

Chapter ILHR 41

SCOPE, GENERAL RULES,
NEW AND EXISTING INSTALLATIONS

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Note: Chapters Ind 41 and 42 as they existed on April 30, 1961 were repealed and new chapters Ind 41 and 42 were created effective May 1, 1961. Chapter Ind 41 was renumbered to ch. ILHR 41 effective March 1, 1984.

PART I SCOPE AND DEFINITIONS

ILHR 41.01 Scope. (1) The provisions of chs. ILHR 41 and 42 shall apply to boilers and piping components associated with boilers, pressure vessels and power piping in use at places of employment and in public buildings. The provisions of these chapters are not retroactive unless specifically stated in the administrative rule.

Note: Section 101.01 (2), Stats., provides that the phrase "place of employment" means and includes every place, whether indoors or out or underground and the premises appurtenant thereto where either temporarily or permanently any industry, trade or business is carried on, or where any process or operation, directly or indirectly related to any industry, trade or business, is carried on, and where any person is, directly or indirectly, employed by another for direct or indirect gain or profit, but does not include any place where persons are employed in private domestic service which does not involve the use of mechanical power or in farming. "Farming" includes those activities specified in s. 102.04 (3), Stats., and also includes the transportation of farm products, supplies or equipment directly to the farm by the operator of said farm or his employes for use thereon, if such activities are directly or indirectly for the purpose of producing commodities for market, or as an accessory to such production. When used with relation to building codes, "place of employment" does not include a previously constructed building used as a community-based residential facility as defined in s. 50.01 (1), Stats., which serves 20 or fewer unrelated residents, except for the purposes of s. 101.11, Stats.

(2) The provisions of chs. ILHR 41 and 42 shall apply to vessels used for the storage and transportation of flammable liquids, liquefied petroleum gas, anhydrous ammonia, and refrigerants unless these vessels are covered by other Wisconsin administrative codes or federal codes.

History: Cr. Register, April 1961, No. 64, eff. 5-1-74; r. and recr., Register, May, 1974, No. 221, eff. 6-1-74; am. (1), Register, May, 1978, No. 269, eff. 6-1-78; am. Register, June, 1980, No. 294, eff. 7-1-80; am. (1), Register, February, 1984, No. 338, eff. 3-1-84.

ILHR 41.015 Petition for variance. The department will consider and may grant a variance to any administrative rule upon receipt of a fee and a completed petition for variance form from the owner, provided an equivalency is established in the petition for variance which meets the intent of the rule being petitioned. The department may impose specific conditions in the petition for variance to promote the protection of the health, safety and welfare of the employees or the public. Violation of

those conditions under which the variance is granted constitutes a violation of these rules.

Note 1: Copies of the petition for variance form (SB-8) are available at no charge from the Division of Safety and Buildings, P.O. Box 7969, Madison, Wisconsin 53707.

Note 2: Section 101.02 (6), Stats., outlines the procedure for submitting petitions to the department and the department's procedures for hearing petitions.

Note 3: See ch. Ind 69 for fee requirements.

History: Cr. Register, February, 1984, No. 338, eff. 3-1-84; am. Register, October, 1984, No. 346, eff. 11-1-84.

ILHR 41.016 Penalties. Penalties for violations of these rules shall be assessed in accordance with s. 101.02, Stats.

Note 1: Section 101.02 (13) (a), Stats., indicates penalties will be assessed against any employer, employee, owner or other person who fails or refuses to perform any duty lawfully enjoined, within the time prescribed by the department, for which no penalty has been specifically provided, or who fails, neglects or refuses to comply with any lawful order made by the department, or any judgment or decree made by any court in connection with ss. 101.01 to 101.25, Stats. For each such violation, failure or refusal, such employee, owner or other person must forfeit and pay into the state treasury a sum not less than \$10 nor more than \$100 for each violation.

Note 2: Section 101.02 (12), Stats., indicates that every day during which any person, persons, corporation or any officer, agent or employee thereof, fails to observe and comply with an order of the department will constitute a separate and distinct violation of such order.

History: Cr. Register, February, 1984, No. 338, eff. 3-1-84.

ILHR 41.02 Definitions. The definitions of this section shall be applicable throughout this code.

(1) **ASME BOILER AND PRESSURE VESSEL CODES** are those published by the American society of mechanical engineers and will hereinafter be referred to as ASME.

(1a) **ALTERATION.** Alteration means a change in a boiler or pressure vessel that substantially alters the original design requiring consideration of the effect of the change on the original design. It is not intended that the addition of nozzles smaller than an unreinforced opening size be considered an alteration. (Also see "repair.")

(2) **BOILER.** A closed vessel intended for use in heating water or for the application of heat to generate steam or other vapor to be used externally to itself.

(a) **Low pressure boiler.** A boiler on which the safety valves are set at pressures not exceeding 15 psig.

(b) **Miniature boiler.** A miniature boiler is a power boiler or high temperature water boiler which does not exceed any of the following limits:

1. 16 inches inside diameter of shell;
2. 20 square feet heating surface (not applicable to electric boilers);
3. 5 cubic feet gross volume exclusive of casing and insulation;
4. 100 psi maximum allowable working pressure.

(c) **Portable boiler.** An internally fired boiler primarily intended for temporary location and whose construction and usage is obviously of a portable nature.

(d) *Power boiler*. A power boiler is a boiler in which steam or other vapor is generated at a pressure of more than 15 psig.

(e) *High temperature water boiler*. A high temperature water boiler is a water boiler intended for operation at pressures in excess of 160 psig or temperatures in excess of 250° F.

(2m) **BOILER EXTERNAL PIPING**. Boiler external piping means piping within the scope of ASME code section I and which requires ASME code stamping as specified in section I.

(3) **CERTIFICATE OF COMPETENCY**. A certificate issued to a boiler or pressure vessel inspector by the department.

(4) **CONDEMNED**. A boiler or pressure vessel declared to be unsafe and has an applied stamping designating its condemnation.

(5) **DEPARTMENT**. Means the department of industry, labor and human relations.

(5m) **ENFORCEMENT AUTHORITY**. Enforcement authority means the department, which is empowered to formulate definitions, rules and regulations for the safe construction, installation, inspection, operation, maintenance, repair and alteration of boilers and pressure vessels in this state.

(6) **EXISTING INSTALLATION**. Boiler and pressure vessels placed in operation or contracted for prior to January 1, 1957. (See part VI.)

(7) **EXTERNAL INSPECTION**. One made while boiler or vessel is in operation.

(8) **FUSION WELDING**. The melting together of filler metal and base metal, or of base metal only, which results in coalescence.

