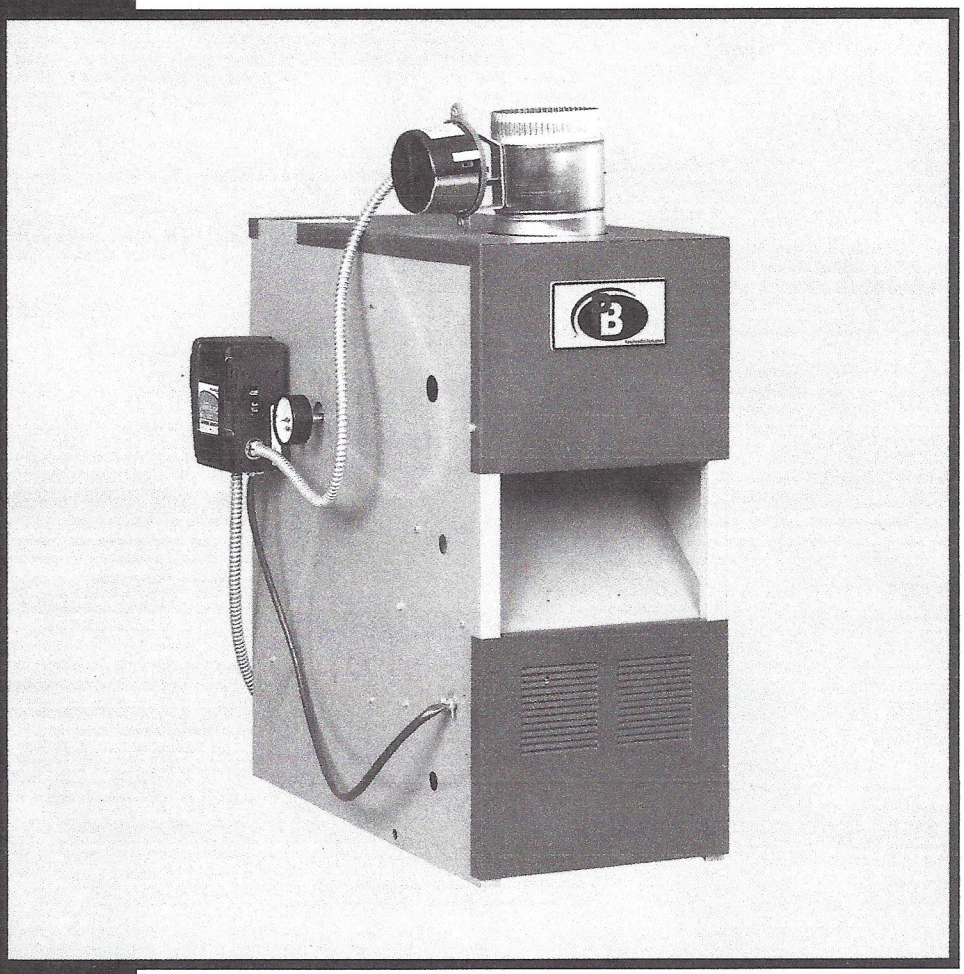
Series MI/MIH II™

Gas Boilers



Installation, Operation & Maintenance Manual

PeerlessBoilers.com

4. Outdoor Combustion Air: Outdoor combustion air is to be provided through one or two permanent openings. The minimum dimension of these air openings is 3 inches (76 mm).
   a. **Two Permanent Opening Method:** Provide two permanent openings. One opening is to begin within 12 inches (305 mm) of the top of the space and the other is to begin within 12 inches (305 mm) of the floor. The openings are to communicate directly or by ducts with the outdoors or with spaces that freely communicate with the outdoors. The size of the openings shall be determined as follows:
      i. Where communicating directly or through vertical ducts with the outdoors each opening shall have a minimum free area of 1 in^2 per 4000 Btu/hr (22 cm^2 per 4000 W) of total input rating for all equipment in the space. See Figure 1.3 for openings directly communicating with the outdoors or Figure 1.4 for openings connected by ducts to the outdoors.

