



RESIDENTIAL WATER HEATER AND BOILER GENERAL REQUIREMENTS

The following is a list of general requirements for residential water heaters and boilers based on the below building codes. The information provided in this document is generalized and is intended as a guide only. Each project is unique, and additional requirements may be enforced as deemed necessary. Please contact the Building Division for additional information about your specific project.

All projects that deviate from the minimum code requirements may apply for approval as Alternative Materials, Design, and Methods as described in **2022 California Residential Code R104.11**.

Applicable Building Codes:

- 2022 California Building Code (CBC)
- 2022 California Residential Code (CRC)
- 2022 California Mechanical Code (CMC)
- 2022 California Electrical Code (CEC)
- 2022 California Plumbing Code (CPC)
- 2022 California Energy Code (CEnC)
- 2022 California Green Building Standards Code (CalGreen)
- Town of Tiburon Municipal Code

WARNING

Smoke and **Carbon Monoxide Alarms** must be installed at the time of inspection. See **2022 CRC R315** and **2022 CRC R314** where these alarms are required, appropriate locations, and other pertinent information.

- **Battery operated smoke detectors over ten years old must be replaced.** If date is not indicated on an existing alarm, it must be replaced.

INSPECTIONS

Required Inspections

- **Location:** Seismic provisions, appliance support, flammable vapor ignition resistance, and bollards
- **Water Piping:** Insulation, Temperature & Pressure Relief Valve and point of discharge, condensation drainage, backflow prevention, and expansion tank.
- **Electrical Wiring:** Bonding, Attic/Crawlspace accessibility, and positive disconnects.
- **Ventilation:** Combustion ventilation, intake ventilation, exhaust ventilation.

Miscellaneous inspections:

- **Gas Piping:** Sediment traps and gas shut off valve.
- **Boilers:** Floor drains,

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Location

- The installation, operation, and maintenance instructions must be attached to the appliance. See **2022 CMC 303.1**.
- Water heaters must be anchored or strapped to resist seismic forces. Strapping must be at points within the upper one third (1/3) and lower one-third (1/3) of its vertical dimensions. All straps, require a minimum distance of four inches maintained above the controls. See **2022 507.2**.
- Appliances in attics and under-floor spaces require an opening and passageway not less than the largest component of the appliance, and not less than 22 inches by 30 inches. See **2022 CMC 304.4**.
 - The passageway cannot be longer than 20 feet, if the height is less than 6 feet, and the width cannot be less than 24 inches. Additionally, a level working platform is required in front of the service side of the appliance measuring 30 inches by 30 inches or greater. See **2022 CMC 304.4.1/304.4.2/304.4.3**
- When located in a garage, or in adjacent spaces that open to the garage, the appliance's burners and burner-ignition devices must be located more than 18 inches above the floor unless listed as flammable vapor ignition resistant. See **2022 CMC 305.1** and **2022 CPC 507.13**.
- Where appliances are installed in areas subject to the normal path of vehicles, the appliance/s must be guarded against mechanical damage using a protective barrier or by being elevated/located away from the normal path of vehicles. See **2022 CMC 305.1.1** and **2022 CPC 507.13.1**
- Water heaters installed in an attic, floor-ceiling assembly, etc., where damage could result from a leaking water heater; a 1.5-inch-deep watertight pan must be installed beneath the water heater with at least a ¾ inch diameter drain to an approved location. See **2022 CMC 305.5** and **2022 CPC 507.5**.

Water Piping

- All domestic hot water piping must be insulated. See **2022 CPC 609.12.1**.
- If the home's water system is provided with a backflow prevention device, or other normally closed device that prevents dissipation of building pressure back into the water main, it must be provided with an adequately sized expansion tank. See **2022 CPC 608.3**.
 - Water systems containing storage water heating equipment shall be provided with an approved and adequately sized combination temperature and pressure-relief valve. See **2022 CPC 608.3**.
- All discharge piping for a temperature, pressure, and combination relief valve must discharge independently by gravity through an air gap into a drainage system or outside of the building with the end of the pipe not exceeding 2 feet and not less than 6 inches above the ground and pointing downwards. See **2022 CPC 608.5(3)** and **2022 CMC 1005.2(3)**.
- All suspended piping must be supported at intervals explained in **2022 CPC Table 313.3**. See **2022 CPC 313.3**.

