CITY OF PALO ALTO

DEVELOPMENT SERVICES – BUILDING INSPECTION

INSPECTION GUIDELINES: FURNACE (CLOSET/ALCOVE)

INSPECTION CODE: 609

SCOPE: RESIDENTIAL AND COMMERCIAL

APPLICABLE CODES: 2016 CBC, CRC, CPC, CMC, CEC, CALGreen, CEnC, and PAMC

The information provided in this document is general and intended as a guide only. Each project is unique and additional requirements may be enforced as deemed appropriate.

IMPORTANT

☐ Failure to complete the items below prior to inspection may result in a re-inspection fee.

INSPECTION

FLOOD ZONE

☐ Appliances and ducts shall be elevated at or above the base flood elevation. (CMC 305.2)

☐ Outside air exhaust openings and air intake openings shall be located at or above the base flood elevation. (CMC 305.2.2)

GENERAL REQUIREMENTS

☐ Verify furnace model, and size as per Title-24 Energy forms on plans.

☐ Verify Title-24 Energy Compliance: CF3R certificate of verification, HERS test. (CEnC 150(m))

☐ Verify automatic setback thermostat installed. (CEnC 110.2 (b))

☐ The appliance installer shall leave the manufacturer's installation and operating instructions attached to the appliance. (CMC 303.1)

☐ Central heating furnaces and boilers installed in closets or alcoves shall be listed for such installation. Central heating furnaces not listed for closet or alcove installation shall be installed in a room or space having a volume not less than 12 times the total volume of the furnace. (CMC 303.2)

☐ Verify clearance to combustibles per equipment listing or name plate rating. (CMC 904.2)

☐ Furnace shall be installed on a floor of noncombustible construction with noncombustible flooring and surface finish unless appliance is listed for installation on combustible floor. (CMC 904.3)

☐ Minimum requirement for a noncombustible platform shall be one layer 3/4" plywood and one layer of Hardy Board, or Dura Rock and 26 gage galvanized sheet metal plan.

☐ Downflow furnaces require a base plate installed per manufacturer's installation instructions. (CMC 904.3)

☐ Appliance shall be securely fastened in place in accordance with the manufacturer's installation instructions. Supports for appliances shall be designed and constructed to sustain vertical and horizontal loads within the stress limitations specified in the building code. (CMC 303.4)

☐ Where more than one system is installed it shall be permanently identified as to the area or space served by the equipment. (CMC 303.6)

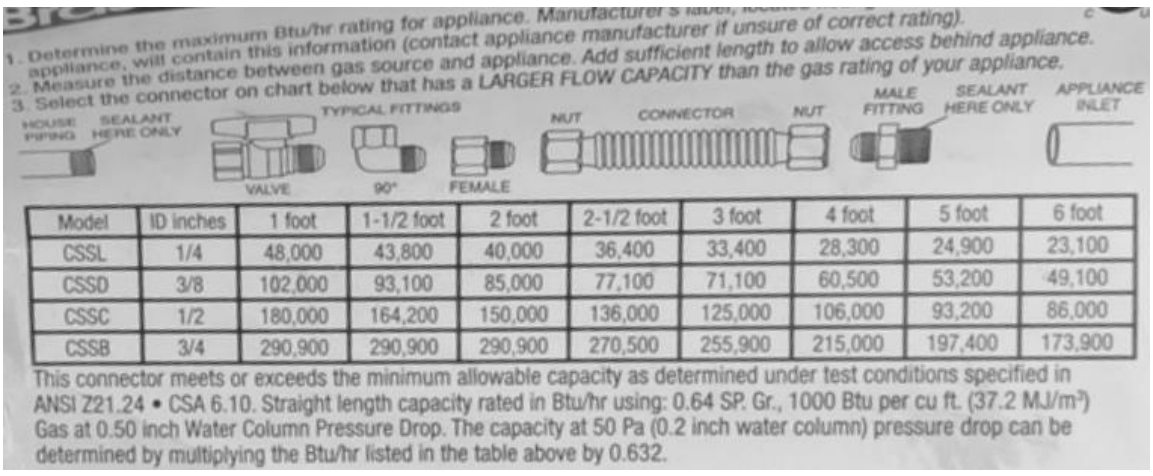
☐ Equipment shall have a positive means of disconnect adjacent to and in site of the equipment served, fused or HACR breaker. Disconnect shall not be attached to the unit. A 120-volt receptacle shall be located within 25' of the equipment for service and maintenance. (CMC 301.4)