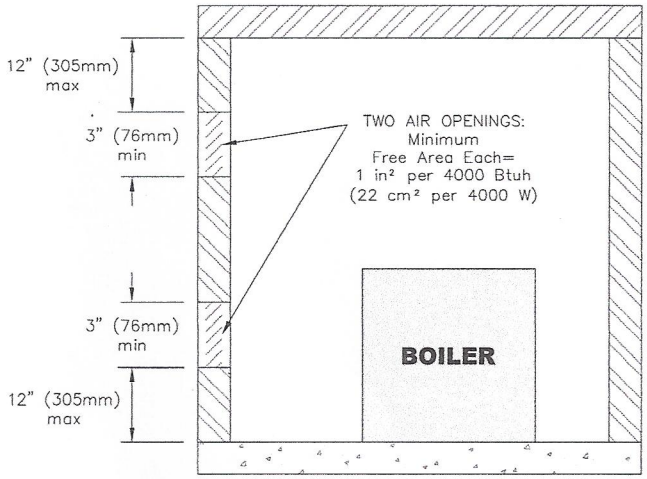


Figure 1.3: Air Openings – All Air Directly from Outdoors

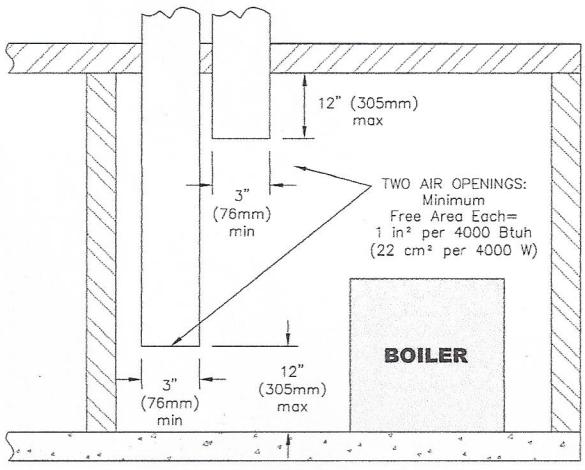


Figure 1.4: Air Openings – All Air from Outdoors through Vertical Ducts

      ii. Where communicating with the outdoors through horizontal ducts, each opening shall have a minimum free area of 1 in^2 per 2000 Btu/hr (22 cm^2 per 2000 W) of total rated input for all appliances in the space. See Figure 1.5.

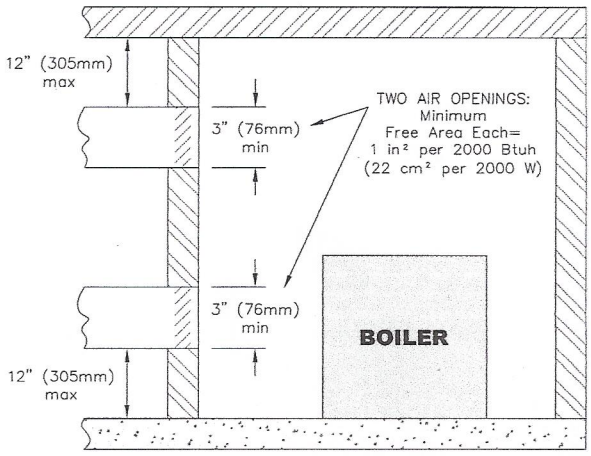


Figure 1.5: Air Openings – All Air from Outdoors through Horizontal Ducts

   b. **One Permanent Opening Method:** Provide one permanent opening beginning within 12 inches (305 mm) of the top of the space. The opening shall communicate directly with the outdoors, communicate through a vertical or horizontal duct, or communicate with a space that freely communicates with the outdoors. The opening shall have a minimum free area of 1 in^2 per 3000 Btu/hr of total rated input for all appliances in the space and not less than the sum of the cross-sectional areas of all vent connectors in the space. The gas-fired equipment shall have clearances of at least 1 inch (25 mm) from the sides and back and 6 inches (150 mm) from the front of the appliance. See Figure 1.6 for this arrangement.

