INSTALLATION INSTRUCTIONS

Venting for Direct-Vent Water Heater

⚠DANGER: **Failure to properly vent the water heater to the outdoors as outlined in this Venting section will result in death or serious personal injury. To avoid the risk of fire, explosion, or asphyxiation from carbon monoxide, NEVER operate the water heater unless it is properly vented and has adequate air supply for proper operation as outlined in this Venting section. This water heater must have air supply connected and terminated to the outdoors.**

⚠WARNING:

Refer to page 29 for required clearances to combustible materials. Improper clearances can cause explosion or fire resulting in death, personal injury, and/or product damage.

⚠CAUTIONS:

- **Check to make sure flue gases do not recirculate into the air intake terminal when using direct venting. If the water heater is having service issues, flue recirculation may be a contributing factor.**
- **Even when the minimum vent terminal separation distances are followed, recirculation may still occur depending upon the location outside the building, the distance from other buildings, proximity to corners, weather conditions, wind patterns, and snow depth.**
- **Periodically check to make sure that flue recirculation is not occurring. Signs of flue gas recirculation include frosted or frozen intake terminals and condensate in the intake terminal and venting system.**
- **Correction to flue recirculation may involve angling the intake away from the exhaust terminal and increasing the distance between them. Check to be sure the intake and exhaust terminals are not obstructed, especially during periods of below-freezing weather.**

Venting Requirements

The installation of venting must comply with national codes, local codes, and the vent manufacturer's instructions.

The vent exhaust and air intake must terminate outside as described in these instructions. DO NOT vent this water heater through a chimney. It must be vented separately from all other appliances.

NOTICE: **The unit can be vented using only the following approved vent pipe material.**

Use only 2- or 3-inch diameter pipe. Refer to local codes for restrictions on the use of PVC, CPVC, or ABS pipe and fittings. All exhaust venting materials for product installed in Canada must meet ULC-S636.

Acceptable materials or equivalent:

PVC (Schedule 40, ASTM D-1785)
CPVC (Schedule 40, ASTM F-441)
ABS (Schedule 40, ASTM D-2661)
(not permitted for exhaust vent in Canada)

The fittings, other than the VENT TERMINAL, should be equivalent to the following:

PVC (Schedule 40 DWV, ASTM D-2665)
CPVC (Schedule 40 DWV, ASTM F-438)
ABS (Schedule 40 DWV, ASTM D-2661)
(Not permitted in Canada)
Category III Stainless Steel (Proper transition part required)

DO NOT USE Schedule 20, Cell Core, Drain Pipe, Galvanized, Aluminum, or B-Vent.

Recommended Vent Lengths

Before starting the vent installation, careful planning should be given to the routing and termination of the vent pipes. The length of the vent pipes (inlet and outlet) should be kept to a minimum. Also, see pages 37–38 and 44 for vent terminal placement. Refer to the maximum and minimum vent length charts for the pipe sizes that can be used and the total equivalent length of pipe that can be used. Do not exceed equivalent length of pipe in maximum vent length chart.

Maximum Vent Length (intake/outlet):

Number of 90° Elbows	Maximum Length of 2" Straight Pipe	Maximum Length of 3" Straight Pipe
1	5.0 ft. (1.5 m)	38.0 ft. (11.6 m)
2	3.5 ft. (1.0 m)	36.5 ft. (11.1 m)
3	2.0 ft. (0.6 m)	35.0 ft. (10.6 m)
4	Not available	33.5 ft. (10.2 m)
5	Not available	32.0 ft. (9.8 m)
6	Not available	30.5 ft. (9.3 m)

The system will not operate if there is excessive restriction (pressure drop) in the venting system. Use the chart above to calculate the maximum pipe run length with the required number of elbows (e.g., a maximum 38 ft. [12 m] of 3" vent pipe may be used provided there is only one 90° elbow in the system).

A 90° elbow is equivalent to 1 ft. 6 in. (0.5 m) of straight pipe. A 45° elbow is equivalent to 9" (0.25 m) of straight pipe.

The vent termination does not count as part of the straight pipe equivalent when determining the total vent length.

Minimum Vent Length:

Number of 90° Elbows	Minimum Length of 2" Straight Pipe	Minimum Length of 3" Straight Pipe
1	1.0 ft. (0.3 m)	1.0 ft. (0.3 m)

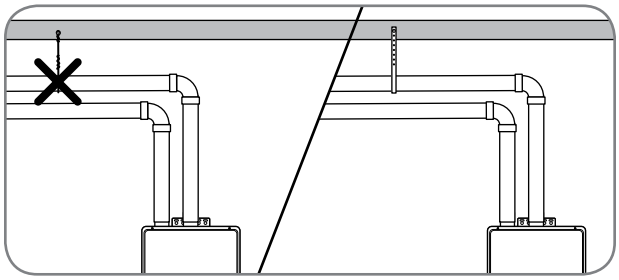
NOTICE: To use 2-inch vent pipe, a reducing adapter or bushing will be required.

⚠WARNING:
To use Category III Stainless Steel, a proper transition part will be required to prevent flue gas from leaking.

Depending on the size of pipe that is chosen for venting the water heater, it might be necessary to use a fitting for stepping down in pipe size, to connect to the water heater.

All intake and exhaust venting components must have the same diameter size. Do not use a different size on the intake and exhaust venting.

The unit may be vented horizontally through a wall or vertically through the roof. Pipe runs must be adequately supported along both vertical and horizontal runs. Maximum unsupported span is recommended to be no more than 4 feet (1.2 m). It is imperative that the first hanger be located on the horizontal runs immediately adjacent to the first 90-degree elbow from the vertical rise. Only use support isolation hanging bands. DO NOT use wire to support pipe runs.



Stress levels in the pipe and fittings can be significantly increased by improper installation. If rigid pipe clamps are used to hold the pipe in place, or if the pipe cannot move freely through a wall penetration, the pipe may be directly stressed, or high thermal stresses may be formed when the pipe heats up and expands. Install accordingly to minimize such stresses.

Preexisting Venting Notes:

If the water heater is being installed as a replacement for an existing water heater, a thorough inspection of the existing venting and air intake system must be performed prior to any installation work. Verify that the correct materials, vent lengths, and terminal locations as described in this manual have been met. Carefully inspect the entire venting and air intake system for any signs of cracks or fractures, particularly at the joints between elbows or other fittings and the straight runs of vent pipe. Check the system for signs of sagging or other stresses in the joints as a result of misalignment of any components in the system. If any of these conditions are found, they must be corrected in accordance with the venting instructions in this manual before completing the installation and putting the water heater into service.

NOTICES:

- It is recommended that the air intake and exhaust pipes have a 1/4" per foot downward slope toward the outdoors.
- Maintain the proper clearance between the vent pipe and combustible or noncombustible materials are described on pages 28, 29.
- A zero clearance 0 in.(0cm) is allowed between the air intake pipes and combustible material.
- Use proper support for the vent and air intake pipes.
- It is recommended the support method used isolates the vent pipe from floor joists or other structural members. This helps prevent transmission of noise and vibration.
- Do not support, pin, or otherwise secure the venting system in a way that restricts the normal thermal expansion and contraction of the chosen venting material.

See page 36 for additional requirements for the Commonwealth of Massachusetts.