

522 CMR 4.00: HEATING BOILERS AND OTHER HEAT STORAGE SOURCES

Section

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4.01: Scope and Application

(1) In accordance with the provisions of M.G.L. c. 146, § 2, the Board adopts the 2021 *ASME Boiler and Pressure Vessel Code* Section IV, *Rules for Construction of Heating Boilers*.

(2) Requirements. 522 CMR 4.00 shall apply to Boilers exceeding three horsepower and restricted to the following services:

- (a) Steam Low Pressure/Heating Boilers having a minimum safety relief valve capacity greater than 200 pounds per hour for operation at pressures not exceeding 15 PSIG (100 kPa).
- (b) Hot Water Low Pressure/Heating Boilers and hot water supply Boilers having a minimum safety relief valve capacity greater than 200,000 Btu/hr for operation at pressures not exceeding 160 PSIG (1,100 kPa).
- (c) Hot Water Low Pressure/Heating Boilers and hot water supply Boilers having a minimum safety relief valve capacity greater than 200,000 Btu/hr for operation at temperatures not exceeding 250°F (120°C), at or near the Boiler outlet, except that when some of the wrought materials permitted by 2021 *ASME Boiler and Pressure Vessel Code* Section IV, *Rules for Construction of Heating Boilers* are used, a lower temperature is specified.
- (d) Potable water heaters and water storage tanks for operation at pressures not exceeding 160 PSIG (1,100 kPa) and water temperatures not exceeding 210°F (99°C). 522 CMR 4.01(2)(d) shall not apply to units in this category when none of the following limitations is exceeded:
  - 1. Heat input of 200,000 Btu/hr;
  - 2. A water temperature of 210°F (99°C);
  - 3. A nominal water-containing capacity of 120 gallons, except that they shall be equipped with safety devices in accordance with the requirements of the 2021 *ASME Boiler and Pressure Vessel Code* Section IV, *Rules for Construction of Heating Boilers* paragraph HLW-100.

The minimum safety valve relieving capacity for Low Pressure/Heating Boilers and other heat storage sources shall be determined in accordance with the 2021 *ASME Boiler and Pressure Vessel Code* Section IV, *Rules for Construction of Heating Boilers*.

4.02: Construction

All Low Pressure/Heating Boilers under the scope of 522 CMR 4.02 shall be initially constructed in accordance with the 2021 *ASME Boiler and Pressure Vessel Code*, Section IV, *Rules for Construction of Heating Boilers*.

4.03: Reconstruction, Including Welded Repairs, Major Repairs and Alterations

(1) All reconstruction, including Repairs and Alterations performed to bring the vessel to the original code of construction, as stamped on the Boiler, shall be done in accordance with the provisions of M.G.L. c. 146, § 2, 2021 NBIC Part 3, *Repairs and Alterations*, and the 2021 *ASME Boiler and Pressure Vessel Code* Section IV, *Rules for Construction of Heating Boilers*.

(2) All welded repairs and alterations performed to the Boiler proper shall be done in accordance with the provisions of M.G.L. c. 146 §2 and NBIC Part 3 Repairs and Alterations, and shall be performed by an accredited “R” Certificate Holder. It is the responsibility of the Owner/User to ensure that all repairs and alterations are performed in accordance with 522 CMR 4.00. Signed copies of completed Form R-1 and Form R-2, together with attachments, shall be submitted, in a format approved by the Chief, to the Division. Copies shall be made available to the Division or an Authorized Inspection Agency upon request. Distribution of Form R-1 and Form R-2 and attachments shall be the responsibility of the organization performing the repair.

4.04: Installation

In accordance with the provisions of M.G.L. c. 146, § 2, the Board adopts 2021 *NBIC Part 1 Installation*.

4.05: Inspection

In accordance with the provisions of M.G.L. c. 146, § 2, the Board adopts 2021 *NBIC Part 2 Inspection*.

