



**Community Development Department**

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**Hot Water Tank Code Information**

Based on the 2022 California Plumbing and Mechanical Codes

**Requirements:**

**Garage Location:** Gas water heaters shall be located not less than 18” above the floor unless listed as flammable vapor ignition resistant. Section 507.13 CPC and Section 308.1 CMC.

**Garage Location-Protection:** Water heaters shall be protected against damage by being installed behind protective barriers or by being elevated or located out of the normal path of vehicles. Section 507.13.1 CPC and Section 308.1 CMC. See page 4.

**Temperature & Pressure Relief Valve (TPRV):** The TPRV drain needs to daylight to the outside of the building, with the end of the pipe pointing down and not more than two (2) feet, nor less than six (6) inches above ground. Section 608.5 CPC. Note drain cannot impede the removal and installation of hot water heater.

**Anchoring:** Strapping shall be provided within upper one third (1/3) and lower one third (1/3). At the lower point, a minimum distance of four (4) inches shall be provided above the controls. Section 507.2 CPC. See Details on page 3

**Drainage Pan:** A watertight pan of corrosion resistant material shall be installed beneath the water heater with not less than ¾” diameter drain to approved location (outside of the building). Section 507.4 CPC.

**Combustion Air Openings:** Two permanent openings, one commencing within 12 inches of the top and one commencing within 12 inches of the bottom of the water heater enclosure shall be provided. The openings shall communicate directly, or by ducts, with the outdoors or spaces that freely communicate with the outdoors. Combustion air openings shall not be less than 100 square inches. Section 506.4.1 (1) & (2) CPC.

**Located in a Bedroom, Bathroom, or Bedroom Closet:** If located in a bedroom, bathroom, or bedroom closet, the water heater shall be located in a closet provided with a listed self-closing, gasketed door and all combustion air shall be obtained from outdoors. The water heater closet shall not be used for any other purpose. Section 504.1 CPC

**Located in Attic:** When located in an attic, the water heater shall be accessible through an opening and passageway at least large as the largest component of the appliance, and not less than 22” by 30”. Where the height of passageway is less than 6’, the distance from the passageway access to appliance shall not exceed 20’ measured along the centerline of the passageway. The passageway shall be unobstructed and shall have solid flooring not less than 24” wide. A level working platform not less than 30” by 30” shall be provided in front of the service side of the appliance. A permanent 120-volt receptacle outlet and lighting fixture shall be installed near the appliance. The switch controlling the lighting fixture shall be located at the entrance to the passageway. Section CPC 508.4

**Requirements:**

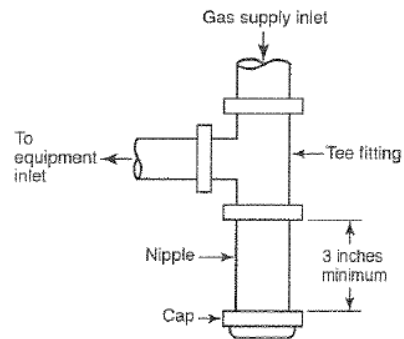
**Cold Water Supply Valve:** A full way valve (gate or ball valve) shall be installed on the cold water supply pipe at or near the water heater. Section 606.2 CPC.

**Unions:** Water line unions are required within 12" of water heater. Section 609.5 CPC.

**Valves:** An accessible, approved manual shutoff gas valve with a non-displaceable valve member shall be installed within six (6) feet of the appliance. A union or flanged connection shall be provided downstream from the valve to permit removal of the appliance. Section 1211.5 CPC.

**Sediment Traps:** A sediment trap shall be installed downstream from the appliance shut-off valve and before the flex line. The sediment trap shall have a minimum 3" nipple. Section 1211.8 CPC and Sections 1311.7 & 1312.7 CMC.

See additional diagram at end of handout.



