

CHAPTER 91  
GENERAL REQUIREMENTS FOR ALL OBJECTS

[Prior to 1/14/98, see 347—Chs 41 to 49]

[Prior to 8/16/06, see 875—Ch 203]

**875—91.1(89) Codes and code cases adopted by reference.**

**91.1(1)** *ASME boiler and pressure vessel codes adopted by reference.* The ASME Boiler and Pressure Vessel Code (2013) is adopted by reference. Regulated objects shall be designed and constructed in accordance with the ASME Boiler and Pressure Vessel Code (2013) except for objects that meet one of the following criteria:

- a. An object with an ASME stamp and National Board Registration that establish compliance with an earlier version of the ASME Boiler and Pressure Vessel Code;
- b. An object within the scope of 875—Chapter 95;
- c. Rescinded IAB 10/5/11, effective 11/9/11.
- d. A miniature boiler installed before March 31, 1967;
- e. A power boiler or unfired steam pressure vessel installed before July 4, 1951; or
- f. A steam heating boiler, hot water heating boiler, or hot water supply boiler installed before July 1, 1960.

**91.1(2)** *ASME code cases.* If the manufacturer of an object listed ASME Code Case 2529, 2568, 2571, 2571-1, 2710, or 2714 on the manufacturer's data report for the object and the object is otherwise in compliance with all applicable provisions, the object is in compliance with these rules.

**91.1(3)** *Inspection code adopted by reference.* The National Board Inspection Code (2013) is adopted by reference, and reinstallations, installations, alterations, and repairs after May 20, 2015, shall comply with it.

**91.1(4)** *Electric code adopted by reference.* The National Electrical Code (2011) is adopted by reference, and reinstallations and installations after May 20, 2015, shall comply with it.

**91.1(5)** *Piping codes adopted by reference.* The Power Piping Code, ASME B31.1 (2014), and the Building Services Piping Code, ASME B31.9 (2014), are adopted by reference, and reinstallations and installations after May 20, 2015, shall comply with them up to and including the first valve.

**91.1(6)** *Control and safety device code adopted by reference.* Controls and Safety Devices for Automatically Fired Boilers (CSD-1) (2012) is adopted by reference, and reinstallations and installations after October 31, 2013, shall comply with it.

**91.1(7)** *Mechanical code adopted by reference.* Excluding Section 701.1, Chapters 2 and 7 of the International Mechanical Code (IMC) (2012) are adopted by reference, and installations and reinstallations after May 20, 2015, shall comply with them.

**91.1(8)** *Oil burning equipment code adopted by reference.* National Fire Protection Association Standard for the Installation of Oil Burning Equipment, NFPA 31 (2011), is adopted by reference, and installations and reinstallations after October 10, 2012, shall comply with it.

**91.1(9)** *Fuel gas code adopted by reference.* National Fire Protection Association National Fuel Gas Code, NFPA 54 (2012), is adopted by reference, and installations and reinstallations after May 20, 2015, shall comply with it.

**91.1(10)** *Liquefied petroleum gas code adopted by reference.* National Fire Protection Association Liquefied Petroleum Gas Code, NFPA 58 (2011), is adopted by reference, and installations and reinstallations after October 10, 2012, shall comply with it.

**91.1(11)** *Boiler and combustion systems hazards code adopted by reference.* National Fire Protection Association Boiler and Combustion Systems Hazards Code, NFPA 85 (2011), is adopted by reference, and installations and reinstallations after October 10, 2012, shall comply with it.

[ARC 8283B, IAB 11/18/09, effective 1/1/10; ARC 8590B, IAB 3/10/10, effective 4/14/10; ARC 9232B, IAB 11/17/10, effective 12/22/10; ARC 9790B, IAB 10/5/11, effective 11/9/11; ARC 0319C, IAB 9/5/12, effective 10/10/12; ARC 0416C, IAB 10/31/12, effective 12/5/12; ARC 1011C, IAB 9/18/13, effective 10/31/13; ARC 1964C, IAB 4/15/15, effective 5/20/15]

**875—91.2(89) Safety appliance.** No person shall remove, disable or tamper with a required safety appliance except for the purpose of repair or inspection. An object shall not be operated unless all applicable safety appliances are properly functional and operational.

**875—91.3(89) Pressure-reducing valves.** Where pressure-reducing valves are used, one or more relief or safety valves shall be provided on the low-pressure side of the reducing valve when the piping equipment on the low-pressure side does not meet the requirements for the full initial pressure. The relief or safety valves shall be located adjoining or as close as possible to the reducing valve. Proper protection shall be provided to prevent injury or damage caused by the escaping fluid from the discharge of relief or safety valves if vented to the atmosphere. The combined discharge capacity of the relief valves or safety valves shall be such that the pressure rating of the lowest pressure piping or equipment shall not be exceeded in case the reducing valve sticks open. If a bypass around the reducing valves is used, a safety valve is required on the low-pressure side and shall be of sufficient capacity to relieve all the fluid that can pass through the bypass without overpressuring the low-pressure side. A pressure gage shall be installed on the low-pressure side of a reducing valve.

