AUTHENTICATED
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PART 51 [RESERVED]

PART 52—POWER BOILERS

Subpart 52.01—General Requirements

Subpart 52.05—Requirements for Boilers Fabricated by Welding

Subpart 52.15—Requirements for Watertube Boilers

Subpart 52.20—Requirements for Firetube Boilers

Subpart 52.25—Other Boiler Types

AUTHORITY: 46 U.S.C. 3306, 3307, 3703; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; Department of Homeland Security Delegation No. 00170.1, Revision No. 01.3.

SOURCE: CGFR 68-82, 33 FR 18815, Dec. 18, 1968, as amended by USCG–2020–0634, 89 FR 50095, June 12, 2024, unless otherwise noted.

Subpart 52.01—General Requirements

§ 52.01–1 Incorporation by reference.

Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the Coast Guard must publish a document in the FEDERAL REGISTER and the material must be available to the public. All approved incorporation by reference (IBR) material is available for inspection at the U.S. Coast Guard and the National Archives and Records Administration (NARA). Contact U.S. Coast Guard Headquarters at: Commandant (CG–ENG), Attn: Office of Design and Engineering Standards, U.S. Coast Guard Stop 7509, 2703 Martin Luther King Jr. Avenue SE, Washington, DC 20593–7509; phone (202) 372–1375; email *typeapproval@uscg.mil*. For information on the availability of this material at NARA, visit *www.archives.gov/federal-register/cfr/ibr-locations* or email *fr.inspection@nara.gov*. The material is available from: *American Society of Mechanical Engineers (ASME)*, Two Park Avenue, New York, NY 10016–5990; 800–

843–2763; *CustomerCare@asme.org*; *www.asme.org*:

(a) ASME BPVC.I–2019, 2019 ASME Boiler and Pressure Vessel Code, Section I, Rules for Construction of Power Boilers, 2019 Edition, issued July 1, 2019 (''Section I of the ASME BPVC''); IBR approved for §§ 52.01–2; 52.01–3 introductory text and (g); 52.01–5; 52.01–50(a); 52.01–90; 52.01–95(a) and (f); 52.01–100(a) and (b); 52.01–105(a) and (b); 52.01–110(a); 52. 01–115; 52.01–120; 52.01–135(a)through (c); 52.01–140; 52.01–145; 52.05–1; 52.05–15; 52.05–20; 52.05–30; 52.05–45; 52.15–1; 52.15–5(a) and (b); 52.20–1; 52.20–25(a); 52.25–3; 52.25–5; 52.25–7; 52.25–10(a).

(b) [Reserved]

[USCG–2003–16630, 73 FR 65160, Oct. 31, 2008, as amended by USCG–2009–0702, 74 FR 49228, Sept. 25, 2009; USCG–2012–0832, 77 FR 59777, Oct. 1, 2012; USCG–2013–0671, 78 FR 60147, Sept. 30, 2013]

§ 52.01–2 Adoption of Section I of the ASME BPVC.

(a) Main power boilers and auxiliary boilers must be designed, constructed, inspected, tested, and stamped in accordance with Section I of the ASME BPVC (incorporated by reference; see § 52.01–1), as limited, modified, or replaced by specific requirements in this part. The appendices to Section I of the ASME BPVC are adopted and must be followed when the requirements in Section I make them mandatory. For general information, table 1 to § 52.01–2(a) lists the various paragraphs in Section I of the ASME BPVC that are limited, modified, or replaced by regulations in this part.

TABLE 1 TO § 52.01–2(a)—LIMITATIONS AND MODIFICATIONS IN THE ADOPTION OF SECTION I OF THE ASME BPVC

Paragraphs in section I, ASME BPVC and disposition	Unit of this part
PG–1 replaced by	54.01–5(a).
PG–16 through PG–31 modified by	52.01–95.
PG–32 through PG–39 modified by	52.01–100.
PG–42 through PG–55 modified by	52.01–100.
PG–58 and PG–59 modified by	52.01–105.
PG–60 modified by	52.01–110.
PG–61 modified by	52.01–115 (56.50–30).
PG–67 through PG–73 modified by	52.01–120.
PG–90 through PG–100 modified by	52.01–135 (52.01–95).
PG–91 modified by	52.01–135(b).
PG–99 modified by	52.01–135(c).
PG–100 modified by	52.01–95(e).
PG–104 through PG–113 modified by	52.01–140(a).
PG–112 and PG–113 modified by	52.01–145.
PW–1 through PW–54 modified by	52.05–1.
PW–10 modified by	52.05–15.
PW–11.1 modified by	52.05–20.
PW–16 modified by	52.05–30.
PW–41 modified by	52.05–20, 52.05–45.
PWT–1 through PWT–15 modified by	52.15–1.
PWT–9 modified by	52.15–5.
PWT–9.2 replaced by	52.15–5(b)
PWT–11 modified by	52.15–5.
PWT–11.3 replaced by	52.15–5(b).
PFT–1 through PFT–49 modified by	52.20–1.
PFT–44 modified by	52.20–17.
PFT–46. modified by	52.20–25.
PFH–1 modified by	52.25–3.
PMB–1 through PMB–21 modified by	52.25–5.
PEB–1 through PEB–19 modified by	52.25–7.
PVG–1 through PVG–12 modified by	52.25–10.
A–19 through A–21 modified by	52.01–50.

Note 1 to table 1 to § 52.01–2(a): The references to specific provisions in the ASME BPVC are coded. The first letter "P" refers to section I, while the letter "A" refers to the appendix to section I. The letter or letters following "P" refer to a specific subsection of section I. The number following the letter or letters refers to the paragraph so numbered in the text.

(b) References to the ASME BPVC, such as paragraph PG–1, indicate:

(1) P=Section I, Power Boilers.

(2) G=Subsection—General Requirements.

(3) 1=Paragraph 1.

