Installation Manual

Installation and Appliance Setup

INSTALLER: Leave this manual with party responsible for use and operation.
OWNER: Retain this manual for future reference.

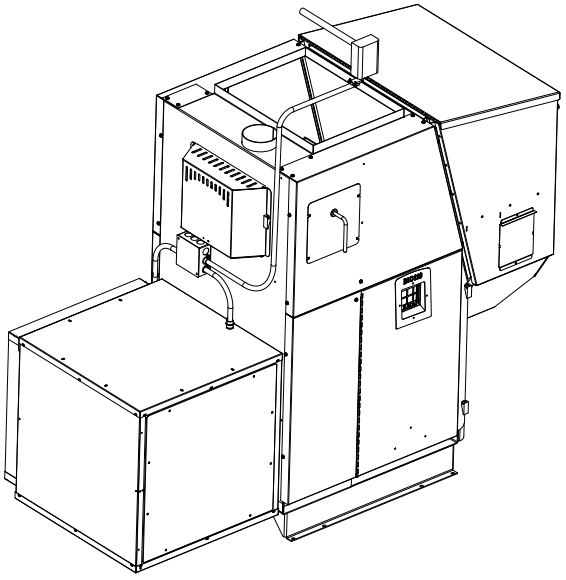
NOTICE: SAVE THESE INSTRUCTIONS

HARMAN®

BUILT TO A STANDARD, NOT A PRICE

Model(s):

PF-120 Pellet Furnace



Tested & Listed By OMNI-Test Laboratories, Inc. Portland Oregon USA

⚠ CAUTION

Tested and approved for wood pellet fuel only. Burning of any other type of fuel voids your warranty.

⚠ CAUTION

Check building codes prior to installation.

- Installation MUST comply with local, regional, state and national codes and regulations.
- Contact local building or fire officials about restrictions and installation inspection requirements in your area.

⚠ WARNING

Please read this entire manual before installation and use of this pellet fuel-burning room heater.
Failure to follow these instructions could result in property damage, bodily injury or even death.

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- Do not overfire - If any external part starts to glow, you are overfiring. Reduce feed rate. Overfiring will void your warranty.
- Comply with all minimum clearances to combustibles as specified. Failure to comply may cause house fire.

⚠ WARNING

HOT SURFACES!

Glass and other surfaces are hot during operation and cool down.

Hot glass will cause burns.

- Do not touch glass until it is cooled
- NEVER allow children to touch glass
- Keep children away
- CAREFULLY SUPERVISE children in same room as stove.
- Alert children and adults to hazards of high temperatures.

  High temperatures may ignite clothing or other flammable materials.
- Keep clothing, furniture, draperies and other flammable materials away.

NOTE

To obtain a French translation of this manual, please contact your dealer or visit www.harmanstoves.com

Pour obtenir une traduction française de ce manuel, s'il vous plaît contacter votre revendeur ou visitez www.harmanstoves.com

⚠ Safety Alert Key:

- ***DANGER!*** Indicates a hazardous situation which, if not avoided will result in death or serious injury.
- ***WARNING!*** Indicates a hazardous situation which, if not avoided could result in death or serious injury.
- ***CAUTION!*** Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
- ***NOTICE:*** Indicates practices which may cause damage to the furnace or to property.

TABLE OF CONTENTS

➔ = Contains updated information

Installation Standard Work Checklist

ATTENTION INSTALLER:

Follow this Standard Work Checklist

This standard work checklist is to be used by the installer in conjunction with, not instead of, the instructions contained in this installation manual.

Customer: _____
Lot/Address: _____
_____

Date Installed: _____
Location of Fireplace: _____
Installer: _____
Dealer/Distributer Ph # _____
Serial Number: _____

> ⚠ ***WARNING! Risk of Fire or Explosion! Failure to install appliance to these instructions can lead to a fire or explosion.***

Appliance Install		**YES**	**IF NO, WHY?**
Required non-combustible floor protection.	(Pg. 8)	☐	_____
Verified clearances to combustible.	(Pg. 10-14)	☐	_____
Furnace is Leveled and secured.		☐	_____
Venting/Chimney Section 4 (Pg. 10-19)			
Venting Configuration complies to vent diagrams.		☐	_____
Venting installed, sealed and secured in place with proper clearances.		☐	_____
Exterior wall/roof flashing installed and sealed		☐	_____
Terminations installed and sealed.		☐	_____
Electrical Section 1 (Pg. 4)			
120VAC unswitched power provided to the appliance.		☐	_____
Finishing Sections 3 & 4 (Pg. 8-14)			
Combustible materials not installed in non-combustible areas.		☐	_____
Verified all clearances meet installation manual requirements.		☐	_____
Appliance Setup Section 5 (Pg. 20-21)			
All packaging and protective materials are removed		☐	_____
Accessories installed properly		☐	_____
Manual bag and all it's contents are removed from inside the appliance and given to party responsible for use and operation		☐	_____
Started appliance and verified that all motors and blowers operate as they should.		☐	_____

Hearth and Home Technologies recommends the following:
Photographing the installation and copying this checklist for you file.
The this checklist remain visible at all times on the appliance until the installation is complete.

