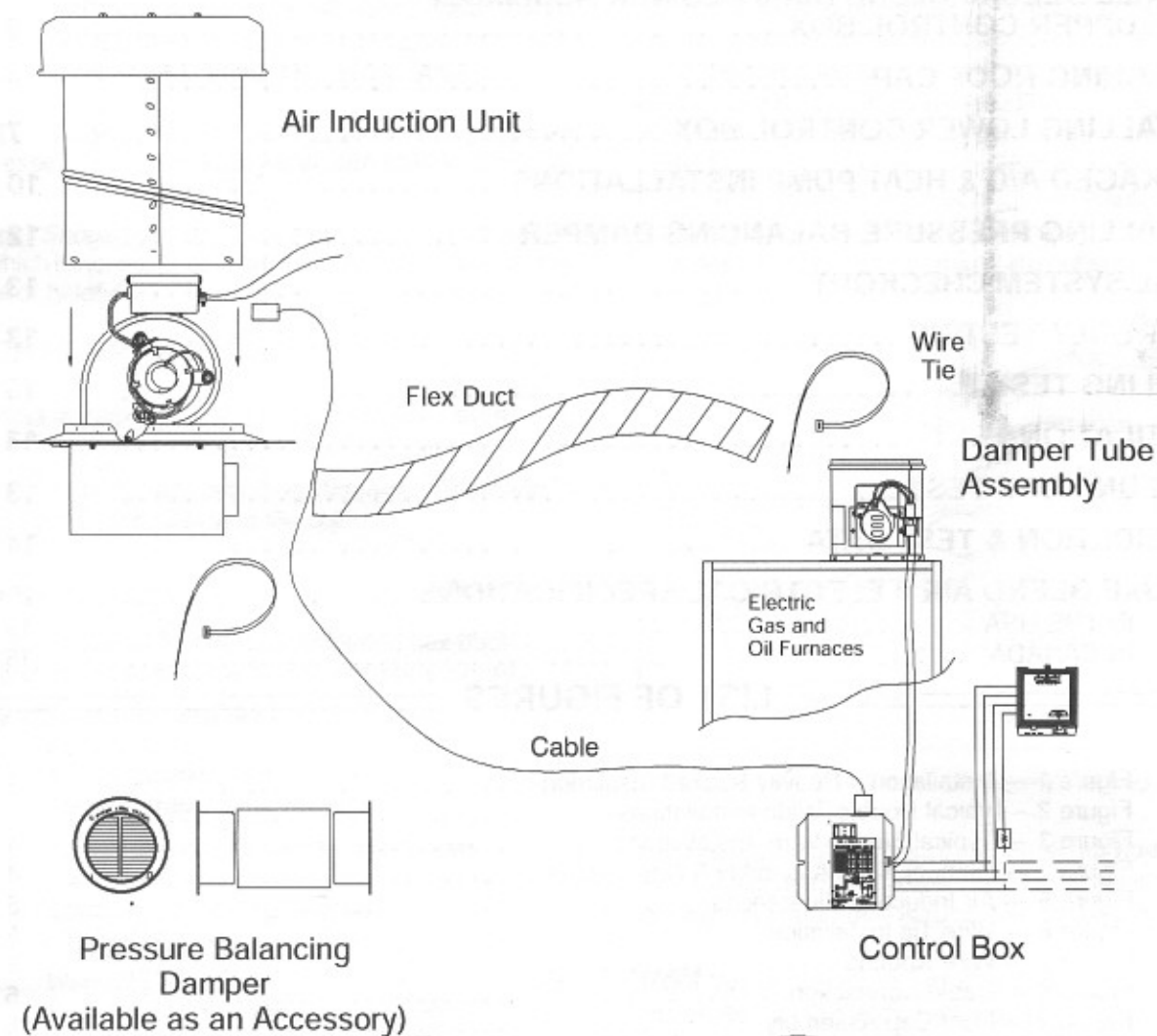


# INSTALLATION INSTRUCTIONS

## 7681-8171/B DELUXE BLEND AIR II™ BLOWER & CONTROL PACKAGE



AND



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## IMPORTANT NOTICE

These instructions are intended for the use of qualified individuals specially trained and experienced in installation of this type of equipment and related system components.

Installation and service personnel are required by some states to be licensed.

**Persons not qualified shall not install this equipment or interpret these instructions.**

## WARNING

**IMPROPER INSTALLATION OR SERVICE MAY DAMAGE EQUIPMENT, CAN CREATE A HAZARD OF ASPHYXIAATION AND WILL VOID THE WARRANTY.**

**NOTE:** The words "Shall" or "Must" indicate a requirement which is essential to satisfactory and safe product performance.

The words "Should" or "May" indicate a recommendation or advice which is not essential and not required but which may be useful or helpful.

## CONTENTS OF PACKAGE

This product is packaged for two systems per carton.

Inspect the parts for any shipping damage. If damage is found, notify freight carrier and file claim.

The package contains the following parts: See **Note**.

- a. 25' section of 5" diameter insulated flex duct.  
(cut in half to provide 12 1/2 feet per system).
- b. 2 - Small parts envelope each containing:  
6 screws,  
1 snap bushing and  
1 wire clamp
- c. 2 - Deluxe Blend Air II blower with crown,  
screen assembly and  
envelope containing 4 screws.
- d. 2 - Packet containing:  
Warranty Cert.,  
Operating Instructions,  
Installation Instructions and  
Customer Registration Card
- e. 2 - Damper tube assembly
- f. 4 - Plastic duct connector straps
- g. 2 - Deluxe Blend Air II control

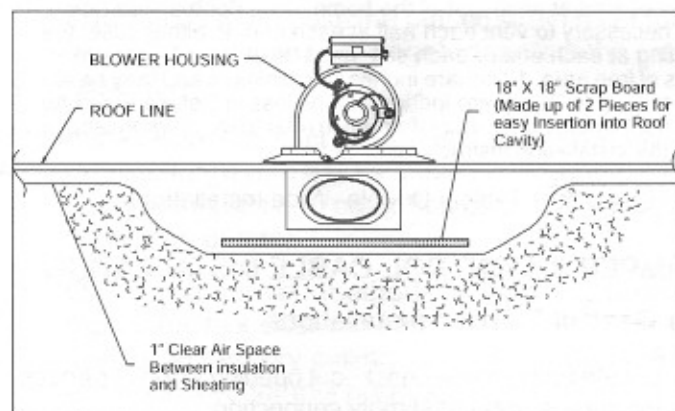
**NOTE:** These systems are serialized and must have the proper warranty registration information sent with each home.

## APPLICATION

All parts required to complete the Deluxe Blend Air II installation are included in this package. The Deluxe Blend Air II system is listed for use on EVCON manufactured housing furnaces. The furnaces are to be equipped with Air Conditioning control or with appropriate Air Conditioning control accessories installed. The Deluxe Blend Air II system is powered by 120 VAC. The only electrical connections between the Deluxe Blend Air II and the furnace are made at the thermostat wire connection, usually located in the upper furnace compartment.

## ATTIC VENTILATION

The Deluxe Blend Air II will automatically provide fresh air to the living space and to the attic space. The attic must be vented to the outside at each end of the home or under the eaves, for proper air exchange. This venting must have a minimum of 35 square inches of free open area at each end of the home. See Figure 2. Insure that vents cannot be obstructed by loose fiberglass or blown insulation. For optimum operation, a 1" minimum clear space throughout the attic is required for air to communicate between ends and front to back.



**Figure 1 — Installation of Heavily Packed Insulation**

For heavily packed insulation, use scrap boards (2 of 9" x 18") underneath the blower housing. This is necessary for blower to provide unobstructed air to the attic space.

Roof vents shown in Figures 2 & 3 should be located as close to the sidewall eaves as possible. These vents should also be less than one foot inward from the endwall.

Under no circumstances should the roof vents be higher than 1/3<sup>rd</sup> from the sidewall eaves.