(c) When a section or paragraph of the regulations in this part relates to Section I of the ASME BPVC, the relationship with the code will be shown immediately following the heading of the section or at the beginning of the paragraph as follows:

(1) (Modifies P ____.) This indicates that the material in P ____ is generally applicable but is being altered, amplified, or augmented.

(2) (Replaces P ____.) This indicates that P ____ does not apply.

(3) (Reproduces P ____.) This indicates that P ____ is being identically reproduced for convenience, not for emphasis.

[CGFR 68–82, 33 FR 18815, Dec. 18, 1968, as amended by CGFR 69–127, 35 FR 9975, June 17, 1970; CGD 81–79, 50 FR 9431, Mar. 8, 1985. Redesignated and amended by CGD 88–032, 56 FR 35821, July 29, 1991; USCG–2003–16630, 73 FR 65160, Oct. 31, 2008]

§ 52.01–3 Definition of terms used in this part.

For primary definitions associated with power boiler design, see Section I of the ASME BPVC (incorporated by reference; see § 52.01–1).

(a) *Types of boilers*—(1) *Main power boiler*. A main power boiler is a steam boiler used for generating steam for main propulsion.

(2) *Auxiliary or donkey boiler*. An auxiliary or donkey boiler is a steam boiler used for general purposes other than main propulsion.

(3) *Watertube boiler*. A watertube boiler is a steam boiler in which the boiler tubes contain water and steam. The heat is applied to the outside surface of the tubes.

(4) *Internally fired firetube boiler (scotch boiler)*. An internally fired firetube boiler is a steam boiler containing furnaces, one or more combustion chambers and tubes or flues, which are surrounded by water and through which the products of combustion pass from the furnace to the uptake.

(5) *Externally fired firetube or flue boiler (horizontal return tubular*). An externally fired firetube or flue boiler is a steam boiler, part of the outer shell of which is exposed to fire or to the products of combustion, and containing flues through which such products pass from the furnace to the uptake.

(6) *Unfired steam boiler*. A pressure vessel in which steam is generated by means other than fuel combustion is classed as an unfired steam boiler. (See § 54.01–10 of this subchapter.)

(b) *Parts of boilers*—(1) *Superheater*. A superheater is an appliance, normally consisting of tube rows, for the purpose of increasing the temperature of steam above the saturation temperature.

(2) *Economizer*. An economizer is a feed-water heater usually located in the uptake or casing of a boiler to absorb heat from the waste gases.

(3) *Furnace*. A furnace is a firebox or a large flue in which the fuel is burned.

(4) *Flues*. Flues are cylindrical shells made of seamless or welded tubing, or with a riveted longitudinal joint, the ends being attached by riveting or welding. Their purpose is to provide additional heating surface and to form a path for the products of combustion.

(5) *Tubes*. Tubes are cylindrical shells of comparatively small diameter constituting the main part of the heating surface of a boiler or superheater.

(c) *Pressure relief devices*. For boilers, pressure vessels, and pressure piping, a pressure relief device is designed to open to prevent a rise of internal pressure in excess of a specified value due to emergency or abnormal conditions. It may be a pressure relief valve or a nonreclosing pressure relief device.

(1) *Pressure relief valve*. A pressure relief valve is a pressure relief device, which is designed to reclose and prevent the further flow of fluid after normal conditions have been restored.

(i) *Safety valve*. A safety valve is a pressure relief valve actuated by inlet static pressure and characterized by rapid opening or pop action. Examples of types used on boilers include:

(A) *Spring-loaded safety valve*. A spring-loaded safety valve is a safety valve fitted with a spring, which normally holds the valve disk in a closed position against the seat and allows it

to open or close at predetermined pressures. Spring-loaded safety valves are characterized by pop action.

(B) [Reserved]

(ii) *Pilot operated pressure relief valve.* A pilot operated pressure relief valve is a pressure relief valve in which the major relieving device is combined with and is controlled by a self-actuated auxiliary pressure relief pilot valve.

(iii) *Temperature actuated pressure relief valve.* A temperature actuated pressure relief valve is a dual-function relief device designed to protect against both excessive pressure and temperature.

(2) *Nonreclosing pressure relief device.* A nonreclosing pressure relief device is a pressure relief device not designed to reclose after operation.

(i) *Rupture disk device.* A rupture disk device is a device actuated by inlet static pressure and designed to function by the bursting of a pressure-retaining disk.

(ii) *Explosion rupture disk device.* An explosion rupture disk device is a rupture disk device designed for use at high rates of pressure rise.

(iii) *Fusible plug device.* A fusible plug device is a device designed to function by the yielding or melting of a plug of suitable melting temperature.

(3) *Vacuum relief valve.* A vacuum relief valve is a valve designed to admit fluid or gas to prevent an excessive internal vacuum.

(d) *Other boiler attachments*—(1) *Mountings.* Mountings are nozzle connections, distance pieces, valves, or fittings attached directly to the boiler.

(2) *Main steam stop valve.* A main steam stop valve is a valve usually connected directly to the boiler for the purpose of shutting off the steam to/from the main steam line.

(3) *Auxiliary steam stop valve.* An auxiliary steam stop valve is a valve usually connected directly to the boiler for the purpose of shutting off the steam to/from the auxiliary lines.

(4) *Manifold.* A manifold is a fitting with two or more branches having valves either attached by bolting or integral with the fitting.

(5) *Blowoff valve.* A blowoff valve is a valve connected directly to the boiler for the purpose of blowing out water, scum or sediment.

(6) *Dry pipe.* A dry pipe is a perforated or slotted pipe placed in the highest part of the steam space of a boiler to prevent priming (water carryover).

(7) *Water column.* A water column is a fitting or tube equipped with a water glass attached to a boiler for the purpose of indicating the water level.