**875—91.4(89) Blowoff equipment.** The blowdown from an object that enters a sanitary sewer system or blowdown that is considered a hazard to life or property shall pass through blowoff equipment that will reduce pressure and temperature. The temperature of the water leaving the blowoff equipment shall not exceed 150 degrees Fahrenheit. If the local jurisdiction has a temperature limit of less than 150 degrees Fahrenheit, the temperature of the water leaving the blowoff equipment shall comply with the limit set by the local jurisdiction. The pressure of the water leaving the blowoff equipment shall not exceed 5 psig. The blowoff piping and fittings between the object and the blowoff tank shall comply with the construction or installation code. All materials used in the fabrication of object blowoff equipment shall comply with the construction or installation code. All blowoff equipment shall be equipped with openings to facilitate cleaning and inspection.

[ARC 8283B, IAB 11/18/09, effective 1/1/10]

**875—91.5(89) Location of discharge piping outlets.** The discharge from safety valves, safety relief valves, blowoff pipes and other outlets shall be so arranged that there will be no danger of scalding personnel. When the safety valve or temperature and pressure relief valve discharge is piped away from the object to the point of discharge, provision shall be made for properly draining the piping. The size of the discharge piping shall not be reduced from the size of the relief valve.

**875—91.6(89) Pipe, valve, and fitting requirements.**

**91.6(1)** Pipes, valves, and fittings subject to the effects of galvanic action shall not be used on objects covered by these rules except where permitted in 875—Chapter 95. Dielectric fittings shall be used where dissimilar metals are joined.

**91.6(2) and 91.6(3)** Rescinded IAB 11/18/09, effective 1/1/10.

[ARC 8283B, IAB 11/18/09, effective 1/1/10]

**875—91.7(89) Electric steam generator.** Rescinded ARC 0319C, IAB 9/5/12, effective 10/10/12.

**875—91.8(89) Alterations, retrofits and repairs to objects.** Rescinded ARC 0319C, IAB 9/5/12, effective 10/10/12.

**875—91.9(89) Boiler door latches.** Rescinded ARC 0319C, IAB 9/5/12, effective 10/10/12.

**875—91.10(89) Clearance.**

**91.10(1)** All objects installed prior to September 20, 2006, shall be so located that adequate space is provided for the proper operation, inspection, and necessary maintenance and repair of the object and its appurtenances.

**91.10(2)** This subrule applies to installations and reinstallations after September 20, 2006. Minimum clearance on all sides of objects shall be 24 inches, or the manufacturer's recommended

service clearances if they allow sufficient room for inspection. Where a manufacturer identifies in the installation manual or any other document that the unit requires more than 24 inches of service clearance, those dimensions shall be followed. Manholes shall have five feet of clearance between the manhole opening and any wall, ceiling or piping that would hinder entrance or exit from the object.

**875—91.11(89) Fall protection.** Safe access to all necessary parts of boilers over eight feet tall shall be provided by a runway platform or fall protection system consistent with the requirements below.

**91.11(1) Runway platform.** A steel runway platform in compliance with the criteria of 29 CFR 1910.23 and 1910.27 shall be installed across the tops of objects or at some other convenient level for the purpose of affording safe access. All runways shall have at least two means of exit remotely located from each other.

**91.11(2) Fall protection system.** A fall protection system shall be in compliance with the requirements of 29 CFR 1910.132.

**875—91.12(89) Exit from rooms containing objects.** All rooms exceeding 500 square feet of floor area and containing one or more objects having a fuel-burning capacity of 1 million Btu's shall have two means of exit remotely located from each other on each level.

**875—91.13(89) Air and ventilation.**

**91.13(1) Notice concerning other rules.** The division and the Iowa department of public safety both enforce requirements concerning air and ventilation. Objects that are covered by both sets of rules must comply with both sets of rules.

**91.13(2) Documentation.** Documentation of compliance with any requirement of this rule shall be maintained in the boiler room. However, it is not necessary to maintain documentation of the louvered area.

**91.13(3) National combustion air standards.**

*a. Installations and reinstallations.* Installations and reinstallations shall comply with the edition of NFPA 31, NFPA 54, NFPA 58, NFPA 85, or IMC currently adopted at rule 875—91.1(89) or with the Iowa combustion air standard in subrule 91.13(4). However, compliance with one of the listed NFPA codes constitutes compliance with this rule only if the object burns the fuel covered by the NFPA.

