

**CHAPTER 3a. BOILER AND UNFIRED PRESSURE VESSEL
REGULATIONS**

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Authority

The provisions of this Chapter 3a issued under section 14 of the Boiler and Unfired Pressure Vessel Law (35 P. S. § 1331.14), unless otherwise noted.

Source

The provisions of this Chapter 3a adopted February 3, 2006, effective February 4, 2006, 36 Pa.B. 514, unless otherwise noted.

Cross References

This Chapter cited in 34 Pa. Code § 13.20 (relating to application process and plan approval).

Subchapter A. GENERAL PROVISIONS

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§ 3a.1. Definitions.

The following words and terms, when used in this chapter, have the following meanings, unless the context clearly indicates otherwise:

AGA—American Gas Association, 400 North Capital Street, NW, Washington, D.C. 2001.

ANSI—American National Standards Institute, 1430 Broadway, New York, New York 10018.

ANSI/NB23—National Board Inspection Code, 2004 edition, issued by the National Board of Boiler and Pressure Vessel Inspectors.

ASME—The American Society of Mechanical Engineers, Three Park Avenue, New York, New York, 10016-5990.

ASME B 31.1—“The ASME Code for Pressure Piping,” 2004 edition issued by ASME.

ASME Code—“The Boiler and Pressure Vessel Code,” 2004 edition and its published cases and interpretations issued by ASME.

ASME/CSD1—“Controls and Safety Devices for Automatically Fired Boilers,” 2002 edition issued by ASME.

Act—The Boiler and Unfired Pressure Vessel Law (35 P. S. §§ 1331.1—1331.19).

Alteration—

(i) A change in the item described on the original manufacturer’s data report, which affects the pressure containing capability of the pressure retaining item.

(ii) The term also includes nonphysical changes such as an increase in maximum allowable working pressure or an increase in design temperature of a pressure-retaining item and a reduction in minimum temperature that requires additional mechanical tests.

American Welding Society—The American Welding Society, 550 N.W. Lejenuen Road, Miami, Florida 33126.

Btu—British thermal unit.

Boiler—

(i) A closed vessel in which water is heated, steam is generated, steam is superheated, or any combination of these actions, under pressure or vacuum, for use externally to itself, by the direct application of heat from the combustion of fuels, or from electricity.

(ii) The term includes fired vessels for heating of liquids other than water where these vessels are separate from processing systems and are complete within themselves.

Certificate of competency—A document issued by the Department to an individual who has passed a National Board Commission Examination conducted in this Commonwealth.

Code of construction—ASME Code in effect at the time the boiler or unfired pressure vessel was manufactured.

Condemned boiler or unfired pressure vessel—A boiler or unfired pressure vessel which was inspected and declared unsafe or disqualified for use by the Department.

Department—The Department of Labor and Industry of the Commonwealth.

External inspection—An inspection made when a boiler or an unfired pressure vessel is in operation or in condition to be operational.

Fusion welding—The process of welding metals in a molten, or molten and vaporous state, without the application of mechanical pressure of blows.

Heat exchanger—A device having a shell and head, and a method to exchange heat between steam, hot water or any other liquid. This device may be fired or unfired.

IBC—The “International Building Code 2003” issued by the ICC.

ICC—International Code Council, 5203 Leesburg Pike, suite 600, Fall Church, Virginia 22041-3401.

IMC—The “International Mechanical Code 2003” issued by the ICC.

Industrial Board—The Department’s Industrial Board established under sections 445 and 2214 of The Administrative Code of 1929 (71 P. S. §§ 155 and 574) which hears requests for variances, extensions of time and appeals of Department decisions under the act.

Instantaneous water heater—A vessel in which water is heated as it passes through the vessel. Water is not stored in the vessel.

Internal inspection—An inspection made when a boiler or unfired pressure vessel is shut down and handholes, manholes, or other inspection openings are opened for inspection of the interior of the boiler or unfired pressure vessel.

Inspector—An inspector commissioned by the Department to field-inspect boilers or unfired pressure vessels in this Commonwealth.

Lap seam crack—A crack found in a lap seam, extending parallel to the longitudinal joint and located between or adjacent to rivet holes.

Locomotive boiler—

(i) A boiler mounted on a self-propelled track locomotive and used to furnish motivating power for travel on rails.

(ii) The term does not include locomotive cranes, tractors or other self-propelled apparatus.

Low pressure heating boiler—A steam boiler operated at a pressure not exceeding 15 psig or a hot water heating or hot water supply boiler operating at a pressure not exceeding 160 psig and a temperature not exceeding 250° F.

Miniature boiler—A boiler which is not more than 16 inches inside diameter of the shell, 5 cubic feet gross volume, excluding casing and insulation; 100 psig maximum allowable working pressure; and, 20 square feet of heating surface.

NB-263—“Rules for Commissioned Inspectors,” revision 13 issued by the National Board.

NEC—The “National Electric Code, National Fire Protection Association’s Standard 70,” 2002 edition, issued by the NFPA.

NFPA—The National Fire Protection Association, 1 Batterymarch Park, Quincy Massachusetts 02269.

NFPA 85—The “Boiler and Combustion System Hazard Code,” 2004 edition, issued by the NFPA.

National Board—The National Board of Boiler and Pressure Vessel Inspectors, 1055 Crupper Avenue, Columbus, Ohio 43229.

Nonstandard boiler—A boiler which does not bear ASME stamping.

Nonstandard unfired pressure vessel—An unfired pressure vessel which does not bear ASME stamping.

Owner or user—A person, firm, corporation or governmental body owning or operating any boiler or unfired pressure vessel within this Commonwealth.

Psig—Pounds per square inch gauge.

Psi—Pounds per square inch.

Pennsylvania special boiler—A boiler which does not bear standard stamping and bears special Pennsylvania stamping and a Department-approved number.

Pennsylvania special unfired pressure vessel—An unfired pressure vessel which bears special Pennsylvania stamping and a Department-approved number and does not bear standard stamping.

Portable boiler—A boiler which is designed to be moved from location to location and used on a temporary basis.

Power boiler—A closed vessel in which steam or other vapor is generated at a pressure of more than 15 psig by the direct application of heat.

Process boiler—Any vessel in which steam is generated or superheated under pressure or for use external to itself by direct or indirect application of heat. The source of heat must be in part from a process other than the boiler itself. To be classified as a process boiler, the boiler must be directly tied to another process other than the generation of steam.

R stamp—A National Board designation indicating that a company is authorized to repair boilers and vessels.

R-1 form—National Board report of repair form.

Reinstalled equipment—Equipment removed from its original setting and reinstalled in the same location or a new location without change of ownership.

Repair—The process of restoring a boiler or unfired pressure vessel component or system to a safe and satisfactory condition.

Secondhand boiler—A boiler whose location and ownership have been changed after primary use.

Secondhand unfired pressure vessel—An unfired pressure vessel whose location and ownership have been changed after primary use.

Secretary—The Secretary of the Department.

Standard boiler or unfired pressure vessel—A boiler or an unfired pressure vessel which bears stamping in accordance with this chapter.

Standard Qualification Procedures of the American Welding Society, D1.1—The “Structure Welding Code, Steel 2002” issued by the American Welding Society.

Steam coil vessel—A vessel that stores hot water that contains an internal steam coil with controls used to heat hot water.

Storage water heater—A fired or an electrically heated vessel for storing or furnishing hot water supply.

Unfired pressure vessel—A vessel in which pressure is obtained from an external source or from an indirect application of heat.

Unfired steam boiler—An unfired pressure vessel which generates steam for power or heat to be used externally to itself.

VR stamp—A National Board designation that a company is authorized to repair and set safety relief valves.

§ 3a.2. Fees.

(a) The Department will charge commission, certificate of operation and inspection fees in accordance with section 613-A of The Administrative Code of 1929 (71 P. S. § 240.13A).