(1) Field Inspection. All Low Pressure/Heating Boilers and heat storage sources, except those listed as exempt in 522 CMR 4.05(2), shall be thoroughly inspected externally at least once a year and as follows:

- (a) Hot Water - Low Pressure/Heating Boilers constructed with manholes or hand holes shall be inspected internally at least once every three years;
- (b) Steam Low Pressure/Heating Boilers constructed with manholes and hand holes shall be inspected internally at least once a year.

The First Inspection for the installation of a Hot Water - Low Pressure/Heating Boiler or heat storage source covered by 522 CMR 4.05 may be made by either a District Engineering Inspector or by an Authorized Inservice Inspector. The first part of the inspection on steel field-erected Boilers shall be completed before the system is filled with the fluid to be heated.

The First Inspection for the installation of a steam Boiler covered by 522 CMR 4.05 shall be made by a District Engineering Inspector.

(2) Exempt from Inspection. The following Low Pressure/Heating Boilers shall be constructed in accordance with 522 CMR 4.00, but are exempt from required inspections:

- (a) Boilers of railroad locomotives, motor vehicles or steam fire engines brought into the Commonwealth for temporary use in times of emergency;
- (b) Boilers used in private residences;
- (c) Boilers used for heating purposes which carry pressures not exceeding 15 PSI and have less than four square feet of grate surface;
- (d) Boilers of not more than three horsepower used for heating purposes;
- (e) Boilers under the jurisdiction of the United States; and
- (f) Boilers used exclusively for horticultural or agricultural purposes.

(3) Certificate to Be Posted.

- (a) The Department shall issue to the Owner/User of a Boiler compliant with 522 CMR a Certificate, on the condition that the appropriate fees have been paid. The Certificate shall be protected from dirt, moisture, and contamination and shall be posted in a conspicuous place near where the Boiler specified is located and shall be kept with said Boiler and shall be always accessible to the District Engineering Inspector or Authorized Inspector.
- (b) The Certificate shall include the name of the Authorized Inspection Agency, the National Board number, the Massachusetts Tag number, the name of the manufacturer, the name of the owner or user, the location, size and number of the Boiler, the date of inspection and the maximum pressure at which it may be operated, with the signature of the inspector, and shall contain such extracts from the statutes as shall be deemed necessary by the Board.
- (c) The Certificate shall remain posted while the Certificate is in force, unless a District Engineering Inspector or an Authorized Inspector deems the Boiler or its Appurtenances unsafe or dangerous. If a Boiler is determined to be unsafe or dangerous, the District Engineering Inspector or Authorized Inservice Inspector shall remove the Certificate, and submit such certificate to the Chief, and the Boiler or Pressure Vessel shall not be operated until such time that a valid Certificate is re-issued.

(4) Application. Whoever owns or uses or causes to be used a Low Pressure/Heating Boiler that comes within the scope of M.G.L. c. 146, § 6, shall make application for inspection prior to installation and operation to the Chief in a format approved by the Division.

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(5) Preparation of Inspection. The Owner/User of a Boiler which requires an Internal Inspection by a District Engineering Inspector or an Authorized Inservice Inspector shall prepare the Boiler for inspection by cooling (blanking off connections to adjacent Boilers, if necessary); removing all soot and ashes from tubes, heads, shell, furnace, and combustion chamber; drawing off the water; removing the handhole and manhole plates; removing grate bars from internally fired Boilers; and removing the steam gauge for testing as well as following 2021 *NBIC*, Part 2 *Inspection*.

If a Boiler has not been properly cooled or otherwise prepared for inspection, the District Engineering Inspector or Authorized Insurance Inspector shall decline to inspect the Boiler until the Boiler has been properly prepared.

(6) Inspection Reporting. Pursuant to M.G.L. c. 146, § 10, whoever owns, or uses or causes to be used, any Low-Pressure Heating Boiler, shall report in writing to the Chief the location of such Boiler, before the work of installation of such Boiler, and annually thereafter; provided, that the Owner/User of an insured Boiler shall report immediately in writing to the Chief whenever the Authorized Inspection Agency ceases for any cause to inspect the Boiler.