*b. Existing objects.* An adequate supply of combustion air shall be maintained for all objects while in operation. Compliance with the current edition of NFPA 31, NFPA 54, NFPA 58, NFPA 85, or IMC as adopted at rule 875—91.1(89) or with subrule 91.13(4) constitutes compliance with this rule. Compliance with an earlier edition of NFPA 31, NFPA 54, NFPA 58, NFPA 85, or IMC constitutes compliance with this rule. However, compliance with one of the listed NFPA codes constitutes compliance with this rule only if the object burns the fuel covered by the NFPA. Compliance with an earlier version of Iowa's combustion air rule constitutes compliance with this rule. Earlier versions of Iowa's combustion air rule are available for reference at [http://www.iowaworkforce.org/labor/boiler\\_inspection.htm](http://www.iowaworkforce.org/labor/boiler_inspection.htm).

**91.13(4) Iowa combustion air standard.** A permanent source of outside air shall be provided for each room to permit satisfactory combustion of fuel and ventilation if necessary under normal operations. The minimum ventilation for coal, gas, or oil burners in rooms containing objects is based on the Btu's per hour, required air, and louvered area. The minimum net louvered area shall not be less than 1 square foot. The following table shall be used to determine the net louvered area in square feet:

INPUT (Btu's per hour)	MINIMUM AIR REQUIRED (cubic feet per minute)	MINIMUM LOUVERED AREA (net square feet)
500,000	125	1.0
1,000,000	250	1.0
2,000,000	500	1.6
3,000,000	750	2.5
4,000,000	1,000	3.3

INPUT (Btu's per hour)	MINIMUM AIR REQUIRED (cubic feet per minute)	MINIMUM LOUVERED AREA (net square feet)
5,000,000	1,200	4.1
6,000,000	1,500	5.0
7,000,000	1,750	5.8
8,000,000	2,000	6.6
9,000,000	2,250	7.5
10,000,000	2,500	8.3

When mechanical ventilation is used, the supply of combustion and ventilation air to the objects and the firing device shall be interlocked with the fan so the firing device will not operate with the fan off. The velocity of the air through the ventilating fan shall not exceed 500 feet per minute, and the total air delivered shall be equal to or greater than shown above.

[ARC 8283B, IAB 11/18/09, effective 1/1/10]

**875—91.14(89) Condensate return tank.** Condensate return tanks shall be equipped with at least two vents or a vent and overflow pipe to protect against a loose float plugging a single connection.

**875—91.15(89) Conditions not covered.** Any condition not governed by these rules shall be governed by the construction or installation code.

**875—91.16(89) Nonstandard objects.** Rescinded IAB 3/12/08, effective 4/16/08.

**875—91.17(89) English language and U.S. customary units required.** All documentation supplied for the unit including but not limited to the manufacturers' data report, drawings, parts lists, installation manuals, and operating manuals shall be in English, and all measurements shall be in U.S. customary units. All pressure gages, thermometers and other controls and safety devices shall also be in U.S. customary units.

**875—91.18(89) National Board registration.** Except for cast iron boilers, cast aluminum boilers, and objects governed by 875—Chapter 95, all objects shall be registered with the National Board.

[ARC 8283B, IAB 11/18/09, effective 1/1/10]

**875—91.19(89) ASME stamp.** Except for water heaters regulated by 875—Chapter 95, all objects shall bear the appropriate ASME stamp. Objects shall not be utilized in a manner inconsistent with the stamp.

[ARC 8283B, IAB 11/18/09, effective 1/1/10]

**875—91.20(89) CSD-1 reports and related documentation.** Documentation required by this rule shall be kept on site and shall be available for inspection.

**91.20(1)** The requirements of this rule do not apply to:

- a. An object within the scope of 875—Chapter 95;
- b. An object within the scope of 875—Chapter 96;
- c. A hot water supply boiler covered by ASME Section IV, Part HLW; or
- d. A boiler with a fuel input rating greater than or equal to 12,500,000 Btu per hour, falling within the scope of NFPA 85, Boiler and Combustion Systems Hazards Code.

**91.20(2)** The installer shall complete a Manufacturer's/Installing Contractor's Report for ASME CSD-1 (CSD-1 report) for each newly installed or reinstalled object.

**91.20(3)** A person who installs a new burner, new gas train, or new controller on an object shall complete a CSD-1 report.

**91.20(4)** A person who replaces a part or component of an object shall complete the relevant portions of the CSD-1 report unless the replacement satisfies the design specifications. A copy of an invoice containing the same information as the relevant portions of the CSD-1 report is an acceptable alternative. [ARC 8283B, IAB 11/18/09, effective 1/1/10; ARC 9232B, IAB 11/17/10, effective 12/22/10; ARC 1964C, IAB 4/15/15, effective 5/20/15]

These rules are intended to implement Iowa Code chapter 89.

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