



BARD MANUFACTURING COMPANY
P. O. Box 607
BRYAN, OHIO 43506

MANUFACTURERS OF:
AIR CONDITIONING
HEATING EQUIPMENT

INSTALLATION AND MAINTENANCE INSTRUCTIONS

for

**OIL-FIRED BASEMENT, HI-BOY
AND COUNTERFLOW FURNACES**

FOR YOUR SAFETY

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

Warning: Improper installation, adjustment, alteration, service or maintenance can cause injury or property damage. Refer to the installation instructions provided with the furnace and this manual. For assistance or additional information consult a qualified installer.

INSTALLATION INSTRUCTIONS

Oil-Fired Basement, Hi-Boy & Counterflow Furnaces

IMPORTANT NOTICE

The installation of furnace, wiring, warm air piping, etc. should conform to the requirements of the National Fire Protection Association, National Electric Code, recommendations of the National Environmental Systems Contractors Association, and any State Laws or Local Ordinances. The local authorities having jurisdiction should be consulted before installation is made. Such applicable regulations or requirements take precedence over the general instructions in this manual.

CHIMNEY

Prior to the installation of the unit a thorough inspection of the chimney should be made to determine whether repairs are necessary and that the chimney is of the proper size and constructed in accordance with the requirements of the National Fire Protection Association. The smallest dimensions of the chimney should be at least equal to the diameter of the flue pipe of the furnace. Be sure the chimney will produce a steady draft sufficient to remove all the products of combustion from the furnace.

UNPACKING FURNACE

(All units except 168 & 196 basement model furnaces)

Your oil fired furnace is packed in one carton. The carton contains the entire furnace, assembled and electrically wired at the factory, ready for installation as a unit. Check carefully when removing the carton to see that no small parts or instruction tags are lost or misplaced; also check for concealed damage.

UNPACKING AND ASS'Y OF 168 & 196 BASEMENT MODEL FURNACES

The furnace is supplied in two packages; one containing the heating compartment and one containing the blower compartment.

Unpack both compartments and locate the heating compartment in its permanent position in the basement. Remove six (6) 1/4" bolts located in the connecting collar on the heat exchanger.

Remove the (2) shipping brackets from the blower compartment by removing eight (8) sheet metal screws. Position the blower compartment behind the heating compartment, align the slip joints between the side panels and bring the two compartments together. Align the flue tube with the heat exchanger connecting collar and bolt together using six (6) 1/4" bolts removed previously. Holes are provided in the matching surfaces of the side

panels to fasten the two compartments together with sheet metal screws.

To complete the assembly, remove the cover plate on the motor, connect the wires to the motor terminals and replace cover. A clamp is provided on the blower housing to support the wires.

Attach the flue pipe to the flue tube and the installation may now be completed in the usual manner.

LOCATION

The compact design of this furnace makes it ideal for a basement or utility room installation. Choose a location for the furnace as centrally located as possible so that warm air pipes to the rooms are nearly the same length. This will allow each room to receive the proper amount of heat. The furnace should also be placed so that the flue pipe connection to the chimney will be a minimum length and have a minimum number of elbows.

NOTE It is very important that the furnace be exactly level. The time spent leveling the furnace when beginning the installation will be more than saved in labor operations since a level unit is necessary for proper fitting of parts. After the furnace has been placed on its foundation, use a carpenter's level and check it at least two directions. If the furnace is not level, place fireproof wedges or shims between the low side of the furnace and the floor. Check again with the level. Also, be sure the weight of the unit is distributed evenly on all four corners. If the weight is not distributed evenly, it will throw a strain on the side of the cabinet and may cause cracking and popping noises in the cabinet.

MINIMUM CLEARANCES The unit must be installed no closer to combustible material than shown in the following table.

In utility rooms or similar installations, the door or access opening shall be large enough to permit replacement of the furnace or another appliance such as a hot water heater, without disturbing any other equipment except the one in question.

WHEN ACCESSIBILITY CLEARANCES ARE GREATER THAN FIRE PROTECTION CLEARANCES, THE ACCESSIBILITY CLEARANCES TAKE PRECEDENCE.

AIR CONDITIONING: — When summer air conditioning is used with the furnace, the furnace shall be installed parallel with or on the upstream side of the evaporator coil. With the parallel flow arrangement, dampers or other means used to control flow of air shall be adequate to prevent chilled air from entering the furnace. And if manually operated, must be equipped with means to prevent operation of either unit unless the damper is in the full heat or cool position.

