

INSTALLATION - VENTING

Section C – Horizontal, Category III Vent System Installation

- C1. This section applies to horizontally vented Category III vent systems and is in addition to "Section A – General Instructions – All Units".
- C2. All heaters that are horizontally vented perform as a Category III appliance. Category III venting has special venting requirements as follows:
- All **residential**, horizontally vented Category III heaters must be vented with an **agency certified (UL1738) Category III venting system**. Agency certified Category III venting systems are available from your local vent pipe distributor. Follow the agency certified Category III vent manufacturer's instructions for installation.
 - For **commercial and industrial** horizontally vented heaters you may use either agency certified Category III venting systems as noted above, or single wall galvanized or stainless steel vent pipe. For single wall vent systems, one continuous section of double wall vent pipe may be used within the vent system to pass through the wall to the listed terminal. Refer to instruction A10 in "Section A – General Instructions – All Units" for attaching double wall pipe to single wall pipe. If single wall vent pipe is used, all seams and joints must be sealed with metallic tape or silastic suitable for temperatures up to 400°F. Wrap the tape 2 full turns around the vent pipe.
- C3. All horizontal Category III vents must be terminated with a listed vent cap. The cap must terminate a minimum distance from the external wall, as summarized in Table 10.1.

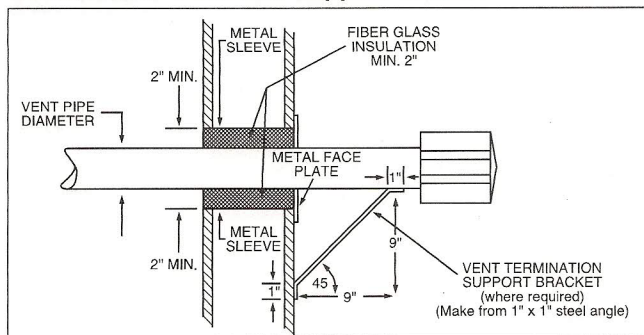
Table 10.1 - Minimum Length Between External Wall and Vent

Model Size	Application	Min. Length A ①
30-75	Residential & Commercial	11"
100, 125	Residential	12"
100, 125	Commercial	24"

① Refer to Figure 10.2 and 10.3.

C4. The vent must be supported as shown in Figure 10.1.

Figure 10.1 - Exhaust Vent Construction Through Combustible Walls and Support Bracket



- C5. When condensation may be a problem, the vent system shall not terminate over public walkways or over an area where condensate or vapor could create a nuisance or hazard or could be detrimental to the operation of regulators, relief openings, or other equipment.
- C6. The venting system must be exclusive to a single unit, and no other unit is allowed to be vented into it.

C7. When vented horizontally, maintain a 1/4" per foot rise away from the heater and place a drip leg with clean out near the unit as shown in Figure 10.2. Where local authorities have jurisdiction, a 1/4" per foot downward slope is acceptable with a drip leg and clean out near the exit of the vent as shown in Figure 10.3, or allow the condensate to drip out the end.

Figure 10.2 - Horizontal Category III Venting with Upward Pitch

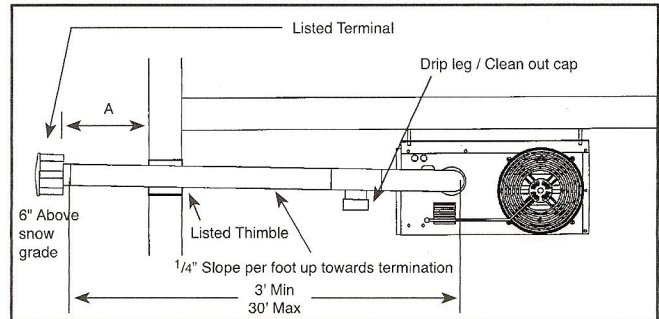
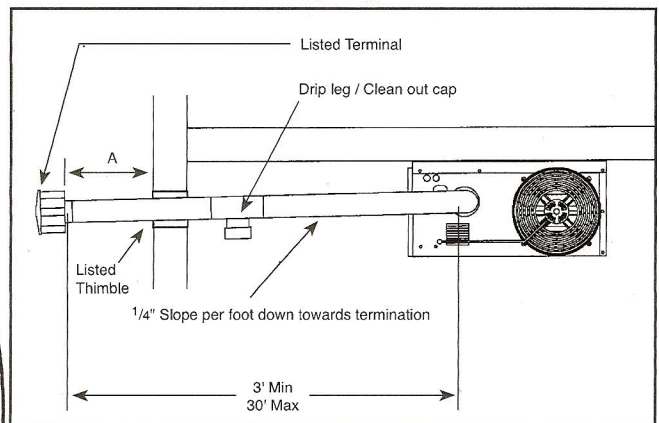


Figure 10.3 - Horizontal Category III Venting with Downward Pitch (with drip leg)



C8. For a vent termination located under an eave, the distance of the overhang must not exceed 24". The clearance to combustibles above the exterior vent must be maintained at a minimum of 12". Consult the National Fuel Gas Code for additional requirements for eaves that have ventilation openings.