(b) The following fees apply to unfired pressures vessels and boilers:

- (1) Certificate of operation:
 - (i) Unfired pressure vessels \$44
 - (ii) Boilers \$22
- (2) Internal inspection of power boilers, high pressure, high temperature water boilers and miniature boilers:
 - (i) Boilers of 50 square feet of heating surface or less \$22
 - (ii) Boilers over 50 square feet of heating surface and less than 4,000 square feet of heating surface \$36
 - (iii) Boilers over 4,000 square feet of heating surface or more and less than 10,000 square feet of heating surface \$51
 - (iv) Boilers over 10,000 square feet of heating surface. \$58
 - (v) Miniature boilers \$15
- (3) External inspection of power boilers, high pressure and high temperature water boilers:
 - (i) Boilers of 50 square feet of heating surface or less \$15
 - (ii) Boilers over 50 square feet of heating surface and less than 4,000 square feet of heating surface \$22
- (4) Not more than \$50 plus the annual certificate fee shall be collected for any and all inspections for boilers covered under paragraphs (2) and (3) in any 1 year.
- (5) Internal or external inspection of low pressure boilers:

- (i) Heating boilers without a manhole \$18
- (ii) Heating boilers with a manhole \$22
- (iii) Hot water supply boilers \$15
- (iv) Not more than \$50 plus the annual certificate fee will be collected for inspections of any low pressure boiler in any required inspection period.
- (6) Internal or external inspection of pressure vessels:
 - (i) Each pressure vessel subject to inspection having a cross sectional area of 50 square feet or less \$15
 - (ii) Each additional 100 square feet of area in excess of 50 square feet. \$15
 - (iii) Not more than \$75 shall be paid for each inspection on any one vessel.
 - (iv) A group of pressure vessels operating as a single machine or unit shall be considered one pressure vessel. Not more than \$75 plus the annual certificate fee will be collected for inspections of any pressure vessel in any required inspection period, except in cases where the vessel is moved.
- (7) Plan approval:
 - (i) Complete mechanical room drawings-boilers and other vessels. \$73
 - (ii) High pressure boilers. \$29
 - (iii) Low pressure boilers \$29
- (8) Boiler inspector commissions:
 - (i) Inspector’s examination fee \$44
 - (ii) Certificate of competency and commission fee \$22
 - (iii) New credential card fee (annual). \$15
- (9) Hydrostatic test (witnessed). \$22
- (10) Onsite consultation fee per hour \$29
- (11) Inspection of repair fee \$15
- (12) ASME and National Board “R” Stamp Shop survey fees:

(i) Full day	\$726
(ii) Half day	\$363
(13) Copy of Department's regulations	\$7
(14) Acceptance of boilers and pressure vessels not originally destined for use within the Commonwealth	\$726
(c) Industrial Board variance request	\$100

Cross References

This section cited in 34 Pa. Code § 3a.5 (relating to Pennsylvania Inspector Commission and National Board Commission); 34 Pa. Code § 3a.6 (relating to certificate of competency, commission, credential card and renewal application); 34 Pa. Code § 3a.7 (relating to reexamination); 34 Pa. Code § 3a.8 (reciprocity); 34 Pa. Code § 3a.9 (relating to suspension or revocation of Pennsylvania inspector commission); and 34 Pa. Code § 3a.38 (relating to commercial beverage dispensing systems).

§ 3a.3. Scope.

(a) This chapter applies to:

(1) The boiler and the pipe connections up to and including the stop valve or valves nearest the boiler as required by the ASME Code and Power Piping, B31.1. Superheaters, reheaters, economizers and other pressure parts connected directly to the boiler without intervening valves will be considered as parts of the boiler and their construction must conform to ASME Code and Power Piping, B31.1 requirements.

(2) Unfired pressure vessels and hot water storage vessels.

(b) Boilers installed before July 1, 1916, and unfired pressure vessels and power boilers installed before September 1, 1937, must comply with §§ 3a.131, 3a.141—3a.145 and 3a.151—3a.154.

(c) Heat exchangers must comply with § 3a.167 (relating to hot water/steam heat exchangers) when the heat exchanger operates at 16 psi or greater, and has 5 cubic feet or more of volume not allowing for channel or tube nest displacements.

(d) This chapter does not apply to:

(1) Piping between the reheater connections and the turbine or other prime mover.

(2) Boilers and unfired pressure vessels regulated under the Atomic Energy Act of 1954 (42 U.S.C.A. §§ 2011—2297h-13).

(3) Boilers and unfired pressure vessels owned or operated by the Federal Government.

(4) Boilers located on farms, except in sales areas which are accessible to the public.

(5) Boilers located in single-family dwellings and multi-unit dwellings with four or less units.

(6) Storage water heaters and instantaneous water heaters if all the following limitations are not exceeded:

- (i) A heat input of 200,000 Btus /hr (58.6 kW).
- (ii) A water temperature of 210°F (99°C).
- (iii) A nominal water-containing capacity of 120 gallons (454 L).

(7) Unfired pressure vessels used for the transportation of compressed gases that are operated in compliance with specifications and regulations of the United States Department of Transportation (49 CFR Part 173 (relating to shippers general requirements for shipments and packaging)).

(8) Air tanks located on vehicles operating under other Commonwealth agency regulations or rules and used for carrying passengers or freight.

(9) Air tanks installed on the right-of-way of railroads and used directly in the operation of switches and signals and under Federal or other Commonwealth agency jurisdiction.

(10) Vessels having an internal or external operating pressure of no more than 15 psi with no limitation on size when equipped with approved safety devices.

(11) Unfired pressure vessels designed to ASME Code section VIII, Division 1 which do not exceed one of the following specifications:

- (i) 5 cubic feet (0.14m³) in volume and 250 psi (1,720 kPa) design pressure.
- (ii) 3 cubic feet (0.08m³) in volume and 350 psi (2,410 kPa) design pressure.
- (iii) 1.5 cubic feet (0.04m³) in volume and 600 psi (4,140 kPa) design pressure.
- (iv) Vessels having an inside diameter, width, height or cross section diagonal not exceeding 6 inches (152 mm), with no limitation on length of vessel or pressure.

(12) Unfired pressure vessels with a nominal water-containing capacity of up to 120 gallons containing water under pressure. These vessels include unfired pressure vessels that contain air, which is trapped in the system and where the compression air serves only as a cushion.

(13) Filters and softeners with a nominal water containing capacity of 120 gallons or less and pressures not exceeding 100 psi at ambient temperature.

(14) Air conditioner heat exchangers (chillers) with a design pressure not more than 300 psi and a water temperature not more than 210° F.

(15) Coil-type hot water boilers which meet the requirements of ASME Code, Section I, paragraph, PG 2.3.

Cross References

This section cited in 34 Pa. Code § 3a.170 (relating to swimming pool heaters).

§ 3a.4. Adoption of National standards.

The Department adopts and incorporates by reference the following codes:

- (1) ANSI/NB23.
- (2) ASME Code.
- (3) ASME Code published cases and interpretations that have been approved by the Industrial Board.
- (4) ASME B 31.1.
- (5) ASME/CSD1.
- (6) National Electric Code, NFPA 70.
- (7) NFPA 85.

§ 3a.5. Pennsylvania Inspector Commission and National Board Commission.

(a) An individual shall hold a current Pennsylvania Inspector Commission to inspect boilers and unfired pressure vessels in this Commonwealth.

(b) The Department will conduct a Pennsylvania Inspector Commission examination on the act, this chapter and the ASME Codes.

(c) An applicant for a Pennsylvania Inspector Commission shall meet the following requirements:

- (1) An applicant shall hold a current National Board Commission.
- (2) An applicant shall meet the National Board requirements in NB-263.
- (3) An applicant shall pass the Pennsylvania Inspector Commission examination with a grade of 70% or more.

(d) The National Board application will be used as the application for a Pennsylvania Inspector Commission examination.

(e) The Department will issue a Pennsylvania credential card and commission to an applicant who meets the requirements of subsection (c) and pays the required fee under § 3a.2 (relating to fees).

(f) The Department will administer examinations for National Board Commissions four times a year. Upon successful completion of the National Board Commission examination administered by the Department, the Department will issue a certificate of competency to the applicant which will enable the applicant to receive a National Board Commission.

Cross References

This section cited in 34 Pa. Code § 3a.8 (reciprocity).

§ 3a.6. Certificate of competency, commission, credential card and renewal application.

(a) The Department will issue a certificate of competency, credential card and commission to an applicant who passes an examination for inspector, meets the requirements of this part and pays the required fee under § 3a.2 (relating to fees).

(b) An inspector shall renew a certificate of competency and obtain a new credential card each year to continue to act as an inspector. The inspector shall complete and submit a Department-provided renewal application and pay the required fee under § 3a.2 to renew the commission.

§ 3a.7. Reexamination.

(a) An applicant may take the Pennsylvania Inspector Commission examination three times in a 1-year period if the applicant fails to obtain a passing grade without submitting a new application and fee.

(b) An applicant may take the Pennsylvania Inspector Commission examination a fourth time within a 1-year period if the applicant fails to obtain a passing grade by submitting a new application and the required fee under § 3a.2 (relating to fees).

§ 3a.8. Reciprocity.

(a) The Department may grant a reciprocal inspector commission to an applicant who meets the following requirements:

(1) The applicant holds a current National Board Commission in good standing.

(2) The applicant is currently employed by another state or an insurance company in good standing.