For SI units: 1 inch = 25.4 mm

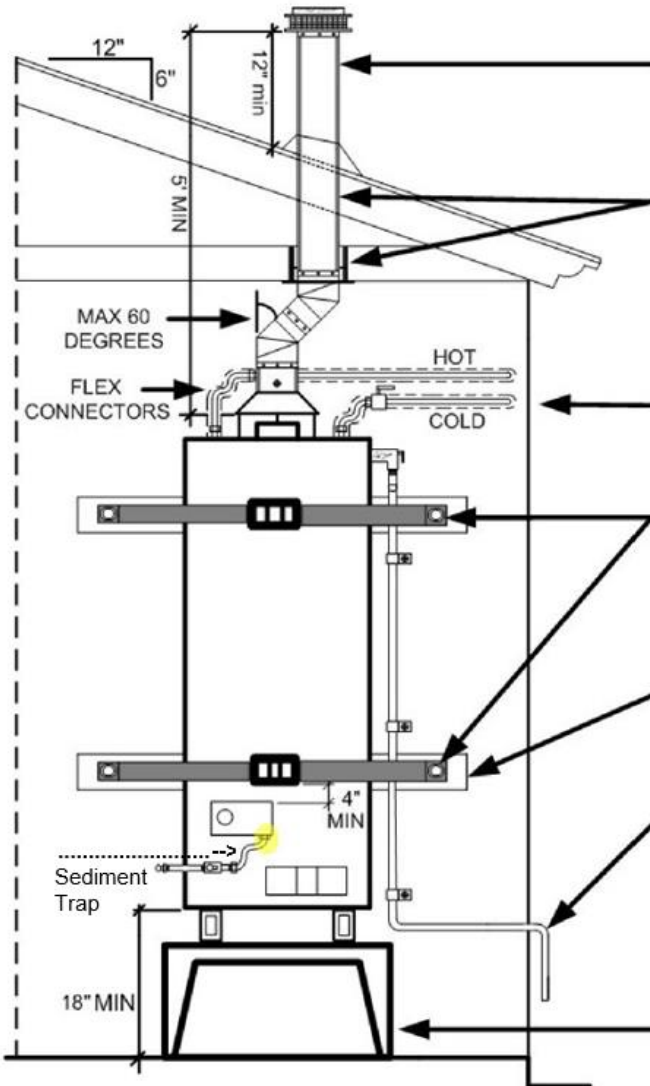
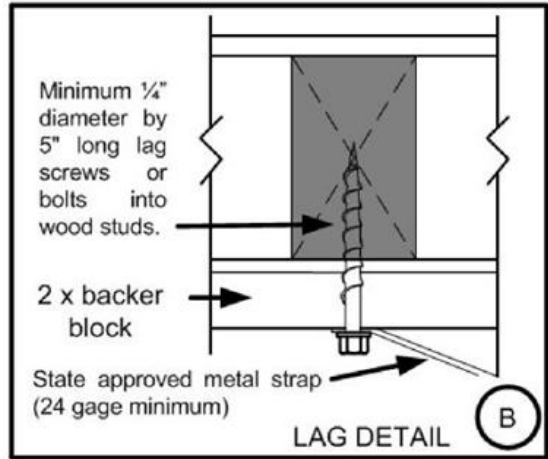
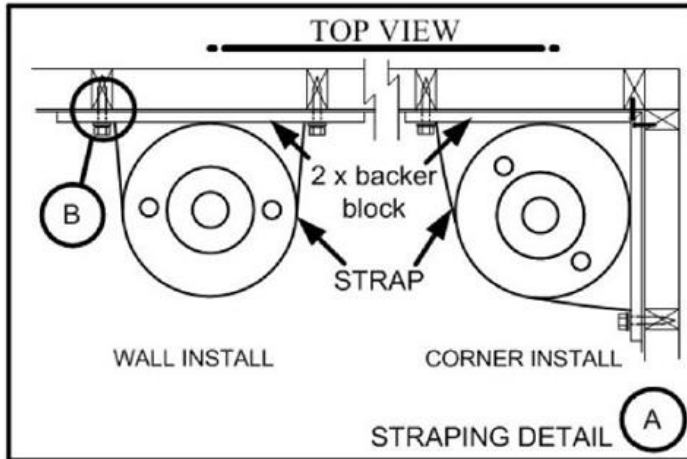
FIGURE 1312.7  
METHOD OF INSTALLING A TEE FITTING  
SEDIMENT TRAP  
[NFPA 54: FIGURE 9.6.7]