## IMPORTANT

**Failure to comply may result in ice damming of the roof.**

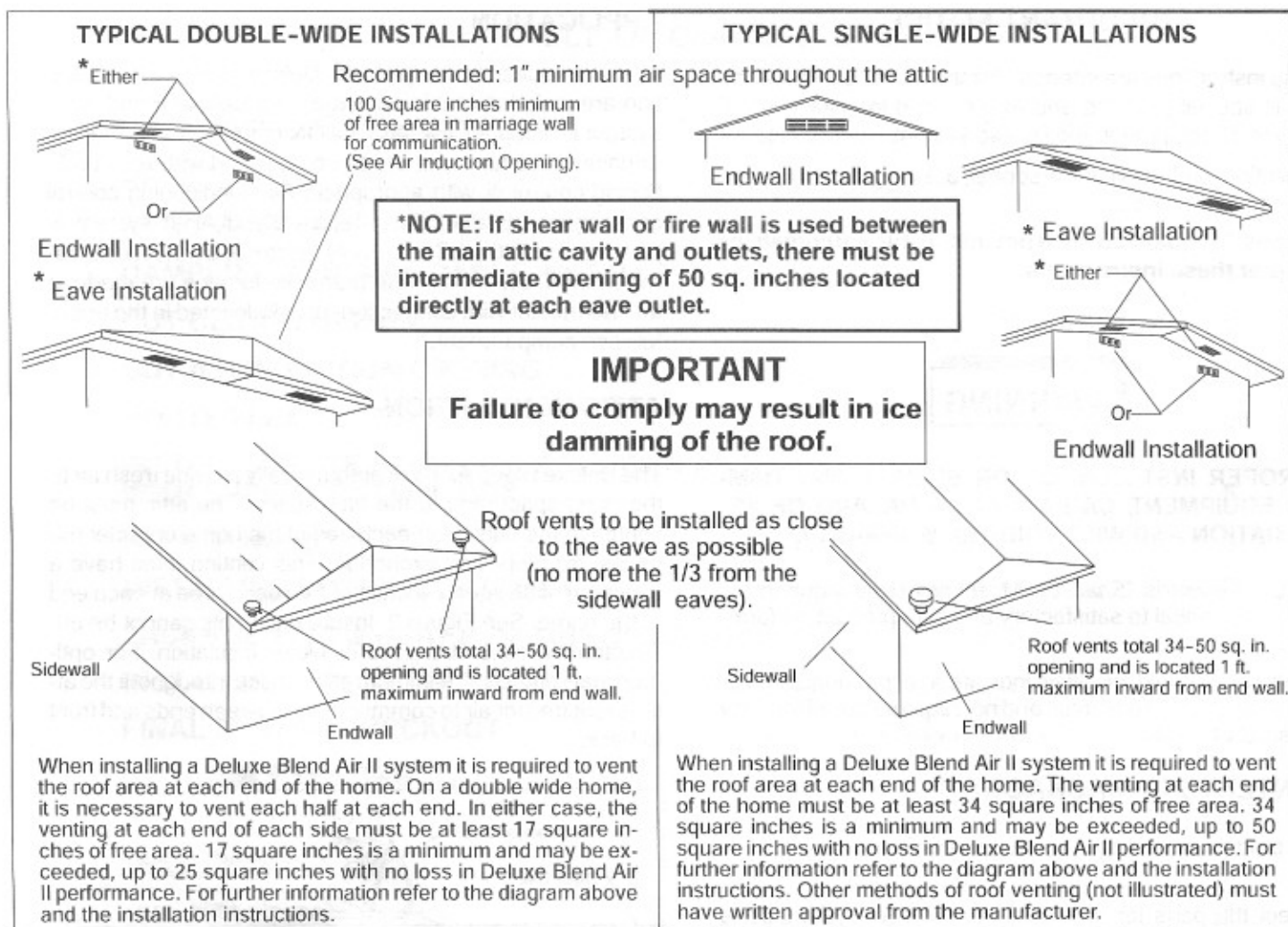


Figure 2 — Typical Double-Wide Installations

Figure 3 — Typical Single-Wide Installations

## DAMPER & CONTROL CABLE INSTALLATION

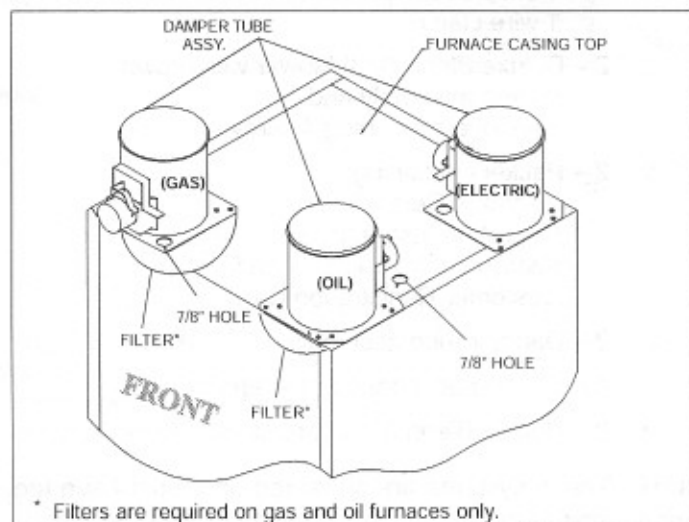
### For Gas/Oil Furnace Installations

1. Locate and remove knock-out opening in top of furnace for damper tube assembly connection.
2. Locate and remove the 7/8" diameter knock-out in the top of the furnace.
3. Mount the damper tube assembly (using screws provided). A minimum of three screws should be used to provide a secure connection. See Figure 4.
4. A plastic strain relief is supplied in the small parts package and is to be used to route the 4 wire cable and the damper motor cable through the raw 7/8" hole.
5. Install the filter under the damper tube using the three tabs to hold it in place. Filters can be ordered from accessory P/N 7681-3331 a package of fifty (50).

### For Electric Furnace Installations

1. Mount the damper tube assembly in the rear and right hand side corner.

**NOTE:** A filter is not required when installing the Blend Air with an electric furnace.



\* Filters are required on gas and oil furnaces only.

Figure 4 — Damper Tube Assembly & Knock-outs

## CUT CEILING OPENING

### WARNING

Disconnect all electrical power to the mobile home at the main electrical panel before cutting into the roof and ceiling cavity.

Contact with hot electrical wires could cause equipment damage, fire, personal injury or death.

When cutting into roof and ceiling area extreme care should be taken not to damage any electrical wiring that may be hidden underneath the roof or behind the ceiling.

If alternate source of power is not available, use battery powered or hand tools to cut openings.

An opening in the ceiling must be cut to accommodate the flex duct and control wiring harness.

1. Scribe a 6-7" dia. circle in the ceiling approximately centered above the damper tube assembly. The ceiling hole location may have to be adjusted to miss ceiling joist or other obstructions in the roof cavity.
2. Once the location has been selected, cut the opening in the ceiling.

**NOTE:** If the Deluxe Blend Air II system is being installed during the construction of the home, avoid dropping sawdust, wood particles or insulation on top of the furnace. The operation of gas and oil furnaces can be affected by contamination within the roof jack openings.

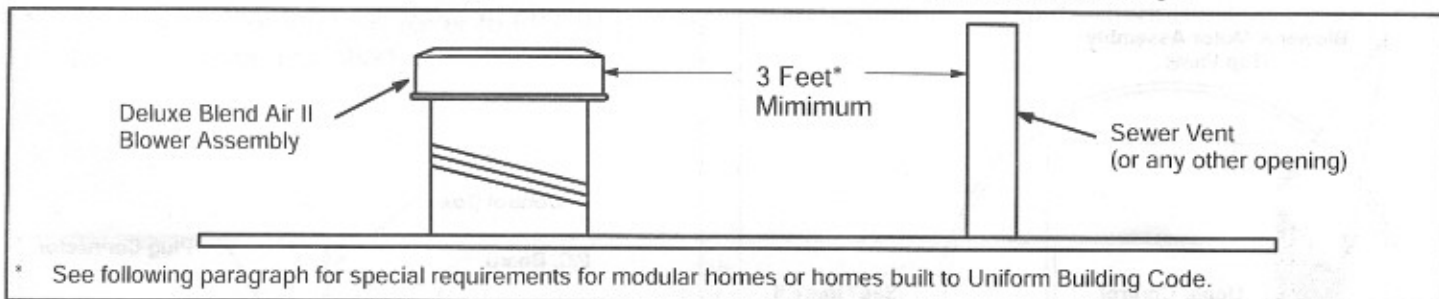


Figure 5 — Air Induction Clearances

## CUT AIR INDUCTION OPENING

1. Homes built in accordance with H.U.D. standards: H.U.D. requires that the fresh air intakes on the roof are located at least three (3) feet away from any roof opening, i.e., roof jack, sewer vent, bathroom exhaust, etc.
2. For optimum operation, the induction opening is recommended to be located no less than 1/3 length of the house toward centers. However, the air delivery requirement is still met if placed less than the recommended.