(8c) **HOT WATER STORAGE TANK**. A hot water storage tank is a tank used to store water that is heated indirectly by a circulating water heater or by steam or hot water circulating through coils or other heat exchange methods internal or external to the tank.

(9) **HOT WATER HEATING BOILER AND HOT WATER SUPPLY BOILER**. A boiler completely filled with water that furnishes hot water to be used externally to itself at pressures not exceeding 160 psig or at temperatures not exceeding 250° F. (A boiler exceeding either of these limits shall be classified as a power boiler.)

(9a) **INCOMPETENCE**. Incompetence means conduct which evidences a lack of ability to discharge the duty required to protect the health, safety and welfare of the public, lack of knowledge of the fundamental principles of inspection services or an inability to apply those principles or failure to maintain competency in the current practices and methods applicable to inspection services and the Boiler and Pressure Vessel Code.

(10) **INSPECTOR, AUTHORIZED OR QUALIFIED**. (a) *Field inspector*. A boiler or pressure vessel inspector who holds a valid certificate of competency issued by the department.

(b) *Shop inspector*. A boiler or pressure vessel inspector who is holding the necessary commissions and employed by a city or a state which has adopted the ASME boiler and pressure vessel code, or who is employed

by an insurance company and who, when performing shop inspections in Wisconsin, holds a certificate of competency issued by the department.

(11) **INTERNAL INSPECTION.** One made when the boiler or pressure vessel is shut down and handholes and manholes or other inspection openings are opened or removed for inspection of the interior as required by the inspector.

(11j) **JURISDICTIONAL AUTHORITY.** See "enforcement authority."

(11k) **MISCONDUCT.** Misconduct means an act performed in the discharge of enforcement duties which jeopardizes the interests of the public, including violation of federal or state laws, local ordinances or administrative rules relating to the position, preparation of deficient or falsified reports, failure to submit information or reports requested by the municipality or the department, conduct which evidences a lack of trustworthiness, misrepresentation of qualifications such as education, experience or certification, illegal entry of premises, misuse of funds, or misrepresentation of authority.

(11n) **NEGLIGENCE.** Negligence means failure entirely by omission or commission to discharge the duty required to protect the health, safety and welfare of the public.

(12) **NON-STANDARD BOILER OR NON-STANDARD PRESSURE VESSEL.** One not bearing a valid Wisconsin stamping, nor the ASME stamping, nor the National Board stamping, nor the U.S. department of transportation stamping, nor the stamping of the API-ASME, nor any stamping authorized by other applicable codes.

(13) **OWNER OR USER.** Any person, firm, or corporation owning or operating a boiler or pressure vessel.

(13p) **POWER PIPING.** Power piping means any steam piping system beyond the scope of ASME code section I and having an operating pressure in excess of 15 psig or any hot water piping system beyond the scope of ASME code section I and subject to temperatures in excess of 250° F.

(13t) **PRESSURE-TEMPERATURE RELIEVING VALVE.** A pressure-temperature relieving valve is an automatic relieving device actuated by the static pressure upstream of the valve which opens further with increase in the pressure over the opening pressure, or by the temperature of the fluid. It is used primarily for liquid service.

(14) **PRESSURE VESSEL.** A pressure vessel is a container for the containment of pressure, either internal or external. This pressure may be obtained from an external source or by the application of heat from a direct or indirect source, or any combination thereof.

(14g) **RELIEF VALVE.** A relief valve is an automatic pressure-relieving device actuated by the static pressure upstream of the valve which opens further with the increase in pressure over the opening pressure. It is used primarily for liquid service.

(15) **REPAIR.** Repair is work necessary to restore a boiler or pressure vessel to a safe operating condition.

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(15g) **RUPTURE DISK.** A rupture disk is a nonmechanical overpressure relief device that releases pressure when its preestablished rating is attained.

(15m) **SAFETY RELIEF VALVE.** A safety relief valve is an automatic pressure-actuated relieving device suitable for use either as a safety valve or relief valve, depending upon application.

(15n) **SAFETY VALVE.** A safety valve is an automatic pressure-relieving device actuated by the static pressure upstream of the valve and characterized by full-opening pop action. It is used for gas or vapor service.

(16) **SECONDHAND VESSEL.** A boiler or pressure vessel when both location and ownership have been changed subsequent to the original installation.

(23) **WATER HEATER.** A water heater is a closed vessel in which water is heated by the combustion of fuels, electricity, or any other source and withdrawn for use external to the system at pressures not exceeding 160 psig and shall include the apparatus by which heat is generated and all controls and devices necessary to prevent water temperatures from exceeding 210° F.

Note: For further explanation of definitions, see the current edition of the ASME Code—Section VIII—Scope.

History: Cr. Register, April, 1961, No. 64, eff. 5-1-61; am. (2) (b), (7), (10), Register, January, 1966, No. 121, eff. 2-1-66; am. (3), (4), (8) (a) and (b), (9), (10), (11), (12), (13), (14), (15), and cr. (16), Register, October, 1970, No. 178, eff. 11-1-70; r. and recr. Register, May, 1974, No. 221, eff. 6-1-74; cr. (intro.), (1) (a), (2) (e), (5m), (8t), (11j), (13p), (13t), (14g), (15g), (15m), (15n), and (23), am. (2) (b) and (d), r. and recr. (14) and (15), Register, May, 1978, No. 269, eff. 6-1-78; am. (1a) and (15), cr. (9a), (11k) and (11n), Register, June, 1980, No. 294, eff. 7-1-80; am. (13p) and cr. (2m), Register, February, 1984, No. 338, eff. 3-1-84.

PART II GENERAL RULES

ILHR 41.03 Safety rules. (1) **MAXIMUM OPERATING PRESSURE.** No boiler or pressure vessel shall be operated at a pressure in excess of the maximum operating pressure stated on its current certificate of operation.

(2) **ALTERATION TO SAFETY DEVICES.** No unauthorized person shall remove or tamper with any connected safety device nor shall any person adjust a connected safety valve to a greater relieving pressure than that allowed for the vessel as stated on its current certificate of operation.

(3) **INSTALLATION LOCATION.** Boiler and pressure vessels shall be so installed that there will be sufficient room between the vessel and any ceiling, wall, partition, or floor to facilitate the connection and operation of valves, pipes, and other appurtenances and shall be installed in a manner that will not block any inspection opening.

Note: To assure proper installation, alteration, or repair of a boiler or pressure vessel, it may be necessary to comply with other applicable Wisconsin Administrative Code sections in addition to the Wisconsin Boiler and Pressure Vessel Code. Some of the Wisconsin Administrative Code sections to be considered are as follows:

Sections ILHR 54.14, 55.29, 56.15, 57.14, 58.24, 58.62, 59.21, 60.25, 60.37, 62.32 and 62.78 (boiler room requirements).