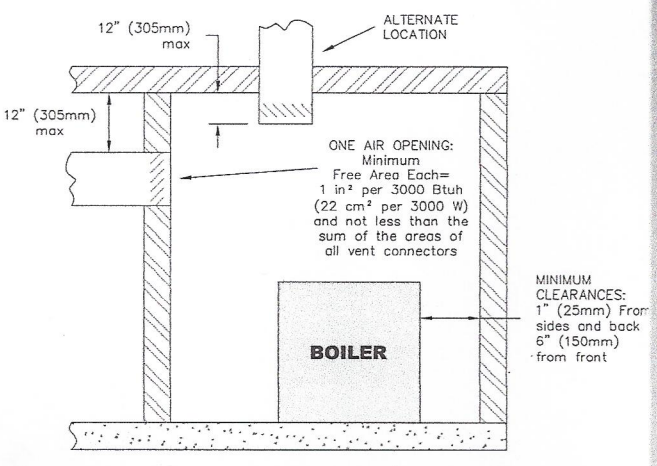


Figure 1.6: Air Openings – All Air from Outdoors through One Opening

3. WATER PIPING AND CONTROLS

A. BOILER SUPPLY AND RETURN

1. Size the supply and return to suit the system. A typical piping arrangement is shown in Figure 3.1. Refer also to the I=B=R Guide - Residential Hydronic Heating Installation/Design and the PB Heat Water Survey for additional guidance during water piping installation.

2. Return Piping:
   Pipe the drain valve to a tee, provided, and the 1-1/4 NPT return tapping near the bottom of the left section. Pipe the return to the tee. Pipe the drain valve nipples and tee to the 1-1/4 NPT return tapping as shown in Figure 3.1.

3. Supply Piping:
   Pipe the supply to the 1-1/2 NPT supply tapping at the top and rear of the boiler.

4. When system return water temperature will be below 130°F (54°C), pipe the boiler with a bypass arrangement to blend the system return and hot supply to obtain at least 130°F (54°C) entering the boiler. For more information on bypass piping, consult the PB Heat Water Survey.