**NOTE:** For double wide models with continuous sheathing between the marriage wall, Air Induction should be located so that one end of air outlet expels air toward the minimum 100 square inches opening.

The opening should be located between rafters and away from the bedroom below.

3. Mark the selected location. Cut an 11 inch diameter hole through the roof and into the roof cavity.

## ROUTE FLEX DUCT AND CONTROL CABLE

1. Route the flex duct from the opening in the roof, through the attic area, into the furnace compartment, passing through the 6-7" diameter opening in the ceiling.
2. Route the low voltage control cable in the same fashion. Pass control cable through the 7/8" hole

in furnace top and use the plastic strain relief (provided in small parts package) to protect the cable assembly.

3. Install inner flex duct to damper tube assembly using one large wire tie, as shown in Figure 6. Pull down insulation and outer flex duct. (Avoid over-tightening of strap.)
4. Observe approved methods of fire-stop requirements for flex duct where it passes through the ceiling. Accessory ceiling rings (P/N 7660-2841) are approved for this purpose.

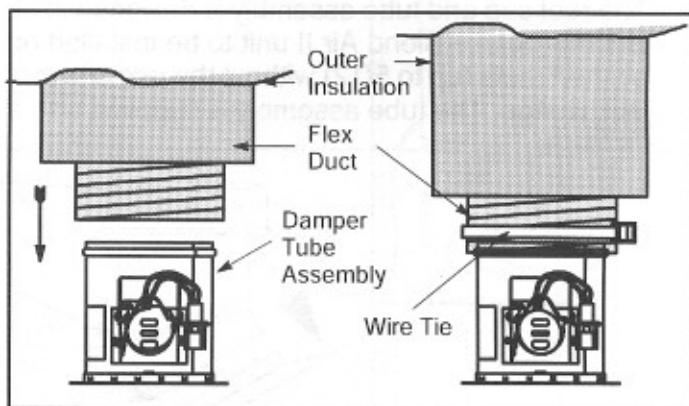


Figure 6 — Wire Tie Installation

## INSTALL DELUXE BLEND AIR II BLOWER ASSEMBLY with UPPER CONTROL BOX

1. Route flex duct up through hole in roof. Attach to 5" oval flange provided on blower air box. Use large wire tie to secure inner flex duct to flange.
2. Route low voltage control cable through hole provided in roof flange, as shown in FIGURE 7. Insure the control cable is plugged into upper control box as shown in FIGURE 8.
3. Remove cover of field wiring box. Route high voltage wiring through strain relief, provided in bottom of field wiring box. Cut and strip proper length of

wire and tighten strain relief to clamp cable in place.

**NOTE:** The electrical supply can either come directly from the breaker box or be tapped from a non-switched lighting, appliance, or wall outlet circuit. Properly size all wiring and circuit overload protectors. See H.U.D. guide for further details.

4. Make electrical connections using proper wire connectors (wire nuts). **This system must be grounded**, using the green headed screw in wire box.
5. Caulk under roof flange of blower assembly. Attach unit to the roof using screw holes in flange.

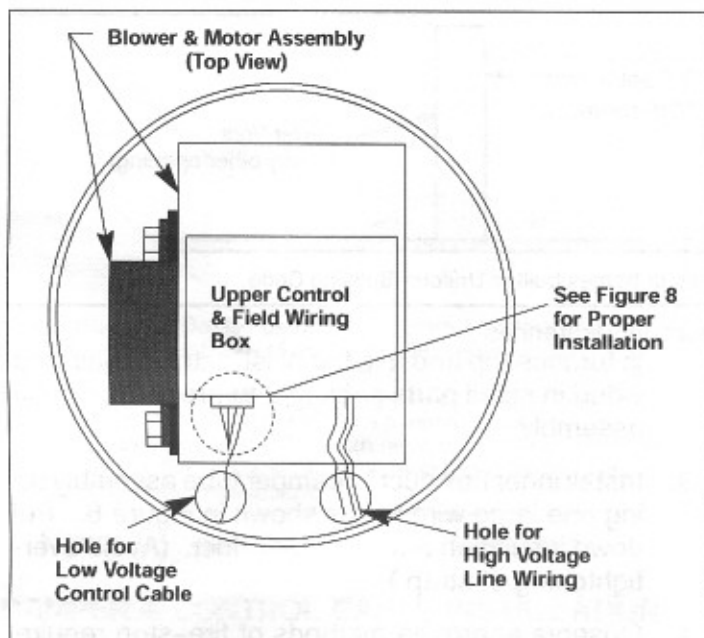


Figure 7 - Wiring Route

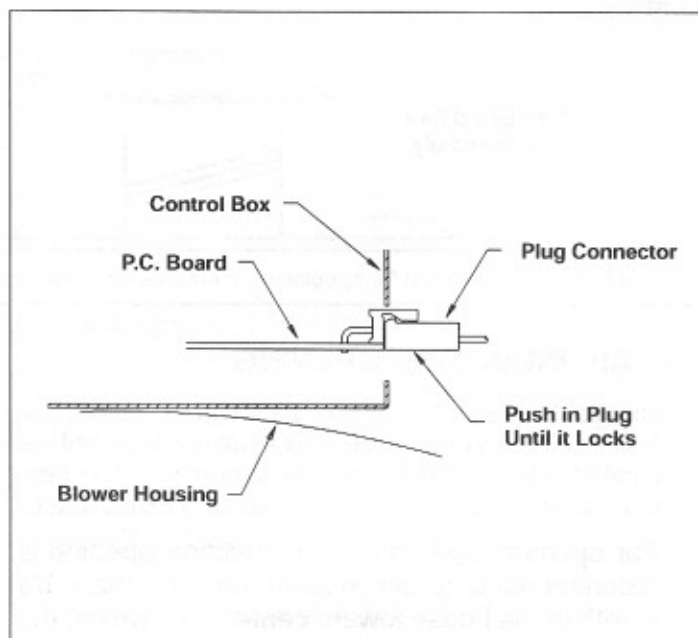


Figure 8 - Cable Connection

## ATTACHING ROOF CAP

1. The roof cap and tube assembly is designed to allow the Deluxe Blend Air II unit to be installed on pitched roofs (up to 5/12) without the use of a roof jack wedge. The tube assembly is supplied with a

swivel joint. For proper alignment, simply twist the tube until the cap is horizontal.

2. Attach the roof cap and tube assembly to the roof flange, using the three sheet-metal screws provided. See FIGURE 9.

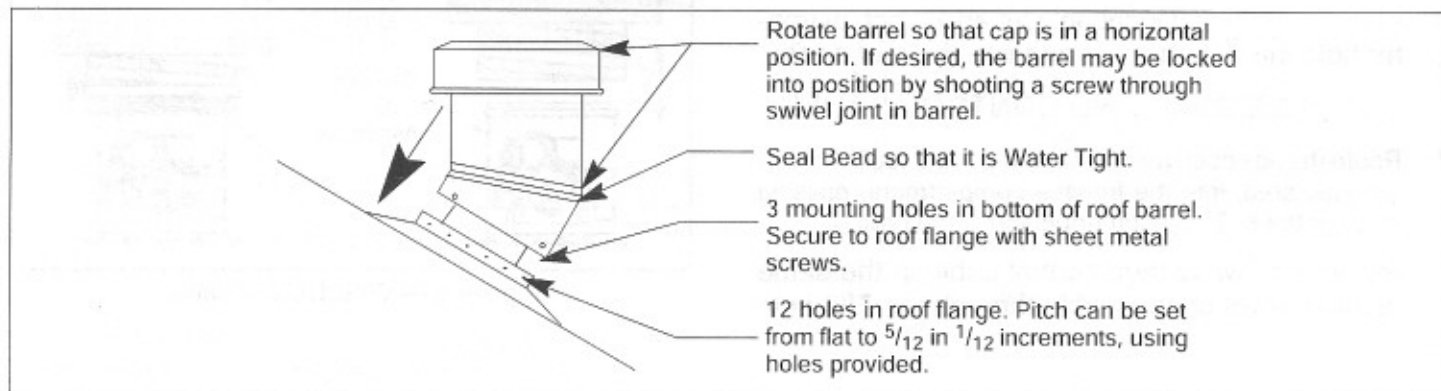


Figure 9 - Roof Cap Assembly

## INSTALLING LOWER CONTROL BOX

### WARNING

The main power to furnace must be disconnected prior to installing the Deluxe Blend Air II control box against the blower compartment.

