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Venting Multiple Appliances Into A Common Chimney Or Flue

Uncategorized [664833, Venting](#)

Connecting more than one oil heating appliance to a common chimney can be easy and beneficial once we understand the basic guidelines. When following the guidelines for installation, the system will work for you. Disregard these guidelines, and the system can work against you.

The flue and chimney sizing not only controls the exhaust of combustion by-products, but also has a direct effect on the burner's air supply. When the draft of the appliance rises, the fan wheel of the burner moves air easier. As the draft on the appliance drops, the fan wheel must work harder to move the same amount of air. Proper chimney and flue design, along with proper draft control, allow for an efficient combustion process.

Important Guidelines

1. Always follow the appliance manufacturer's recommendations on venting the particular appliance. It is also just as important to obey your local codes and requirements.
2. The chimney must be of adequate size to properly vent the gases created by the total BTU input of all appliances combined. Refer to Figure 1.

Figure 1 **COMMON CHIMNEY SIZES vs BTU INPUT**

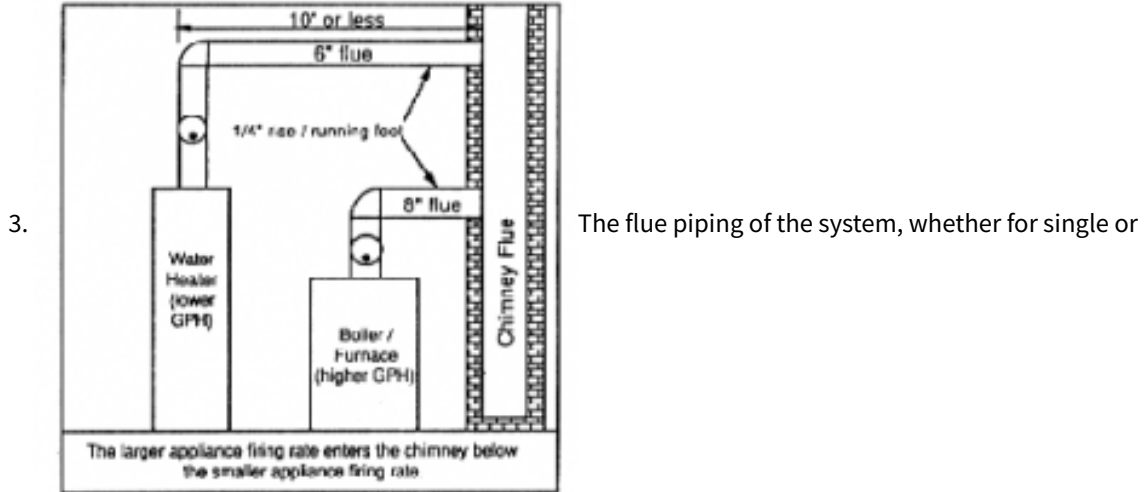
Gross BTU In	Rectangular Dim.	Round Dim.	Minimum Height
144000	8 1/2" x 8 1/2"	8"	20 feet
235000	8 1/2" x 13"	10"	30 feet
374000	13" x 13"	12"	35 feet

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768000	18" x 18"	18"	50 feet
960000	20" x 20"	18"	226.98

FIG. 2 MULTIPLE APPLIANCES VENTED SEPERATELY



multiple appliances, should be as short a run as possible, and rise 1/4" per running foot up and toward the chimney. Whenever possible, do not exceed 10 feet of flue pipe length.

4. Avoid using more than two 90-degree turns in the piping. Additional 90-degree turns further restrict the exhaust system on burner start-up.
5. The piping, when inserted into the chimney entrance, should not extend beyond the inside surface of the chimney liner. The area around the flue piping should be sealed where it enters the chimney.
6. When venting two appliances separately into a common chimney, always install the smaller flue pipe (appliance with lowest GPH input) at a higher point into the chimney than the larger flue pipe for the appliance with the largest GPH input. Refer to Figure 2.

Basic Requirements

The following observes the National Fire Protection Agency's recommendations: In order to determine the main flue size or manifold required to vent more than one appliance into the chimney, you must combine the flue sizes of the individual appliances. Example: Let's say you have a job where you combine a furnace or boiler (8" flue) with a water heater (6" flue). To determine the main flue size, refer to Figure 3 and locate the square inch area of each individual flue size.

$$6'' \text{ flue} = 28.27 \text{ square inches}$$

$$8'' \text{ flue} = 50.27 \text{ square inches}$$

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with. In our example, 78.54 square inches equal a 10" pipe size. Our main flue or manifold required to properly vent these two appliances is a 10" pipe.

Figure 3 **SQUARE INCH AREA OF FLUE COLLARS**

Flue Diameter	Equiv. Sq. In. Area	Flue Diameter	Equiv. Sq. In. Area
3"	7.06	11"	95.03
4"	12.56	12"	113.1
5"	19.63	13"	132.73
6"	28.27	14"	153.94
7"	38.48	15"	176.71
8"	50.27	16"	201.06
9"	63.62	17"	226.98
10"	78.54	18"	254.47

Whether you are combining two appliances or more, you will follow the same technique of totaling individual flue sizes to determine your main flue or manifold.

Common Methods

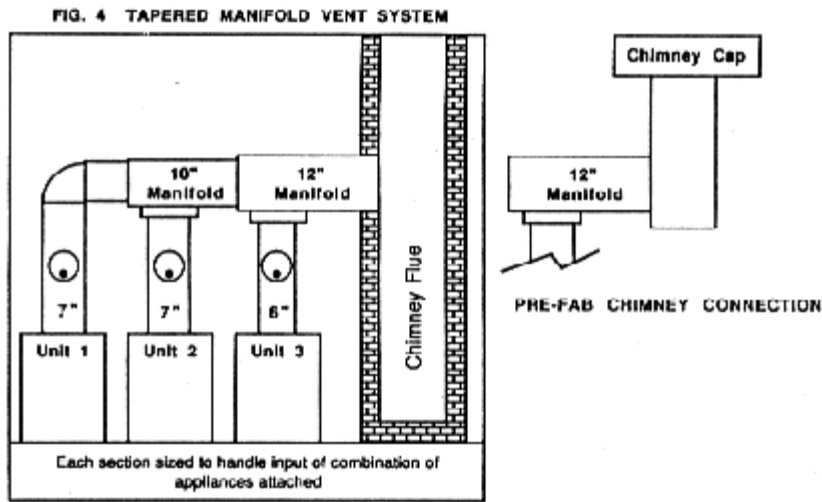
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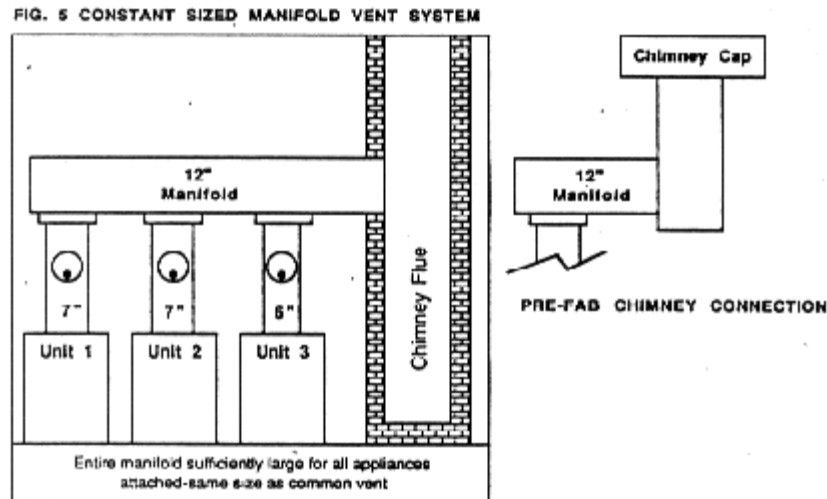
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The illustrations in Figures 4



and 5 are the most common systems utilized in our market. They are the tapered manifold and the constant sized manifold vent systems.

As was the case in our previous example, in order to obtain the correct flue or manifold size for the constant sized manifold, combine the totals of the flue collars. (See Figure 5.)

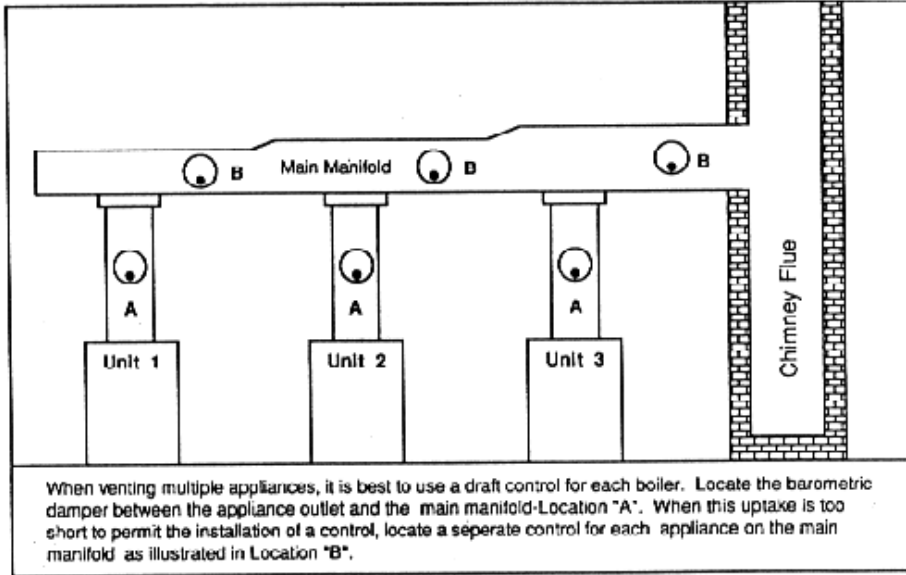
When figuring the sizing for the tapered manifold (Figure 4), you will size each section according to the flue sizes that will vent through that section. You will eventually reduce the manifold size until it equals the flue size of the appliance furthest from the chimney.

Finally, you also should be familiar with barometric damper location. Keep in mind, a properly designed system needs proper barometric damper control for it to function properly. Figure 6 gives you this

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FIG. 6 BAROMETRIC DAMPER LOCATIONS WHEN VENTING MULTIPLE APPLIANCES



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