☐ Whole house gas test required when any modifications are made to gas line piping. See "Whole House Gas Test" checklist. (CPC 1213.1.2)

☐ An accessible gas shut off valve is required within 6' of the unit. (CPC 1212.15)

☐ Where flexible connectors are used, they shall be of the minimum practical length and shall not extend from on room to another, or pass through walls, ceilings, partitions, or floors. Flexible connectors shall not be located in concealed locations. (CPC 1212.4.3)

☐ Flexible connectors shall be sized for the demand of the furnace. Do not remove sizing label from connector. See manufacturer's installation instructions for sizing chart. (CPC 1316)


1. Determine the maximum Btu/hr rating for appliance. Manufacturer's label, [illegible] of correct rating).
appliance, will contain this information (contact appliance manufacturer if unsure of correct rating).
2. Measure the distance between gas source and appliance. Add sufficient length to allow access behind appliance.
3. Select the connector on chart below that has a LARGER FLOW CAPACITY than the gas rating of your appliance.

Model	ID inches	1 foot	1-1/2 foot	2 foot	2-1/2 foot	3 foot	4 foot	5 foot	6 foot
CSSL	1/4	48,000	43,800	40,000	36,400	33,400	28,300	24,900	23,100
CSSD	3/8	102,000	93,100	85,000	77,100	71,100	60,500	53,200	49,100
CSSC	1/2	180,000	164,200	150,000	136,000	125,000	106,000	93,200	86,000
CSSB	3/4	290,900	290,900	290,900	270,500	255,900	215,000	197,400	173,900

This connector meets or exceeds the minimum allowable capacity as determined under test conditions specified in ANSI Z21.24 • CSA 6.10. Straight length capacity rated in Btu/hr using: 0.64 SP. Gr., 1000 Btu per cu ft. (37.2 MJ/m³) Gas at 0.50 inch Water Column Pressure Drop. The capacity at 50 Pa (0.2 inch water column) pressure drop can be determined by multiplying the Btu/hr listed in the table above by 0.632.

Figure CPA 068 – Example Flex Connector Sizing Label

☐ Existing flex connector shall not be reused.

☐ Where a sediment trap is not incorporated as part of the appliance, a sediment trap shall be installed downstream of the appliance shut off valves as close to the inlet of the appliance as practical, before the flex connector. (CPC 1212.8)