(8) *Test cocks.* Test cocks are small valves on a boiler for indicating the water level or water sampling.

(9) *Fusible plugs.* Fusible plugs are plugs made with a bronze casing and a tin filling, which melts at a temperature of 445 to 450 °F. They are intended to melt in the event of low water level.

(e) *Boiler fabrication*—(1) *Repair.* Repair is the restoration of any damaged or impaired part to an effective and safe condition.

(2) *Alteration.* Alteration is a structural modification to or departure from an approved design or existing construction.

(3) *Access or inspection openings.* Access or inspection openings are holes cut in the shells or heads of boilers or boiler pressure parts for the purpose of inspection and cleaning.

(f) *Gage (or gauge) pressure.* Gage pressure is the difference between the pressure at the point being measured and the ambient pressure for the gage. It is measured in units such as pounds per square inch gage (psig).

(g) *Maximum allowable working pressure.* For a definition of maximum allowable working pressure, see PG–21 of Section I of the ASME BPVC.

[CGFR 68–82, 33 FR 18815, Dec. 18, 1968, as amended by CGFR 69–127, 35 FR 9976, June 17, 1970; CGD 81–79, 50 FR 9431, Mar. 8, 1985; CGD 83–043, 60 FR 24772, May 10, 1995]

§ 52.01–5 Plans.

(a) Manufacturers intending to fabricate boilers to be installed on vessels must submit detailed plans as required by subpart 50.20 of this subchapter. The plans, including design calculations, must be certified by a registered professional engineer as meeting the design requirements in this part and in Section I of the ASME BPVC (incorporated by reference; see § 52.01–1).

(b) The following information must be included:

(1) Calculations for all pressure containment components including the maximum allowable working pressure and temperature, the hydrostatic or pneumatic test pressure, the maximum steam generating capacity and the intended safety valve settings.

(2) Joint design and methods of attachment of all pressure containment components.

(3) A bill of material meeting the requirements of Section I of the ASME BVPC, as modified by this subpart.

(4) A diagrammatic arrangement drawing of the assembled unit indicating the location of internal and external components including any interconnecting piping.

(Approved by the Office of Management and Budget under control number 1625–0097)

[CGD 81–79, 50 FR 9432, Mar. 8, 1985, as amended by USCG–2006–25697, 71 FR 55746, Sept. 25, 2006; USCG–2003–16630, 73 FR 65160, Oct. 31, 2008]

§ 52.01–10 Automatic controls.

(a) Each main boiler must meet the special requirements for automatic safety controls in § 62.35–20(a)(1) of this subchapter.

(b) Each automatically controlled auxiliary boiler having a heat input rating of less than 12,500,000 Btu/hr. (3.66 megawatts) must meet the requirements of part 63 of this subchapter.

(c) Each automatically controlled auxiliary boiler with a heat input rating of 12,500,000 Btu/hr. (3.66 megawatts) or above, must meet the requirements for automatic safety controls in part 62 of this subchapter.

[CGFR 68–82, 33 FR 18815, Dec. 18, 1968, as amended by CGD 81–030, 53 FR 17837, May 18, 1988; CGD 88–057, 55 FR 24236, June 15, 1990]

§ 52.01–35 Auxiliary, donkey, fired thermal fluid heater, and heating boilers.

(a) To determine the appropriate part of the regulations where requirements for miscellaneous boiler types, such as donkey, fired thermal fluid heater, heating boiler, etc., may be found, refer to table 1 to § 54.01–5 of this subchapter.

(b) Fired vessels in which steam is generated at pressures exceeding 103 kPa gage (15 psig) must meet the requirements of this part.

[CGFR 68–82, 33 FR 18815, Dec. 18, 1968, as amended by CGD 81–79, 50 FR 9432, Mar. 8, 1985]

§ 52.01–40 Materials and workmanship.

All materials to be used in any of the work specified in the various sections of this part must be free from injurious defects and must have a workmanlike finish. The construction work must be executed in a workmanlike manner with proper tools or equipment and must be free from defects which would impair strength or durability.

§ 52.01–50 Fusible plugs (modifies A–19 through A–21).

(a) Fusible plugs must comply with the requirements of A19 and A20 of Section I of the ASME BPVC (incorporated by reference; see § 52.01–1) and be stamped on the casing with the name of the manufacturer, and on the water end of the fusible metal ''ASME Std.'' Fusible plugs are not permitted where the maximum steam temperature to which they are exposed exceeds 218 °C (425 °F).

(b)(1) Fusible plugs must be cleaned and will be examined by the marine inspector at each inspection for certification, periodic inspection, or if the boiler is opened for repair or inspection. If in the marine inspector's opinion, the condition of any plug is satisfactory, it may be continued in use.

(2) When fusible plugs are renewed at other than the inspection for certification and no marine inspector is in attendance, the Chief Engineer must report the renewal to the Officer in Charge, Marine Inspection. This report must contain the following information:

(i) Name and official number of vessel.

(ii) Date of renewal of fusible plugs.

(iii) Number and location of fusible plugs renewed in each boiler.

(iv) Manufacturer and rating of each plug.

(v) Reason for renewal.

[CGFR 68–82, 33 FR 18815, Dec. 18, 1968, as amended by CGD 81–79, 50 FR 9432, Mar. 8, 1985; USCG–1999–4976, 65 FR 6500, Feb. 9, 2000; USCG–2003–16630, 73 FR 65160, Oct. 31, 2008]

§ 52.01–55 Maximum allowable working pressure.

(a) The piping system, machinery, and appurtenances must meet the requirements of this subchapter for the boiler maximum allowable working pressure. Only the Commandant may grant an increase in pressure.

(b) When an existing boiler is replaced by a new boiler designed to operate at pressures in excess of the pressure indicated on the certificate of inspection for the previous boiler, an analysis of the complete system must be made, including machinery and piping, to insure its compatibility with the increased steam pressure. The maximum allowable working pressure on the certificate of inspection must be based on the results of this analysis.