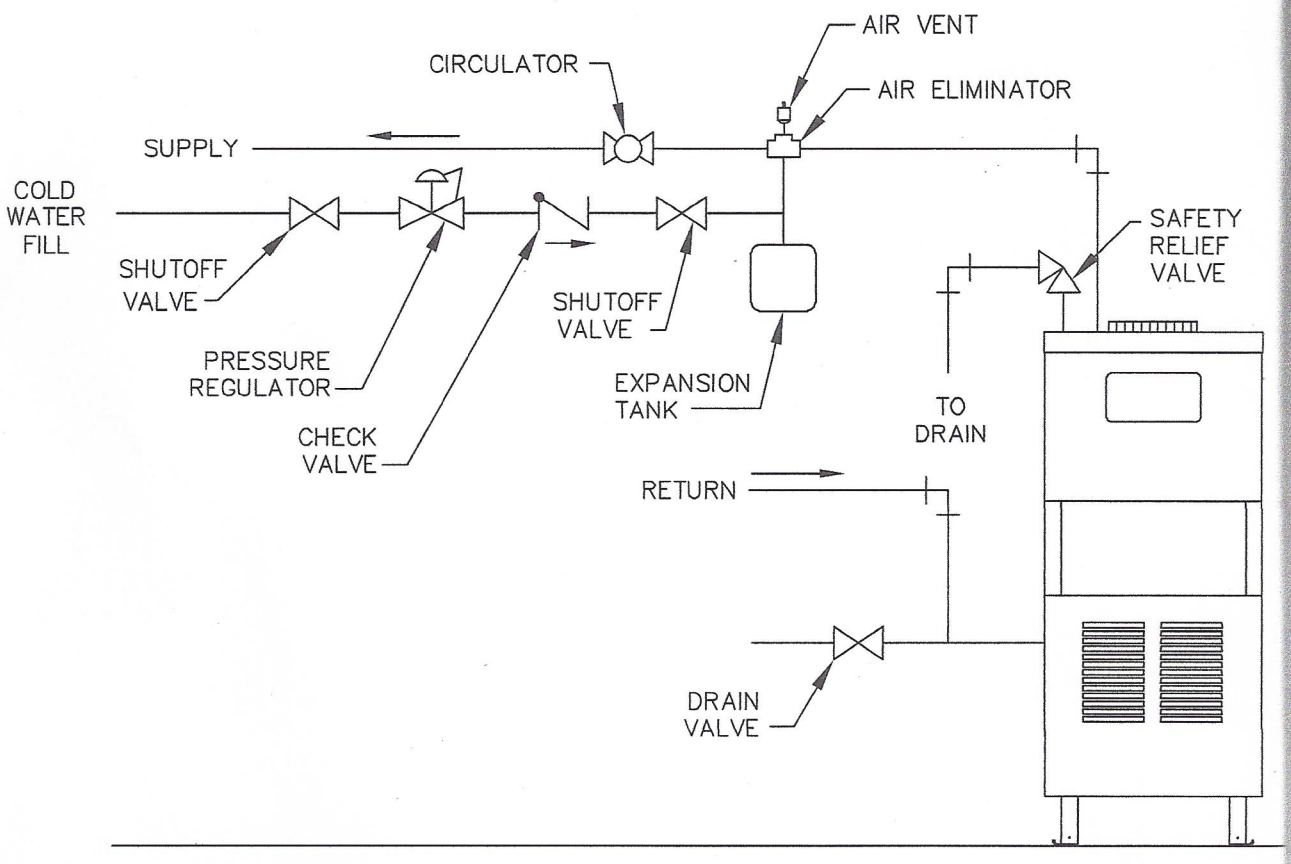


Figure 3.1: Supply and Return Piping

C. VENT PIPING AND CHIMNEY

1. Install vent piping in accordance with Venting of Equipment part of the *National Fuel Gas Code*, ANSI Z223.1/NFPA 54, sections 7.2, 7.3 or 7.4 of CAN/CSA B149.1, *Natural Gas and Propane Installation Code*, or applicable provisions of the local building codes.

2. Inspect the existing chimney and lining for structural soundness, corrosion and perforations. Repair as necessary.

3. Install vent pipe to slope upward at least 1/4" per lineal foot (21 mm per meter) between the draft hood outlet and the chimney.

   Installer le tuyau d'évent avec une pente ascendante minimum de 21 mm au mètre (1/4 po au pied) à la sortie du coupe-tirage et la cheminée.

4. Before connection of joints, inspect the vent pipe interior for foreign objects such as tools, equipment, rags, etc. and remove if present.

5. Insert vent pipe into but not beyond the inside wall of the chimney flue.

6. Do not connect vent connectors serving appliances vented by natural draft into any portion of mechanical draft systems operating under positive pressure.

7. Support horizontal portions of the venting system to prevent sagging by use of metal strapping or equivalent means. Locate supports at no more than 4 foot (1.2 meter) intervals.

   Fournir un support à toute portion horizontale du système d'évacuation à l'aide de courroies de métal ou une méthode équivalente afin de l'empêcher de s'affaisser. Placer les supports à des intervalles ne dépassant pas cent vingt deux (122) centimètres (4 po), ou en suivant les recommandations d' installation du fabricant.