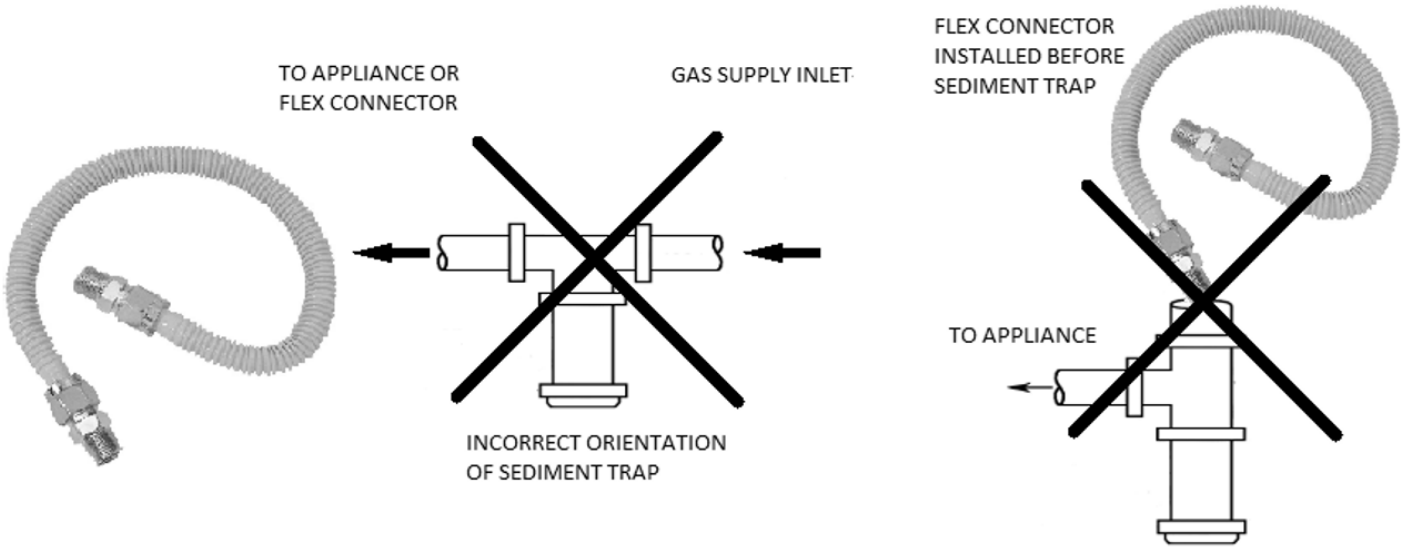


Figure CPA 065—Improper Installations of Sediment Trap

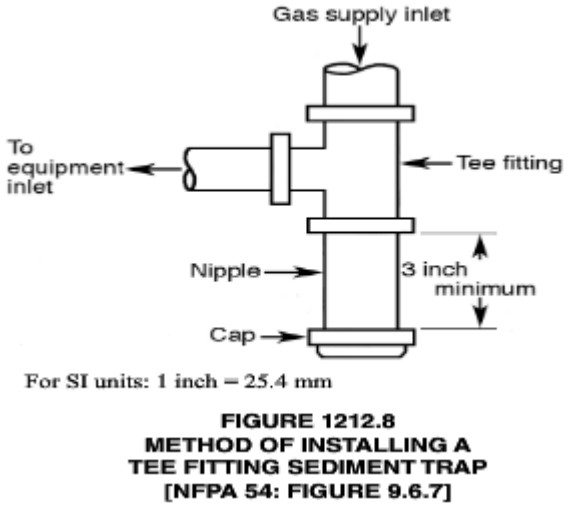


FIGURE 1212.8
METHOD OF INSTALLING A TEE FITTING SEDIMENT TRAP
[NFPA 54: FIGURE 9.6.7]

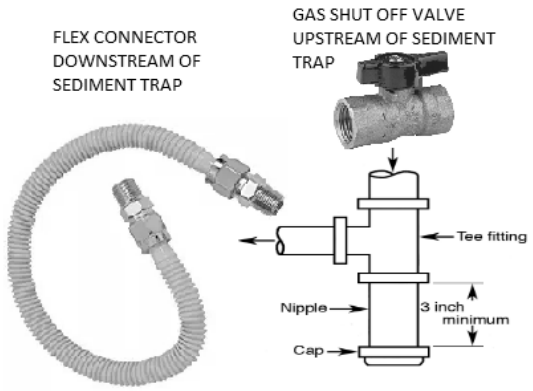


Figure CPA 066—Correct Installation of Sediment Trap

INSTALLATION IN BEDROOM OR BATHROOM CLOSET

☐ Furnaces shall be of the direct-vent type or furnaces and low-pressure boilers shall be permitted to be installed in a closet located in the bedroom or bathroom, provided the closet is equipped with a listed, gasketed door assembly, and a listed self-closing device. (CMC 904.1)