(7) Reporting by Authorized Inspection Agency.

(a) Pursuant to M.G.L. c. 146, § 18, every Authorized Inspection Agency shall forward to the Chief, within 14 days after each inspection, reports of all Boilers inspected by the Authorized Inservice Inspectors. Such reports shall be made on a form and submitted in a format approved by the Chief, and shall contain all orders made by the company regarding such Boilers.

(b) All Authorized Inspection Agencies shall notify the Chief, within 14 days, on a form and submitted in a format approved by the Chief, of all Boiler new business or discontinuation of business. All Authorized Inspection Agencies shall report immediately to the Chief, in writing, the name of the Owner/User and the location of every Boiler required to be inspected in accordance with M.G.L. c. 146, § 70, upon which they have cancelled or refused insurance, giving the reasons therefor.

(c) The Authorized Inservice Inspector shall notify the Chief or his designee immediately in writing if the Authorized Inservice Inspector finds that an unsafe and dangerous condition exists resulting in the removal of the Certificate.

(8) Massachusetts Heat Boilers, Inspection and Stamping. Massachusetts Heat Boilers, Inspection and Stamping. Mass. Heat Boilers shall be inspected during construction by an Authorized Inspector. Each Boiler shall be stamped MASS. HEAT and shall display the following data:

- (a) Manufacturer's name;
- (b) Maximum allowable working pressure;
- (c) Safety valve relieving capacity (minimum) in pounds per hour;
- (d) MASS. HEAT number; and
- (e) Year built.

(9) Installation of Used Boilers in the Commonwealth. Whoever owns and operates a Boiler not in the Commonwealth which was not shop inspected and stamped in accordance with the *ASME Boiler and Pressure Vessel Code Section IV, Rules for Construction of Heating Boilers*, but bears the stamping of another state or political subdivision which has adopted a standard of construction equivalent to that of Massachusetts, and wishes to operate said steam Boiler within the Commonwealth, may petition the Board for permission to do so. Such petition shall be accompanied by the following:

- (a) a copy of the original data report of the manufacturer of the Boiler, signed by an inspector with the appropriate commission who made the original shop inspection; and
- (b) the field inspection data sheet and report covering the inspection of the Boiler, signed by an inspector with the appropriate commission.

If upon review of this information, the Board finds that the Boiler is in compliance with the Massachusetts requirements with regard to material, construction, and workmanship, and further finds that the Boiler is in safe working condition and equipped with all necessary appendages, the Board shall issue a Certificate establishing the safe working pressure.

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(10) Atmospheric Boilers. Boilers that are vented directly to the atmosphere, where it is not possible for the Boiler to build up any pressure above atmospheric pressure, shall be exempt from 522 CMR 4.00 provided they do not have any valves, flaps, louvers or dampers in the vent line which could have the capacity to freeze in place, thereby causing the Boiler to build pressure. Any atmospheric boiler that has such valve, flap, louvers, dampers or any Appurtenance that can result in a blockage of the vent line shall be constructed in accordance with 2021 *ASME Boiler and Pressure Vessel Code* Section IV, *Rules for Construction of Heating Boilers*.

(11) Shutdown Switches and Circuit Breakers. A manually operated remote heating plant automatic shutdown device including, but not limited to, a shutdown switch or circuit breaker, shall be located adjacent to the boiler room door, marked for easy identification. Consideration should also be given to the type and location of the switch to safeguard against tampering. In the event that the boiler room door is located on the building exterior, the shutdown device shall be located adjacent to the interior of the door. Where entrance may be gained to the boiler room through two or more separate doors, each door shall be outfitted with a shutdown device adjacent to the door. Alternate locations of remote emergency switch(es) may be approved by the Board through the variance process in 522 CMR 1.05: *Variance Procedure*.

REGULATORY AUTHORITY

522 CMR 4.00: M.G.L. c. 146, §§ 1 through 51, 56 through 64 and 66 through 80.

(PAGES 17 AND 18 ARE RESERVED FOR FUTURE USE.)