Washington State Department of Labor & Industries

Pre-Inspection Checklist for Hot Water Heating or Hot Water Supply Boilers

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Notice: This checklist reflects the most common violations our field inspectors encounter when performing an inspection on a hot water heating or hot water supply boiler installation. We recommend boiler industry personnel have access to a current set of applicable codebooks/jurisdictional laws, such as ASME Boiler Code Section IV, National Board Inspection Code (NBIC), Chapter 296-104 WAC and Chapter 70.79 RCW of the State of Washington Boiler and Unfired Pressure Vessel Laws.

Reference	Administration and General Requirements	Compliance Yes	Compliance No
RCW 18.27 & RCW 18.106	Every contractor shall be registered with the Department of Labor and Industries before installing/reinstalling, making repairs, or modifications to any boiler.	☐	☐
RCW 70.79.320	Once installed or reinstalled, the owner or user shall not operate the boiler until a certificate-inspection has been made.	☐	☐
WAC 296-104-020	A Boiler/Pressure Vessel Installation or Reinstallation Permit form from the Boiler Section must be submitted to the Dept. prior to making the installation or reinstallation of any boiler.	☐	☐
WAC 296-104-255 & WAC 296-104-271	A minimum clearance of eighteen inches (18”) shall be provided on all sides of the boiler. Boiler manufacturer’s installation instructions and clearances to combustible materials may require greater distance. A clearance variance acceptable to the manufacturer and owner may be submitted to the inspector for approval.	☐	☐
WAC 296-104-200	All hot water heating or hot water supply boilers shall be constructed, stamped, and installed in accordance with Section IV of the ASME code.	☐	☐
WAC 296-104-302	All boilers installed or refitted after December 1998, shall be equipped with suitable primary safety controls, safety limit switches, and burners and electrical elements as required by a nationally or internationally recognized standard.	☐	☐
WAC 296-104-303	A means shall be provided for testing the operation of hot water boiler low-water cutoff(s) without resorting to draining the entire system.	☐	☐
RCW 79.79.350 & WAC 296-104-700	The owner/user is responsible for fees. All inspection, permit and certificate fees must be submitted to the Dept. before a “Certificate of Inspection” is issued and the boiler is lawful to operate.	☐	☐

Reference	Instruments, Fittings, and Controls	Compliance Yes	No
ASME Section IV HG-611(a)	Each hot water heating or hot water supply boiler shall have a pressure or altitude gage connected directly to the boiler or the flow connection.	☐	☐
ASME Section IV HG-611(b)	The graduated scale on the dial of the pressure or altitude gage should not be less than 1 ½ or more than 3 ½ times the pressure at which the safety relief valve is set.	☐	☐
ASME Section IV HG-611(c)	Piping or tubing for pressure or altitude gage connections shall be of nonferrous metal when smaller than NPS 1 inch.	☐	☐
ASME Section IV HG-612	Each hot water heating or hot water supply boiler shall have a thermometer that indicates the temperature of the water in the boiler at or near the outlet and shall be connected at a location where it can be easily read.	☐	☐
ASME Section IV HG-613	Each automatically fired hot water heating or hot water supply boiler shall be protected from over-temperature by two temperature-operated controls.	☐	☐
ASME Section IV HG-613(a)	Each automatically fired hot water heating or hot water supply boiler shall have a high temperature limit control that will cut off the fuel supply to prevent the water temperature from exceeding the maximum allowable water temperature at the boiler outlet. This control shall be constructed to prevent the temperature from being set above the maximum.	☐	☐
ASME Section IV HG-614 (a)	Each automatically fired hot water boiler shall have an automatic low-water fuel cutoff that is designed for hot water service. It shall be so located as to automatically cut off the fuel supply when the surface of the water falls to the lowest safe permissible water level established by the boiler manufacturer.	☐	☐
ASME Section IV HG-614 (c)	A coil-type boiler or a watertube boiler requiring forced circulation to prevent overheating of the coils or tubes shall have a flow-sensing device installed in lieu of a low-water fuel cutoff to automatically cut off the fuel supply when the circulating flow is interrupted.	☐	☐

Reference	Installation Requirements	Compliance Yes	No
ASME Section IV HG-701.1	Safety valves and safety relief valves shall be located in the top or side of the boiler.	☐	☐
ASME Section IV HG-701.1	Coil or header type boilers shall have the safety valve or safety relief valve located on hot water outlet end.	☐	☐
ASME Section IV HG-701.1	Safety valves and safety relief valves shall be installed with their spindles vertical.	☐	☐

Reference	Installation Requirements	Compliance Yes	Compliance No
ASME Section IV HG-701.1	The opening or connection between the boiler and any safety valve and safety relief valve shall have at least the area of the valve inlet.	☐	☐
ASME Section IV HG-701.4	Safety valves and safety relief valves shall not be connected to an internal pipe in the boiler.	☐	☐
ASME Section IV HG-701.5	No shutoff of any description shall be placed between the safety or safety relief valve and the boiler, or on discharge pipes between the valves and the atmosphere.	☐	☐
ASME Section IV HG-701.6 (a)	A discharge pipe shall be used. Its internal cross-sectional area shall be not less than the full area of the valve outlet.	☐	☐
ASME Section IV HG-701.6 (a)	The discharge from safety or safety relief valves shall be so arranged that there will be no danger of scalding attendants.	☐	☐
ASME Section IV HG-701.6 (a)	The safety valve discharge shall be as short and straight as possible and so arranged as to avoid undue stress on the valve.	☐	☐
ASME Section IV HG-701.7	Hot water heating or supply boilers limited to a water temperature of 210°F may have one or more officially rated temperature and pressure (T&P) safety relief valves installed. If additional valves are used they shall be temperature and pressure safety relief valves.	☐	☐
ASME Section IV HG-701.7	When the temperature and pressure (T&P) safety relief valve is mounted directly on the boiler with no more than 4 in. maximum interconnecting piping, the valve may be installed in the horizontal position with the outlet pointed down.	☐	☐
ASME Section IV HG-709.2	On closed heating systems an expansion tank shall be installed that will be consistent with the volume and capacity of the system.	☐	☐
ASME Section IV HG-709.2	Provisions shall be made for draining the tank without emptying the system, except for pre-pressurized tanks.	☐	☐
ASME Section IV HG-710.3	A stop valve shall be used in each supply and return pipe connection of two or more boilers connected to a common system.	☐	☐
ASME Section IV HG-710.4	The minimum pressure rating of all valves or cocks shall be at least equal to the pressure stamped upon the boiler, and the temperature rating of such valves or cocks including all internal components, shall be not less than 250°F.	☐	☐
ASME Section IV HG-715	Each hot water boiler shall have one or more drain connections, fitted with valves or cocks connecting to the lowest water containing spaces.	☐	☐
ASME Section IV HG-715	The minimum size of the drain piping, valves, and cocks shall be ¾ inch. The discharge piping shall be full size to the point of discharge.	☐	☐

Reference	Installation Requirements (Continued)	Compliance Yes	Compliance No
ASME Section IV HC-325	All cast iron hot water boilers shall be provided with washout openings to permit the removal of any sediment. Washout plugs shall not be smaller than NPS 1 ½ inch for boilers having gross internal volume more than 5 cu ft. Washout plugs shall not be smaller than 1 inch for boilers having gross internal volume not more than 5 cu ft.	☐	☐

Note: Make certain that all items listed above are in compliance prior to requesting an inspection on a new or reinstalled boiler.

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