	Basement Type 84/95	Basement Type 112/125	Basement Type 140/168/196	Hi-Boy Type 84/95	Hi-Boy Type 112/125	Down- Flow 84/95	Down- Flow 112/125
Top of Plenum and duct work	2"	2"	2"	2"	2"	1"	1"
Plenum Sides	6"	6"	6"	3"	3"	2"	2"
Furnace Sides	6"	6"	6"	2"	2"	2"	2"
Furnace Rear	24"	24"	24"	1"	1"	2"	2"
From Front Door	24"	24"	24"	8"	8"	8"	8"
Flue Pipe** Measured Above	9"	9"	18"	9"	15"	9"	9"
Flue Pipe Measured Vertically	13"	15"	18"	9"	11"	9"	11"
Type of Floor	Non. Comb.	Non. Comb.	Non. Comb.	Comb.	Comb.	Non.† Comb.	Non.† Comb.
Combustion Air Openings-2 Req'd	10 x 20	11 x 22	20 x 40	10 x 20	11 x 22	10 x 20	11 x 22

*A passage, suitable for a large person, shall be provided to the furnace and chimney; the latter for inspection or replacement of the flue connector when necessary. A clearance of 24" shall be allowed at rear and on one side of furnace for service and cleaning of blower.

**Minimum clearance shown to flue pipe may be reduced by using special protection as provided by local building codes and National Fire Protection Association Standards.

†When installing counterflow unit on combustible flooring a sub-base must be used. See. Figure 1 for size of cutout in floor.

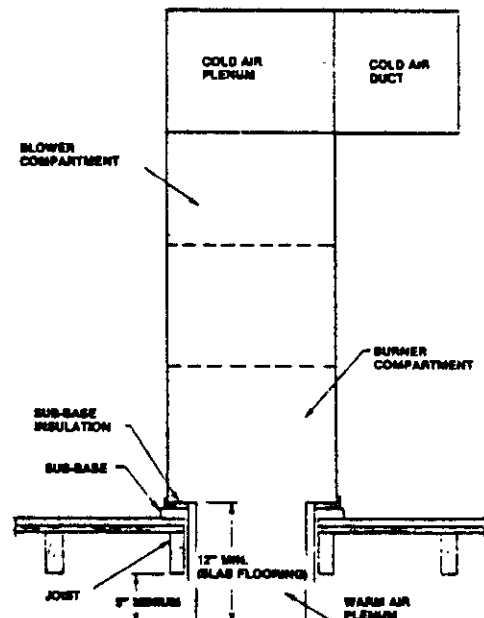
AIR REQUIREMENTS — IMPORTANT

In confined spaces such as utility rooms, provide two openings, see Min. clearance. One opening is to be below the burner level and the other at top of room. The upper opening should not be more than 6" below the ceiling of the room.

An opening to the outside for combustion air is strongly recommended especially in new homes. Provide a minimum free area of one-half square inch per 1,000 BTU per hour input. This combustion air should be brought into the furnace room at a level below the burner.

BURNER

The burner and combustion chamber are installed at the factory. The burner has a fixed location in the furnace and need not be changed.



MODEL SIZE (DOWNFLOW)	COLD AIR DUCT SIZE	WARM AIR PLENUM SIZE	SIZE HOLE IN FLOOR (WOOD)	SIZE HOLE IN FLOOR (GLASS)
84/95	18" X 18"	16 X 16	20 1/4 X 20 1/4	18 X 18
112/125	18" X 22"	20 X 20	24 1/4 X 24 1/4	20 X 20

FIGURE 1

WIRING THE FURNACE

The unit is completely wired at the factory in accordance with the National Electrical Code and Underwriters Laboratories and should conform to all local codes. Connect the 115 volt, single phase service to the unit at the junction box. It is recommended that a separate circuit be taken from the main service box, with a separate fused switch, direct to the unit. Follow carefully, wiring diagram found adhered to inside of blower compartment door.

WARM AIR PLENUM BASEMENT AND HI-BOY FURNACES

Install warm air plenum of correct size to fit over the flanges surrounding the warm air opening in the top of the furnace. It must be of sufficient height to conform with local codes. Be sure to check clearance tables for proper distances from top of plenum to adjacent combustible surfaces of the building.

RETURN AIR TO BASEMENT TYPE AND COUNTERFLOW FURNACES

Return air to the furnace must enter the top of the furnace. A return air plenum of adequate size may be attached to the flanges around the return air opening of the furnace. In confined spaces such as utility rooms where there is no return duct system, a return air connection must be run full size to the location outside the room.

RETURN AIR TO HI-BOY FURNACE

When the return air is to enter either side of the furnace, bend out one of the lanced (partly cut) corners on the side of the cabinet to be used. From this opening cut out complete lanced opening. To this opening attach duct or return air drop to side of furnace and be sure (duct is wide enough) not to place sheet metal screws so as to interfere with vertical filter in furnace. Use at least an 8 inch vertical duct the width of the opening in the furnace or a "Return Air Drop" (Accessory).

THERMOSTAT

Locate the thermostat on an inside wall in the room usually occupied during the day such as a living room or dining room at a height of 4½ feet from the floor. Avoid direct sunlight, or supply air from a register. Make sure location is not adjacent to appliances such as oven or lights.

