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the only installed means of retrieving the closed bell; or

(ii) A period of time, at least equal to 1 hour plus twice the time required to retrieve the bell from its designed operating depth and attach an auxiliary lifesupport system, after an accident severing the umbilical to the surface when the umbilical is one of the two independent installed means of retrieving the closed bell, each meeting the requirements of paragraph (a)(3) of this section.

(b) A closed bell that does not meet the requirements of paragraphs (a)(3), (a)(4), and (a)(5) of this section, must be capable of attachment to another PVHO that—

(1) Allows the transfer of personnel and diver's equipment under pressure from the closed bell to the PVHO;

(2) Meets the requirements of paragraph (a)(3) of this section;

(3) Is capable of attachment to a decompression chamber meeting the requirements of paragraphs (a)(4) and (a)(5) of this section; and

(4) Allows the transfer of personnel and diver's equipment under pressure from the PVHO to the decompression chamber.

§ 197.332 PVHO—Decompression chambers.

Each decompression chamber must—

(a) Meet the requirements of § 197.328;

(b) Have internal dimensions sufficient to accommodate a diver lying in a horizontal position and another person tending the diver;

(c) Have a capability for ingress and egress of personnel and equipment while the occupants are under pressure;

(d) Have a means of operating all installed man-way locking devices, except disabled shipping dogs, from both sides of a closed hatch;

(e) Have interior illumination sufficient to allow visual observation, diagnosis, and medical treatment of an occupant.

(f) Have one bunk for each two occupants;

(g) Have a capability that allows bunks to be seen over their entire lengths from the exterior;

(h) Have a minimum pressure capability of—

(1) 6 ATA, when used for diving to 300 fsw; or

(2) The maximum depth of the dive, when used for diving operations deeper than 300 fsw, unless a closed bell meeting the requirements of § 197.330(a) (3), (4), and (5) is used;

(i) Have a minimum pressurization rate of 2 ATA per minute to 60 fsw and at least 1 ATA per minute thereafter;

(j) Have a decompression rate of 1 ATA per minute to 33 fsw;

(k) Have an external pressure gage for each pressurized compartment;

(l) Have a capability to supply breathing mixtures at the maximum rate required by each occupant doing heavy work; and

(m) Have a sound-powered headset or telephone as a backup to the communications system required by § 197.328(c) (5) and (6), except when that communications system is a sound-powered system.

§ 197.334 Open diving bells.

Each open diving bell must—

(a) Have an upper section that provides an envelope capable of maintaining a bubble of breathing mixture available to a diver standing on the lower section of the platform with his body through the open bottom and his head in the bubble;

(b) Have lifting equipment capable of returning the occupied open bell to the dive location;

(c) Have an umbilical; and

(d) Be—(1) Made of corrosion-resisting material; or

(2) Protected against and maintained free from injurious corrosion.

§ 197.336 Pressure piping.

Piping systems that are not an integral part of the vessel or facility, carrying fluids under pressures exceeding 15 psig must—

(a) Meet the ANSI Code;

(b) Have the point of connection to the integral piping system of the vessel or facility clearly marked; and

(c) Be tested after every repair, modification, or alteration to the pressure boundaries as set forth in § 197.462.

§ 197.338 Compressed gas cylinders.

Each compressed gas cylinder must—

(a) Be stored in a ventilated area;

(b) Be protected from excessive heat;
(c) Be prevented from falling;
(d) Be tested after any repair, modification, or alteration to the pressure boundaries as set forth in §197.462; and
(e) Meet the requirements of—
(1) Part 54 of this chapter; or
(2) 49 CFR 173.34 and 49 CFR part 178, subpart C.

§197.340 Breathing gas supply.

(a) A primary breathing gas supply for surface-supplied diving must be sufficient to support the following for the duration of the planned dive:
(1) The diver.
(2) The standby diver.
(3) The decompression chamber, when required by §197.432(e)(2) or by §197.434(a) for the duration of the dive and for one hour after completion of the planned dive.
(4) A decompression chamber when provided but not required by this subpart.
(5) A closed bell when provided or required by §197.434(d).
(6) An open bell when provided or required by §197.432(e)(4) or by §197.434(c).
(b) A secondary breathing gas supply for surface-supplied diving must be sufficient to support the following:
(1) The diver while returning to the surface.
(2) The diver during decompression.
(3) The standby diver.
(4) The decompression chamber when required by §197.432(e)(2) or by §197.434(a) for the duration of the dive and one hour after the completion of the planned dive.
(5) The closed bell while returning the diver to the surface.
(6) The open bell while returning the diver to the surface.
(c) A diver-carried reserve breathing gas supply for surface-supplied diving must be sufficient to allow the diver to—
(1) Reach the surface.
(2) Reach another source of breathing gas; or
(3) Be reached by a standby diver equipped with another source of breathing gas for the diver.
(d) A primary breathing gas supply for SCUBA diving must be sufficient to support the diver for the duration of the planned dive through his return to the dive location or planned pick-up point.
(e) A diver-carried reserve breathing gas supply for SCUBA diving must be sufficient to allow the diver to return to the dive location or planned pick-up point from the greatest depth of the planned dive.
(f) Oxygen used for breathing mixtures must—
(1) Meet the requirements of Federal Specification BB–0–925a; and
(2) Be type 1 (gaseous) grade A or B.
(g) Nitrogen used for breathing mixtures must—
(1) Meet the requirements of Federal Specification BB–N–411c;
(2) Be type 1 (gaseous);
(3) Be class 1 (oil free); and
(4) Be grade A, B, or C.
(h) Helium used for breathing mixtures must be grades A, B, or C produced by the Federal Government, or equivalent.
(i) Compressed air used for breathing mixtures must—
(1) Be 20 to 22 percent oxygen by volume;
(2) Have no objectionable odor; and
(3) Have no more than—
(i) 1,000 parts per million of carbon dioxide;
(ii) 20 parts per million carbon monoxide;
(iii) 5 milligrams per cubic meter of solid and liquid particulates including oil; and
(iv) 25 parts per million of hydrocarbons (includes methane and all other hydrocarbons expressed as methane).

§197.342 Buoyancy-changing devices.

(a) A dry suit or other buoyancy-changing device not directly connected to the exhaust valve of the helmet or mask must have an independent exhaust valve.
(b) When used for SCUBA diving, a buoyancy-changing device must have an inflation source separate from the breathing gas supply.

§197.344 Inflatable floatation devices.

An inflatable floatation device for SCUBA diving must—
(a) Be capable of maintaining the diver at the surface in a faceup position;