generator(s) will be level.

(ii) There is no excessive strain will be placed on the generator or its connections.

(B) Ground the generator(s).

(C) Place generators where water will not freeze. 253(f)(4)(i)(B)

(D) Prohibited sources of ignition in outside generator houses or inside generator rooms unless the generators are prepared in accordance with paragraph (f)(7)(v) of this section: 253(f)(4)(i)(C).

(E) Terminate non-continuous connection not less than 2 inches above the regularly provided opening for filling so that the water can be observed as it enters the generator. 253(f)(4)(i)(D)

(F) Discharge generators through an open connection into a suitably vented outdoor receptacle or residue pit which may have such connections. 253(f)(4)(i)(E)

NOTE: An open connection for the sludge drawoff is desirable to enable the generator operator to observe leakage of generating water from the drain valve or sludge cock.

(G) Provide a vent pipe for each generator. 253(f)(4)(ii)(A)

(H) Rigidly install the escape or relief pipe: 253(f)(4)(ii)(B)

(i) Without traps

(ii) So any condensation will drain back to the generator.

(I) Carry the escape or relief pipe full size to a suitable point outside the building. 253(f)(4)(ii)(C)

(J) Terminate the escape or relief pipe in a hood or bend located at least 12 feet (3.7 m) above the ground. 253(f)(4)(ii)(C)

NOTE: It is preferable to terminate the escape or relief pipe above the roof, and as far away as practicable from windows or other openings into buildings and as far away as practicable from sources of ignition such as flues or chimneys and tracks used by locomotives.

(K) Lead the generating chamber relief pipes separately to the outside so they are unobstructed by rain, snow, ice, insects, or birds253(f)(4)(ii)(C)

(L) Locate the outlet at least 3 feet (0.9 m) from combustible construction. 253(f)(4)(ii)(C)

(M) Use gas holders constructed on the gasometer principle that have the bell suitably guided. 253(f)(4)(iii)(A)

(N) Ensure the gas bell moves freely without tendency to bind and it has at least 2 inches (5 cm) clearance from the shell. 253(f)(4)(iii)(A)

(O) Provide a compressor or booster cutoff at a point 12 inches (0.3 m) or more above the landing point of the bell. 253(f)(4)(iii)(B)

(Pi) Ventilate the room in accordance with paragraph (f)(6)(ii) of this section when the gas holder is located indoors., 253(f)(4)(iii)(B)

(Qi) Heat and light the room in accordance with paragraphs (f)(6)(iii) and (f)(6)(iv) of this section when the gas holder is located indoors. 253(f)(4)(iii)(B)

(R) Protect gas holder seals against freezing when the gas hold is not located within a heated building. 253(f)(4)(iii)(C)

(S) Provide means to stop the generator-feeding mechanism before the gas holder reaches the upper limit of its travel. : 253(f)(4)(iii)(D)

(T) Ensure that the gas capacity of the gas holder is not less than one-third of the hourly rating of the generator when the holder is connected to only one generator. 253(f)(4)(iii)(E)

(U) If acetylene is used from the gas holder without increase in pressure at some points but with increase in pressure by a compressor or booster pump at other points you must: 253(f)(4)(iii)(F)

(i) Install approved piping protective devices in each supply line.

(ii) Locate low-pressure protective device shall be located between the gas holder and the shop piping.

(iii) Locate the medium-pressure protective device shall be located between the compressor or booster pump and the shop piping (see Figure Q-4).

NOTE 1: Approved protective equipment (designated PF) is used to prevent:

- a. Backflow of oxygen into the fuel-gas supply system;**
- b. Passage of a flashback into the fuel-gas supply system; and**
- c. Excessive back pressure of oxygen in the fuel-gas supply system.**

NOTE 2: The three functions of the protective equipment may be combined in one device or may be provided by separate devices.

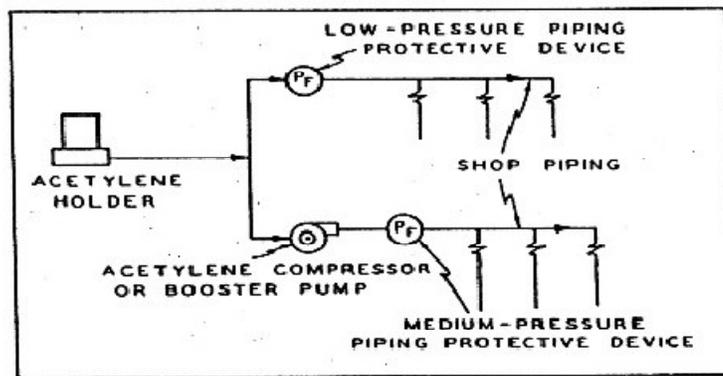


Figure Q-4

(V) Only use approved type compressor or booster systems 253(f)(4)(iv)(A)

(Wi) Ensure that wiring and electrical equipment in compressor or booster pump rooms or enclosures conform to the provisions of Subdivision S, Electrical, of this division for Class I, Division 2 locations. 253(f)(4)(iv)(B)

(X) Locate compressors and booster pump equipment: 253(f)(4)(iv)(C)

(i) In well-ventilated areas

(ii) Away from:

(I) Open flames

(II) Electrical or mechanical sparks, or

(III) Other ignition sources.

(Y) Provide compressor or booster pumps with pressure relief valves which will relieve pressure exceeding 15 psig: 253(f)(4)(iv)(D)

(i) To a safe outdoor location as provided in paragraph (f)(4)(ii) of this section, or

(ii) By returning the gas to the inlet side or to the gas supply source.

(Z) Provide compressor or booster pump discharge outlets with approved protective equipment. 253(f)(4)(iv)(E)

(b) You must not: 253(f)(4)(i)(B)

(A) Use common salt (sodium chloride) or other corrosive chemicals for protection against freezing. 253(f)(4)(i)(B)

(B) Supply water through a continuous connection to the generator unless the generator is provided with an: 253(f)(4)(i)(D)

(i) Adequate open overflow, or

(ii) Automatic water shutoff which will effectively prevent overfilling the generator.

(C) Fit generators with continuous drain connections leading to sewers unless otherwise specifically approved. 253(f)(4)(i)(E)

(D) Interconnect generating chamber relief pipes. 253(f)(4)(ii)(C)

437-002-3253(xx) Portable acetylene generators. (currently 253(f)(5))

(a) You must:

(A) Only use portable generators that are approved for portable use.
253(f)(5)(i)

(B) Use portable generators within 10 feet (3m) of combustibile materials other than the floor. 253(f)(5)(i)(B)

(C) Protect portable generators against freezing. : 253(f)(5)(i)(D)

(D) Clean and recharge portable generators and blow off the air mixture outside of buildings. 253(f)(5)(ii)(A)

(E) Anchor portable acetylene generators to vehicles they are to be transported and operated on. : 253(f)(5)(ii)(D)

(F) Turn off the vehicle motor during charging, cleaning, and generating periods. 253(f)(5)(ii)(D)

(G) Locate portable generators at a safe distance from the welding position so they will not be exposed to: 253(f)(5)(ii)(E)

(i) Sparks,

(ii) Slag,

(iii) Misdirection of the torch flame,

(iv) Over heating from hot materials or processes

(b) You must not:

(A) use portable generators in rooms having: 253(f)(5)(i)(C)

(i) A total volume less than the generators in the room.

(ii) A ceiling height less than 10 feet (3 m).

(B) Use salt or other corrosive chemical to prevent freezing. : 253(f)(5)(i)(D)

(C) Move portable generators charged with carbide by crane of derrick.
253(f)(5)(ii)(B)

(D) Store unused portable generators in rooms where open flames are used unless the: 253(f)(5)(ii)(C)

(i) Generator contains no carbide.

(ii) Generator has been thoroughly purged of acetylene.

(iii) Rooms are well ventilated.

437-002-3253(xx) Outside generator houses and inside generator rooms for stationary acetylene generators. (f)(6)

(a) You must:

(A) Ensure that the walls, floors, and roofs of outside generator houses are of noncombustible construction. 253(f)(6)(i)(B)

(B) Separate the storage or manifolding of oxygen cylinders from the generator or carbide storage section by partition walls continuous from floor to roof or ceiling, of the type of construction stated in paragraph (f)(6)(i)(H) of this section. 253(f)(6)(i)(C)

(C) Assure that separation walls are:

(i) Without openings,

(ii) Joined to the floor, other walls and ceiling or roof in a manner to affect a permanent gastight joint.

(D) Located exit doors so they are readily accessible in case of emergency.
253(f)(6)(i)(D)

(E) Provide explosion venting: 253(f)(6)(i)(E)

(i) For outside generator houses and inside generator rooms in exterior walls or roofs.

(ii) Areas equal to not less than 1 square foot (0.09 m²) per 50 cubic feet (1.4 m³) of room volume.

(iii) That consists of anyone or any combination of the following:

(I) Walls of light, noncombustible material preferably single-thickness,

(II) Single-strength glass;

(III) Lightly fastened hatch covers;

(IV) Lightly fastened swinging doors in exterior walls opening outward;

(V) Lightly fastened walls or roof designed to relieve at a maximum pressure of 25 pounds per square foot (0.001 MPa).

(F) Restrict the installation of acetylene generators inside buildings to buildings not exceeding one story in height. 253(f)(6)(i)(F)

NOTE: This does not prohibit such installation on the roof or top floor of a building exceeding such height.

(G) Enclose generators installed inside a building in a separate room. 253(f)(6)(i)(G)

(H) Ensure that the walls, partitions, floors, and ceilings of inside generator rooms: 253(f)(6)(i)(H)

(i) Are constructed from noncombustible materials having a fire-resistance floor to ceiling.

(ii) Are securely anchored.

(iii) Have at least one wall of the room be an exterior wall.

(I) Protect openings from an inside generator room to other parts of the building: 253(f)(6)(i)(I)

(i) By a swinging type, self-closing fire door for a Class B opening and having a rating of at least 1 hour.

(ii) With wired glass windows in partitions that are in approved metal frames with fixed sash.

(ii) By completing installation in accordance with the **Standard for the Installation of Fire Doors and Windows, NFPA 80-1970,**

(J) Ventilate inside generator rooms or outside generator houses with vent located at floor and ceiling levels. 253(f)(6)(ii)

(K) Heat by steam, hot water, enclosed electrically heated elements or other indirect means 253(f)(6)(iii)

(L) Use flames or fire to heat in outside generator houses or inside generator rooms, or in any enclosure communicating with them.
253(f)(6)(iii)

(M) Ensure that generator houses or rooms have natural light during daylight hours. 253(f)(6)(iv)(A)

(--) Restrict installation of electric lamps to fixed position where artificial lighting is necessary. 253(f)(6)(iv)(A)

(N) Provide lamps with enclosures of glass or other noncombustible material so designed and constructed to prevent gas vapors from reaching the lamp or socket and to resist breakage. 253(f)(6)(iv)(A)

(O) Use rigid conduit with threaded connections. 253(f)(6)(iv)(A)

(P) Install lamps outside of wired-glass panels in gas-tight frames in the exterior walls or roof of the generator house or room. 253(f)(6)(iv)(B)

(Q) Locate electric switches, telephones, and all other electrical apparatus which may cause a spark, outside the generator house or in a room or space separated from the generator room by a gas-tight partition, except:
253(f)(6)(v)

(i) Unless they are specifically approved for use inside acetylene generator room. 253(f)(6)(v)

(ii) Where the generator system is designed so that no carbide fill opening or other part of the generator is open to the generator house or room during the operation of the generator, and 253(f)(6)(v)

(iii) When residue is carried in closed piping from the residue discharge valve to a point outside the generator house or room, and 253(f)(6)(v)

(iv) Where electrical equipment in the generator house or room shall conform to the provisions of Subpart S of this part for Class I, Division 2 locations 253(f)(6)(v)

(b) You must not:

(A) Locate openings in any outside generator house within 5 feet (1.5m) of any opening in another building. 253(f)(6)(i)(A)

437-002-3253(xx) Maintenance and operation. (f)(7)

(a) You must:

(A) Ensure that unauthorized persons do not enter outside generator houses or inside generator rooms. 253(f)(7)(i)

(B) Post operating instructions in a conspicuous place near the generator or keep them in a suitable place available for ready reference. 253(f)(7)(i)(A)

(C) Follow the order of operations specified in the manufacturer instructions when recharging generators. 253(f)(7)(i)(B)

(D) Flush out batch-type generators with water; 253(f)(7)(i)(C)

(i) When the charge of carbide is exhausted.

(ii) Before additional carbide is added to the generating chamber, and

(E) Renew the water supply according to instruction card furnished by the manufacturer

(F) Add enough carbide each time the generator is recharged to refill the space provided for carbide without ramming the charge. 253(f)(7)(ii)

(G) Keep the generator water chambers filled to the proper level at all times except while draining during the recharging operation. 253(f)(7)(iii)

(H) Fill the water chamber shall be filled to the proper level whenever: 253(f)(7)(iv)

(i) Repairs are to be made.

(ii) The generator is to be charged.

(iii) Carbide is to be removed.

(I) Do the following before making repairs involving welding, soldering, or other hot work or other operations which produce a source of ignition: 253(f)(7)(v)

(i) Completely remove the carbide charge and feed mechanism.

(ii) Expel all acetylene by completely flooding the generator shell with water.

(iii) Disconnect the generator from the piping system.

(iv) Keep the generator filled with water, if possible, or positioned to hold as much water as possible.

(b) You must not:

(A) Discharge water-carbide residue from the generator: 253(f)(7)(i)(D)

(i) Into sewer pipes, or

(ii) Store in areas near open flames.

NOTE: Clear water from residue settling pits may be discharged into sewer pipes.

(B) Use steel or ferrous tools while distributing the charge, 253(f)(7)(ii)

(C) Make hot repairs in a room where there are other generators unless all the generators and piping have been purged of acetylene. 253(f)(7)(vi)