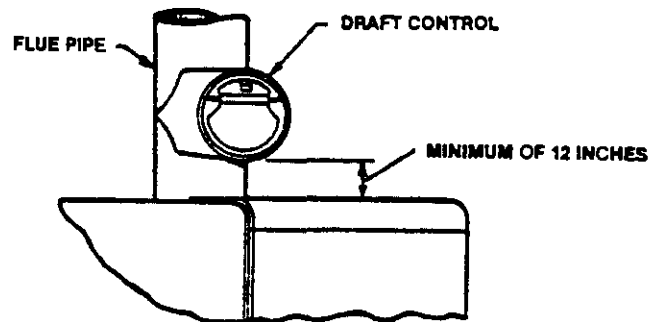
Wire the thermostat with #18 AWG thermostat wire.

SMOKE PIPE AND DRAFT CONTROL

Connect furnace vent to chimney with 24 gauge (or heavier) galvanized smoke pipe and fittings, maintaining full diameter of furnace vent throughout. Do not reduce in size. It is desirable to have smoke pipe as short and direct as possible.

The flue pipe is to maintain a rise of at least 1" per foot. Install the draft control at least 12 inches beyond the furnace. If there is no space to install the draft control in the smoke pipe, it may be placed in the chimney above the smoke pipe. Follow instructions packed with control.

For counterflow furnaces see Figure 2.



DRAFT CONTROL INSTALLATION

See draft control to obtain .03 to .04 inches of draft at the furnace outlet. This will be a satisfactory setting in most cases.

SERVICE AND MAINTENANCE

BLOWER (Belt Drive Blower Motor only)

Lubrication is recommended at least once during each heating season. Use clean high grade automobile oil SAE No. 20 oil in the blower motor bearings. When these bearing are properly lubricated they will last indefinitely. DO NOT OVER OIL MOTOR. More motors are ruined by over oiling than under oiling. Direct drive blower and blower bearings are lifetime, oilless bearings and need no oil. When furnace is first installed or blower squeaks place one drop of oil on shaft at each end of bearings.

For cleaning and servicing blower, the blower assembly may be removed from cabinet.

FILTER

The unit may contain either a disposable filter or a permanent filter. If a disposable filter is provided, replace with a filter with the same size as removed. If a permanent filter is provided, clean filter and replace. To clean permanent filter, shake filter to remove excess dirt and/or use a vacuum cleaner. Wash filter in soapy or detergent water and replace after filter is dry. Permanent filters supplied need not be oiled after washing. Examine filter label for any special instructions that may apply.

Filter should be cleaned or replaced at least once a month or more frequently if unusual dusty conditions are encountered.

UNDER NO CIRCUMSTANCES SHOULD THE ACCESS PANELS TO THE BLOWER COMPARTMENT BE LEFT OFF OR LEFT PARTIALLY OPEN.

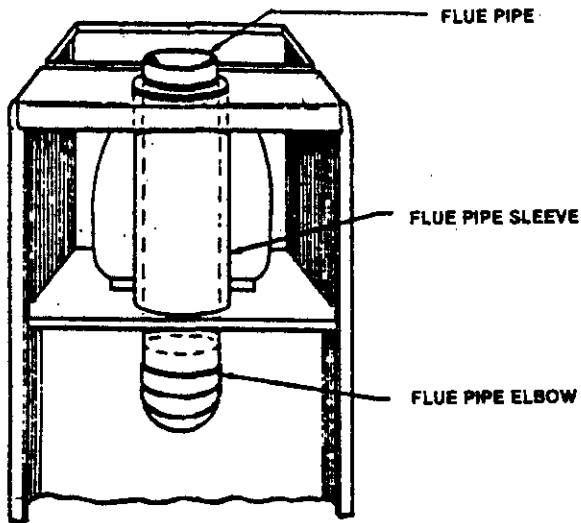


FIGURE 2

FLUE PIPE INSTALLATION

The field installed flue pipe must extend through the flue pipe sleeve and connect to the flue pipe elbow on the furnace.

FOR FILTERS IN RETURN AIR DROP — SEE INSTRUCTIONS ON DOOR

CLEANING HEAT EXCHANGER

1. Remove vent pipe and sheet metal screws around flue elbow.
2. Remove elbow.
3. Clean heat exchanger through vent pipe opening and observation door.
4. **DO NOT USE** wire brush or vacuum cleaner in combustion chamber. **DO NOT ATTEMPT TO CLEAN OUT COMBUSTION CHAMBER.** The flexible ceramic combustion chamber is easily damaged, do not attempt to clean this part of the heat exchanger.

These furnaces come equipped from the factory with oil burner nozzle for the maximum BTU/HR output.

To reduce the BTU/HR output, remove the oil burner, remove nozzle from burner, install the size nozzle indicated in the following Table and install the oil burner into furnace.

FURNACE MODEL	OUTPUT BTU/HR	NOZZLE SIZE (U.S.) G.P.H.	NOZZLE SPRAY ANGLE	NOZZLE PATTERN
Basement Type 95	84,000	.75	80°	Solid
Basement Type 125	111,000	1.00	80°	Solid
Basement Type 196	166,000	1.50	70°	Solid
Hi-Boy Type 95	85,000	.75	80°	Solid
Hi-Boy Type 125	112,000	1.00	80°	Solid
Downflow Type 95	85,000	.75	80°	Solid
Downflow Type 125	111,000	1.00	80°	Solid

37116E086