**Venting:** All vent piping that runs through ceilings, floors, or walls shall be double-wall Type B metal pipe. The vent and the water heater must maintain clearance from combustibles (such as wall framing or roofing) as required by the manufacturer, which is typically 1" minimum. The vent shall terminate a minimum 1' above the roof, be installed with flashing through the roof, and terminate in a listed and approved vent cap. Vents shall also terminate a minimum of 3' above any building opening (door, operable window, etc.) within 3' of the termination. Venting shall extend in a generally vertical direction with offsets not exceeding 45°, except one 60° offset is permitted. Vents may require additional supports depending on the material and design. Section CPC 510

**Vent Termination:** Gas vents less than 12" in diameter minimum clearance above roofs: Section 509.6.2 CPC

- A pitch of flat to 6/12 = 1.0 foot
- A pitch over 6/12 to 7/12 = 1.25 foot
- A pitch over 7/12 to 8/12 = 1.5 foot
- A pitch over 8/12 to 9/12 = 2.0 foot
- A pitch over 9/12 to 10/12 = 2.5 foot
- A pitch over 10/12 to 11/12 = 3.25
- A pitch over 11/12 to 12/12 = 4.0 foot

**Water Heater Venting:** Type B gas vents shall terminate at least 5 feet in vertical height above the water heater. Section CPC 509.7.2.



Venting for the water heater shall be Type B (double wall) vent pipe and shall terminate at least 5 feet above the draft hood or flue collar and at least 12" above roof. (steeper pitched roofs will require additional clearances)

Provide minimum 1" clear space from vent to any combustible materials. When type B water heater vent is installed in an attic, provide approved ceiling thimble for the double wall vent. NO single wall vents allowed in attic.

Insulate pipes (hot & cold) within the first 5' feet of the water heater.

Strapping shall be within the upper 1/3 and the lower 1/3 of the water heater. At the lower point, a minimum distance of 4" inches shall be maintained between the controls and the lower strap. Other methods may be acceptable, check with the Building Inspector. See strap and lag detail above.

Provide a 2 x backer block top and bottom behind water heater for support if there is no stud directly behind the water heater. See detail (A)

Temperature and pressure (T&P) relief valve piping shall extend from the valve to the outside of the building with end of pipe not more than 24" nor less than 6" from the ground. Other methods and locations may be acceptable, check with the Building Inspector. Piping shall be of galvanized steel, hard-drawn copper or CPVC.

Gas water heaters in residential garages must be a minimum of 18" above the floor to the burner device. Additionally, water heaters installed in garages shall be protected so as to not be subject to physical damage by a moving vehicle.