§ 52.01–90 Materials.

Material subject to stress due to pressure must conform to specifications as indicated in paragraphs PG–5 through PG–14 of Section I of the ASME BPVC (incorporated by reference; see § 52.01–1).

[USCG–2003–16630, 73 FR 65161, Oct. 31, 2008]

§ 52.01–95 Design (modifies PG–16 through PG–31 and PG–100).

(a) *Requirements.* Boilers required to be designed to this part must meet the requirements of PG–16 through PG–31 of Section I of the ASME BPVC (incorporated by reference; see § 52.01–1) except as noted otherwise in this section.

(b) *Superheater.* (1) The design pressure of a superheater integral with the boiler must not be less than the lowest setting of the drum safety valve.

(2) Controls must be provided to ensure that the maximum temperature at the superheater outlets does not exceed the allowable temperature limit of the material used in the superheater outlet, in the steam piping, and in the associated machinery under all operating conditions. Visible and audible alarms indicating excessive superheat must be provided in any installation in which the superheater outlet temperature exceeds 454 °C (850 °F). The setting of the excessive superheat alarms must not exceed the maximum allowable temperature of the superheater outlet, which may be limited by the boiler design, the main steam piping design, or the temperature limits of other equipment subjected to the temperature of the steam.

(3) Arrangement must be made for venting and draining the superheater in order to permit steam circulation through the superheater when starting the boiler.

(c) *Economizer.* The design pressure of an economizer integral with the boiler and connected to the boiler drum without intervening stop valves must be at least equal to 110 percent of the highest setting of the safety valves on the drum.

(d) *Brazed boiler steam air heaters.* Boiler steam air heaters utilizing brazed construction are permitted at temperatures not exceeding 525 °F. Refer to § 56.30–30(b)(1) of this subchapter for applicable requirements.

(e) *Stresses.* (Modifies PG–22.) The stresses due to hydrostatic head must be taken into account in determining the minimum thickness of the shell or head of any boiler pressure part unless noted otherwise. Additional stresses, imposed by effects other than internal pressure or static head, which increase the average stress over substantial sections of the shell or head by more than 10 percent of the allowable stress, must be taken into account. These effects include the weight of the vessel and its contents, method of support, impact loads, superimposed loads, localized stresses due to the reactions of supports, stresses due to temperature gradients and dynamic effects.

(f) *Cylindrical components under internal pressure.* (Modifies PG–27.) The minimum required thickness and maximum allowable working pressure of boiler piping, tubes, drums, and headers must be as required by the formula in PG–27 of Section I of the ASME BPVC except that threaded boiler tubes are not permitted.

[CGFR 68–82, 33 FR 18815, Dec. 18, 1968, as amended by CGD 81–79, 50 FR 9432, Mar. 8, 1985; USCG–2003–16630, 73 FR 65161, Oct. 31, 2008]

§ 52.01–100 Openings and compensation (modifies PG–32 through PG–39, PG–42 through PG–55).

(a) The rules for openings and compensation must be as indicated in PG–

32 through PG–55 of Section I of the ASME BPVC (incorporated by reference; see § 52.01–1) except as noted otherwise in this section.

(b) (Modifies PG–39.) Pipe and nozzle necks must be attached to vessel walls as indicated in PG–39 of Section I of the ASME BPVC except that threaded connections must not be used under any of the following conditions:

(c) (Modifies PG–42.) Butt-welding flanges and fittings must be used when full radiography is required by § 56.95–10 of this subchapter.

[CGD 81–79, 50 FR 9432, Mar. 8, 1985, as amended by USCG–2003–16630, 73 FR 65161, Oct. 31, 2008]

§ 52.01–105 Piping, valves and fittings (modifies PG–58 and PG–159).

(a) Boiler external piping within the jurisdiction of the ASME BPVC must be as indicated in PG–58 and PG–59 of Section I of the ASME BPVC (incorporated by reference; see § 52.01–1) except as noted otherwise in this section. Piping outside the jurisdiction of the ASME BPVC must meet the appropriate requirements of part 56 of this subchapter.

(b) In addition to the requirements in PG–58 and PG–59 of Section I of the ASME BPVC, boiler external piping must:

(1) Meet the design conditions and criteria in § 56.07–10 of this subchapter, except § 56.07–10(b);

(2) Be included in the pipe stress calculations required by § 56.35–1 of this subchapter;

(3) Meet the nondestructive examination requirements in § 56.95–10 of this subchapter;

(4) Have butt-welding flanges and fittings when full radiography is required; and

(5) Meet the requirements for threaded joints in § 56.30–20 of this subchapter.

(c) Steam stop valves, in sizes exceeding 152mm (6 inch) NPS, must be fitted with bypasses for heating the line and equalizing the pressure before the valve is opened.

(d)(1) Feed water must not be discharged into a boiler against surfaces exposed to hot gases or radiant heat of the fire.

(2) Feed water nozzles of boilers designed for pressures of 2758 kPa (400 psi), or over, must be fitted with sleeves or other suitable means employed to reduce the effects

(e)(1) Firetube and drum type boilers must be fitted with a surface and a bottom blowoff valve or cock attached directly to the boiler or to a short distance piece. The bottom blowoff valve must be attached to the lowest part of the boiler or fitted with an internal pipe leading to the lowest point inside the boiler. Boilers equipped with a continuous blowdown valve on the steam drum are not required to be fitted with an additional surface blowoff connection.

(2) Where blowoff pipes are exposed to radiant heat of the fire, they must be protected by fire brick or other suitable heat-resisting material.

(f) Where dry pipes are used, they must be provided with drains at each end to prevent an accumulation of water.