The lower control box must be installed on the furnace in an area that does not expose the homeowner to live electrical parts when attempting to operate the control switches.

1. Install lower control box. Refer to FIGURE 10 for proper mounting location.

**NOTE:** If a Hi-Pot Test (dielectric withstand test) is to be performed, DO NOT continue to the next step until the test is completed. Insure the control cable connector is disconnected from the lower control board before subjecting the system to a Hi-Pot test.

2. Plug the control cable into the lower control box. (See Figure 11.)
3. The Deluxe Blend Air II wires (red, white, green and black) connect with the furnace thermostat wires. See Figures 12, 14, and 17.

### WARNING

Do not attempt to connect the wires from the lower control to any high voltage wiring. The lower control wires are for connection to the thermostat wires only.

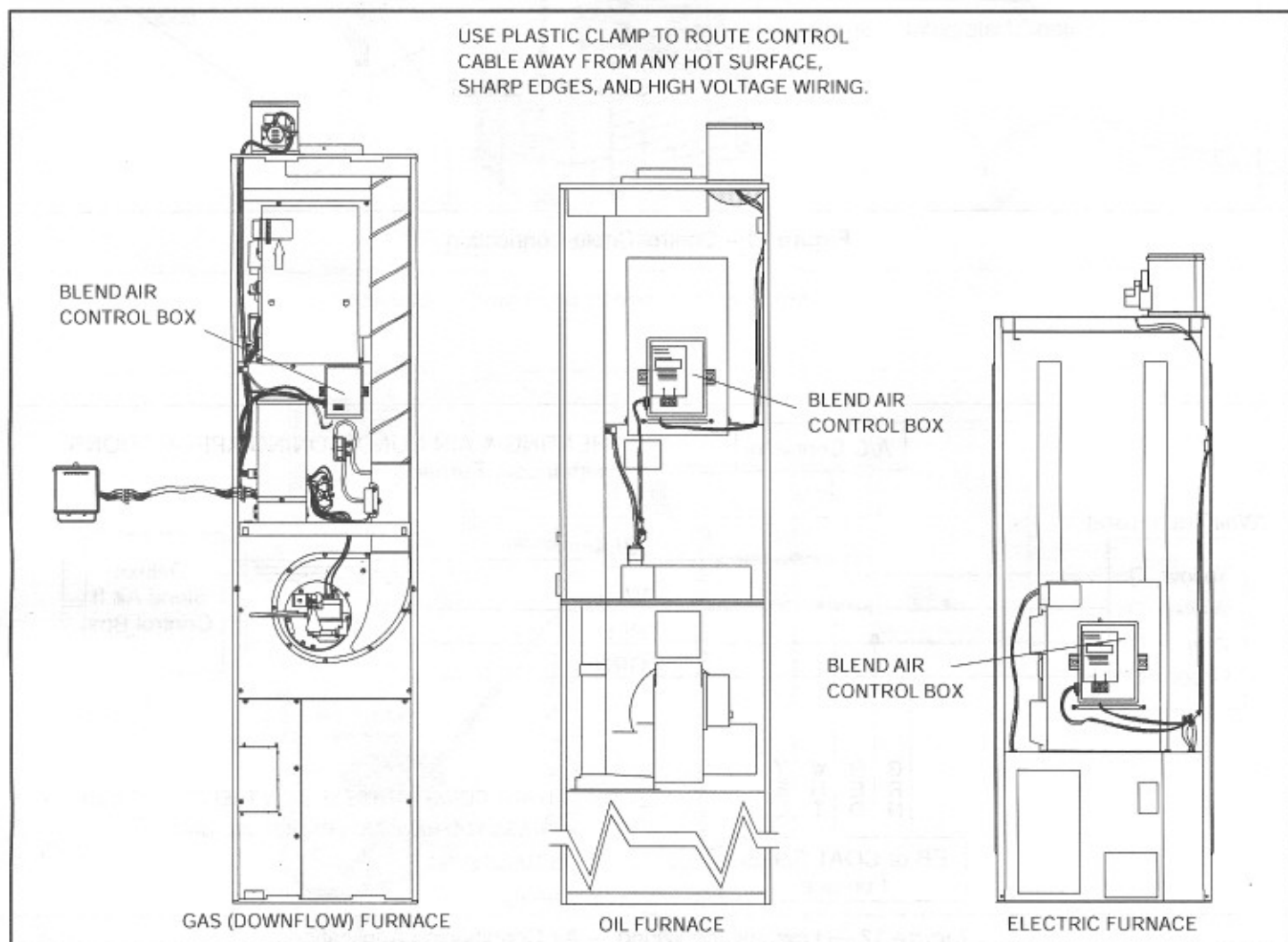


Figure 10 - Control Box Locations

The control cable must be plugged into the control box with the marker on the edge connector facing the installer and the red wire on the right side.

**WARNING**

DO NOT ATTEMPT TO CONNECT THE PLUG IN ANY OTHER WAY, THE BLEND AIR WILL NOT WORK AND THE ALARM WILL SOUND.