# PROTECTIVE GUARD POST / BOLLARD

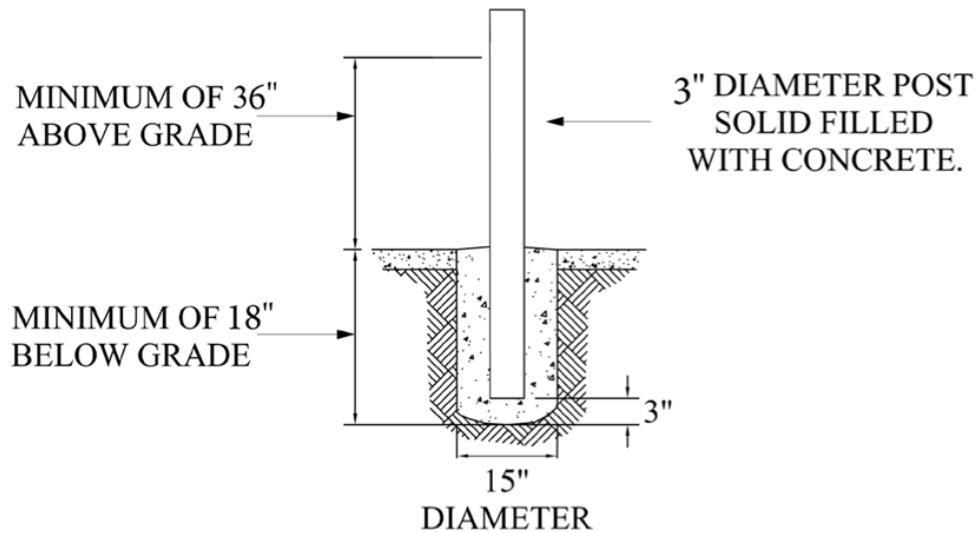
## CALIFORNIA MECHANICAL CODE

APPLIANCES INSTALLED IN GARAGES, WAREHOUSES OR OTHER AREAS WHERE THEY MAY BE SUBJECTED TO MECHANICAL DAMAGE SHALL BE SUITABLY GUARDED AGAINST SUCH DAMAGE BY BEING INSTALLED BEHIND PROTECTIVE BARRIERS OR BY BEING ELEVATED OR LOCATED OUT OF THE NORMAL PATH OF VEHICLES.

## CALIFORNIA BUILDING CODE 507.13.1

ALL WATER HEATERS INSTALLED IN AREAS WHERE THEY MAY BE SUBJECTED TO MECHANICAL DAMAGE SHALL BE SUITABLY GUARDED AGAINST SUCH DAMAGE BY BEING INSTALLED BEHIND ADEQUATE BARRIERS OR BY BEING ELEVATED OR LOCATED OUT OF THE NORMAL PATH OF A VEHICLE USING ANY SUCH GARAGE.

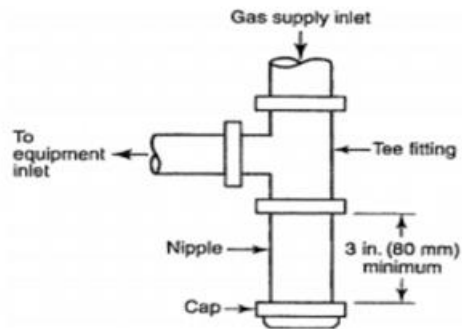
*NOTE:  
THE DIAGRAM SHOWN BELOW MEETS THE DEFINITION OF A " PROTECTIVE GUARD POST" AND MINIMUM INSTALLATION REQUIREMENTS PER CALIFORNIA FIRE CODE.*



## 2019 CALIFORNIA PLUMBING CODE GAS APPLIANCE SEDIMENT TRAPS

Gas burning appliances require a manual shutoff valve within 6 ft. of the appliance (1212.5). Where a connector is used, the shutoff shall be installed upstream of the connector.

Appliances such as furnaces and water heaters require a sediment trap downstream of the appliance shutoff valve and as close as practical to the inlet of the appliance (1212.8). It should be arranged as in the figure below, which is printed in the code. The gas flow makes a 90° turn above the sediment trap. **New for 2016 code: The sediment trap must be upstream from the flex connector.**



**Ranges, clothes dryers, vented decorative gas appliances in fireplaces, gas fireplaces, outdoor grills, and gas lights do not require a sediment trap.**

Wall furnaces do not always have room for a full 3 in. deep sediment trap, and shorter lengths are acceptable.

Tankless water heaters and attic furnaces may require additional elbows and nipples to bring the gas to the equipment after the sediment trap. Examples are shown below:

