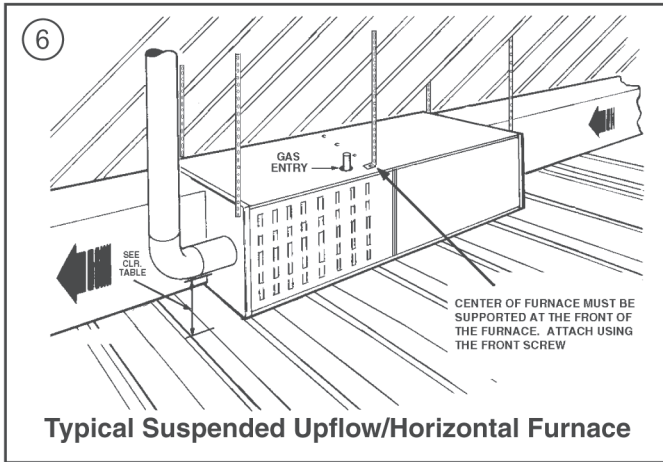


A cutout is provided on both sides of the downflow furnace cabinet to allow a 90° elbow to be attached inside the cabinet and the vent piping to connect there. In horizontal, the downflow furnace may be vented through the top of the cabinet if needed. In vertical configuration, the downflow furnace may be vented using the side cabinet cutouts. This venting configuration could be used if an electronic air cleaner is installed.

**When the downflow furnace is vented through the left side of the furnace cabinet in horizontal or vertical configuration, Type B vent pipe must be used within the cabinet.**



## AIR FOR COMBUSTION AND VENTILATION

Adequate flow of combustion and ventilating air must not be obstructed from reaching the furnace. Air openings provided in the furnace casing must be kept free of obstructions which restrict the flow of air. Airflow restrictions affect the efficiency and safe operation of the furnace. Keep this in mind should you choose to remodel or change the area which contains your furnace. Furnaces must have a free flow of air for proper performance.

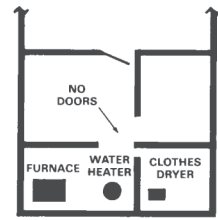
Provisions for combustion and ventilation air shall be made in accordance with "latest edition" of Section 5.3, Air for Combustion and Ventilation, of the National Fuel Gas Code, ANSI Z223.1, or Sections 7.2, 7.3 or 7.4 of CAN/CGA B149 Installation Codes, and applicable provisions of the local building codes. Special conditions created by mechanical exhausting of air and fireplaces must be considered to avoid unsatisfactory furnace operation.

Furnace locations may be in "confined space" or "unconfined space". Unconfined space is defined in Table 2 and Figure 6. These spaces may have adequate air by infiltration to provide air for combustion, ventilation, and dilution of flue gases. Buildings with tight construction (for example, weather stripping, heavily insulated, caulked, vapor barrier, etc.), may need additional air provided as described for confined space.

Confined spaces are installations with less than 50 cu. ft. of space per 1000 BTU/hr input from all equipment installed. Air for combustion and ventilation requirements can be supplied from inside the building as in Figure 8 or from the outdoors, as in Figure 9.

1. All air from inside the building as in Figure 8: The confined space shall be provided with two permanent openings communicating directly with an additional room(s) of sufficient volume so that the combined volume of all spaces meets the criteria for an unconfined space. The

7 UNCONFINED  
50 CU. FT. OR MORE  
PER 1000 BTU/HR. INPUT  
ALL EQUIP. INSTALLED



8 CONFINED  
LESS THAN 50 CU. FT.  
PER 1000 BTU/HR. INPUT  
ALL EQUIP. INSTALLED



total input of all gas utilization equipment installed in the combined space shall be considered in making this determination. Refer to Table 3, for minimum open areas required.

2. All air from outdoors as in Figure 9: The confined space shall be provided with two permanent openings, one commencing within 12 inches of the top and one commencing within 12 inches of the bottom of the enclosure.

The openings shall communicate directly, or by ducts, with the outdoors or spaces (crawl or attic) that freely communicate with the outdoors. Refer to Table 3, for minimum open areas required.

3. The following types of installations will **require** use of OUTDOOR AIR for combustion, due to chemical exposures:
  - \* Commercial buildings
  - \* Buildings with indoor pools
  - \* Furnaces installed in commercial laundry rooms
  - \* Furnaces installed in hobby or craft rooms
  - \* Furnaces installed near chemical storage areas.

Exposure to the following substances in the combustion air supply will also require OUTDOOR AIR for combustion:

- \* Permanent wave solutions
- \* Chlorinated waxes and cleaners
- \* Chlorine based swimming pool chemicals
- \* Water softening chemicals
- \* Deicing salts or chemicals
- \* Carbon Tetrachloride
- \* Halogen type refrigerants
- \* Cleaning solvents (such as perchloroethylene)
- \* Printing inks, paint removers, varnish, etc.
- \* Hydrochloric acid
- \* Cements and glues
- \* Antistatic fabric softeners for clothes dryers
- \* Masonry acid washing materials

TABLE 2

MINIMUM AREA IN SQUARE FEET FOR UNCONFINED SPACE INSTALLATIONS	
FURNACE MAXIMUM BTUH INPUT RATING	WITH 8 FT. CEILING MINIMUM AREA IN SQUARE FEET OF UNCONFINED SPACE
60,000	375
80,000	500
100,000	625
120,000	750
140,000	875

# Installer's Guide

TABLE 3

MINIMUM FREE AREA IN SQUARE INCHES  
EACH OPENING (FURNACE ONLY)

Furnace Maximum BTUH/INPUT Rating	Air From Inside	Air From Outside	
		Vertical Duct	Horizontal Duct
60,000	100	15	30
80,000	100	20	40
100,000	100	25	50
120,000	120	30	60
140,000	140	35	70