☐ Combustion air for such installations shall be obtained from the outdoors. (CMC 904.1)

☐ Self-closing doors shall swing easily and freely, and shall be equipped with a self-closing device to cause the door to close and latch each time it is opened. The closing mechanism shall not have a

hold-open feature. (CMC 904.1.1)

☐ Gasketing on gaskets doors or frames shall be furnished in accordance with the published listings of the door, frame, or gasketing material manufacturer. (CMC 904.1.2)

☐ The closet shall be for the exclusive use of the central heating furnace or low-pressure boiler. No storage allowed. (CMC 904.1)

VENTING

☐ Vents that pass through unconditioned space shall be type B double wall and maintain a minimum 1" clearance to combustibles. (CMC 802.7.3.4)

☐ Type B vents shall extend in a vertical direction with offsets not exceeding 45 degrees, except that a vent system having not more than one 60 degree offset shall be permitted. An angle greater than 45 degrees from the vertical is considered horizontal. The total horizontal distance of a vent plus the horizontal vent connector serving draft hood-equipped appliances shall not exceed 75 percent of the vertical height of the vent. (CMC 802.6.3.2)

☐ Where a vent passes through an insulated assembly, an approved metal shield shall be installed between the vent and insulation. The shield shall extend not less than 2" above the insulation. (CMC 802.6.2.7)

☐ Vent shall terminate a minimum 5' above the flue collar of the appliance. Vent termination to be 8' from vertical surfaces and 1' above roof on slope 6/12 or less per table CMC 802.6.2. (CMC 802.6.)

☐ Listed direct vent appliances shall be vented in accordance with the manufacturer's installation instructions. (CMC 802.2.4)

☐ Common vents shall be sized per table CMC 803.

☐ Category II, III, and IV venting systems shall be sized and installed per the manufacturer's installation instructions. (CPC 802.6.3.3)

☐ Provision shall be made to collect and dispose of condensate from venting systems serving Category II and Category IV appliances. (CMC 802.9)

☐ Condensate shall be discharged to an approved plumbing fixture or disposal area. Where discharged into the drainage system, equipment shall drain by means of an indirect waste pipe. Waste pipe must be sloped a minimum of 1/4" per foot. (CPC 814.1)

COMBUSTION AIR

☐ Verify adequate combustion air see "Combustion Air for Gas Appliances" checklist.

☐ Verify listed direct vent appliances are installed per manufacturer's installation instructions.

AIR CONDITIONING CONDENSATE

- ☐ Condensate drain shall be trapped in accordance with manufacturer's installation requirements. (CPC 814.5)

- ☐ Condensate drain shall be sloped a minimum 1/8" per foot. Drain shall be sized per CPC table 814.3 or per manufacturer's installation requirements. (CPC 814)

- ☐ Condensate shall drain through indirect connection to an approved location (i.e. drywell, vented receptor, or tailpiece of plumbing fixture). Direct connection permitted for condensate from air conditioning coils discharging directly through the tailpiece of a lavatory or overflow inlet on a bathtub. (CPC 814.5, 814.6)

- ☐ When equipment is installed in a space where damage is capable of resulting from condensate overflow an additional protection method for condensate shall be provided. (CPC 814.2)

    - A water level detecting device that will shut off the equipment or appliance in the event the primary drain is blocked.
    - An additional water tight pan of corrosion-resistant material with a separate drain line installed beneath the cooling coil, unit, or appliance.
    - An additional drain line that is higher than the primary drain line connection
    - An additional watertight pan of corrosion-resistant material with a water level detection device installed beneath the cooling coil, unit, or the appliance.