Section ILHR 64.09 (combustion air intake requirements).

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Section ILHR 64.20 (installation and safety control requirements).

Sections ILHR 64.45 to 64.50 (chimney and smokestack requirements).

Section ILHR 64.51 (equipment location and protection requirements).

Wisconsin Administrative Codes may be obtained by contacting State Department of Administration, Document Sales and Distribution, 202 So. Thornton Ave., Madison, Wis. 53702.

(4) **CONTROLS AND HEAT GENERATING APPARATUS.** (a) Oil- and gas-fired and electrically heated boilers shall be equipped with suitable primary (flame safeguard) safety controls, safety limit switches, and burners or electric elements as required by a nationally recognized standard.

(b) The symbol of the certifying organization which has investigated the equipment under par. (a) as having complied with a nationally recognized standard shall be affixed to the equipment and shall be considered as evidence that the unit was manufactured in accordance with that standard. A certifying organization is one that is acceptable to the department and that provides uniform testing, examination, and listing procedures under established, nationally recognized standards.

History: Cr. Register, April, 1961, No. 64, eff. 5-1-61; am. (3), Register, January, 1966, No. 121, eff. 2-1-66; am., Register, February, 1971, No. 182, eff. 3-1-71; cr. (4), February, 1982, No. 314, eff. 3-1-82.

ILHR 41.04 Reporting accidents, repairs and alterations. (1) Whenever a boiler or pressure vessel fails and causes injury to any person, the owner or user shall report the facts involved to the department within the following 24 hours. The owner or user shall not remove or disturb the boiler or pressure vessel or any of its parts nor permit any such removal or disturbance prior to receiving authorization from the department, except for the purpose of saving human life or further property damage.

(2) The owner or user shall report any repairs or alterations of a boiler or pressure vessel as required in ch. ILHR 42. The owner or user shall also report conversions to other fuels.

History: Cr. Register, April, 1961, No. 64, eff. 5-1-61; am. Register, February, 1971, No. 182, eff. 3-1-71; r. and recr., Register, May, 1974, No. 221, eff. 6-1-74; am. (2), Register, May, 1978, No. 269, eff. 6-1-78.

ILHR 41.05 Notification of installation of boilers, pressure vessels and power piping. (1) **BOILER OR PRESSURE VESSEL INSTALLATION REGISTRATION.** (a) Installing contractors* shall register with the department the installation of any boiler or pressure vessel before the operation of the boiler or vessel. Registration shall be in writing on form DILHR SBD-6314. Owners or users making their own installations shall be considered installing contractors.

(b) Registration with the department is not required for:

1. Pressure vessels exempted from periodic inspections in s. ILHR 41.21.

2. Installations in cities of the first class if the appropriate city official has been notified.

(2) **POWER PIPING INSTALLATION REGISTRATION.** The installing contractor* of any power piping system shall file an installation registration form with the department or with the city if installed in a city of the first

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class. (See Form SB-5204 for an example of information required on the registration form.)

*Note: Owners or users making their own installations will be considered installing contractors.

(a) *Exceptions.* 1. Registration is not required for power piping of 2 inches nominal pipe size and smaller.

2. Registration with the department is not required for installations in cities of the first class if an installation registration form has been filed with the appropriate city official.

3. Registration is not required for underground power piping systems which are not located in a walk-in tunnel.

4. Registration is not required for replacements, modifications and alterations to existing systems and for new installations which do not exceed 50 feet in length.

History: Cr. Register, April, 1961, No. 64, eff. 5-1-61; am. Register, February, 1971, No. 182, eff. 3-1-71; r. and recr., Register, May, 1974, No. 221, eff. 6-1-74; r. and recr. Register, May, 1978, No. 269, eff. 6-1-78; cr. (2) (a), Register, June, 1980, No. 294, eff. 7-1-80; r. and recr. (1), Register, February, 1982, No. 314, eff. 3-1-82; am. (1) (a) and (b) 1., r. and recr. (2) (a) 3., or (2) (a) 4. Register, February, 1984, No. 338, eff. 3-1-84.

**BOILER AND PRESSURE VESSEL
INSTALLATION REGISTRATION**

Installing Contractors shall prepare this form in triplicate for each boiler or pressure vessel installed.

Distribute as follows:

WHITE:

Department of
Industry, Labor & Human Relations.

Send to: Safety & Buildings Division
Box 7969, Madison, WI 53707.

YELLOW: Send to owner. PINK: Installer's copy.

STATE OF WISCONSIN
DEPARTMENT OF INDUSTRY, LABOR & HUMAN RELATIONS
SAFETY AND BUILDINGS DIVISION

(Complete appropriate portion)

BOILER:		
<input type="checkbox"/> POWER	<input type="checkbox"/> HEATING	<input type="checkbox"/> MINIATURE
<input type="checkbox"/> PRESSURE VESSEL		
<input type="checkbox"/> NEW	<input type="checkbox"/> USED	

NAME OF USER OR OWNER:			LOCATION OF INSTALLATION:		
STREET ADDRESS:			WIS. REGISTRATION NO.:	NATIONAL BOARD NO.:	
CITY:	STATE:	ZIP CODE:	MFR. SERIAL NO.:	OTHER NO.:	
NAME OF INSTALLING CONTRACTOR:		SIGNATURE OF INSTALLER:		DATE:	
STREET ADDRESS:			CITY:	STATE:	ZIP CODE:

DILHR SBD 6314 (N. 02/81)

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POWER PIPING
INSTALLATION REGISTRATION

SB-5204

Installing contractor shall prepare this form in triplicate
and distribute as follows:

- White - Send to Dept. of Industry, Labor &
Human Relations, Safety & Buildings
Division, P.O. Box 7946, Madison,
Wisconsin 53707,
or City of Milwaukee, if applicable.
- Yellow - Send to owner.
- Pink - Retain for file.

STATE OF WISCONSIN
DEPARTMENT OF INDUSTRY, LABOR AND HUMAN
RELATIONS
SAFETY AND BUILDINGS DIVISION

Complete appropriate portion.

Description of system

Name of user or owner

Location of installation

Street Address

City

State

Zip

Safety valve settings -- power source

Capacity

PSIG

1.

2.

3.

Maximum allowable pressure

Test pressure

Date tested

Name of installing contractor

Street address

City

State

Zip

I certify this system was installed and tested in accordance with s. ILHR 41.56 of the Wisconsin Administrative Code.

Date installation completed

Signature of installer

Title

Date registered

TABLE 41.10-A

			As amended by Summer Addenda issued June 30th and Winter Addenda issued December 31st of each respective year: S-Summer; W-Winter.		
ASME			1983	1984	1985
1. Section	I	Power Boilers, 1983 Edition	S	W	
2. Section	II	Material Specifications, 1983 Edition			
	a.	Part A—Ferrous Material	S	W	
	b.	Part B—Nonferrous Material	S	W	
	b.	Part C—Welding Rods, Electrodes and Filler Metals	S	W	
3. Section	III	Nuclear Power Plant Components, 1983 Edition			
	a.	Division 1 and Division 2 General Requirements Subsection NCA	S	W	
		Division 1			
	a.	Subsection NB—Class 1 Components	S	W	
	b.	Subsection NC—Class 2 Components	S	W	
	c.	Subsection ND—Class 3 Components	S	W	
	d.	Subsection NE—Class MC Components	S	W	
	e.	Subsection NF—Component Supports	S	W	
	f.	Subsection NG—Core Support Structures	S	W	
	g.	Appendices	S	W	
		Division 2			
	a.	Concrete Reactor Vessels and Containments	S	W	
4. Section	IV	Heating Boilers, 1983 Edition	S	W	
5. Section	V	Nondestructive Examination, 1983 Edition	S	W	
6. Section	VIII	Pressure Vessels, 1983 Edition			
	a.	Division 1—Pressure Vessels	S	W	
	b.	Division 2—Alternative Rules	S	W	
7. Section	IX	Welding and Brazing Qualifications, 1983 Edition	S	W	
8. Section	X	Fiberglass-Reinforced Plastic Pressure Vessels, 1983 Edition	S	W	
9. Section	XI	Rules for Inservice Inspection of Nuclear Power Plant Components, Division 1, 1983 Edition	S	W	
ANSI					
10. Power Piping (ANSI B31.1, 1983 edition)					

History: Cr. Register, May, 1974, No. 221, eff. 6-1-74; r. and recr. Register, April, 1975, No. 232, eff. 5-1-75; r. and recr. table Register, May, 1976, No. 245, eff. 6-1-76; r. and recr. table, Register, March, 1977, No. 255, eff. 4-1-77; am. table, Register, September, 1978, No. 273, eff. 10-1-78; am. table, Register, June, 1980, No. 294, eff. 7-1-80; r. and recr. table, cr. (2) (c), Register, February, 1982, No. 314, eff. 3-1-82; am. table, Register, August, 1982, No. 320, eff. 9-1-82; am. table, Register, February, 1984, No. 338, eff. 3-1-84; r. and recr. table, Register, October, 1984, No. 346, eff. 11-1-84.

ILHR 41.105 Adoption of miscellaneous standards. (1) CONSENT TO INCORPORATE. Pursuant to s. 227.025, Stats., the attorney general and the

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revisor of statutes have consented to the incorporation by reference of the following standards:

(a) ANSI Z21.10.1-1981 Gas Water Heaters, Volume I Automatic Storage Water Heaters with Inputs of 75,000 Btu per Hour or Less, with Addenda Z21.10.1a-1982.

(b) ANSI Z21.10.3-1981 Gas Water Heaters, Volume III Circulating Tank, Instantaneous and Large Automatic Storage Water Heaters, with Addenda Z21.10.3a-1982.

(c) ANSI Z21.56-1979 Gas-Fired Swimming Pool Heaters, with Addenda Z21.56a-1981 and Z21.56b-1982.

(d) UL 174-1977 Household Electric Storage Tank Water Heaters.

(e) UL 732-1974 Oil-Fired Water Heaters.

(f) UL 795-1982 Commercial-Industrial Gas-Heating Equipment, with revisions dated March 25, 1982.

(g) UL 1453-1982 Electric Booster and Commercial Storage Tank Water Heaters, with revisions dated July 27, 1982.

(2) INTERIM AMENDMENTS. Interim amendments of the standards listed in sub. (1) shall have no effect in the state until such time as this section is correspondingly revised to reflect those changes.

(3) AVAILABILITY OF STANDARDS. The standards in reference may be obtained at a reasonable cost by writing to the following addresses:

(a) American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.

(b) Underwriters' Laboratories, Inc., 333 Pfingsten Road, Northbrook, IL 60062.

(4) FILING OF STANDARDS. Copies of the standards in reference are on file in the offices of the department, the secretary of state and the revisor of statutes.

History: Cr. Register, February, 1984, No. 338, eff. 3-1-84.

ILHR 41.11 Boiler blow-down equipment. (1) The blow-down from a boiler or boilers that enters a sewer system or blow-down which is considered a hazard to life or property shall pass through some form of blow-off equipment that will reduce pressure and temperature as required hereinafter.

(2) The temperature of the water leaving the blow-off equipment shall not exceed 140° F.

(3) The pressure of the blow-down leaving any type of blow-off equipment shall not exceed 5 psi.

(4) The blow-off piping and fittings between the boiler and the blow-off tank shall comply with ss. ILHR 41.50 and 41.51 of this code.

(5) The tank shall be designed in accordance with ss. ILHR 41.50 and 41.51 of this code for a working pressure of at least one-fourth the maximum working pressure of the boiler to which it is connected.

- (d) Boilers used exclusively for agricultural purposes.
 - (e) Pressure vessels having an inside diameter not exceeding 6 inches with no limit on pressure.
 - (f) Pressure vessels having a volume of less than 5 cubic feet and an operating pressure of less than 250 psig.
 - (g) Pressure vessels with a volume of less than 1-½ cubic feet with no limit on pressure.
 - (h) Pressure vessels having an internal or external operating pressure of not more than 15 psig with no limitations on size.
 - (i) Hot water supply boilers, water heaters and hot water storage tanks.
 - (j) Vessels used for the storage or processing cold water, including those with air cushions.
 - (k) Pressure vessels which are used in accordance with the regulations of the U.S. department of transportation.
- (1) Air receivers having a volume of less than 12 cubic feet and an operating pressure of less than 250 psig.

(2) EXCEPTION. In individual cases, the boilers and pressure vessels exempted in sub. (1) will be subject to inspection by or on order of the department upon complaint of any person or upon initiative of the department when there is reasonable cause to suspect that the construction, installation, maintenance or operation of the vessel is not in keeping with the general purpose and intent of this code.

History: Cr. Register, April, 1961, No. 64, eff. 5-1-61; r. and recr. Register, February, 1971, No. 182, eff. 3-1-71; am. (1) (b), (i) and (j), Register, May, 1974, No. 221, eff. 6-1-74; r. and recr. Register, May, 1978, No. 269, eff. 6-1-78; r. (1) (b) and (f), renum. (1) (c) to (e), (g) to (m) to be (1) (b) to (d) and (e) to (k) and am. (1) (b), Register, February, 1984, No. 338, eff. 3-1-84; cr. (1) (l), Register, October, 1984, No. 346, eff. 11-1-84.