(3) The applicant passes the Department-administered written examination under § 3a.5(b) (relating to Pennsylvania Inspector Commission and National Board Commission).

(b) An applicant for reciprocal inspector commission shall submit a completed Department-provided application form, a copy of the inspector's National Board Commission and the required fee under § 3a.2 (relating to fees) to the Department.

§ 3a.9. Suspension or revocation of Pennsylvania inspector commission.

(a) *General.* The Department may suspend or revoke a Pennsylvania inspector commission for due cause under section 11(d) of the act (34 P. S. § 1331.11(d)). Due cause includes the following:

(1) Practicing fraud or deceit or making untrue representations in obtaining a commission.

(2) Failure to remit the required commission fee under § 3a.2 (relating to fees).

(3) Violating a provision of the act or this chapter.

(4) Incompetence or gross negligence while acting as a boiler inspector.

(5) Acting in a manner presenting a danger to public health and safety.

(6) Having a commission or any other authorization to engage in the business of boiler inspection revoked or suspended or having other disciplinary action taken, surrendering a commission or other authorization in lieu of disci-

pline, or having an application for a commission or authorization to engage in the business of boiler inspection refused or denied by the National Board, the proper authority of another state or Federal district, territory, insular possession of the United States or Canada.

(7) Engaging in fraud, deceit or other act of moral turpitude while acting as a boiler inspector.

(8) Failure to enforce the act or this chapter.

(9) Engaging in boiler inspection activities without a current commission issued by the Department.

(10) Pleading guilty, entering a plea of *nolo contendere*, being found guilty, receiving probation without verdict, disposition in lieu of trial or an Accelerated Rehabilitative Disposition for any felony or for any other crime relating to boiler inspection in the courts of this Commonwealth, a Federal court, a court of any other state, territory or insular possession of the United States or a court of Canada.

(b) *Notice and hearing.* Actions of the Department relating to suspension or revocation under this section will be taken subject to the right of notice, hearing and adjudication in accordance with 2 Pa.C.S. (relating to administrative law and procedure). Suspension and revocation proceedings will be conducted under 1 Pa. Code Part II (relating to the General Rules of Administrative Practice and Procedure).

(c) *Procedure for suspension or revocation.*

(1) The Department will serve the boiler inspector with an order to show cause under 1 Pa. Code § 35.14 (relating to orders to show cause). The order to show cause will contain notification that the certification may be subject to action and the grounds for the action. The order to show cause will require that the boiler inspector respond in writing within 30 days after the date of service of the order. The Department will also serve a copy of the order to show cause upon the boiler inspector's current employer, if any.

(2) The boiler inspector shall file an answer in writing to the allegations set forth in the order to show cause in accordance with 1 Pa. Code § 35.37 (relating to answers to orders to show cause). If made, answers shall be filed with the Department at the appropriate address within 30 days after the date of service of the order to show cause. Failure to file an answer will result in the entry of a default judgment against the inspector.

(3) At the request of any of the parties, the Department will hold a hearing on the matter. The Secretary will designate a presiding officer to preside at the hearing and to issue a proposed report under 1 Pa. Code §§ 35.201—35.207 (relating to proposed reports). The Secretary may delegate final authority to the hearing examiner.

(4) The presiding officer will have the power to conduct hearings under 1 Pa. Code §§ 35.185—35.190 (relating to presiding officers). The presiding officer will issue a proposed report that must be served upon counsel of record

or to the parties in the hearing. The presiding officer will transmit the proposed report and the certified record to the Secretary within 15-days after issuance of the proposed report.

(5) A participant desiring to appeal to the Secretary shall, within 30 days after the service of a copy of the proposed report, file exceptions to the proposed report under 1 Pa. Code § 35.211 (relating to procedure to except to proposed report). A response may be filed within 20 days to the exceptions.

(6) The Secretary or a designee will issue a final order under 1 Pa. Code § 35.226 (relating to final orders).

(d) The Department may not reinstate a Pennsylvania inspector commission that was revoked under this section unless ordered to do so by a court of competent jurisdiction. The Department will order the surrender of the Pennsylvania inspector commission documents following an order of revocation or suspension.

(e) Subsection (c) supplements 1 Pa. Code §§ 35.14, 35.37, 35.185—35.190 35.201—35.207, 35.211 and 35.226.

Subchapter B. REQUIREMENTS FOR BOILERS AND UNFIRED PRESSURE VESSELS

GENERAL REQUIREMENTS

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INSTALLATIONS OF POWER BOILERS

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INSTALLATIONS OF LOW-PRESSURE HEATING BOILERS

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INSTALLATIONS OF UNFIRED PRESSURE VESSELS

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REPAIRS AND ALTERATIONS

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GENERAL REQUIREMENTS**§ 3a.21. Stamping.**

(a) A boiler or unfired pressure vessel destined for use in this Commonwealth must be built to the applicable ASME code of construction or meet the requirements of section 7 of the act (35 P. S. § 1331.7).

(b) A boiler or unfired pressure vessel built to the ASME Code must be stamped with the appropriate ASME symbol, the manufacturer's information in accordance with stamping requirements of the code of construction, and its National Board registration number. The stamping may be applied to a nameplate in accordance with the code of construction.

(c) National Board registration and stamping requirements do not apply to cast iron boilers, which are constructed under ASME Code provisions and do not require final inspection by a National Board inspector.

(d) A new boiler or unfired pressure vessel installed in this Commonwealth must be stamped with an identifying serial number consisting of the keystone symbol and figures, which may not be less than 5/16 inches in height and arranged as follows:



(e) A boiler or unfired pressure vessel that is not built to the ASME Code may be stamped with a Pennsylvania special number if it meets the requirements of section 7(b) of the act.

(f) The Department may accept a boiler or unfired pressure vessel with a registration number from another state for use in this Commonwealth if a National Board inspector inspected and approved the boiler or unfired pressure vessel during construction.

(g) Stamping required under this section must be exposed at all times and may not be concealed by paint or lagging.

Cross References

This section cited in 34 Pa. Code § 3a.162 (relating to portable boilers).

§ 3a.22. Other state stamps.

A boiler or unfired pressure vessel stamped with the ASME symbol and another state stamp may be installed and operated if a National Board inspector witnessed its construction and the shop data report is provided to the Department with a completed Department-provided intent to install form under § 3a.98 (relating to plan approval).

§ 3a.23. Lap seam crack.

The shell or drum of a boiler or unfired pressure vessel containing a lap seam crack along a longitudinal riveted joint shall be immediately taken out of service. Repairs may not be made without Department approval.

§ 3a.24. Boiler controls.

- (a) The installation of boiler controls performed after February 4, 2006, must comply with ASME CSD 1 and NFPA 85.
- (b) The maintenance and inspection of boilers must comply with ANSI/NB 23.

§ 3a.25. Pressure reducing stations.

- (a) The installation of pressure reducing stations must comply with ASME B 31.1.
- (b) Hand-controlled bypasses around reducing valves may be used if the bypass has no greater capacity than the reducing valve. Hand controlled bypasses may be used around reducing valves at greater capacity than the reducing valve if the system or unfired pressure vessel has adequate relief or safety valve protection, or meets the requirements of the high pressure system.
- (c) A pressure gauge must be installed on the low-pressure side of a reducing station.

§ 3a.26. Safety devices.

- (a) A boiler or unfired pressure vessel must be protected by safety relief devices, and indicating and controlling devices sufficient to insure its safe operation which meet all of the following requirements:
 - (1) The devices must be constructed, located, installed and maintained to prevent the safety devices from becoming inoperative.