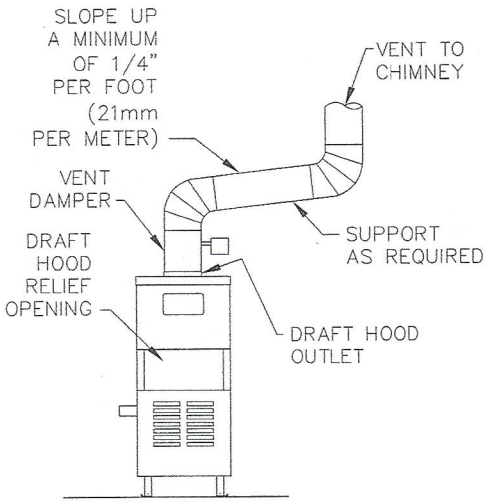


Figure 4.2: Venting with Vent Damper in Vertical Position

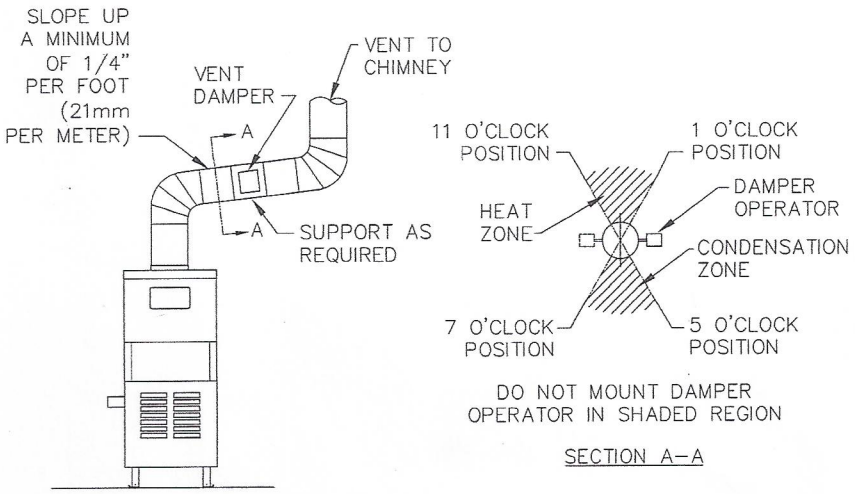


Figure 4.3: Venting with Vent Damper in Horizontal Position

Table 5.1: MI™ Boiler – Natural Gas

Model	Input	
	Cubic Feet / Hour	Cubic Meters / Hour
MI-03	70	2.0
MI-04	105	3.0
MI-05	140	4.0
MI-06	175	5.0
MI-07	195	5.5
MI-08	227.5	6.4
MI-09	260	7.4

Table 5.2: MI™ Boiler – LP Gas

Model	Input	
	Cubic Feet / Hour	Cubic Meters / Hour
MI-03	28	0.8
MI-04	42	1.2
MI-05	56	1.6
MI-06	70	2.0
MI-07	78	2.2
MI-08	91	2.6
MI-09	104	2.9

Table 5.3: MIH II™ Boiler – Natural Gas

Model	Input	
	Cubic Feet / Hour	Cubic Meters / Hour
MIH II-03	65	1.8
MIH II-04	97.5	2.8
MIH II-05	130	3.7
MIH II-06	162.5	4.6

Table 5.4: Pipe Capacity

Capacity of pipe of different diameters and lengths in cubic feet per hour [cubic meter per hour] with a pressure drop of 0.3 inches of water (75 Pa) and specific gravity of 0.60. No allowance for an ordinary number of fittings is required.

Pipe Length in Feet [Meters]	3/4" Pipe	1" Pipe	1-1/4" Pipe	1-1/2" Pipe
10 [3.0]	278 [7.9]	520 [14.7]	1050 [29.7]	1600 [45.3]
20 [6.1]	190 [5.4]	350 [9.9]	730 [20.7]	1100 [31.1]
30 [9.1]	152 [4.3]	285 [8.1]	590 [16.7]	890 [25.2]
40 [12.2]	130 [3.7]	245 [6.9]	500 [14.2]	760 [21.5]
50 [15.2]	115 [3.3]	215 [6.1]	440 [12.5]	670 [19.0]
60 [18.3]	105 [3.0]	195 [5.5]	400 [11.3]	610 [17.3]

Maximum Capacity Correction Factors for Specific Gravity other than 0.60.						
Specific Gravity	**0.50**	**0.55**	**0.60**	**0.65**	**0.70**	**0.75**
Correction Factor	1.10	1.04	1.00	0.96	0.93	0.90
Specific Gravity	**0.80**	**0.85**	**0.90**	**1.00**	**1.10**	**1.20**
Correction Factor	0.87	0.84	0.82	0.78	0.74	0.71
Specific Gravity	**1.30**	**1.40**	**1.50**	**1.60**	**1.70**	**1.80**
Correction Factor	0.68	0.66	0.63	0.61	0.59	0.58