ILHR 41.22 Preparation for internal inspection. The owner or user of a boiler or a pressure vessel subject to inspection shall prepare the vessel for internal inspection after due notice from the inspector. To prepare a vessel for an internal inspection all manhole plates, all wash-out plugs, and a sufficient number of handhole plates to permit a satisfactory inspection shall be removed. The shell and heads shall be thoroughly cleaned and exposed when so requested. Each steam boiler shall be thoroughly drained of water and all fire side surfaces cleaned before an internal inspection is made.

Note: The following precautionary procedure is the recommended preparation for inspection:

Before opening the manhole or manholes and entering any part of a boiler which is connected to a common header with other boilers, the required steam or water system stop valves should be closed, tagged, and preferably padlocked, and drain valves or cocks between the two closed stop valves opened. The feed valves should be closed, tagged, and preferably padlocked, and drain valves or cocks located between the two valves opened. After draining the boiler, the blowoff valves should be closed, tagged and preferably padlocked. Blowoff lines, where practicable, should be disconnected between pressure parts and valves. All drains and vent lines should be opened.

History: Cr. Register, April, 1961, No. 64, eff. 5-1-61; r. and recr. Register, February, 1971, No. 182, eff. 3-1-71.

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ILHR 41.23 Insurance company inspections. (1) Periodic inspections of boilers and pressure vessels by insurance companies may be accepted by the department under the following conditions:

(a) The boiler and pressure vessel inspectors employed by the insurance company shall hold certificates of competency issued by the department.

(b) The insurance company shall report inspections of boilers and pressure vessels to the department as required in s. ILHR 41.26.

(c) The inspection procedures used by the insurance company shall conform to the regulations of this code.

(d) The insurance company shall report to the department within 30 days when insurance coverage is started or discontinued on a boiler or pressure vessel. The reason for discontinuing the coverage shall be given on the report. If the boiler or pressure vessel is installed in a city of the first class and inspections are made by the city, the report shall also be provided to the city.

History: Cr. Register, April, 1961, No. 64, eff. 5-1-61; r. and rec. Register, February, 1971, No. 182, eff. 3-1-71; am. (1) (a), (b) and (d), Register, May, 1974, No. 221, eff. 6-1-74; am. (1) (d), Register, February, 1984, No. 338, eff. 3-1-84.

ILHR 41.24 Inspections by cities. (1) Periodic inspections of boilers and pressure vessels by cities of the first class may be accepted by the department under the following conditions:

(a) The boiler and pressure vessel inspectors employed by the city shall hold certificates of competency issued by the department.

(b) The city shall keep a record of such periodic inspections and shall submit a copy to the department.

(c) The inspection procedures used by the city shall conform to the regulations of this code.

History: Cr. Register, April, 1961, No. 64, eff. 5-1-61; r. and rec. Register, February, 1971, No. 182, eff. 3-1-71; am. (1) (a) and (b), Register, May, 1974, No. 221, eff. 6-1-74.

ILHR 41.25 Companies or corporations allowed to make inspections. (1) Periodic inspections by companies or corporations of boilers or pressure vessels which they own or operate may be accepted by the department under the following conditions:

(a) The boiler and pressure vessel inspectors employed by the company or corporation shall hold certificates of competency issued by the department.

(b) The company or corporation shall report inspections of boilers and pressure vessels to the department as required in s. ILHR 41.26.

(c) The inspection procedures used by the company or corporation shall conform to the regulations of this code.

History: Cr. Register, April, 1961, No. 64, eff. 5-1-61; r. and rec. Register, February, 1971, No. 182, eff. 3-1-71; am. (1) (a) and (b), Register, May, 1974, No. 221, eff. 6-1-74.

ILHR 41.26 Reporting of inspections. (1) Reports of periodic internal or external inspections of boilers and pressure vessels shall be sent to the department within 15 days from the date of inspection.

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(2) External inspections shall be reported only when either of the following conditions is found:

(a) An internal inspection is not possible because of the construction of the vessel. In such cases the first inspection shall be reported to the department in the same manner as an internal inspection. The report shall be marked "external" and the reason for making an external inspection instead of an internal shall be given.

(b) When violations of this code or unsafe conditions involving the safety of the vessel are found. This report shall be made on forms acceptable to the department and shall explain the violation or unsafe condition with references to code section numbers. A copy of the recommendations to the owner or user of the vessel shall accompany the report to the department.

History: Cr. Register, April, 1961, No. 64, eff. 5-1-61; am. (1), Register, February, 1971, No. 182, eff. 3-1-71; am., Register, May, 1974, No. 221, eff. 6-1-74; am. (2) (b), Register, June, 1980, No. 294, eff. 7-1-80.

ILHR 41.27 Inspection report forms. (1) An internal or external boiler inspection that conforms to periodic inspection requirements (ILHR 41.20) shall be reported to the department on inspection forms acceptable to the department or national board of boiler and pressure vessel inspectors standard form.

(2) A pressure vessel inspection that conforms to periodic inspection requirements (ILHR 41.20) shall be reported to the department on inspection forms acceptable to the department or national board of boiler and pressure vessel inspectors standard form.

(a) Multiple vessels on a single report. A group of pressure vessels of the same design and use that are interconnected or are operated so as to form a unit, machine, or apparatus may be included in a single report. The report shall contain the number, description, and use of the vessel and shall be reported to the department on inspection forms acceptable to the department or national board of boiler and pressure vessel inspectors standard form.

(3) The inspection report shall be legible and complete as possible. A manufacturer's data report of boiler or pressure vessel shall be available to inspector for first inspection.

History: Cr. Register, April, 1961, No. 64, eff. 5-1-61; r. and recr. Register, February, 1971, No. 182, eff. 3-1-71; am. (1) and (2), Register, May, 1974, No. 221, eff. 6-1-74; am. (1) and (2), Register, June, 1980, No. 294, eff. 7-1-80.

ILHR 41.28 Certificates of operation. (1) The owner or user of the boiler or pressure vessel shall be responsible for obtaining and maintaining a valid certificate of operation.

(2) After each periodic internal or external inspection a certificate of operation shall be issued to the owner or user of the boiler or pressure vessel by the department or by the city authorized by that agency.

(3) The certificate of operation shall give the maximum operating pressure as determined using the regulations of the code.

(4) The certificate of operation shall be valid until the next required periodic inspection.