- (2) The devices must have sufficient relieving capacity to prevent a rise of pressure in the boiler or unfired pressure vessel of more than 10% above the maximum allowable working pressure, taking into account the effect of static head.
- (3) The discharge from safety devices must be carried to a safe place away from the boiler or unfired pressure vessel.
- (b) Safety valves for other than noxious liquids or toxic vapors must be direct spring-loaded type valves, designed with substantial lifting devices so that the disk can be lifted from its seat by the spindle of at least 1/8 the diameter of the valve if the pressure of the vessel is at 75% of the safety valve setting.
- (c) Each safety valve must have clear manufacturer markings that are 1/4-inch or larger. The markings must contain all of the following information stamped on the valve, cast on the valve body, or cast on a plate securely fastened to the valve:
- (1) The name or identifying trademark of the manufacturer.
 - (2) The pipe size, in inches, of the valve inlet.
 - (3) The pressure, in pounds, at which the valve is set to open.
 - (4) The blow down, in pounds.
- (d) If the valve inlet is not threaded, the initial diameter of the inlet may not be less than the inside diameter of a standard pipe of the same size.
- (e) The difference between the opening and closing pressures of a safety valve must be a minimum of 20%.
- (f) Existing safety valves bearing ASME stamping different from the requirements in subsection (c) are permitted if the safety valves have equivalent construction and relieving capacity.
- (g) Safety valves with a cast iron seat or a disk may not be used.
- (h) If more than one safety valve is used, the discharge capacity must be the combined capacity of all safety valves.
- (i) A boiler or unfired pressure vessel in which pressure is not generated and is derived from an outside source must have a safety device connected to the vessel or system which it protects in a manner to prevent a rise in pressure beyond the maximum allowable pressure.
- (j) A boiler or unfired pressure vessel in which pressure may be generated must have a safety device or devices connected directly to the vessel and comply with all of the following:
- (1) When the contents of a vessel may cause interference with the operation of the vessel or safety valve when the safety valve is directly attached, the safety valve or valves may be connected in a manner to avoid the interference.
 - (2) An escape pipe may be used. The pipe must be full sized and fitted with an open drain to prevent liquid from lodging in the upper part of the safety valve. A valve may not be placed on the escape pipe between the safety valve and the atmosphere.

- (3) An elbow may be placed on an escape pipe if it is located close to the safety valve outlet or the escape pipe is securely anchored and supported. If two or more safety devices are placed on one connection, the connection must have a cross sectional area at least equal to the combined area of the safety devices' inlets.
- (k) Every safety valve which is exposed to temperatures of 32°F or less must have a drain of at least 3/8 inch in diameter at the lowest point where water can collect.
- (l) A spring in a safety or relief valve in service for pressures 250 psi and less may not be reset for a pressure more than 10% above or 19% below the pressure at which the valve is marked. For pressures higher than 250 psi, the spring may not be reset for any pressure more than 5% above or 50% below the pressure at which the safety or relief valve is marked.
- (m) Safety valves for compressed air tanks cannot be larger than 3-inch diameter. The valves must be proportioned for the maximum number of cubic feet of free air that may be applied per minute.
- (n) A rupture disk may be used as a pressure safety device on boilers or unfired pressure vessels containing nontoxic gases, when it is designed to fail at not more than the design pressure of the vessel.
- (o) Safety valves on systems using toxic gases must discharge in accordance with the ASME Code, Section VIII, Division 1, 2 or 3.
- (p) A company or organization holding a Department-issued certificate of authorization to reset and reseal safety valves and relief valves or a current VR stamp is required to reset and reseal safety valves and relief valves.
- (q) A company or organization holding a current VR stamp is required to repair safety valves and relief valves.
- (r) A safety valve or relief valve may not be loaded to maintain a working pressure in excess of the maximum working pressure stated on the boiler or unfired pressure vessel's certificate of operation.
- (s) Additional or supplemental safety or relief valves installed on a boiler or unfired pressure vessel, may exceed maximum working pressure if the valves comply with the applicable code of construction or this chapter.

Cross References

This section cited in 34 Pa. Code § 3a.152 (relating to safety appliances).

§ 3a.27. Different working pressures.

- (a) At least one safety valve on each boiler must be set at or below the maximum allowable working pressure. All other valves may be set within a range of 3% above the maximum allowable working pressure. The range of setting of all of the saturated steam valves on the boiler may not exceed 10% of the saturated steam valve set at the highest pressure.

(b) When a boiler system is comprised of boilers with different maximum allowable working pressures having minimum safety valve settings varying more than 6% and connected so that steam flows toward the lower pressure boiler, the boiler system must meet one of the following requirements:

- (1) A check valve must be installed in the steam line to protect the lower pressure boilers.
- (2) Additional safety valves on the low-pressure side of the boiler system must protect lower pressure boilers and meet the following requirements:
 - (i) The additional safety valve capacity must be based on the maximum amount of steam that can flow into the low-pressure system.
 - (ii) Additional safety valves must have at least one valve set at a pressure that is not greater than the lowest maximum allowable pressure.
 - (iii) Other valves must be set within a range of not more than 3% above the lowest allowable pressure.

§ 3a.28. Blowoff tanks.

(a) Blowoff piping from a power boiler or a miniature boiler may not discharge directly into a sewer. A blowoff tank will be used if conditions do not provide an adequate and safe open discharge.

(b) ASME Section VIII, Division I governs the construction of metal blowoff tanks.

(c) The cross sectional area of the outlet from blowoff tanks must be twice the area of the inlet. The outlet pipe must be located to drain the blowoff tank to within 8 inches of the bottom of the tank.

(d) A vent pipe comprised of at least four times the area of the inlet pipe must lead to the outer atmosphere.

(e) Vents must lead as directly as possible to the outer air and discharge in a safe location. There may be no valve or other obstructions such as water pockets between the tank and the discharge end of the vent pipe.

(f) Pipe connections between the boiler blowoff valves and the tank must be as direct as possible and conform to the ASME Code.

(g) A manhole or an access opening shall be installed for cleaning the tank.

(h) A blowoff tank that is not vented as required in this section must meet one of the following requirements:

- (1) Constructed to withstand pressure equal to the pressure allowed on its attached boiler.
- (2) Equipped with a safety valve or valves of sufficient capacity to prevent the pressure from exceeding the safe working pressure of the tank.

§ 3a.29. Discharge outlets.

Discharge of safety valves of a boiler generating in excess of 500 pounds of steam per hour must be piped to the outside atmosphere and to a safe point of discharge. Blowoff pipes and other outlets must be located to prevent injury to personnel.

§ 3a.30. Electric boilers.

Appliances required for electric boilers must be attached to the boilers in accordance with the following requirements:

- (1) A cable shall be provided for grounding the boiler shell and shall be the same gauge as the incoming power line to the boiler. The cable must be permanently connected and grounded.
- (2) A suitable screen or guard shall be placed around high-tension bushings with a sign containing a high voltage warning. The screen or guard shall be located to prevent a person from accidentally coming in contact with the high-tension circuit.
- (3) The power circuit to the boiler must be open when safety valves are adjusted.
- (4) The power line must be open when the boiler is under steam pressure and the operator is making a necessary adjustment.
- (5) Safety or relief valves must have a relieving capacity of 3 1/2 pounds per hour for each kilowatt rating.
- (6) Boiler shell grounding connectors shall be installed in accordance with the following:
 - (i) The NEC, Chapter 4, except that the cable gauge size must comply with paragraph (1).
 - (ii) A conductor will be permanently attached to the boiler shell by suitable lugs, pressure connectors, clamps, or other Department-approved means. Connectors that depend on solder to maintain connection may not be used.

§ 3a.31. Forced circulation boilers.

Forced circulation boilers and boilers with no fixed steam or waterline must conform to the ASME Code, section 1.

§ 3a.32. Supports.

- (a) A boiler or unfired pressure vessel must be supported by masonry or structural supports sufficient to safely support the boiler or vessel and its contents.
- (b) An air compressor vessel must be shock mounted.

§ 3a.33. Explosion doors.

Stoker coal fired boilers under positive pressure must be equipped with explosion doors to relieve furnace pressure. The explosion doors must be located in the setting wall within 7 feet of the firing floor or any platform, and must be provided with substantial deflectors to divert the blast away from personnel.

§ 3a.34. Ventilation for combustion equipment.

Adequate air to support combustion shall be provided. The recommendations of the manufacturer of the equipment shall be utilized.

§ 3a.35. Ladders and runways.

(a) Walkways, runways and platforms are required between and on top of boilers, which are more than 8-feet high from the operating floor to afford accessibility for the operation and servicing.

(b) Walkways, runways and platforms must meet the following requirements:

(1) Be constructed of metal.

(2) Be constructed of safety treads, standard grating, or similar material with a minimum clear width of 30 inches.

(3) Be constructed by bolts, welds or rivets.

(4) Be equipped with handrails that are 42-inches high with an intermediate rail and 6-inch toeboard.

(c) A stairway that is a means of access to the walkways, runways or platforms must not exceed an angle of 45°.

(d) A ladder that serves as a means of access to walkways, runways or platforms must be constructed:

(1) Of metal.

(2) So the rungs extend through the side members and are permanently secured to the side rails.

(3) So the front of the rungs have a distance of at least 30 inches from the nearest permanent object on the climbing side of the ladder.

(4) So the back of the rungs have a distance of at least 6 1/2 inches from the nearest permanent object.

(5) So there is a clear width of at least 15 inches from the centerline of the ladder on either side across the front of the ladder.

(e) A welder qualified under Standard Qualification Procedures of the American Welding Society is required for welding a walkway, runway, platform or ladder.