C9. Once venting is complete, proceed to the section titled "Installation – Gas Connections".

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diameter is necessary. If there is 6' or more of vent pipe in the open space between the appliance and where the vent pipe passes through the wall or floor, the thimble need only be 2" greater than the diameter of the vent pipe. If a thimble is not used, all combustible material must be cut away to provide 6" of clearance. Where authorities have jurisdiction, type B vent may be used for the last section of vent pipe to maintain clearance to combustibles while passing through wall or floor (see Figure 6.1). Any material used to close the opening must be noncombustible.

- A11. The following are general instructions for double wall (type B) terminal pipe installation:

How to attach a single wall vent terminal to double wall (type B) vent pipe:

1. Look for the "flow" arrow on the vent pipe.
2. Slide the vent terminal inside the exhaust end of the double wall vent pipe.
3. Drill 3 holes through the pipe and the vent terminal. Using 3/4" long sheet metal screws, attach the cap to the pipe. Do not over tighten.

How to connect a single wall vent system to double wall (type B) vent pipe:

1. Slide the single wall pipe inside the inner wall of the double wall pipe.
2. Drill 3 holes through both walls of the single and double wall vent pipes. Using 3/4" sheet metal screws, attach the two pieces of pipe. Do not over tighten.
3. The gap between the single and double wall pipe must be sealed, but it is not necessary to fill the full volume of the annular area. To seal, run a large bead of 400°F silastic around the gap.

- A12. Vent termination clearances must be maintained:

Table 7.1 - Vent Termination Clearances

Structure	Minimum Clearances for Vent Terminal Location
Forced air inlet within 10 feet	3 feet above
Combustion air inlet of another appliance	6 feet all directions
Door, window, gravity air inlet, or any building opening	4 feet horizontal and below 1 foot above
Electric meter, gas meter, gas regulator, and relief equipment ① Gas regulator ①	4 feet horizontal (U.S.) 6 feet horizontal (Canada) 3 feet horizontal (U.S.) 6 feet horizontal (Canada)
Adjoining building or parapet wall	6 feet all directions
Adjacent public walkways	7 feet all directions
Grade (ground level)	3 feet above

① Do not terminate the vent directly above a gas meter or regulator.

- A13. Do NOT use dampers or other devices in the vent or combustion air pipes.
- A14. Precautions must be taken to prevent degradation of building materials by flue products.
- A15. Single wall vent pipe must not pass through any unoccupied attic, inside wall, concealed space, or floor.
- A16. Uninsulated single wall vent pipe must not be used outdoors for venting appliances in regions where the 99% winter design temperature is below 32°F.
- A17. The vent terminal must be:

Table 7.2 - Vent Terminals

Model Size	Modine PN	Other Listed Terminals
30-75	5H0722850005	Gary Steel 1092
100-125	5H0722850001	Gary Steel 1092

- A18. In addition to following these general instructions, specific instructions for Vertical Category I or Horizontal Category III vent systems must also be followed. Table 7.3 outlines the differences:

Table 7.3 - ANSI Unit Heater Venting Requirements

Category	Description	Venting Requirements
I	Negative vent pressure Non-condensing	Follow standard venting requirements.
II	Negative vent pressure Condensing	Condensate must be drained.
III	Positive vent pressure Non-condensing	Vent must be gas tight.
IV	Positive vent pressure Condensing	Vent must be liquid and gastight. Condensate must be drained.

Note: Vent connectors serving Category I appliances shall not be connected into any portion of mechanical draft systems operating under positive pressure.

Vertical Category I Vent System Determination

- Vertical vent systems terminate vertically (up).
- The horizontal portion of the vent run cannot exceed 75% of the vertical rise (Example: If the vent height is 10', the horizontal portion of the vent system cannot exceed 7.5').
- The vent terminates a minimum of 5' above the vent connector on the unit.
- If the vent system to be installed meets ALL these criteria (an example is shown in Figure 9.1), proceed to "Section B – Vertical Vent System Installation". For all other cases, proceed to the next section for Horizontal Category III Vent System Determination:

Horizontal Category III Vent System Determination

- Horizontal vent systems terminate horizontally (sideways).
- A vent system that terminates vertically but has a horizontal run that exceeds 75% of the vertical rise is considered horizontal.

Horizontal vent configurations are Category III. For residential installations, this requires the use of an agency approved (UL1738) Category III vent system. Additional requirements, including those for commercial and industrial installations are covered in "Section C – Horizontal, Category III Vent System Installation".