Electrical Wiring

- All appliances requiring electrical connections must have a positive means of disconnect adjacent to and in sight. See **2022 CMC 301.4(1)**.
- A 120volt receptacle must be located within 25 feet of the water heater for service and maintenance purposes. The receptacle outlet must be on the supply side of the disconnect switch. See **2022 CMC 301.4(2)**.
- Metal water, gas and other piping systems must be bonded. See **2022 CEC 250.104(A)/(B)/(D)**.
- Appliances in attics and under-floor spaces require a permanent light near the appliance and with the light switch nearby the entrance to the passageway. See **2022 CMC 304.4.4**.

Ventilation

- Air for combustion, ventilation, and dilution of flue gases for appliances installed in buildings must be achieved by indoor combustion air, outdoor combustion air, a combination of indoor and outdoor combustion air, engineered installations, or mechanical combustion air supply. See **2022 CMC 701.1** and **2022 CMC 1001.3**.

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- Joints between sections of connector piping and connections to flue collards or draft hood outlets must be fastened with sheet metal screws or vent connectors of listed vent material assembled and connected to flue collars or draft hood outlets per manufacturer's instructions. See **2022 CMC 802.6.1**.
- Plastic pipes and fittings used to vent appliances must be installed per the manufacturer's instructions. Where primer is required, it must be of a contrasting color. See **2022 CMC 802.4.2**.
- Gas vents must be supported and spaced per the manufacturer's installation instructions. See **2022 CMC 802.6.4**.

Gas Piping

- All appliances require accessible, approved manual shutoff valves with nondisplaceable valve members (non-removable handle). Appliance shutoff valves must serve a single appliance only. The shutoff valve must be located within 6 feet of the appliance. Where a connector is used, the valve must be installed upstream of the connector. See **2022 CPC 1212.6** and **2022 CMC 1312.6**.
- A sediment trap must be installed downstream of the appliance shutoff valve as close to the inlet of the appliance as practical at the time of appliance installation. The sediment trap must be a tee fitting with a capped nipple in the bottom outlet, as illustrated in Figure A-1. See **2022 CPC 1212.9** and **2022 CMC 1312.9**.
- Gas piping must be supported by Hangers, Supports, and Anchors at intervals explained in **2022 CPC 1210.3.5.1** See **2022 CPC 1210.3.5**.

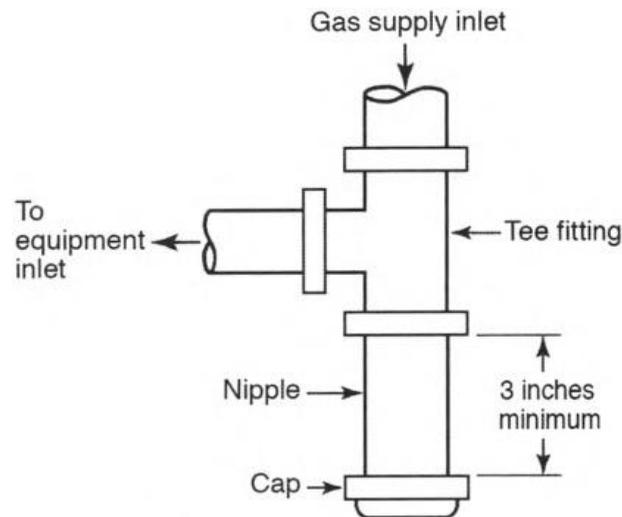


FIGURE A-1

Boilers

- Potable water connections to steam or hot water boilers shall be protected from backflow by a reduced pressure principle backflow prevention assembly per Marin Municipal Water District (MMWD) and in accordance with **2022 CPC Table 603.2**. See **2022 CPC 603.5.10**.
- The boiler room must be equipped with a floor drain for disposing of the accumulation of liquid wastes incident to cleaning, recharging and routine maintenance. Steam piping cannot directly connect to the plumbing or drainage system. Additionally, water having a temperature above 140 degrees Fahrenheit may not be discharged under pressure directly into the drainage system. See **2022 CMC 1001.4**.
- Expansion tanks must be installed when a boiler is installed. They must be fastened to the structure and supports must be capable of carrying twice the weight of the tank filled with water without placing a strain on connecting piping. The tanks must be rated for the pressure of the system. See **2022 CMC 1004.1**.
- Boilers must be installed with a low-water cutoff. A coil-type boiler or a water-tube boiler that requires forced circulation to prevent overheating of the coils or tubes must be installed with a flow-sensing device in the outlet piping instead of a low-water cut-off. See **2022 CMC 1008.1**.