(f) A walkway, runway or platform exceeding 6 feet in length must have at least two means of exit access.

§ 3a.36. Clearances.

(a) The following clearances apply for boilers installed after January 1, 1960:

(1) The minimum clearance around each boiler must be 30 inches with at least 6 feet clearance from the floor to overhead obstructions.

(2) The minimum clearance around each unfired pressure vessel must be 18 inches. The minimum clearance in front of a manhole cover must be 30 inches.

- (3) A clearance of at least 12 inches must be provided between the floor and lower head or the underside of the shell of an unfired pressure vessel. The clearance distance must be the measurement from a vessel appendage to the next object.
- (b) The following requirements apply to a single installation or assembly of storage water heaters or instantaneous water heaters, which operate as a unit:
- (1) The unit may be arranged with a minimum clearance of 6 inches between components if an 18-inch clearance shall be maintained around the assembly. The clearance in front of a manhole opening is a minimum of 30 inches.
 - (2) An assembly may not exceed 9 million BTU input.
 - (3) Casings must be readily removable for inspection purposes, if casings are provided.
- (c) A new building containing multiple boiler installations must meet the following minimum overhead clearance requirements:
- (1) Between the boiler platform and the ceiling: 7 feet.
 - (2) Between the top of the boiler proper and the ceiling for all installations: 3 1/2 feet.
 - (3) Between the highest point of any valve or fitting and the ceiling: 6 inches.
- (d) Subsections (a) and (b) do not apply to pressure vessels of factory assembled package units that are governed by § 3a.111 (relating to field inspections) if there is adequate clearance for operation and inspection. Subsection (a) applies to the entire factory assembled unit.
- (e) The minimum clearance around a wall-hung boiler must be 30 inches except for the wall mount side.
- (f) The clearance between modules in a modular system may be reduced to the manufacturer's recommendations if the entire modular boiler system meets the 30-inch clearance requirement of subsection (a)(1).
- (g) This section does not apply to a miniature boiler if the boiler can be safely inspected as installed.
- (h) Tripping hazards are not permitted.

Cross References

This section cited in 34 Pa. Code § 3a.98 (relating to plan approval); 34 Pa. Code § 3a.161 (relating to modular boilers); and 34 Pa. Code § 3a.166 (relating to miniature boilers and kitchen equipment).

§ 3a.37. Special design.

- (a) The owner or user of a new boiler or unfired pressure vessel having unusual features of special design intended for installation and operation in this Commonwealth shall submit the following to the Department for approval:
- (1) One copy of complete specifications.

- (2) Drawings that show all details of the proposed construction and the method of computation used in determining the safe working pressure for each new boiler and unfired pressure vessel.
- (b) A specially designed boiler or unfired pressure vessel may not be operated until the Department approves its design.

§ 3a.38. Commercial beverage dispensing systems.

- (a) An unfired pressure vessel used in a commercial beverage dispensing system must have clearance of 18 inches for at least 50% of the vessel surface. The remaining vessel surface may have its clearance reduced to 1 inch.
- (b) The Department will issue one certificate of operation and charge one fee under § 3a.2 (relating to fees) for all vessels used in a commercial dispensing system at a single business location at the same design maximum working pressure.

§ 3a.39. Manufactured parts.

Parts manufactured for boilers or unfired pressure vessels constructed to the ASME Code must be manufactured and stamped in accordance with the applicable section of the ASME Code. Data reports must be furnished in accordance with the applicable section of the ASME Code.

INSTALLATIONS OF POWER BOILERS

§ 3a.51. Compliance with the ASME Code for power boilers.

Installations of power boilers must comply with the provisions of section 1 of the ASME Code, ASME/CSD1 and NFPA 85.

INSTALLATIONS OF LOW-PRESSURE HEATING BOILERS

§ 3a.61. Compliance with the ASME Code for low-pressure boilers.

Installations of low-pressure heating boilers must comply with section IV of the ASME Code and ASME/CSD 1.

§ 3a.62. Registration and installation.

- (a) An installer of low-pressure steel heating boilers shall provide a copy of the manufacturer's data report to the inspector when the boiler is installed.
- (b) A cast iron boiler shall be hydrostatically tested when it is installed. The inspector may accept the factory hydrostatic test.
- (c) An installer of low-pressure cast iron boilers shall submit a "Cast Iron Installation Report" to the Department on a Department-provided form. The Cast Iron Installation Report contains manufacturer, testing and installation information.

INSTALLATIONS OF UNFIRED PRESSURE VESSELS**§ 3a.71. Compliance with the ASME Code for installations of unfired pressure vessels.**

Installations of unfired pressure vessels must comply with sections VIII or X of the ASME Code.

REPAIRS AND ALTERATIONS**§ 3a.81. Major repairs and alterations.**

(a) An owner or user of a boiler or unfired pressure vessel shall consult with an inspector on a repair that affects the working pressure or safety of a boiler or unfired pressure vessel.

(b) A repair to a boiler or unfired pressure vessel must comply with the applicable provisions of the ASME Code or ANSI/NB 23. A manufacturer or repair company may not perform welded repairs and tube replacements without holding an “R” Stamp.

(c) An owner or user of a boiler or unfired pressure vessel shall consult with the inspector responsible for completing the report of welded repair before commencement of work or repairs that alter the original design of a boiler or unfired pressure vessel. A manufacturer or repair company holding an ANSI/NB 23 “R” stamp may perform alterations to other vessels.

(d) Welds shall be documented on a Department-issued “Record of Welded Repair Form” or a R-1 form. Hydrostatic testing of welded repairs may be conducted at the inspector’s discretion in accordance with ANSI/NB23.

(e) An owner or user of a boiler or unfired pressure vessel that requires an inspection under this chapter shall immediately notify the Department when a defect affecting the safety of the boiler or unfired pressure vessel is discovered.

§ 3a.82. Reconstruction and repair.

Workmanship, materials, fittings and attachments used in the reconstruction or repair of a boiler or unfired pressure vessel must meet ANSI/NB 23. The boiler or unfired pressure vessel may not become operational until an inspector approves all repairs.

§ 3a.83. Repairs by welding.

(a) Welding repairs must comply with section IX of the ASME Code.

(b) A repair to a boiler or unfired pressure vessel that involves welding may be made if an inspector approves the repair and signs a record of welded repairs.

(c) Repairs by fusion welding must comply with ANSI/NB 23.

(d) Repairs listed as routine in ANSI/NB 23 may be preapproved by an inspector.

Subchapter C. ADMINISTRATION

Sec.	
3a.91.	Certificates of operation.
3a.92.	Unsafe operation.
3a.93.	Accident notification.
3a.94.	Restamping.
3a.95.	Condemnation.
3a.96.	Removal from service.
3a.97.	Reinstallation.
3a.98.	Plan approval.
3a.99.	Notice of deficiency.
3a.100.	Appeals.

§ 3a.91. Certificates of operation.

(a) The Department will issue a certificate of operation for a boiler or unfired pressure vessel upon receipt of an inspection report indicating that the boiler or unfired pressure vessel is safe to operate at the pressure limit listed in the inspection report.

(b) The owner or user shall post the certificate in a visible location that is as close as possible to the boiler or unfired pressure vessel.

§ 3a.92. Unsafe operation.

The Department will suspend the certificate of operation and seal a boiler or unfired pressure vessel that is unsafe. A person, firm, partnership or corporation operating a boiler or unfired pressure vessel with a suspended certificate of operation is subject to the penalties of section 19 of the act (35 P. S. § 1331.19).

Cross References

This section cited in 34 Pa. Code § 3a.99 (relating to notice of deficiency).

§ 3a.93. Accident notification.

(a) Under section 16 of the act (35 P. S. § 1331.16), the owner, user or operator shall immediately notify the Department by telephone, facsimile transmission, electronic mail or messenger of an accident or explosion. Immediate notification means within 24 hours of the accident. The owner, user or operator shall file a written report with the Department on the Department's boiler accident report form within 5 days of the accident. The boiler accident report form may be obtained on the Department's website (www.dli.state.pa.us).

(b) The boiler or unfired pressure vessel, its parts or equipment involved in the accident or explosion may not be removed or disturbed before a Department inspection is made except to prevent harm to persons or property.

§ 3a.94. Restamping.

(a) An inspector will instruct the owner or user to restamp a boiler or unfired pressure vessel when the stamping becomes indistinct or detached. The owner or user shall submit a request for restamping the boiler or unfired pressure vessel to the Department. The request must be accompanied with proof of the original stamping consisting of a rubbing of the original stamping or a copy of the manufacturer's data sheet.