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(5) The certificate of operation shall be kept on file on the premises by the owner or user of the boiler or pressure vessel and shall be available when called for by a deputy of the department.

Note: See ch. Ind 69, Fee Schedule, for amount of fee to be paid to the department for all certificates of operation.

History: Cr. Register, April, 1961, No. 64 eff. 5-1-61; am. (1), (4) and (5), Register, January, 1966, No. 121, eff. 2-1-66; am. (1), (2), (3) and (4) and r. (5), Register, October, 1970, No. 178, eff. 11-1-70; am. (1) and (4), Register, May, 1974, No. 221, eff. 6-1-74; renum. (1) to (4) to be (2) to (5) and cr. (1), Register, February, 1984, No. 338, eff. 3-1-84.

ILHR 41.29 Condemnation. (1) The condemnation of a boiler or pressure vessel shall be a function of the department only. Any boiler or pressure vessel declared by an authorized inspector to be unsafe and beyond repair shall be referred to the department for condemnation proceedings.

(2) Any boiler or pressure vessel confirmed by the department to be unsafe for further use shall be stamped as follows:

"CONDEMNED"

"Arrowhead Stamp x Wisconsin x Arrowhead Stamp"

Letters shall be at least $\frac{3}{8}$ " high and arrowheads shall be $\frac{1}{2}$ " wide.

(3) It shall be unlawful for any person, firm, partnership or corporation to use, operate, or offer for sale for operation within the state any condemned boiler or pressure vessel.

History: Cr. Register, October, 1970, No. 178, eff. 11-1-70; am. (1) and (2), Register, May, 1974, No. 221, eff. 6-1-74.

PART IV NUCLEAR POWER PLANTS

ILHR 41.30 Installation registration. (1) **OWNER REPORT FILING BEFORE OPERATION.** The owner of any nuclear class pressure vessel within the scope of ASME code section III, except as regulated in s. ILHR 41.21, shall file a copy of form N-3, ASME data report, with the department before operating the pressure vessel.

(2) **REGISTRATION OF BOILERS, PRESSURE VESSELS, AND POWER PIPING.** All other boilers, pressure vessels, and power piping at nuclear power plants shall be registered with the department as required by s. ILHR 41.06. The installation inspection shall meet the requirements of s. ILHR 41.19.

Note: Large groups of vessels may be reported in summary form in lieu of individual reports for each vessel.

History: Cr. Register, May, 1978, No. 269, eff. 6-1-78; am. (2) Register, February, 1984, No. 338, eff. 3-1-84.

ILHR 41.35 Periodic inspections. (1) **IN-SERVICE INSPECTION PROGRAM.** The owner or user shall place on file with the department an in-service inspection plan as required by section XI of the ASME code listed in Table 41.10-A. The department shall be notified at least 10 days prior to all planned shutdowns which include in-service inspections.

Note: A copy of the in-service inspection plan accepted by the Nuclear Regulatory Commission will be acceptable to the department in satisfying the filing of an in-service inspection plan required by this code.

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(2) **STATEMENT OF INSPECTION SERVICE CONTRACT.** The owner or user shall file a statement with the department indicating possession of an arrangement with an authorized inspection agency to provide inspection services under section XI of the ASME code listed in Table 41.10-A. The statement must include the name and address of the current authorized inspection agency.

(3) **IN-SERVICE INSPECTION REPORT.** Within 90 days after each in-service inspection, the owner or user shall submit an owner's data report for in-service inspection (NIS-1) describing the inspections performed under section XI of the ASME code listed in Table 41.10-A.

(4) **FREQUENCY OF INSPECTION.** Pressure vessels located within a nuclear containment may be inspected as part of the in-service inspection. The vessels shall be inspected at least once every 36 months.

Note: Extension of period between inspections. If operating conditions require, longer periods between inspections may be approved by the department upon receipt of a written request for an extension.

History: Cr. Register, May, 1978, No. 269, eff. 6-1-78.

ILHR 41.40 Welded repair. (1) **RECORD OF REPAIR.** The owner or the owner's agent shall furnish the department, within 90 days, a record of repair (form SB-190) when any component within the scope of ASME code section XI is repaired by welding.

Note #1: No other supporting documents are required to be submitted to meet this requirement.

Note #2: Multiple repairs to the same object may be reported on a single report form.

(2) **RECORD OF MODIFICATIONS, REPLACEMENT, ADDITIONS OR ALTERATIONS.** When modifications, replacements, additions or alterations are made by welding, the requirement stated in sub. (1) shall apply.

(3) **EXEMPTION.** Piping, valves and fittings of 2-inch nominal pipe size and smaller are exempt from the requirements of this section.

History: Cr. Register, May, 1978, No. 269, eff. 6-1-78.

ILHR 41.45 Report of incidents. The owner or the owner's agent shall report to the department any incident involving pressure-retaining components within the scope of section XI of the ASME code which requires notification to the U.S. nuclear regulatory commission. The report shall be filed coincident with the report to the U.S. nuclear regulatory commission.

Note: It is the intent of the department to avoid conflicts with the requirements of the U.S. nuclear regulatory commission.

PART V NEW INSTALLATIONS ORIGINAL CONSTRUCTION

ILHR 41.50 ASME code vessels. (1) **ASME CODE COMPLIANCE.** Except as regulated in ss. ILHR 41.51, 41.52 and 41.53, boilers and pressure vessels installed after the effective date of this section shall be constructed and installed in accordance with the ASME standards adopted under s.

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ILHR 41.10. Electric boilers shall be constructed and installed in accordance with ASME section I or IV as applicable.

Note: The department will recognize the applicable "case interpretations" of the ASME Boiler and Pressure Vessel Code as being acceptable.

(2) **FILING WITH NATIONAL BOARD.** Boilers and pressure vessels constructed and installed in accordance with the ASME standards adopted in s. ILHR 41.10 and manufactured after the effective date of this subsection shall have the manufacturer's data report filed with the National Board of Boiler and Pressure Vessel Inspectors and shall bear a National Board number.

History: Cr. Register, April, 1961, No. 64, eff. 5-1-61; r. and recr. Register, December, 1962, No. 84, eff. 1-1-63; am. Register, August, 1964, No. 104, eff. 9-1-64; am. Register, January, 1966, No. 121, eff. 2-1-66; am. Register, March, 1966, No. 123, eff. 4-1-66; r. and recr., Register, November, 1970, No. 179, eff. 12-1-70; am. (1) intro. par., Register, March, 1971 No. 183, eff. 4-1-71; r. and recr., Register, May, 1974, No. 221, eff. 6-1-74; am. Register, May, 1978, No. 269, eff. 6-1-78; am. Register, February, 1984, No. 338, eff. 3-1-84; am. (1) Register, October, 1984, No. 346, eff. 11-1-84; cr. (2), Register, October, 1984, No. 346, eff. 4-1-85.

