



Combustion Air -- Manufactured Home Direct Vent Water Heaters

Extreme care must be taken when placing a manufactured home on a lot with a basement. The terms and conditions of UL Standard 307B are not exempted by a basement. Once completed the basement becomes part of the living space of the manufactured home. Installation of a direct vent water heater with the air inlet assembly taking its' combustion air from the basement atmosphere is a violation of UL 307B, Section 4.3 (c). See the Use and Care Manual supplied with the water heater for further installation requirements.

The direct vent water heaters produced by Rheem Manufacturing Company are designed for use in manufactured housing and are required to comply with the provisions of UL Standard 307, Gas Burning Heating Appliances for Manufactured Homes and Recreational Vehicles. Section 2.3, Terminology, defines an 'appliance' to include water heaters. Please review the excerpts from this standard which follow:

Section 4.3 A direct vent appliance shall be constructed so that:

- a) All air supplied for combustion;
- b) The combustion system of the appliance; and
- c) All products of combustion are isolated from the atmosphere of the manufactured home or recreational vehicle.

Doors, panels, and any other access openings serving an enclosure required for such isolation of a fuel-burning appliance are to communicate only to the outdoors.

Section 4.7 Air Intake assemblies and flue-gas outlet assemblies for appliances of direct vent system construction shall be an integral part of the appliance, or each assembly shall be constructed for direct attachment to the appliance.

Section 4.8 If an appliance is not assembled by the manufacturer as a unit, it shall be arranged in as few subassemblies as practicable. Each subassembly shall be capable of being, incorporated readily into the final assembly without, requiring, alteration such as cutting, drilling threading, welding or similar tasks by the installer. Two or more subassemblies, that bear definite relationship to each other for the intended installation or operation of the appliance shall be arranged, and constructed to permit them to be incorporated into the complete assembly, without need for alteration or alignment, only in the intended relationship with each other; or such subassemblies shall be assembled, tested, and shipped from the factory as one element.

Both of these sections preclude any alteration of the inlet air assembly as it is supplied with each unit. However, if certain installations require the inlet air to be supplied to the air inlet assembly from outside the perimeter of the manufactured home, (i.e. homes over a basement type foundation) the following guidelines will ensure that adequate air is made available to air inlet assembly and the unit will operate as certified.

1. A plenum box assembly should be fabricated to encompass the air inlet assembly without alteration to the air inlet assembly itself. This plenum should have a minimum horizontal dimension of eight (8) inches. The minimum clearance between the air inlet assembly and the inner wall of the plenum shall be two (2) inches. The vertical height of the plenum shall be as necessary to accommodate the air inlet assembly without alteration.
2. To ensure proper air entry into the fabricated plenum box, a 6 inch minimum round (or equivalent cross-sectional area) duct is required. The duct shall be of a smooth surface, rigid variety (no flex pipe) and shall be connected to the plenum in a manner that does not reduce the cross-sectional area of the pipe.
3. The air inlet shall be of damper less type and provide a free area not less than the cross-sectional area of the duct. A screen, if used, shall be 1/4 X 1/4 inch minimum.