

CHAPTER 45-12-07
MINIATURE BOILERS - EXISTING INSTALLATIONS

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45-12-07-01. General rules.

The rules adopted for power boilers applying to strength of materials and calculations to determine maximum allowable working pressure must be used for miniature boilers unless a special rule is stated in those rules.

History: Effective June 1, 1994.

General Authority: NDCC 26.1-22.1-14

Law Implemented: NDCC 26.1-22.1-14

45-12-07-02. Maximum allowable working pressure.

The maximum allowable working pressure for standard boilers on the shell of a boiler or drum must be determined by section 45-12-05-01.

History: Effective June 1, 1994.

General Authority: NDCC 26.1-22.1-14

Law Implemented: NDCC 26.1-22.1-14

45-12-07-03. Maximum allowable working pressure for nonstandard boilers.

Nonstandard miniature boilers:

1. Must conform to all requirements of this chapter.
2. Must have a factor of safety as given in subsection 5 of section 45-12-05-02.
3. Must be given an initial inspection that must include a hydrostatic pressure test.
4. May not have solder or silver solder as a method of attachment of any pressure part of the entire assembled unit.
5. May have a plate for the North Dakota stamp and registration number to be welded to boiler proper. The plate must be placed in a conspicuous and accessible location with a minimum size thickness one-sixteenth inch [1.59 millimeters], length two inches [50.8 millimeters], and width one inch [25.4 millimeters].
6. May not exceed the design criteria limits as defined in subsection 20 of section 45-12-01-01.

7. Of the watertube, fired-coil and fired-radiator design must be considered as not meeting the requirements of this section.
8. Exceeding twelve inches [304.80 millimeters] internal diameter must have at least one 1-inch [25.4-millimeter] opening in the bottom of the shell and one 1-inch [25.4-millimeter] opening in each water leg. Boilers not exceeding twelve inches [304.80 millimeters] internal diameter must have one 1/2-inch [12.7-millimeter] opening in the shell and one 1/2-inch [12.7-millimeter] opening in each water leg.
9. Construction material used for fabrication of the shell must be steel of at least fifty-five thousand pounds per square inch [386.11 megapascals] tensile strength. Material of tubes may be steel, brass, or copper with a rating equal to materials from section II of the American Society of Mechanical Engineers Code.

History: Effective June 1, 1994.

General Authority: NDCC 26.1-22.1-14

Law Implemented: NDCC 26.1-22.1-14

45-12-07-04. Safety valves.

1. Each miniature boiler must be equipped with an American society of mechanical engineers approved safety valve set at or below the maximum allowable working pressure.
2. The safety valve must be plainly marked by the manufacturer showing name or identifying trademark, nominal diameter, and pressure at which it is set to release.
3. The safety valve relieving capacity of each boiler must be such that it will discharge all the steam that can be generated by the boiler without allowing the pressure to rise more than six percent above the maximum allowable working pressure.
4. In those cases where the boiler is supplied with feedwater directly from a pressure main or system without the use of a mechanical feeding device, the safety valve must be set to release at a pressure not in excess of ninety-four percent of the lowest pressure obtained in the supply main or system feeding the boiler. Return traps may not be considered mechanical feeding devices.

History: Effective June 1, 1994.

General Authority: NDCC 26.1-22.1-14

Law Implemented: NDCC 26.1-22.1-14

45-12-07-05. Gauge glass and water level indicator.

1. Each miniature boiler must be equipped with a water gauge glass for determination of water level.
2. The lowest permissible water level must be at a point one-third of the height of the shell, except where the boiler is equipped with internal furnace in which case it may not be less than one-third of the tube length above the top of the furnace. For small boilers where there is insufficient space for the usual type of gauge glass, water level indicators of the glass bull's-eye type may be used.

History: Effective June 1, 1994.

General Authority: NDCC 26.1-22.1-14

Law Implemented: NDCC 26.1-22.1-14

45-12-07-06. Feeding and feedwater piping.

1. Every miniature boiler must be provided with at least one feed pump or other mechanical feeding device except if the following conditions exist:
 - a. If the boiler is connected to a water main or system having sufficient pressure to feed the boiler at any time while under pressure.
 - b. If the fuel burned is such that all heat input can be discontinued instantaneously by the operation of a valve, cock, or switch, thereby permitting the boiler pressure to be quickly lowered to a point where water can be introduced from the connection of the water main.
 - c. If the boiler is operated without extraction of steam (closed system) in which case the boiler is filled, when cold, through the connection or opening provided in accordance with the following rule.
2. Each miniature boiler must be fitted with a feedwater connection that may not be less than one-half-inch [12.7-millimeter] iron pipe size. The feedpiping must be provided with a check valve near the boiler and a valve or check between the check valve and the boiler.
3. Feedwater may be introduced through the blowoff connection if the boiler is operated without extraction of steam (closed system).
4. Feedwater may not be introduced through the water column or gauge glass connections while the boiler is under pressure.

History: Effective June 1, 1994.

General Authority: NDCC 26.1-22.1-14

Law Implemented: NDCC 26.1-22.1-14

45-12-07-07. Blowoff piping.

1. Each miniature boiler must be provided with a blowoff connection not less than one-half-inch [12.7-millimeter] iron pipe size, directly connected with the lowest water space.
2. Blowoff piping may not be galvanized and must be provided with a valve or cock.

History: Effective June 1, 1994.

General Authority: NDCC 26.1-22.1-14

Law Implemented: NDCC 26.1-22.1-14

45-12-07-08. Steam gauges.

Each miniature boiler must be equipped with a steam gauge having a dial range not less than one and one-half times the safety valve setting. The gauge must be connected to the steam space or to the steam connection to the gauge glass by a brass or bronze composition siphon tube, or equivalent device that will keep the gauge tube filled with water.

History: Effective June 1, 1994.

General Authority: NDCC 26.1-22.1-14

Law Implemented: NDCC 26.1-22.1-14

45-12-07-09. Stop valves.

The steam piping from a miniature boiler must be provided with a stop valve located as close to the boiler shell or drum as is practicable, except in those cases where the boiler and steam receiver are operated as a closed system.

History: Effective June 1, 1994.

General Authority: NDCC 26.1-22.1-14

Law Implemented: NDCC 26.1-22.1-14

45-12-07-10. Flue connection.

Each gas-fired boiler must be equipped with a four-inch [10.16-centimeter] vent pipe or flue extended to an approved location outside the building or connected to a chimney flue. If the horizontal run is more than ten feet [3.05 meters], the vent must be increased to six inches [152.4 millimeters]. A draft hood of approved design must be provided on each boiler.

History: Effective June 1, 1994.

General Authority: NDCC 26.1-22.1-14

Law Implemented: NDCC 26.1-22.1-14

45-12-07-11. Duties of owners.

1. The owner and user of any steam traction engine or boiler on wheels shall notify the chief boiler inspector of sale or other disposition of steam traction engines.
2. Within ten days of purchase, any person purchasing any steam traction engine shall notify the chief boiler inspector where it will be located and operated.

History: Effective June 1, 1994.

General Authority: NDCC 26.1-22.1-14

Law Implemented: NDCC 26.1-22.1-14

45-12-07-12. Steam gauge.

The steam pressure gauge must show the pressure at which the boiler is actually being operated. Adjustments to the gauge to show a lesser pressure are prohibited, and if any gauge has been so adjusted, such act will be considered a willful violation of this section.

History: Effective June 1, 1994.

General Authority: NDCC 26.1-22.1-14

Law Implemented: NDCC 26.1-22.1-14