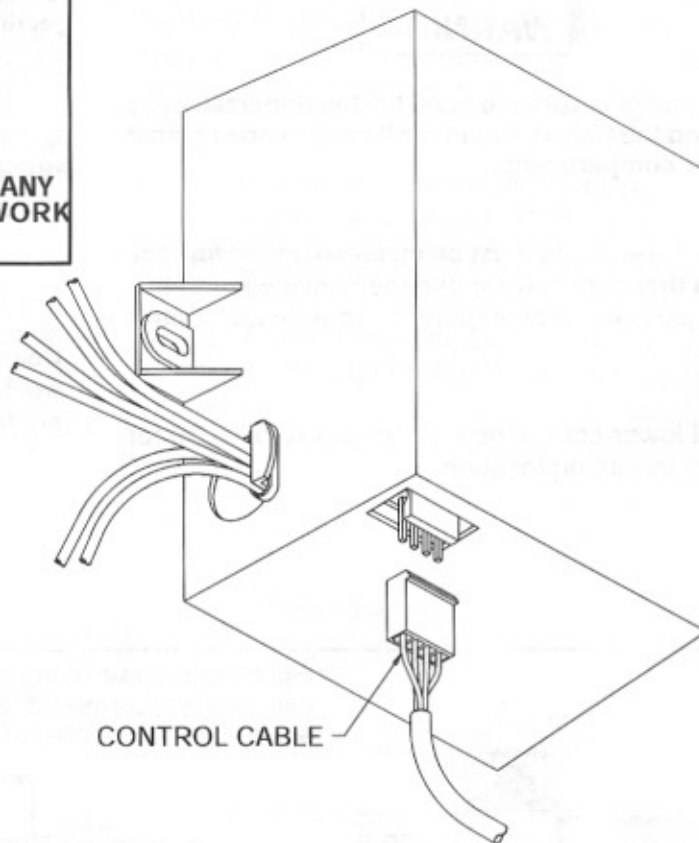


Figure 11 - Control Cable Connection

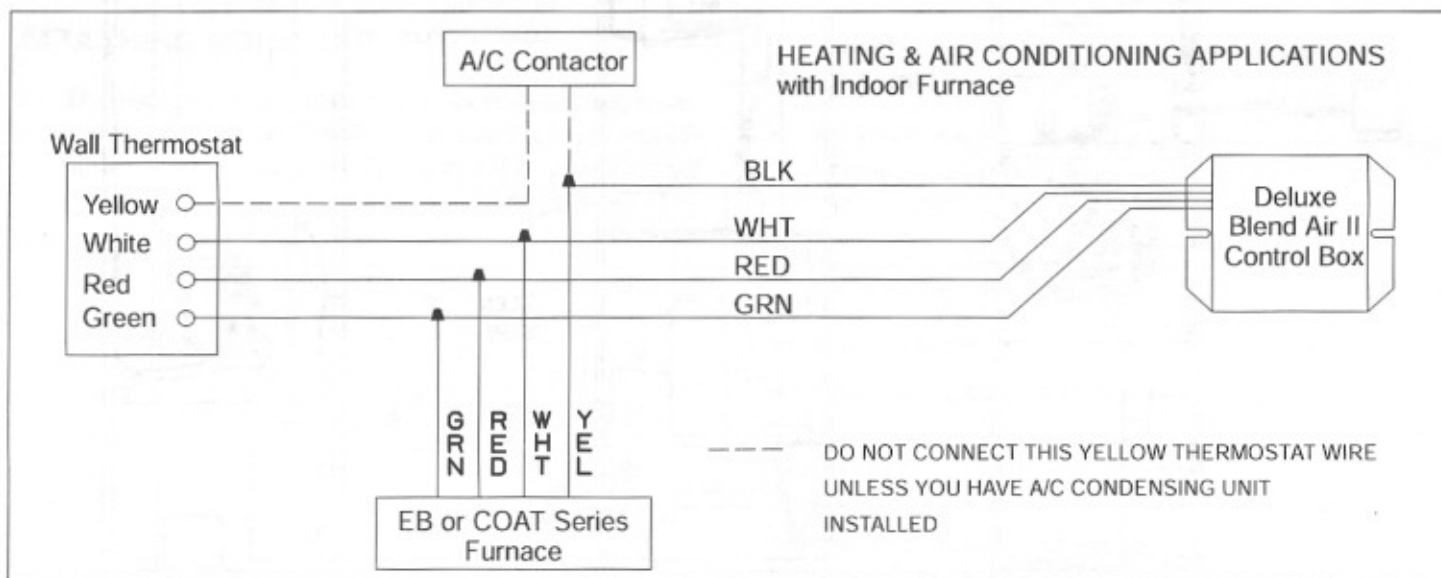


Figure 12 — Low Voltage Wiring — Air Conditioning Applications

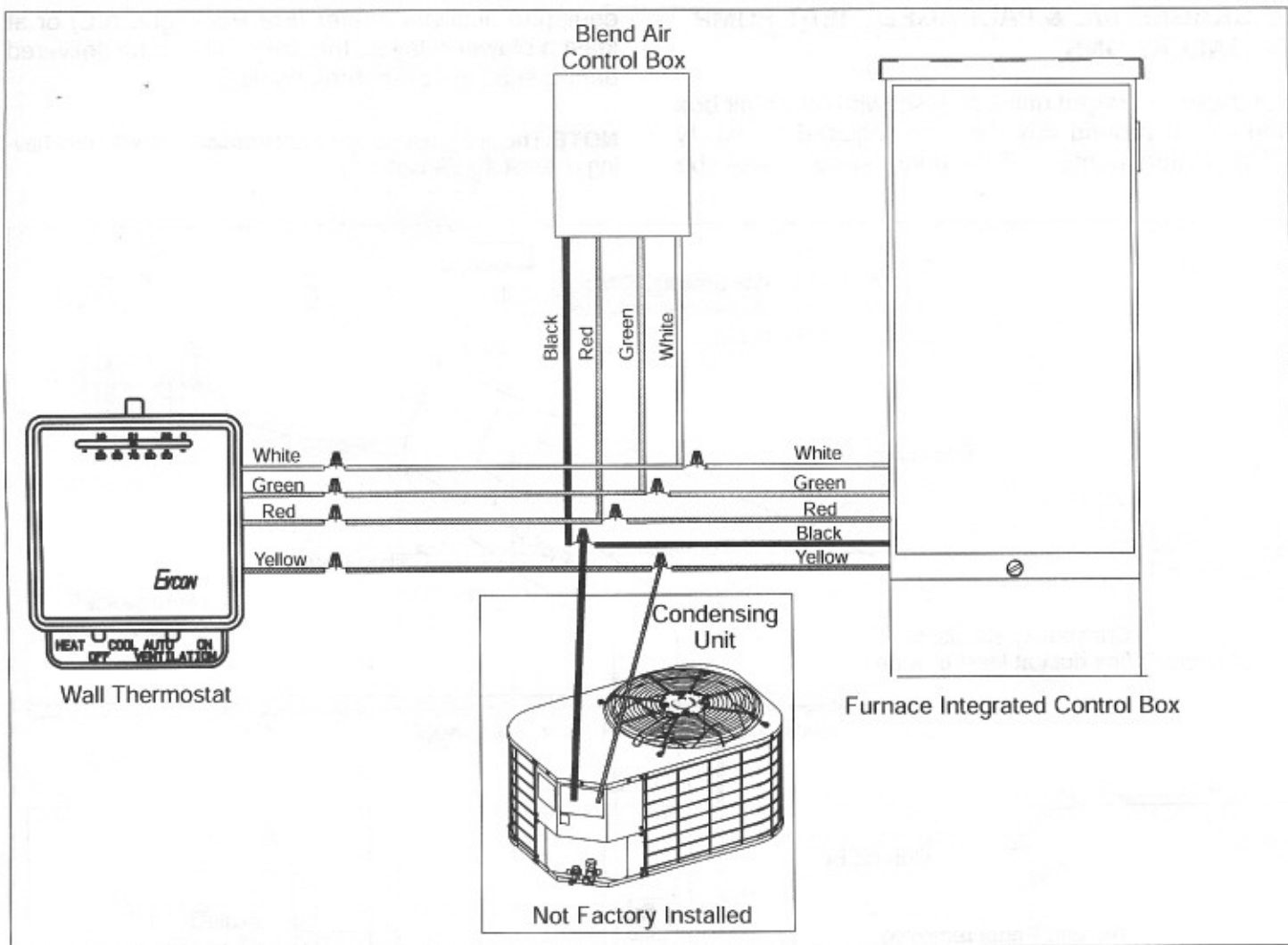


Figure13 - Thermostat Wiring for Gas Furnaces

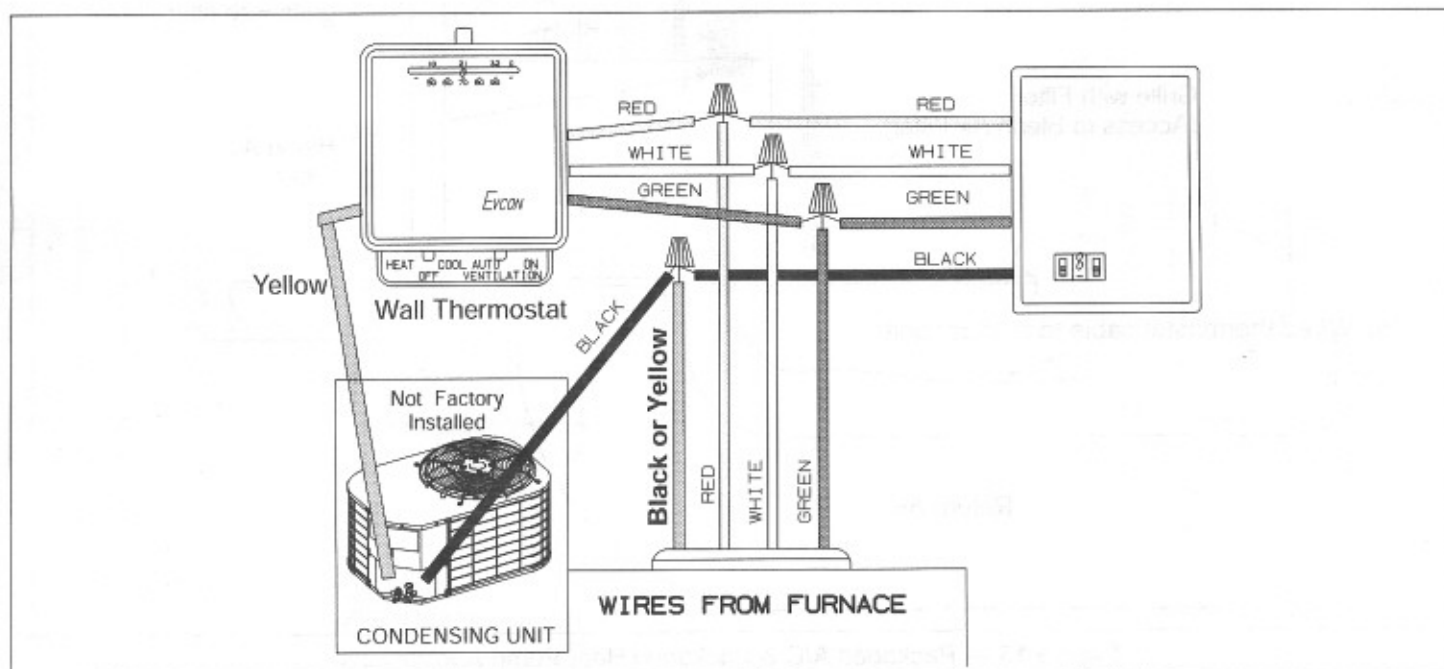


Figure 14 - Thermostat Wiring for EB Electric Series and COAT Oil Gun Series

## PACKAGED A/C & PACKAGED HEAT PUMP INSTALLATIONS

For these packaged units, a closet with return air box and chase around flex duct are required to satisfy CFM requirements. The units should also be

equipped auxiliary heater (For Packaged A/C) or at least a blower relay so that fresh air can be delivered during seasons other than cooling.