- ☐ Secondary drain minimum 3/4 nominal pipe size. (CPC 824.2)

- ☐ The additional condensate drain pan shall drain over a door, window, or to a point that is readily observable. (CPC 814.2)

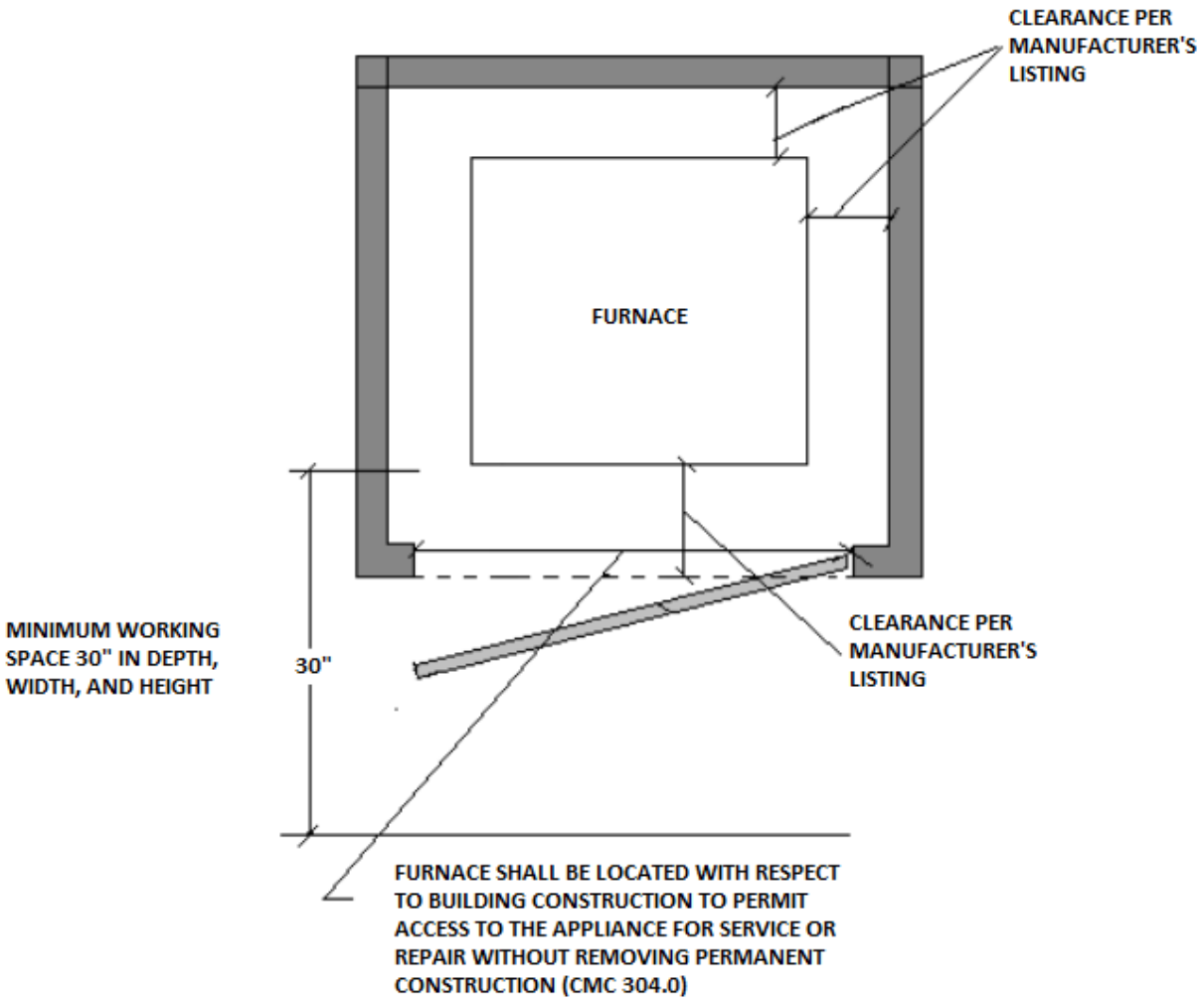


Figure CPA 067—Furnace in Closet