[CGD 81–79, 50 FR 9432, Mar. 8, 1985, as amended by USCG–2003–16630, 73 FR 65161, Oct. 31, 2008]

§ 52.01–110 Water-level indicators, water columns, gauge-glass connections, gauge cocks, and pressure gauges (modifies PG–60).

(a) *Boiler water level devices.* Boiler water level devices must be as indicated in PG–60 of Section I of the ASME BPVC (incorporated by reference; see § 52.01–1) except as noted otherwise in this section.

(b) *Water level indicators.* (Modifies PG–60.1.)

(1) Each boiler, except those of the forced circulation type with no fixed water line and steam line, must have two independent means of indicating the water level in the boiler connected directly to the head or shell. One must be a gage lighted by the emergency electrical system (See subpart 112.15 of subchapter J of this chapter). The secondary indicator may consist of a gage glass, or other acceptable device. Where the allowance pressure exceeds 1724 kPa (250 psig), gage glasses must be of the flat type instead of the common tubular type.

(2) Gage glasses must be in continuous operation while the boiler is steaming.

(3) Double-ended firetube boilers must be equipped as specified in this paragraph (b) and paragraph (e) of this section except that the required water level indicators must be installed on each end of the boiler.

(4) Externally fired flue boilers, such as are used on central western river vessels, must be equipped as specified in paragraphs (b)(1) through (3) of this section except that float gages may be substituted for gage glasses.

(c) *Water columns.* (Modifies PG–60.2.) The use of water columns is generally limited to firetube boilers. Water column installations must minimize the effect of ship motion on water level indication. Water columns must be fitted directly to the heads or shells of boilers or drums, or if necessary, connected thereto by a distance piece both at the top and bottom of the water columns. Shutoff valves used in the pipe connections between the boiler and water column must be locked or sealed open. Water column piping must not be fitted inside the uptake, the smoke box, or the casing. Water columns must be fitted with suitable drains. Cast iron fittings are not permitted.

(d) *Gage glass connections.* (Modifies PG–60.3.) Gage glasses and gage cocks must be connected directly to the head or shell of a boiler as indicated in paragraph (b)(1) of this section.

(e) *Gage cocks.* (Modifies PG–60.4.)

(1) When the steam pressure does not exceed 250 psi, three test cocks attached directly to the head or shell of a boiler may serve as the secondary water level indicator.

(2) [Reserved]

(f) *Salinometer cocks.* In vessels operating in saltwater, each boiler must be equipped with a salinometer cock or valve. They must not be attached to the water gage or water column.

(g) *High-water-level alarm.* Each watertube boiler for propulsion must have an audible and a visible high-water-level alarm. The alarm indicators must be located where the boiler is controlled.

[CGFR 68–82, 33 FR 18815, Dec. 18, 1968, as amended by CGD 81–79, 50 FR 9433, Mar. 8, 1985; CGD 83–043, 60 FR 24772, May 10, 1995; USCG–2003–16630, 73 FR 65161, Oct. 31, 2008]

§ 52.01–115 Feedwater supply (modifies PG–61).

Boiler feedwater supply must meet the requirements of PG–61 of Section I of the ASME BPVC (incorporated by reference; see § 52.01–1) and § 56.50–30 of this subchapter.

[USCG–2003–16630, 73 FR 65161, Oct. 31, 2008]

§ 52.01–120 Safety valve and safety relief valves (modifies PG–67 through PG–73).

(a)(1) Boiler safety valves and safety relief valves must be as indicated in PG–67 through PG–73 of Section I of the ASME BPVC (incorporated by reference; see § 52.01–1) except as noted otherwise in this section.

(2) A safety valve must:

(i) Be stamped in accordance with PG–110 of Section I of the ASME BPVC;

(ii) Have its capacity certified by the National Board of Boiler and Pressure Vessel Inspectors;

(iii) Have a drain opening tapped for not less than 6mm (¼ in.) NPS; and

(iv) Not have threaded inlets for valves larger than 51mm (2 in.) NPS.

(3) On river steam vessels whose boilers are connected in batteries without means of isolating one boiler from another, each battery of boilers must be treated as a single boiler and equipped with not less than two safety valves of equal size.

(4) (Modifies PG–70.) The total rated relieving capacity of drum and superheater safety valves as certified by the valve manufacturer must not be less than the maximum generating capacity of the boiler, which must be determined and certified by the boiler manufacturer. This capacity must comply with PG–70 of Section I of the ASME BPVC.

(5) In the event the maximum steam generating capacity of the boiler is increased by any means, the relieving capacity of the safety valves must be checked by an inspector, and, if necessary, valves of increased relieving capacity must be installed.

(6) (Modifies PG–67.) Drum safety valves must be set to relieve at a pressure not in excess of that allowed by the Certificate of Inspection. Where for any reason this is lower than the pressure for which the boiler was originally designed and the revised safety valve

capacity cannot be recomputed and certified by the valve manufacturer, one of the tests described in PG–69 of section I of the ASME BPVC must be conducted in the presence of the Inspector to ensure that the relieving capacity is sufficient at the lower pressure.

(7) On new installations the safety valve nominal size for propulsion boilers and superheaters must not be less than 38mm (1.5 in.) nor more than 102mm (4 in.). Safety valves 38mm (1.5 in.) to 114mm (4.5 in.) may be used for replacements on existing boilers. The safety valve size for auxiliary boilers must be between 19mm (¾ in.) and 102mm (4 in.) NPS. The nominal size of a safety valve is the nominal diameter (as defined in § 56.07–5(b) of this subchapter) of the inlet opening.

(8) Lever or weighted safety valves now installed may be continued in use and may be repaired, but when repairs are not possible, lever or weighted safety valves must be replaced by valves conforming to the requirements of this section.

(9) Gags or clamps for holding the safety valve disk on its seat must be carried on board the vessel at all times.

(10) (Modifies PG–73.2.) Cast iron may be used only for caps and lifting bars. When used for these parts, the elongation must be at least 5 percent in 51mm (2 inch) gage length. Nonmetallic material may be used only for gaskets and packing.

(b)(1) (Modifies PG–68.) Superheater safety valves must be as indicated in PG–68 of Section I of the ASME BPVC except as noted otherwise in this paragraph.

(2) The setting of the superheater safety valve must not exceed the design pressure of the superheater outlet flange or the main steam piping beyond the superheater. To prevent damage to the superheater, the drum safety valve must be set at a pressure not less than that of the superheater safety valve setting plus 5 pounds, plus the pressure drop through the superheater and associated piping, including the desuperheater if fitted. See also § 52.01–95(b)(1).

(3) Drum pilot actuated superheater safety valves are permitted provided the setting of the pilot valve and superheater safety valve is such that the superheater safety valve will open before the drum safety valve.

(c)(1) (Modifies PG–71.) Safety valves must be installed as indicated in PG–71 of Section I of the ASME BPVC except as noted otherwise in this paragraph (c).

(2) The final setting of boiler safety valves must be checked and adjusted under steam pressure and, if possible, while the boiler is on line and at operating temperatures, to the satisfaction of a marine inspector who, upon acceptance, must seal the valves. This regulation applies to both drum and superheater safety valves of all boilers.

(3) The safety valve body drains required by PG–71 of Section I of the ASME BPVC must be run as directly as possible from the body of each safety valve, or the drain from each safety valve may be led to an independent header common only to boiler safety valve drains. No valves of any type may be installed in the leakoff from drains or drain headers and they must be led to suitable locations to avoid hazard to personnel.

(d)(1) (Modifies PG–72.) The operation of safety valves must be as indicated in PG–72 of Section I of the ASME BPVC except as noted in paragraph (d)(2) of this section.

(2) (Modifies PG–73.) The lifting device required by PG–73.1.3 of Section I of the ASME BPVC must be fitted with suitable relieving gear so arranged that the controls may be operated from the fireroom or engine room floor.

[CGFR 68–82, 33 FR 18815, Dec. 18, 1968, as amended by CGD 81–79, 50 FR 9433, Mar. 8, 1985; USCG–2003–16630, 73 FR 65161, Oct. 31, 2008]

§ 52.01–130 Installation.

(a) *Foundations.* (1) Plans showing details of proposed foundations and support for boilers and the proposed means of bracing boilers in the vessel must be submitted for approval to the Officer in Charge, Marine Inspection, in the district where the installation is being made.

(2) Provision must be made in foundations for expansion of the boilers when heated.

(3) Boilers must be provided with chocks to prevent movement in the

event of collision unless a bolted or riveted construction satisfactorily provides for this contingency.

(b) *Protection of adjacent structure.* (1) Boilers must be so placed that all parts are readily accessible for inspection and repair.

(2) In vessels having a double bottom or other extensive surfaces directly below the boiler, the distance between such surface and a boiler must in no case be less than 18 inches at the lowest part.

(3) The pans of oil-burning, watertube boilers must be arranged to prevent oil from leaking into the bilges and must be lined with firebrick or other heat resisting material.

(4) The distance between a boiler and a compartment containing fuel oil must not be less than 24 inches.

(5) All oil-burning boilers must be provided with oiltight drip pans under the burners to prevent oil draining into the bilges.

(c) *Boiler uptakes.*

(1) Where dampers are installed in the uptakes or funnels, the arrangement must be such that it will not be possible to shut off the gas passages from the operating boilers.

(2) Each main power boiler and auxiliary boiler must be fitted with a separate gas passage.

§ 52.01–135 Inspection and tests (modifies PG–90 through PG–100).

(a) *Requirements.* Inspection and test of boilers and boiler pressure parts must be as indicated in PG–90 through PG–100 of Section I of the ASME BPVC (incorporated by reference; see § 52.01–1) except as noted otherwise in this section.

(b) *Inspection personnel.* The inspections required by PG–90 through PG–100 of Section I of the ASME BPVC must be performed by the ''Authorized Inspector'' as defined in PG–91 of Section I of the ASME BPVC. The Authorized Inspector must hold a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors. After installation, boilers will be inspected for compliance with this part by the ''Marine Inspector'' as defined in § 50.10–15 of this subchapter.

(c) *Hydrostatic test.* (Modifies PG–99.) Each new boiler must be hydrostatically tested after installation to 1.5 times the maximum allowable working pressure as indicated in PG–99 of Section I of the ASME BPVC. Before the boilers are insulated, accessible parts of the boiler must be emptied, opened, and all interior surfaces must be examined by the marine inspector to ascertain that no defects have occurred due to the hydrostatic test.

(d) *Operating tests.* In addition to hydrostatic tests prescribed in paragraph (c) of this section, automatically controlled propulsion and auxiliary boilers must be subjected to operating tests as specified in §§ 61.30–20, 61.35–1, 61.35–3, 62.30–10, 63.15–9, 63.25–3, and 63.25–5 of this subchapter, as appropriate, or as directed by the Officer in Charge, Marine Inspection, for propulsion boilers. These tests are to be performed after final installation.

[CGFR 68–82, 33 FR 18815, Dec. 18, 1968, as amended by CGFR 69–127, 35 FR 9976, June 17, 1970; CGD 81–79, 50 FR 9433, Mar. 8, 1985; CGD 88–057, 55 FR 24236, June 15, 1990; USCG–2003–16630, 73 FR 65162, Oct. 31, 2008]

§ 52.01–140 Certification by stamping (modifies PG–104 through PG–113).

(a) All boilers built in accordance with this part must be stamped with the appropriate ASME symbol as required by PG–104 through PG–113 of Section I of the ASME BPVC (incorporated by reference; see § 52.01–1).