**NOTE:** The unit must be operated from one transformer having at least 40 VA capacity.

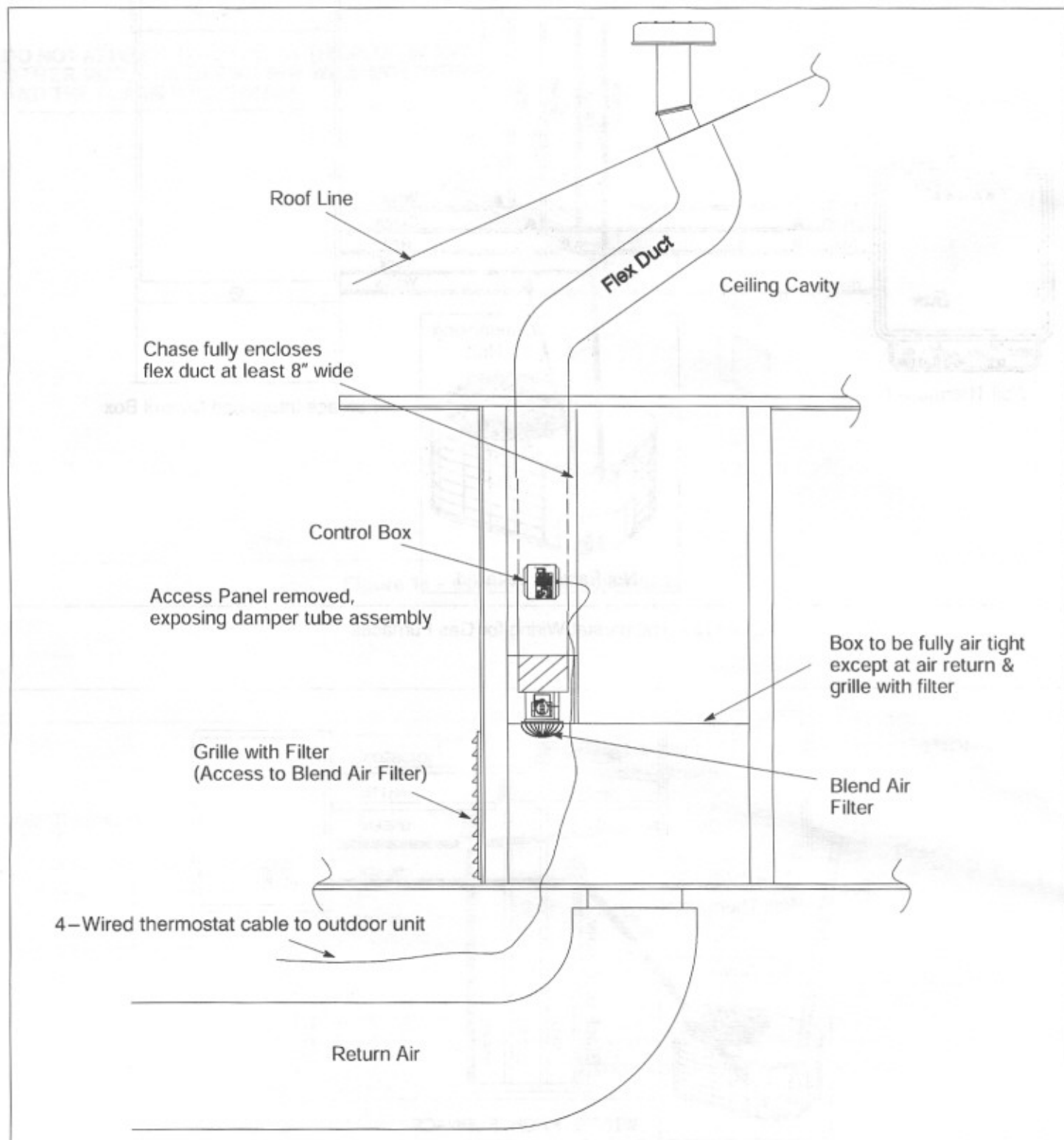
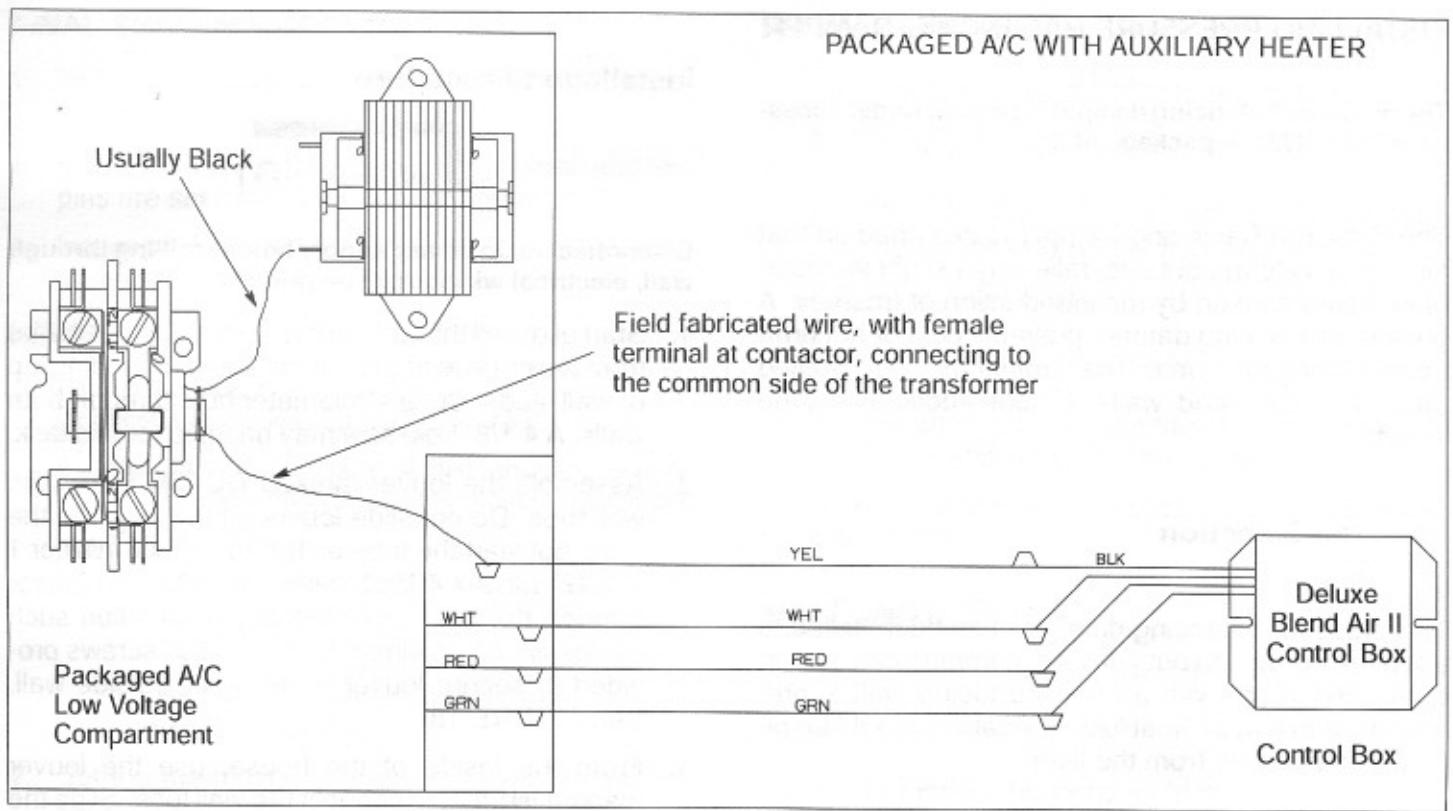
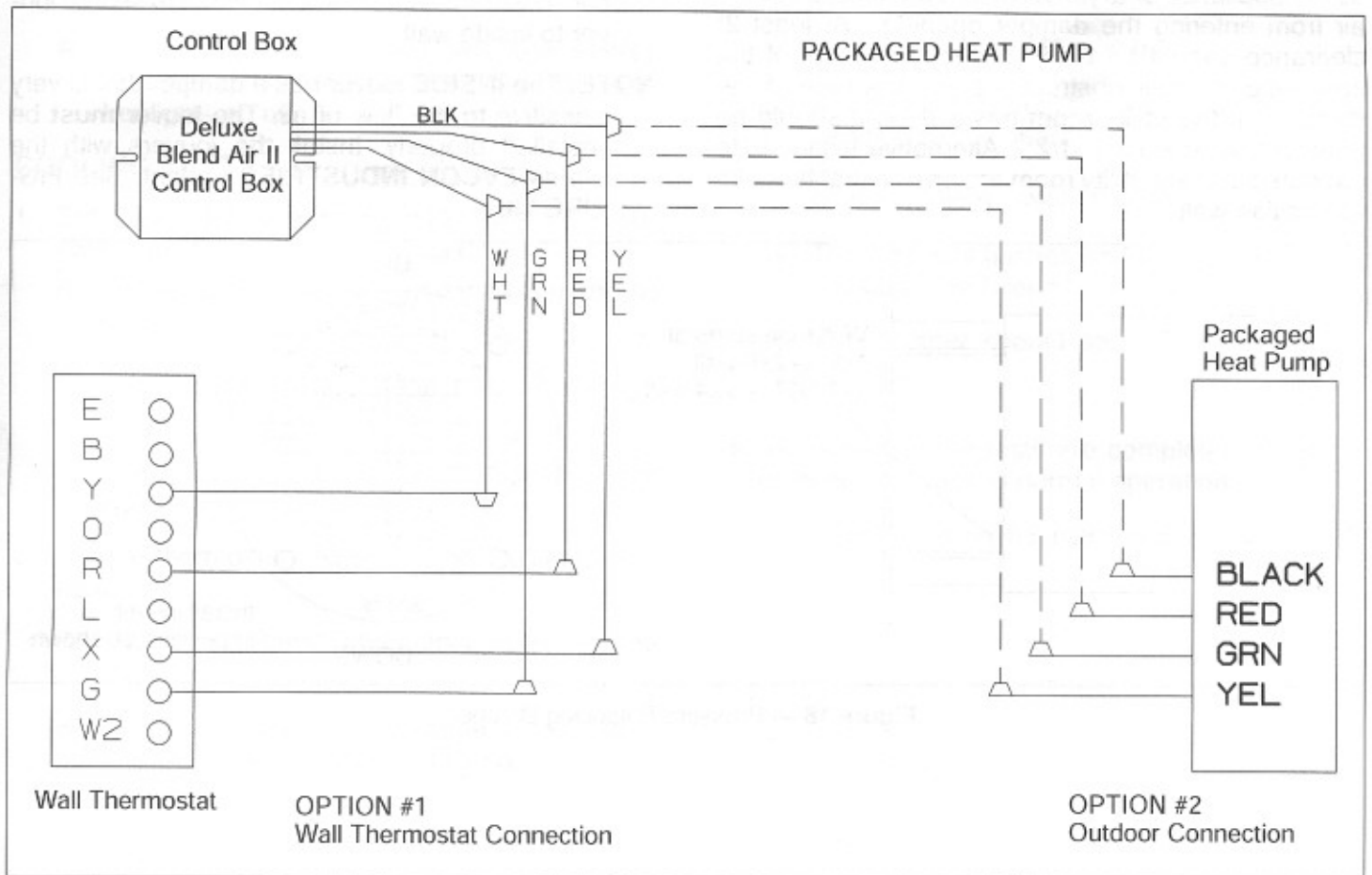


Figure 15 — Packaged A/C & Packaged Heat Pump Applications



**Figure 16 — Low Voltage Wiring — Packaged A/C**



**Figure 17 — Low Voltage Wiring — Packaged Heat Pump**

## INSTALLING PRESSURE BALANCING DAMPER

### NOTE

The pressure balancing damper is packed under accessory 7681-8021, a package of 24.

The Pressure Balancing Damper is designed so that air can pass to the outside, relieving a slight increase of pressure caused by the introduction of fresh air. A pressure balancing damper prevents cold or hot draft from entering the home. The damper may be installed on 2x4 or 2x6 stud walls without addition to tube length.

### Location Selection

The pressure balancing damper must be installed to allow the inside and outside air to communicate directly. A utility room with an outside facing wall is preferred. To minimize heat loss, a location should be no higher than 2 feet from the floor.

The pressure balancing damper may be installed either on the side or back of the washer/dryer so long as the appliance or dryer vent hose do not block room air from entering the damper opening. At least 2" clearance should be held between the back of the appliance or other obstructions and the face of the damper. If the utility room has a door, it should be undercut by at least 1-1/2". Alternative locations to the outside of the utility room are any central hall with an outside wall.

## Installation Procedure

### WARNING

Disconnect main power supply before drilling through wall, electrical wiring may be present.

1. Start pilot drill through the wall (inside and outside) from the outside of the house, avoid any siding lap or wall studs. Cut a 4" diameter hole through both walls. A 4 1/8" hole saw may be used for this task.
2. Assemble the louver marked **OUTSIDE** and the wall tube. Do not slide louver all the way into the tube, but start the tube at 1/4" for a 2 x 6 Wall or 1 - 1/12" for 2 x 4 Wall. Slide the tube and louver through the hole, avoiding any obstruction such as, insulation or wiring. Use #8 x 1/2" screws provided to secure louver to siding or outside wall. See FIGURE 18.
3. From the inside of the house, use the louver marked **INSIDE** to connect the wall tube. Slide the louver in as far as it can go. Do not use a hard object to facilitate the process as damage might occur. Use #8 x 1/2" screws provided to secure louver to inside wall.

**NOTE:** The **INSIDE** louver has a damper that is very sensitive to the flow of air. The louver **must** be installed properly. Install the louvers with the words **EVCON INDUSTRIES** upright. See FIGURE 18.

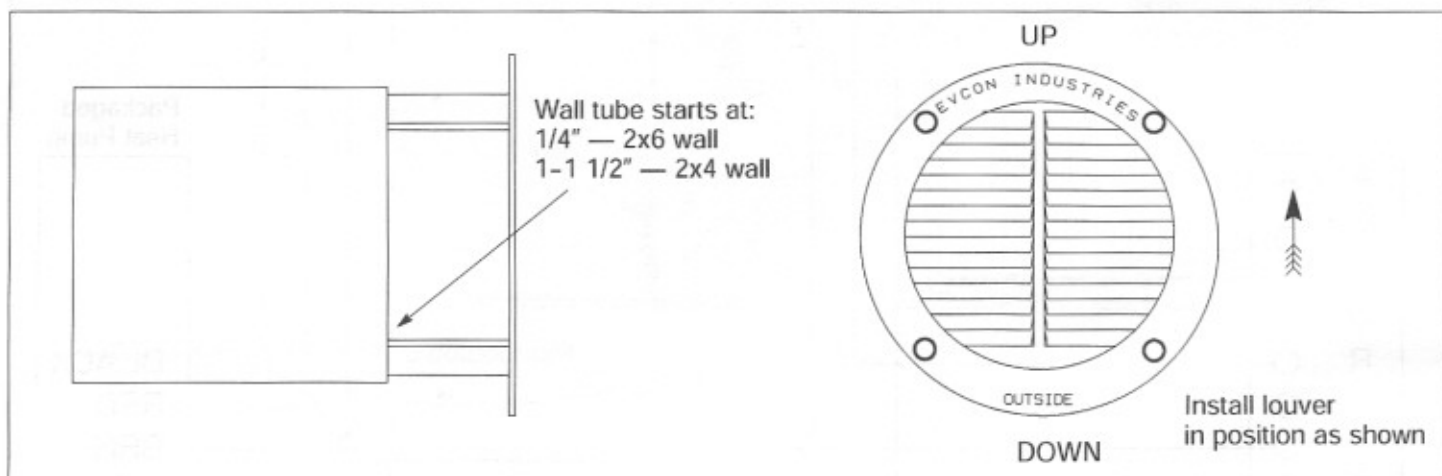


Figure 18 — Pressure Balancing Damper

## FINAL SYSTEM CHECKOUT

1. Insure both power to furnace and Blend Air blower is supplied.
2. Insure both switches are at the up position and test pins are set to **RUN**. See note below.
3. Insure power to the furnace and Deluxe Blend Air II system is ON.

## HEAT ONLY TESTING

1. Set the thermostat system switch to HEAT and set the thermostat all the way up (calling for heat).
  - A. The furnace controller should energize heating components (consult furnace manual for specific components).
  - B. The attic blower should start. ‡ The Green light comes on.
    1. The damper should open within 1 minute. The Amber light comes on. This delay is to allow the furnace to pre-heat.
2. Set the thermostat all the way down (thermostat satisfied).
  - A. The furnace controller should de-energize heating components.
  - B. The damper should close and attic motor‡ should stop immediately. The Green and Amber lights go off.

## COOLING TEST

1. Set thermostat system switch to COOL and thermostat all the way down (calling for cooling).
  - A. The air conditioner and indoor blower should start.
  - B. The attic blower should start. ‡ The Green light comes on.
  - C. The damper should open. The Amber light comes on.
2. Set the thermostat all the way up (cooling satisfied).
  - A. The air conditioner and indoor blower should stop.
  - B. The attic blower‡ and damper should stop. The Green and Amber lights go off.

## VENTILATION TEST

1. Set ventilation switch \* at thermostat to ON.
  - A. The indoor blower should start.
  - B. The attic blower‡ and damper should start. The Green and Amber lights come on.
2. Set ventilation switch \* to AUTO.
  - A. The indoor blower should stop.
  - B. The attic‡ and damper motor should stop. The Green and Amber lights go off.

\* On Some models of thermostat, the ventilation switch is the fan switch.

## MALFUNCTION TEST

1. Locate the power supply disconnect to the attic motor.
  - A. Set Ventilation switch to **ON**.
  - B. The indoor blower should start.
  - C. The attic blower‡ and damper should start. The Green and Amber lights come on.
  - D. Disconnect power to attic motor.
  - E. The **Red** light should come on and intermittent beeping will be heard.
  - F. Slide the Alarm switch down.
  - G. The Red light flashes and the beeping sound will stop. The Green light stays on.
  - H. The damper should stop. The Amber light stays on.

**NOTE:** When all the tests are completed, insure all controls are set back to normal operation.

‡ If attic fan is in 4 hour OFF cycle.

**APPLICATION & TEST DATA**  
**DELUXE BLEND AIR II**  
**LIVING AREA & ATTIC VENTILATION / AIR QUALITY SYSTEM**

**LIVING AREA VENTILATION CODE REQUIREMENTS**

- .035 CFM PER SQUARE FOOT OF LIVING AREA FLOOR SPACE

**ATTIC AREA VENTILATION CODE REQUIREMENTS**

- .02 CFM PER SQUARE FOOT OF ATTIC FLOOR SPACE

**DELUXE BLEND AIR II PERFORMANCE**

Evcon Furnaces			
LIVING AREA			ATTIC AREA
Gas	DGAT	94 CFM ‡	150 CFM ‡
Oil	COAT		
Electric	EB	80 CFM ‡	

**TO DETERMINE THE CFM REQUIREMENTS OF A SPECIFIC HOME**

- MULTIPLY SQUARE FEET OF LIVING AREA FLOOR SPACE BY .035 CFM
- MULTIPLY SQUARE FEET OF ATTIC FLOOR SPACE BY .02

**Example: Typical 14 x 66 Single Wide:**

$$\begin{array}{r}
 924 \text{ Square Feet} \\
 \times .035 \text{ CFM} \\
 \hline
 32.34 \text{ CFM}
 \end{array}$$

- \* For living area floor space that has cfm requirements greater than those listed above, use large capacity kit (part #7681-8281) to achieve the cfm listed below.

**LARGE CAPACITY KIT WITH DELUXE BLEND AIR II**

Evcon Furnaces			
LIVING AREA			ATTIC AREA
Gas	DGAT	143 CFM ‡	150 CFM ‡
Oil	COAT		
Electric	EB	129 CFM ‡	

‡ APPLICATION TEST WITNESSED BY UNDERWRITERS LABORATORIES, INC.

Blend Air data shown, is compiled from actual tests on a furnace, including all assembled components which include; roof top terminal, 10 feet of insulated duct, furnace motorized damper assembly and pressure balancing assembly. Furnace operating at .3" WC external duct static pressure.

PRESSURE DIFFERENTIAL TESTS IN AN ACTUAL MANUFACTURED HOME WITH THE BLEND AIR SYSTEM II AND THE ACCESSORY PRESSURE BALANCING DAMPER IN OPERATION, RESULT IN NEUTRAL PRESSURE BALANCE WITHIN COMMERCIAL TOLERANCE.

## DELUXE BLEND AIR II ELECTRICAL SPECIFICATIONS

### IN THE USA

The installation must conform with:

- ☐ Local building codes,
- ☐ Federal Manufactured Home Construction & Safety Standard (H.U.D. Title 24, Part 280) or in the absence of local codes with American National Standard (ANSI-C1/NFPA-70) for all electrical wiring.

### IN CANADA

Unit electrical wiring and grounding shall comply with current standard CSA C22.1 - Canadian Electrical Code part 1.

Attic Motor	120 VAC, 50-60 Hz, 1.80 AMPS (customer supply power wiring; Suggested 14 AWG Min. wire size)
Control Box and Damper Motor	24 VAC, 50-60 Hz, 0.40 AMPS (power generated from furnace transformer)
Control Cable between Lower and Upper Boards	30 VDC, 0.10 AMPS Max.

### **NOTE ON METAL ROOFING HOME:**

To minimize noise transmission from the blower housing to the home

that has metal roofing, it is strongly recommended that plywood, or equivalent material, is installed between rafters and underneath the blower housing.

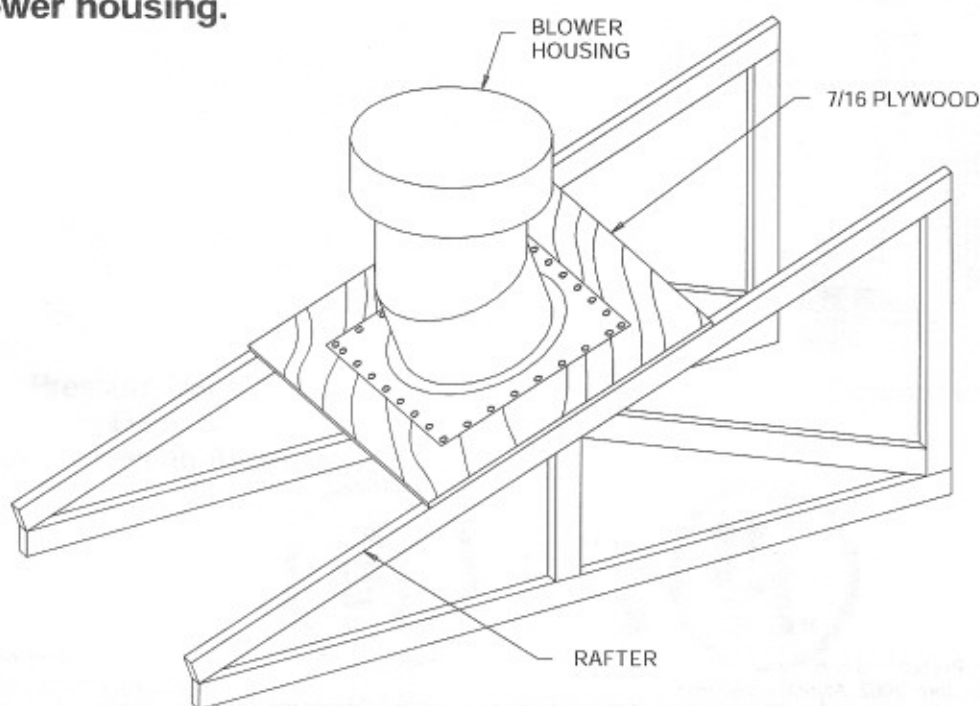


Figure 19 - Noise Reduction on Metal Roofing Home