ILHR 41.51 Wisconsin special vessels. (1) Where it is not possible or practical to construct a boiler or pressure vessel in strict compliance with s. ILHR 41.50, the department may grant a variance to the owner or user to permit the installation of the vessel as a Wisconsin special within the state of Wisconsin. The department will consider a variance request upon receipt of a completed petition for variance form and the required fee. The variance may be granted under the following conditions:

(a) When the method of designing or constructing the vessel is not covered by the ASME codes listed in s. ILHR 41.10, the department may approve the installation of the vessel if adequate proof of comparable safety of the design or construction is shown.

1. Complete plans, calculations, and specifications in duplicate shall be submitted to and approved by the department before the vessel is installed.

2. The vessel shall be stamped "Wisconsin Special".

3. All other applicable requirements of the ASME codes listed in s. ILHR 41.10 shall be met.

(b) When the vessel is to be built by an owner for the owner's use, the department may waive the stamping required by the ASME codes listed in s. ILHR 41.10.

1. Complete plans, calculations, and specifications in duplicate shall be submitted to and approved by the department before the vessel is installed.

2. The vessel shall be stamped "Wisconsin Special".

3. All other applicable requirements of the ASME codes listed in s. ILHR 41.10 shall be met.

(c) When a small number of vessels is to be built by a manufacturer, the department may waive the stamping required by the ASME codes listed in s. ILHR 41.10.

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1. Complete plans, calculations, and specifications in duplicate shall be submitted to and approved by the department before the vessel is installed.

2. The vessel shall be stamped "Wisconsin Special".

3. All other applicable requirements of the ASME codes listed in s. ILHR 41.10 shall be met.

(2) The provisions of this section shall not apply to Wisconsin special vessels accepted by the department before the effective date of this section.

History: Cr. Register, April, 1961, No. 64, eff. 5-1-61; r. and recr., Register, February, 1971, No. 182, eff. 3-1-71; r. and recr., Register, May, 1974, No. 221, eff. 6-1-74; am. (1) (intro.), Register, February, 1984, No. 338, eff. 3-1-84; am. (1), Register, October, 1984, No. 346, eff. 11-1-84.

ILHR 41.52 U.S. department of transportation—federal highway division. Pressure vessels carrying the stamping of the D.O.T. will be considered comparable to a vessel meeting the requirements of s. ILHR 41.50. When such vessels are used in the state of Wisconsin, it shall be the responsibility of the owner of the vessels to have the construction records of the vessels available for inspection by the department.

History: Cr. Register, April, 1961, No. 64, eff. 5-1-61; am. Register, February, 1971, No. 182, eff. 3-1-71; am., Register, May, 1974, No. 221, eff. 6-1-74.

ILHR 41.53 Noncode vessels. (1) EXEMPTED VESSELS. The following vessels are not required to be constructed and installed in accordance with the codes listed in Table 41.10-A:

(a) Water heaters used exclusively for hot water service and hot water storage tanks, provided such apparatus meets the requirements of the applicable standards listed in s. ILHR 41.105. Water heaters or hot water storage tanks bearing the stamp, monogram or other evidence of approval of the applicable standard, or bearing the ASME stamp, shall be considered as conforming with the provisions of this chapter. Water heaters or hot water storage tanks not so identified shall:

1. Have their design submitted for approval by the department for approval;

2. Withstand a hydrostatic pressure of 300 psig or their rated hydrostatic test pressure if greater than this amount without developing leakage or permanent distortion; and

3. Be equipped with suitable primary flame safeguard, safety controls, limit switches and burners, or electric elements as required by the applicable standards listed in s. ILHR 41.105.

(b) Vessels for containing water under pressure for domestic supply, including those having an air space for expansion;

(c) Pressure vessels used for the storage of water at water temperatures not exceeding 210° F. Such vessels may contain a steam or hot water coil or heat exchanger, provided the steam is at or below a pressure of 15 psig and the hot water is at or below a pressure of 160 psig and a temperature of 250° F; and

(d) Pressure vessels used for water conditioning and filtration.

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(2) **VESSEL IDENTIFICATION.** The vessels listed in sub. (1) (b), (c) and (d) shall be identified with the manufacturer's name, a serial number, the allowable working pressure and the year fabricated.

(3) **PRESSURE-RELIEF REQUIREMENTS.** (a) Except as provided in par. (b), the vessels listed in sub. (1) shall meet the pressure-relief device requirements of the ASME codes listed in Table 41.10-A.

(b) Water heaters and hot water storage tanks shall be equipped with pressure-temperature relief devices:

1. Listed by AGA, UL or ASME when heat inputs are less than or equal to 200,000 Btu per hour and temperatures do not exceed 210° F; and

2. Listed by ASME when heat inputs exceed 200,000 Btu per hour.

History: Cr. Register, April, 1961, No. 64, eff. 5-1-61; am. (1) (intro. par.) and (1) (a), Register, May 1974, No. 221, eff. 6-1-74; am. (1) (c) and r. and recr. (1) (intro.) and (a), Register, May, 1978, No. 269, eff. 6-1-78; r. and recr. Register, February, 1984, No. 338, eff. 3-1-84.

ILHR 41.54 Multi-boiler installation. (1) **HOT WATER HEATING BOILERS.** When hot water heating boilers are installed in multiples with a common header and a common return, isolation valves may be eliminated between units and they may be considered one boiler provided:

(a) No single unit exceeds 500,000 Btu per hour output;

(b) Each unit has a pressure-relief device as required by the ASME code listed in Table 41.10-A or the common header has a pressure-relief device(s) with sufficient relieving capacity for all units in the installation.

(c) Each unit has operating controls and safety controls acceptable to the department; and

(d) The fuel supply to each unit is shut off by a low water cutoff in the event of low water in the system.

History: Cr. Register, April, 1961, No. 64, eff. 5-1-61; r. and recr. Register, May, 1978, No. 269, eff. 6-1-78.

ILHR 41.55 Pressure gauges for air receivers. (1) Air receivers shall be equipped with an indicating pressure gauge so located as to be readily visible.

(2) The dial of the pressure gauge shall be graduated to approximately double the pressure at which the safety valve is set, but not less than one and one-half times that pressure.

History: Cr. Register, May, 1974, No. 221, eff. 6-1-74.

ILHR 41.56 Power piping. Power piping, as defined in s. ILHR 41.02 (13p), and boiler external piping within the scope of Section I of the ASME code listed in Table 41.10-A, shall be installed in accordance with the ANSI standard for power piping, including addenda, listed in Table 41.10-A. This section applies to new systems as well as all replacements, modifications and alterations to existing systems.

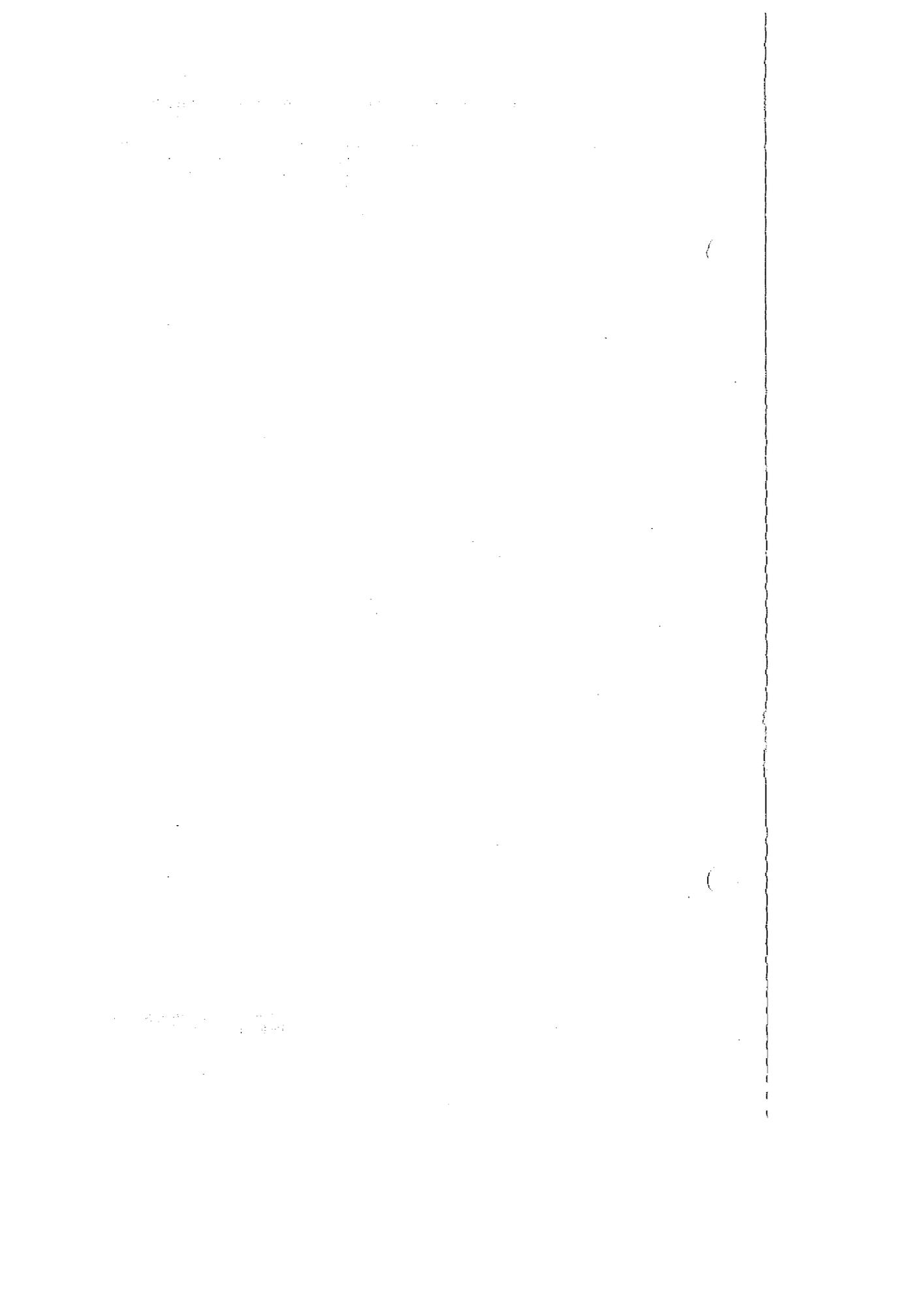
History: Cr. Register, September, 1978, No. 273, eff. 10-1-78; am. Register, February, 1984, No. 338, eff. 3-1-84.

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ILHR 41.57 Organic fluid heat transfer systems. Boilers and coil type heaters which utilize organic thermal fluids as a heat transfer media shall be designed, constructed and installed in accordance with the ASME standards adopted under s. ILHR 41.10.

History: Cr. Register, February, 1984, No. 338, eff. 3-1-84.



with 2 safety or relief valves on one connection, this connection to the pressure vessel shall have a cross-sectional area equal to or greater than the combined area of the 2 safety or relief valves. No valve of any description shall be placed between the safety or relief valve and the pressure vessel, nor on the escape pipe between the safety or relief valve and the atmosphere.

(7) When an elbow is placed on a safety or relief valve escape pipe it shall be located close to the safety or relief valve outlet, or the escape pipe shall be securely anchored and supported.

(8) When the capacity of the safety valve on an existing tank for containing gases is not known, the relieving capacity of such safety valve shall be determined from Table 7. Such safety valves shall not exceed 4 inches in diameter.

TABLE 7
MAXIMUM FREE AIR SUPPLIED IN CUBIC FEET PER MINUTE FOR
DIFFERENT SIZES OF SAFETY VALVES AT STATED PRESSURES

Diameter of Valve (inches)	Gage pressure, pounds							
	50	100	150	200	250	300	350	400
1/4								53
1/2	20	32	42	51	59	67	74	111
3/4	37	59	78	96	112	127	141	176
1	58	94	124	152	178	202	224	248
1-1/4	84	136	180	221	259	293	325	
1-1/2	114	186	248	302	354	400	444	
2	189	306	410	501	592	668	741	
2-1/2	282	457	613	750	880	998	1114	
3	393	638	856	1050	1230	1398	1557	

Diameter of Valve (inches)	Gage pressure, pounds							
	500	600	800	1000	1200	1600	2000	2400
1/4	61	70	84	97	109	128	147	167
1/2	129	147	177	205	230	270	304	330
3/4	224	232	242	346	386	423	474	518
1	286	324	390	450	500	586		
1-1/4	374		509					
1-1/2	472		634					
2								
2-1/2								
3								

History: Cr. Register, April, 1961, No. 64, eff. 5-1-61; am. (3) and (4), Register, May, 1974, No. 221, eff. 6-1-74; am. (3), Register, February, 1982, No. 314, eff. 3-1-82; am. (1), Register, February, 1984, No. 338, eff. 3-1-84.