(b) A Department inspector has sole authorization to perform the Department restamping. The restamping will contain the same information as the original stamping. The Department will not restamp the ASME symbol.

§ 3a.95. Condemnation.

(a) A Department inspector will stamp an unsafe boiler or unfired pressure vessel by crossing out the serial number stamping. The following designation will be used:

Pa < XX >

(b) The stamping will be at least 5/16 inch in height.

(c) A Department inspector will remove the stamping of subsection (a) when a boiler or unfired pressure vessel has been restored or repaired to comply with this chapter. No other person may remove the stamping.

§ 3a.96. Removal from service.

An owner or user shall notify the Department when a boiler or unfired pressure vessel is removed from service for a repair or alteration within 10 days.

§ 3a.97. Reinstallation.

(a) Fittings and appliances used for the reinstallation of a boiler and pressure vessel must comply with this chapter.

(b) The owner or user of a boiler or unfired pressure vessel shall notify the Department within 10 days of the new location of a boiler or unfired pressure vessel that is moved.

(c) The owner or user may not place a reinstalled boiler or unfired pressure vessel into service until it passes a Department inspection.

§ 3a.98. Plan approval.

(a) Installation of a boiler must comply with all of the requirements of this section.

(b) A boiler owner shall submit an intent to install form or other data showing compliance with the act and this chapter to the Department before a boiler is installed.

(c) A boiler owner shall submit drawings and a request for a variance to the Industrial Board if the installation clearances do not meet the requirements of

§ 3a.36 (relating to clearances). Drawings must be at least 18 inches by 24 inches in size drawn to a scale of not less than 1/4 inch equals 1 foot. Drawings for boiler installations must include the following:

- (1) A floor plan and cross section of the boiler room.
- (2) The proposed location of all boilers, drums, headers, doors, steam, air and water gages, safety devices, blowoffs, all necessary piping, and all other parts and equipment.
- (3) The exit ways from all of the following:
 - (i) Boiler rooms.
 - (ii) Blowoff pits and ashpits or alleys.
 - (iii) High pressure steam line tunnels.
 - (iv) Other places where there is danger to persons in confined space in case of explosion.
 - (v) Platforms.
- (4) Walkways located over boilers.
- (5) Clearance dimensions above, around and between boilers, equipment and other construction.

Cross References

This section cited in 34 Pa. Code § 3a.22 (relating to other State stamps).

§ 3a.99. Notice of deficiency.

(a) The Department will use the following procedures if an inspection reveals any violation of the act or this chapter:

- (1) The Department will issue a written notice of deficiency to the boiler or unfired pressure vessel owner or user. The notice will contain a description of the violations and an order requiring correction of the violations and repairs within 30 days of the date of issuance. When a violation relates to the unsafe operation of a boiler, the Department will act under § 3a.92 (relating to unsafe operation).
- (2) The written notice of deficiency will include a certification requiring the boiler or unfired pressure vessel owner or user to sign, date and return the certification when the corrective action or repair has occurred. The Department will inspect boilers or unfired pressure vessels which have been placed out of service to verify the corrective action or repair. The Department must approve the corrective action or repair before the boiler or unfired pressure vessel is returned to service.
- (3) If the boiler or unfired pressure vessel owner or user does not correct the deficiency within the period of time allowed in the notice of deficiency, the Department may initiate action to seal the boiler or unfired pressure vessel by issuing an order to show cause to the boiler or unfired pressure vessel owner or user.

(4) The order to show cause must contain a statement of the grounds for the action, the alleged violations of the act and this chapter and notification that the boiler or unfired pressure vessel may be sealed. The order to show cause must contain notification that the owner or user shall submit a written answer within 30 days. The Department will serve the order to show cause upon the owner or user by certified mail or personal service.

(5) The owner or user may file a written answer to the order to show cause with the Department within 30 days following service of the order to show cause. The answer must contain specific admissions or denials of the allegations contained in the order to show cause and set forth the specific facts, matters of law or regulation interpretation relied upon by the owner or user. The answer may contain a request for a variance or an extension of time for compliance.

(b) The Department will consider a timely-filed request for variance or extension of time, or a timely-filed appeal as a stay to an enforcement action unless the Department acts under § 3a.92 or the boiler constitutes a danger to life or property under section 10(e) of the act (35 P. S. § 1331.10(e)).

(c) The Department will inspect the boiler or unfired pressure vessel at the expiration of an extension of time or other time period granted for compliance under this section. If the boiler or unfired pressure vessel violates the act or this chapter following inspection, the Department may seal or condemn the boiler or unfired pressure vessel under section 13 of the act (35 P. S. § 1331.13). The Department will serve the seal order upon the owner or user by certified mail or personal service.

(d) Under section 13 of the act, the Department will issue a notice to discontinue operation to the boiler or unfired pressure vessel owner or user for a violation that was not corrected. The notice to discontinue operation will require the owner or user to discontinue the use of the boiler or unfired pressure vessel within 24 hours. The boiler or unfired pressure vessel may not be returned to service until the violations have been corrected, the repairs have been made and the Department notifies the owner or user that the boiler or unfired pressure vessel may be returned to service.

(e) Subsection (a) supplements 1 Pa. Code §§ 35.14 and 35.37 (relating to orders to show cause; and answers to orders to show cause).

§ 3a.100. Appeals.

(a) A person aggrieved by a notice of deficiency or a notice to discontinue operation may appeal the order to the Industrial Board within 30 days of the issuance of the order.

(b) The Industrial Board will decide petitions for variances and extensions of time, and appeals of Department decisions.

(c) The Board may consider the following factors, among others, when reviewing and ruling upon a request for an extension of time or a variance or other appropriate relief:

- (1) The reasonableness of the Department's rules and regulations as applied in the specific case.
- (2) The extent to which an extension of time or a variance will subject occupants to unsafe conditions.
- (3) The availability of professional or technical personnel needed to come into compliance.
- (4) The availability of materials and equipment needed to come into compliance.
- (5) The efforts being made to safeguard occupants against boiler and unfired pressure vessel hazards.
- (6) The efforts being made to come into compliance as quickly as possible.
- (7) Compensatory safety features which will provide an equivalent degree of protection for the occupants.

Subchapter D. INSPECTIONS

Sec.

- 3a.111. Field inspections.
- 3a.112. Inspection preparation.
- 3a.113. Inspection accessibility.
- 3a.114. Removal of covering for inspection.
- 3a.115. Hydrostatic pressure test.
- 3a.116. Inspection during construction.
- 3a.117. Inspection report.

§ 3a.111. Field inspections.

Field inspections shall be conducted by an individual holding a current Pennsylvania Inspector Commission to inspect boilers and unfired pressure vessels in this Commonwealth. Field inspections shall be conducted according to the following timetable:

- (1) Power boilers and process boilers will be inspected internally and externally while not under pressure every 12 months except as provided under section 9(e) and (f) of the act (35 P. S. § 1331.9(e) and (f)).
- (2) The Department may extend power boiler internal inspections to 24 months and process boiler internal inspections to 60 months if the boiler passes an annual external inspection and the following requirements are met:
 - (i) There is continuous boiler water treatment under the direct supervision of a person trained and experienced in water treatment for controlling and limiting corrosion and deposits.
 - (ii) The records are available for review and contain the following:
 - (A) The date and time the boiler was out of service and the reason for being taken out of service.
 - (B) Daily analysis of water samples showing water conditions and elements or characteristics that produce corrosion or other deterioration to the boiler or its parts.

- (iii) An inspector performed annual inspections of the boiler, which included inspection of the items contained in paragraphs (1) and (2).
 - (iv) The boiler is operated under direct supervision of a trained operator.
 - (v) Inspection records demonstrate no significant scaling, corrosion, erosion or overheating.
- (3) Internal and external inspection of low-pressure steam vapor boilers that are not under pressure will be conducted every 24 months.
- (4) External inspection of hot water supply boilers will be conducted every 24 months. An inspector may require internal inspection because of a vessel's age or condition. The Department will notify the boiler owner or operator verbally or in writing of the need for an internal inspection.
- (5) Internal inspection of steel hot water heating boilers will be conducted every 48 months. External inspections will be conducted every 24 months.
- (6) Internal and external inspections of low-pressure boilers in schools will be conducted every 24 months.
- (7) External inspections of cast iron boilers will be conducted every 24 months and will include an internal inspection of the firebox. The unit shall be flushed until clean if the watersides appear to contain sludge.
- (8) Unfired pressure vessels will be inspected every 36 months. An inspector may require internal inspections because of a vessel's age or condition. The Department will notify the boiler owner or operator verbally or in writing of the need for an internal inspection.

Cross References

This section cited in 34 Pa. Code § 3a.36 (relating to clearances); 34 Pa. Code § 3a.161 (relating to modular boilers); 34 Pa. Code § 3a.162 (relating to portable boilers); 34 Pa. Code § 3a.163 (relating to fired coil water heaters and instantaneous water heaters); 34 Pa. Code § 3a.164 (relating to storage water heaters); 34 Pa. Code § 3a.165 (relating to steam/hot water coil storage water heater); 34 Pa. Code § 3a.166 (relating to miniature boilers and kitchen equipment); 34 Pa. Code § 3a.167 (relating to hot water/steam heat exchangers); 34 Pa. Code § 3a.168 (relating to autoclaves and quick opening vessels); 34 Pa. Code § 3a.169 (relating to fuel trains and piping systems); 34 Pa. Code § 3a.170 (relating to swimming pool heaters); and 34 Pa. Code § 3a.171 (relating to locomotive boilers).

§ 3a.112. Inspection preparation.

- (a) An owner or user shall prepare a boiler or unfired pressure vessel for internal inspection in accordance with the ANSI/NB23 after a inspector provides notification.
- (b) The inspector will not inspect a boiler or unfired pressure vessel that is not properly prepared for an internal inspection.

§ 3a.113. Inspection accessibility.

Underground-unfired pressure vessels shall be installed or reinstalled in a manner that allows for external inspection of the vessel after February 4, 2006.

§ 3a.114. Removal of covering for inspection.

An owner or user shall remove a portion of the jacketing, setting wall or other form of casing or housing so an inspector may view rivet size and pitch, and other data necessary to determine the safety of a boiler or unfired pressure vessel when a portion of the jacketing, setting wall or other form of casing or housing is not visible and there is no other means to obtain this information.

§ 3a.115. Hydrostatic pressure test.

(a) A hydrostatic pressure test must comply with the following requirements:

(1) A hydrostatic pressure test may not exceed the following pressures:

(i) For boilers or unfired pressure vessels in the field, 1.5 times the maximum allowable working pressure.

(ii) For boilers of locomotives, 1.25 times the maximum allowable working pressure.

(iii) For glass-lined unfired pressure vessels, the maximum allowable working pressure.

(iv) For unfired pressure vessels fabricated to ASME section VIII, division 1 after January 1, 2000, 1.3 times the maximum allowable working pressure.

(v) For unfired pressure vessels fabricated to ASME Section VIII, Divisions 2 and 3, the pressure that was preapproved by an inspector.

(2) Pressure must be controlled at all times and may not be more than 106% of the test pressure allowed by the ASME Code at the time of construction.

(3) The temperature of the water used to apply the test must be between 70° and 120°F.

(4) A safety valve must be removed or each valve shall be held to its seat by a testing clamp. Screwing down the compression screw upon the spring is prohibited. A VR stamp holder must reseal the valves.

(5) Pressure must be equal to or below the release pressure of the safety valve having the highest release setting when a test is applied to an existing installation to determine tightness.

(b) An inspector may require a hydrostatic test after the completion of a repair to insure the pressure containing boundaries hold design pressure.

§ 3a.116. Inspection during construction.

An inspector shall comply with ASME requirements for inspections of cast iron boilers in construction.

§ 3a.117. Inspection report.

An inspector shall submit a copy of each boiler or unfired pressure vessel inspection to the Department no more than 30 days after the inspection.

**Subchapter E. BOILERS INSTALLED PRIOR TO JULY 1, 1916, AND
UNFIRED PRESSURE VESSELS AND POWER BOILERS INSTALLED
PRIOR TO SEPTEMBER 1, 1937**

- Sec.
3a.131. Allowable working pressure.
3a.132. Fusible plugs.
3a.133. Repair and replacement.
3a.134. Weighted safety valves.

§ 3a.131. Allowable working pressure.

The ASME Code governs calculation of allowable working pressure.

Cross References

This section cited in 34 Pa. Code § 3a.3 (relating to scope).

§ 3a.132. Fusible plugs.

Fire-actuated fusible plugs may be used if the plugs conform to the requirements of Sections A19—A21, Appendix A, section I of the ASME Code. The plugs must be replaced annually.

§ 3a.133. Repair and replacement.

Repairs or replacements to fittings or appliances must comply with the requirements for installations in the ASME Code and ASME/CSD1.

§ 3a.134. Weighted safety valves.

Weighted safety valves may not be used on boilers or unfired pressure vessels.

**Subchapter F. LOW PRESSURE HEATING BOILERS INSTALLED
PRIOR TO JULY 1, 1916**

- Sec.
3a.141. Riveted boilers.
3a.142. Welded boilers.
3a.143. Cast iron boilers.
3a.144. Safe pressure.
3a.145. Steam stop valves.

§ 3a.141. Riveted boilers.

(a) The ASME Code governs the determination of the maximum allowable working pressure on the shell of a riveted heating boiler.

(b) The maximum allowable working pressure of a steam heating boiler may not exceed 15 psig.

(c) The maximum allowable working pressure of a hot water boiler may not exceed 160 psig at a temperature not exceeding 250°F.

Cross References

This section cited in 34 Pa. Code § 3a.3 (relating to scope).

§ 3a.142. Welded boilers.

The maximum allowable working pressure on the shell of a welded steel or wrought iron heating boiler may not exceed the requirements of ASME Code, section IV.

Cross References

This section cited in 34 Pa. Code § 3a.3 (relating to scope).

§ 3a.143. Cast iron boilers.

(a) The maximum allowable working pressure on the shell of a cast iron boiler may not exceed 15 psig for a steam boiler and the stamped working pressure for a hot water boiler.

(b) The maximum allowable working pressure for a boiler having a cast iron shell or heads, and steel or wrought iron tubes may not exceed 15 psig for a steam boiler and the stamped working pressure for a hot water boiler.

Cross References

This section cited in 34 Pa. Code § 3a.3 (relating to scope).

§ 3a.144. Safe pressure.

An inspector may reduce the operating pressure of a heating boiler if the inspector determines that the boiler is unsafe for operation at the approved pressure and the boiler is not properly repaired. The inspector may reduce the operating pressure based upon the remaining thickness of the pressure boundaries and code of construction requirements.

Cross References

This section cited in 34 Pa. Code § 3a.3 (relating to scope).

§ 3a.145. Steam stop valves.

(a) A boiler equipped with a steam stop valve must contain a check valve in the condensate return line between the boiler and the system.

(b) A heating system equipped with a steam stop valve must have a check valve in the condensate return pipe from the part of the system equipped with the steam stop valve.

Cross References

This section cited in 34 Pa. Code § 3a.3 (relating to scope).

**Subchapter G. UNFIRED PRESSURE VESSELS INSTALLED PRIOR TO
SEPTEMBER 1, 1937**

Sec.

- 3a.151. Maximum allowable working pressure.
- 3a.152. Safety appliances.
- 3a.153. Pipe connections and fittings.
- 3a.154. Repair and renewal.

§ 3a.151. Maximum allowable working pressure.

(a) The maximum allowable working pressure on the shell of an unfired pressure vessel is determined by the following:

- (1) The strength of the weakest course completed from the thickness of the plate.
- (2) The tensile strength of the plate.
- (3) The efficiency of the longitudinal joint.
- (4) The inside diameter of the course.
- (5) The safety factor allowed by the ASME Code.

(b) The equation for computing the maximum allowable working pressure is:

$$\frac{TS \times t \times E}{R \times FS} = \text{Maximum allowable working pressure in psi where:}$$

(1) TS equals the ultimate strength of the shell plates in psi. If the tensile strength is not known, 55,000 psi must be used for temperatures not exceeding 700° F.

(2) T equals the maximum thickness of shell plates of weakest course in inches.

(3) E equals the efficiency of longitudinal joint depending upon construction.

(i) ANSI/NB 23, Appendix C, sections A-1 to A-9 must be used to calculate efficiency for a riveted joint.

(ii) Fusion welded joints must have the following E values:

- (A) Single lap weld is 40%.
- (B) Double lap weld is 60%.
- (C) Single butt weld is 60%.
- (D) Double butt weld is 75%.
- (E) Forge weld is 70%.
- (F) Brazed steel and brazed copper is 80%.

(4) R equals the inside radius of the weakest course of the shell in inches if the thickness of the shell does not exceed 10% of the radius. The outer radius is used in the equation if the thickness is over 10% of the radius.

(5) FS equals the minimum safety factor allowed by this section. The minimum allowable safety factors are as follows:

(i) For unfired pressure vessels, except those of lap seam construction, the minimum safety factor is five.

- (ii) For unfired pressure vessels with longitudinal lap joints the minimum safety factor is 5 1/2.
- (iii) For unfired pressure vessels with reinstalled or secondhand lap seamed construction the minimum safety factor is six.
- (iv) For unfired pressure vessels with reinstalled or secondhand butt strap or welded construction the minimum safety factor is 5 1/2.
- (c) The ASME Code, section VIII, Division 1 is incorporated as the maximum allowable working pressure for cylindrical unfired pressure vessels subjected to external or collapsing pressure.
- (d) The formulas in ASME Code, section VIII, divisions 1 and 2 or ASME, section X are incorporated and must be used to calculate the maximum allowable pressure for the head of an existing unfired pressure vessel that was not constructed in accordance with this chapter.
- (e) The effect of static head must be considered in checking an existing vessel's maximum allowable working pressure.

Cross References

This section cited in 34 Pa. Code § 3a.3 (relating to scope).

§ 3a.152. Safety appliances.

An unfired pressure vessel must be protected by safety appliances required in § 3a.26(a)—(o) (relating to safety devices).

Cross References

This section cited in 34 Pa. Code § 3a.3 (relating to scope).

§ 3a.153. Pipe connections and fittings.

- (a) The general arrangement of piping shall be designed to reduce vibration, expansion and drainage, and provide adequate support at the proper points.
- (b) The code of construction governs repairs of existing high-pressure/temperature piping systems installed before 1998.

Cross References

This section cited in 34 Pa. Code § 3a.3 (relating to scope).

§ 3a.154. Repair and renewal.

Repairs to fittings and controls must comply with the ASME Code and ASME/CSD1 requirements for installations.

Cross References

This section cited in 34 Pa. Code § 3a.3 (relating to scope).

Subchapter H. SPECIAL INSTALLATIONS

Sec.

- 3a.161. Modular boilers.
- 3a.162. Portable boilers.
- 3a.163. Fired coil water heaters and instantaneous water heaters.
- 3a.164. Storage water heaters.
- 3a.165. Steam/hot water coil storage water heater.
- 3a.166. Miniature boilers and kitchen equipment.
- 3a.167. Hot water/steam heat exchangers.
- 3a.168. Autoclaves and quick opening vessels.
- 3a.169. Fuel trains and piping systems.
- 3a.170. Swimming pool heaters.
- 3a.171. Locomotive boilers.

§ 3a.161. Modular boilers.

(a) A modular boiler as defined in ASME Code, section IV shall be installed in accordance with § 3a.36 (relating to clearances). The distance between modules may be reduced to the manufacturer's recommendations if the entire modular boiler system meets the 30-inch clearance requirements.

(b) A modular boiler must have only one inlet and one outlet valve, as required by ASME Code, section IV. The boiler controls must comply with ASME Code, section IV and ASME/CSD1.

(c) Inspection of modular boilers shall be performed in accordance with § 3a.111(1)—(7) (relating to field inspections).

§ 3a.162. Portable boilers.

(a) A portable boiler must meet the requirements of § 3a.21 (relating to stamping).

(b) A portable boiler may be mounted in covered trailers if the following conditions are met:

- (1) A 30-inch clearance is provided on both ends of the boiler.
- (2) The boiler's trailer is provided with chocks and is anchored to prevent movement during operation.
- (3) The boiler is anchored to the trailer.
- (4) The trailer provides a means or area to remove boiler tubes.
- (5) The roof or the ceiling of the trailer provides space to allow proper operation of all valves and appurtenances.

(c) The clearance on one side of a boiler mounted in a covered trailer may be reduced to 3 inches if the trailer has access panels for removal of handhole plugs for inspection and maintenance.

(d) The user or operator shall notify the Department in writing and obtain written Department approval before a portable boiler is moved and placed in service.

(e) Inspection of portable boilers shall be performed in accordance with § 3a.111(1)—(7) (relating to field inspections).

§ 3a.163. Fired coil water heaters and instantaneous water heaters.

(a) A fired coil water heater and instantaneous water heater shall be installed in accordance with ASME Code, section IV, articles HLW 700, HLW 800 and HG 614.

(b) A storage vessel may be used with a fired coil water heater and instantaneous water heater, if its controls comply with ASME CSD1, and it meets the ASME Code over-pressure protection requirements. The vessel must be ASME Code constructed if the Btu input exceeds 200,000 Btu.

(c) Temperature controls must be designed to not exceed 210°F.

(d) Inspection of fired coil water heaters and instantaneous water heaters shall be performed in accordance with § 3a.111(4) (relating to field inspections).

§ 3a.164. Storage water heaters.

(a) A storage water heater shall be installed in accordance with ASME Code, section IV, articles HLW 700 and HLW 800, and comply with safety valve requirements of ASME CSD1.

(b) Temperature controls must be designed to not exceed 210°F.

(c) Inspection of storage water heaters shall be performed in accordance with § 3a.111(4) (relating to field inspections).

§ 3a.165. Steam/hot water coil storage water heater.

(a) The design and construction of a steam/ hot water coil storage water heater must comply with ASME Code, section VIII and the additional control requirements of ASME/CSD1.

(b) Temperature controls must be designed to not exceed 210°F.

(c) Inspection of steam/hot water coil storage water heaters shall be performed in accordance with § 3a.111(8) (relating to field inspections).

§ 3a.166. Miniature boilers and kitchen equipment.

(a) A miniature boiler must be manufactured under the ASME “S,” “H” or “M” Code. A boiler manufactured under ASME “S” and “H” Code must be stamped with a National Board registration number.

(b) Clearance requirements contained in § 3a.36 (relating to clearances) do not govern a miniature boiler or kitchen equipment if all pressure containing parts with appurtenances are visible for inspection.

(c) Miniature boiler controls must comply with ASME/CSD1.

(d) The sight glass and pressure gauge of a miniature boiler installed in a cabinet must always be visible during operation.

(e) Discharge from safety valves must be piped to a safe point.

(f) Burners for gas-fired installations must be AGA approved.

(g) Inspection of miniature boilers and kitchen equipment shall be performed in accordance with § 3a.111(1)—(6) (relating to field inspections).

§ 3a.167. Hot water/steam heat exchangers.

- (a) Heat exchangers must be manufactured under the ASME Code.
- (b) Heat exchangers must have adequate over-pressure protection to protect both systems.
- (c) Heat exchangers used for domestic hot water supply must have a high temperature limit switch designed not to exceed 210°F.
- (d) Inspection of hot water/steam heat exchangers shall be performed in accordance with § 3a.111(8) (relating to field inspections).

Cross References

This section cited in 34 Pa. Code § 3a.3 (relating to scope).

§ 3a.168. Autoclaves and quick opening vessels.

- (a) An inspector shall inspect autoclaves and quick opening vessels with close examination of all moving parts, locking devices, pins and interlocking devices, in accordance with ANSI/NB 23.
- (b) An autoclave and quick opening vessel must have interlocking systems to prevent charging the vessel until all openings and locking devices are fully in place.
- (c) A pressure-relieving device must be sized in accordance with the data plate for pressure. The capacity must be based on the pressure and pipe size or the total Btu valve of the boiler.
- (d) Inspection of autoclaves and quick opening vessels shall be performed in accordance with § 3a.111(8) (relating to field inspections).

§ 3a.169. Fuel trains and piping systems.

- (a) The piping of low-pressure steam systems, except PVC materials, must comply with Chapters 10 and 12 of the IMC.
- (b) The piping of low-pressure hydronic piping systems, except PVC materials, must comply with Chapter 12 of the IMC.
- (c) The design and installation of high-pressure steam and high temperature hot water piping must comply with ASME B31.1.
- (d) The repair of high pressure/temperature piping systems installed before 1998 must comply with the code of construction.
- (e) The installation of fuel trains and associated piping must comply with ASME/CSD1.
- (f) Inspection of fuel trains and piping systems shall be determined by the type of boiler to which the system is attached and performed in accordance with § 3a.111 (relating to field inspections).

§ 3a.170. Swimming pool heaters.

(a) A swimming pool heater is an instantaneous water heater. The heater must meet the construction requirements of ASME Code, section IV and the control requirements of ASME/CSD1 except if exempt under § 3a.3(d) (relating to scope).

(b) A pool heater may be piped with polyvinyl chloride material rated for the pressure and temperature of the heater after the isolation valves.

(c) Inspection of swimming pool heaters shall be performed in accordance with § 3a.111(4) (relating to field inspections).

§ 3a.171. Locomotive boilers.

(a) New installations for boilers of locomotives must comply with ASME Code, section I.

(b) Inspection of locomotive boilers shall be performed in accordance with § 3a.111(1) and (2) (relating to field inspections).

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