(b)(1) Upon satisfactory completion of the tests and Coast Guard inspections, boilers must be stamped with the following:

(i) Manufacturer's name and serial number;

(ii) ASME symbol;

(iii) Coast Guard symbol, which is affixed only by marine inspector (see § 50.10–15 of this subchapter);

(iv) Maximum allowable working pressure ____ at ____ °C (°F): and

(v) Boiler rated steaming capacity in kilograms (pounds) per hour (rated joules (Btu) per hour output for high temperature water boilers).

(2) The information required in paragraph (b)(1) of this section must be located on:

(i) The front head or shell near the normal waterline and within 610 mm

(24 inches) of the front of firetube boilers; and

(ii) The drum head of water tube boilers.

(3) Heating boilers built to Section I of the ASME BPVC, as permitted by § 53.01–10(e) of this subchapter, do not require Coast Guard stamping but must receive full ASME stamping including the appropriate code symbol.

(c) The data must be legibly stamped and must not be obliterated during the life of the boiler. In the event that the portion of the boiler upon which the data is stamped is to be insulated or otherwise covered, a metal nameplate as described in PG–106.6 of Section I of the ASME BPVC must be furnished and mounted. The nameplate is to be maintained in a legible condition so that the data may be easily read.

(d) Safety valves must be stamped as indicated in PG–110 of the ASME BPVC.

[CGD 81–79, 50 FR 9433, Mar. 8, 1985, as amended by USCG–2003–16630, 73 FR 65162, Oct. 31, 2008]

§ 52.01–145 Manufacturer's data report forms (modifies PG–112 and PG–113).

The manufacturer's data report forms required by PG–112 and PG–113 of Section I of the ASME BPVC (incorporated by reference; see § 52.01–1) must be made available to the marine inspector for review. The Authorized Inspector's National Board commission number must be included on the manufacturer's data report forms.

[CGD 81–79, 50 FR 9434, Mar. 8, 1985, as amended by USCG–2003–16630, 73 FR 65161, Oct. 31, 2008]

Subpart 52.05—Requirements for Boilers Fabricated by Welding

§ 52.05–1 General (modifies PW–1 through PW–54).

Boilers and component parts, including piping, that are fabricated by welding must be as indicated in PW–1 through PW–54 of Section I of the ASME BPVC (incorporated by reference; see § 52.01–1) except as noted otherwise in this subpart.

[CGFR 68–82, 33 FR 18815, Dec. 18, 1968, as amended by USCG–2003–16630, 73 FR 65162, Oct. 31, 2008]

§ 52.05–15 Heat treatment (modifies PW–10).

Vessels and vessel parts must be preheated and postweld heat treated in accordance with PW–38 and PW–39 of Section I of the ASME BPVC (incorporated by reference; see § 52.01–1). This includes boiler parts made of pipe material, even though they may be nondestructively examined under § 52.05–20.

[CGFR 68–82, 33 FR 18815, Dec. 18, 1968, as amended by USCG–2003–16630, 73 FR 65162, Oct. 31, 2008]

§ 52.05–20 Radiographic and ultrasonic examination (modifies PW–11 and PW–41.1).

Radiographic and ultrasonic examination of welded joints must be as described in PW–11 of Section I of the ASME BPVC (incorporated by reference; see § 52.01–1). Parts of boilers, fabricated of pipe material such as drums, shells, downcomers, risers, cross pipes, headers, and tubes containing only circumferentially welded butt joints, must be nondestructively examined as required by § 56.95–10 of this subchapter.

[USCG–2003–16630, 73 FR 65162, Oct. 31, 2008]

§ 52.05–30 Minimum requirements for attachment welds (modifies PW–16).

(a) The location and minimum size of attachment welds for nozzles and other connections must be as required by PW–16 of Section I of the ASME BPVC (incorporated by reference; see § 52.01–1) except as noted otherwise in this section.

(b) When nozzles or couplings are attached to boilers, as shown in Figure PW–16 (a) and (c) of Section I of the ASME BPVC, and are welded from one side only, backing strips must be used unless it can be determined visually or by nondestructive test methods that complete penetration has been obtained.

(c) When attachments as shown in Figure PW–16 (y) and (z) of Section I of the ASME BPVC are employed they

must be limited to 2-inch pipe size for pressure exceeding 150 psig.

[CGFR 68–82, 33 FR 18815, Dec. 18, 1968, as amended by USCG–2003–16630, 73 FR 65161, Oct. 31, 2008]

§ 52.05–45 Circumferential joints in pipes, tubes, and headers (modifies PW–41).

(a) Circumferential welded joints of pipes, tubes and headers must be as required by PW–41 of Section I of the ASME BPVC (incorporated by reference; see § 52.01–1) except as noted otherwise in this section.

(b) (Modifies PW–41.1.) Circumferential welded joints in pipes, tubes, and headers of pipe material must be nondestructively examined as required by § 56.95–10 of this subchapter and PW–41 of Section I of the ASME BPVC.

(c) (Modifies PW–41.5.) Butt-welded connections must be provided whenever radiography is required by § 56.95–10 of this subchapter for the piping system in which the connection is to be made. When radiography is not required, welded socket or sleeve type joints meeting the requirements of PW–41.5 of Section I of the ASME BPVC may be provided.

[CGFR 68–82, 33 FR 18815, Dec. 18, 1968, as amended by CGD 81–79, 50 FR 9434, Mar. 8, 1985; USCG–2003–16630, 73 FR 65161, Oct. 31, 2008]

Subpart 52.15—Requirements for Watertube Boilers

§ 52.15–1 General (modifies PWT–1 through PWT–15).

Watertube boilers and parts thereof must be as indicated in PWT–1 through PWT–15 of Section I of the ASME BPVC (incorporated by reference; see § 52.01–1) except as noted otherwise in this subpart.

[CGD 81–79, 50 FR 9434, Mar. 8, 1985; USCG–2003–16630, 73 FR 65161, Oct. 31, 2008]

§ 52.15–5 Tube connections (modifies PWT–9 and PWT–11).

(a) Tubes, pipe, and nipples must be attached to sheets, heads, headers, and fittings as indicated in PWT–11 of Section I of the ASME BPVC (incorporated by reference; see § 52.01–1) except as noted otherwise in this section.

(b) (Replaces PWT–9.2 and PWT–11.3.) Threaded boiler tubes are not permitted as described by PWT–9.2 and PWT–11.3 of Section I of the ASME BPVC.

(c) In welded wall construction employing stub and welded wall panels that are field welded, 10 percent of the field welds must be checked using any acceptable nondestructive test method.

(d) Nondestructive testing of the butt-welded joints must meet the requirements of § 56.95–10 of this subchapter.

[CGFR 68–82, 33 FR 18815, Dec. 18, 1968, as amended by CGFR 69–127, 35 FR 9976, June 17, 1970; CGD 81–79, 50 FR 9434, Mar. 8, 1985; USCG–2003–16630, 73 FR 65161, Oct. 31, 2008]

Subpart 52.20—Requirements for Firetube Boilers

§ 52.20–1 General (modifies PFT–1 through PFT–49).

Firetube boilers and parts thereof must be as indicated in PFT–1 through PFT–49 of Section I of the ASME BPVC (incorporated by reference; see § 52.01–1) except as noted otherwise in this subpart.

[USCG–2003–16630, 73 FR 65161, Oct. 31, 2008]

§ 52.20–17 Opening between boiler and safety valve (modifies PFT–44).

Discharge pipes must be installed in accordance with the requirements of § 52.01–105.

[CGD 81–79, 50 FR 9434, Mar. 8, 1985]

§ 52.20–25 Setting (modifies PFT–46).

(a) The method of supporting firetube boilers must be as indicated in PFT–46 of Section I of the ASME BPVC (incorporated by reference; see § 52.01–1) except as noted otherwise in this section.

(b) The foundations must meet the requirements of § 52.01–130.

[CGFR 68–82, 33 FR 18815, Dec. 18, 1968, as amended by USCG–2003–16630, 73 FR 65161, Oct. 31, 2008]

Subpart 52.25—Other Boiler Types

SOURCE: CGD 81–79, 50 FR 9434, Mar. 8, 1985, unless otherwise noted.

§ 52.25–1 General.

Requirements for fired boilers of various sizes and uses are referenced in table 1 to § 54.01–5 of this subchapter.

§ 52.25–3 Feedwater heaters (modifies PFH–1).

Feedwater heaters must meet the requirements in PFH–1 of Section I of the ASME BPVC (incorporated by reference; see § 52.01–1).

[CGFR 68–82, 33 FR 18815, Dec. 18, 1968, as amended by USCG–2003–16630, 73 FR 65161, Oct. 31, 2008]

§ 52.25–5 Miniature boilers (modifies PMB–1 through PMB–21).

Miniature boilers must meet the requirements in PMB–1 through PMB–21 of Section I of the ASME BPVC (incorporated by reference; see § 52.01–1).

[CGFR 68–82, 33 FR 18815, Dec. 18, 1968, as amended by USCG–2003–16630, 73 FR 65161, Oct. 31, 2008; USCG–2014–0688, 79 FR 58280, Sept. 29, 2014]

§ 52.25–7 Electric boilers (modifies PEB–1 through PEB–19).

Electric boilers required to comply with this part must meet the requirements in PEB–1 through PEB–19 except PEB–3 of Section I of the ASME BPVC (incorporated by reference; see § 52.01–1).

[CGFR 68–82, 33 FR 18815, Dec. 18, 1968, as amended by USCG–2003–16630, 73 FR 65161, Oct. 31, 2008]

§ 52.25–10 Organic fluid vaporizer generators (modifies PVG–1 through PVG–12).

(a) Organic fluid vaporizers must meet the requirements of PVG–1 through PVG–12 of Section I of the ASME BPVC (incorporated by reference; see § 52.01–1).

(b) The Commandant must approve the application and end use of organic fluid vaporizer generators.

[CGFR 68–82, 33 FR 18815, Dec. 18, 1968, as amended by USCG–2003–16630, 73 FR 65161, Oct. 31, 2008]

§ 52.25–15 Fired thermal fluid heaters.

(a) Fired thermal fluid heaters must be designed, constructed, inspected, tested, and stamped in accordance with the applicable provisions in this part.

(b) Each fired thermal fluid heater must be fitted with a control which prevents the heat transfer fluid from being heated above its flash point.

(c) The heat transfer fluid must be chemically compatible with any cargo carried in the cargo tanks serviced by the heat transfer system.

(d) Each fired thermal fluid heater must be tested and inspected in accordance with the requirements of subpart 61.30 of this subchapter.

[CGFR 68–82, 33 FR 18815, Dec. 18, 1968, as amended by CGD 88–057, 55 FR 24236, June 15, 1990]

§ 52.25–20 Exhaust gas boilers.

Exhaust gas boilers with a maximum allowable working pressure greater than 103 kPa gage (15 psig) or an operating temperature greater than 454 °C (850 °F) must be designed, constructed, inspected, tested, and stamped in accordance with the applicable provisions in this part. The design temperature of parts exposed to the exhaust gas must be the maximum temperature that could normally be produced by the source of the exhaust gas. This temperature must be verified by testing or by the manufacturer of the engine or other equipment producing the exhaust. Automatic exhaust gas boiler control systems must be designed, constructed, tested, and inspected in accordance with § 63.25–7 of this subchapter.

[CGD 88–057, 55 FR 24236, June 15, 1990]

PART 53—HEATING BOILERS

Subpart 53.01—General Requirements

Sec.

Subpart 53.05—Pressure Relieving Devices (Article 4)