Comments: Further description of the issues, who is responsible (Installer/Builder/Other Trades, etc.) and corrective action needed _____

_____

_____

Comments communicated to party responsible_____ by _____ on _____
(Builder / Gen Contractor) (Installer) (Date)

1 Product Specific and Important Safety Information

A. Appliance Certification

MODEL:	Pellet Furnace - PF-120
LABORATORY:	OMNI Test Laboratories, Inc
REPORT NO.	135-S-02b-2
TYPE:	Pellet Fueled Central/Supplementary
STANDARD(s):	UL 391-2010, ASTM E 1509-04, and CSA-B366.1-11

NOTE: This installation must conform with local codes. In the absence of local codes you must comply with the UL 391-2010, ASTM E 1509-04, and CSA-B366.1-11 **& (UM) 84-HUD**

The PF-120 Pellet Furnace by Harman® is exempt from Environmental Protection Agency certification under 40 CFR 60.531 by definition [Wood Heater (A) “Air to Fuel Ratio”].

Note: **This appliance is also approved for installation into a shop.**

B. Glass Specifications

This appliance is equipped with 5mm ceramic glass. Replace glass only with 5mm ceramic glass. Please contact your dealer for replacement glass.

C. Electrical Rating

120 VAC, 60 Hz, Start 9.2 Max Amps, 7.5 Amps normal operation.

NOTE: Some generator or battery back-up systems may not be compatible with the micro-processor electronics on this appliance. Please consult the power supply manufacturer for compatible systems.

D. Mobile Home Approved (US Only)

This appliance is approved for mobile home installations when not installed in a sleeping room and when an outside combustion air inlet is provided.

The structural integrity of the mobile home floor, ceiling, and walls must be maintained. The appliance must be properly grounded to the frame of the mobile home and use only listed pellet vent, Class “PL” connector pipe.

A Harman® Outside Air Kit must be installed in a mobile home installation.

E. BTU & Efficiency Specifications

Particulate Emissions Rating:	N/A
***BTU Output:**	8,000 - 120,000 / hr
Heating Capacity:	N/A
Hopper Capacity:	160 lbs
Fuel:	Wood Pellets
Shipping Weight:	580 lbs

*BTU output will vary, depending on the brand of fuel you use in your appliance. Consult your dealer for best results.

WARNING! Risk of Fire! *Hearth & Home Technologies disclaims any responsibility for, and the warranty and agency listing will be voided by the below actions.*

DO NOT:

- *Install or operate damaged appliance*
- *Modify appliance*
- *Install other than as instructed by Hearth & Home Technologies*
- *Operate the appliance without fully assembling all components*
- *Overfire*
- *Install any component not approved by Hearth & Home Technologies*
- *Install parts or components not Listed or approved.*
- *Disable safety switches*

Improper installation, adjustment, alteration, service or maintenance can cause injury or property damage.

For assistance or additional information, consult a qualified installer, service agency or your dealer.

NOTE: Hearth & Home Technologies, manufacturer of this appliance, reserves the right to alter its products, their specifications and/or price without notice.

2 Getting Started

A. Tools And Supplies Needed

Tools and building supplies normally required for installation, unless installing into an existing masonry fireplace:

Reciprocating Saw	Gloves
Hammer	Safety Glasses
Phillips Screw driver	Electric Drill & Bits
Tape Measure	
Level	<u>May also need:</u>
Non-Combustible Sealant	Vent Support Straps
Material	Venting Paint

B. Inspect Appliance and Components

- Carefully remove the appliance and components from the packaging.
- The vent system components and decorative doors and fronts may be shipped in separate packages.
- Report to your dealer any parts damaged in shipment, particularly the condition of the glass.
- **Read all of the instructions before starting the installation. Follow these instructions carefully during the installation to ensure maximum safety and benefit.**

WARNING! Risk of Fire or Explosion! *Damaged parts could impair safe operation.* ***DO NOT i****nstall damaged, incomplete or substitute components. Keep appliance dry.*

Hearth & Home Technologies disclaims any responsibility for, and the warranty will be voided by, the following actions:

- Installation and use of any damaged appliance or vent system component.
- Modification of the appliance or vent system.
- Installation other than as instructed by Hearth & Home Technologies.
- Installation and/or use of any component part not approved by Hearth & Home Technologies.

Any such action may cause a fire hazard.

WARNING! Risk of Fire, Explosion or Electric Shock! DO NOT use this appliance if any part has been under water. Call a qualified service technician to inspect the appliance and to replace any part of the control system and/or gas control which has been under water.

OPERATE THE GAS-FIRED UNIT (If applicable) PERIODICALLY TO ENSURE THAT IT WILL OPERATE SATISFACTORILY WHEN NEEDED.

3 Clearances

A. Appliance Dimension Diagram

Dimensions are actual appliance dimensions. Use for reference only.

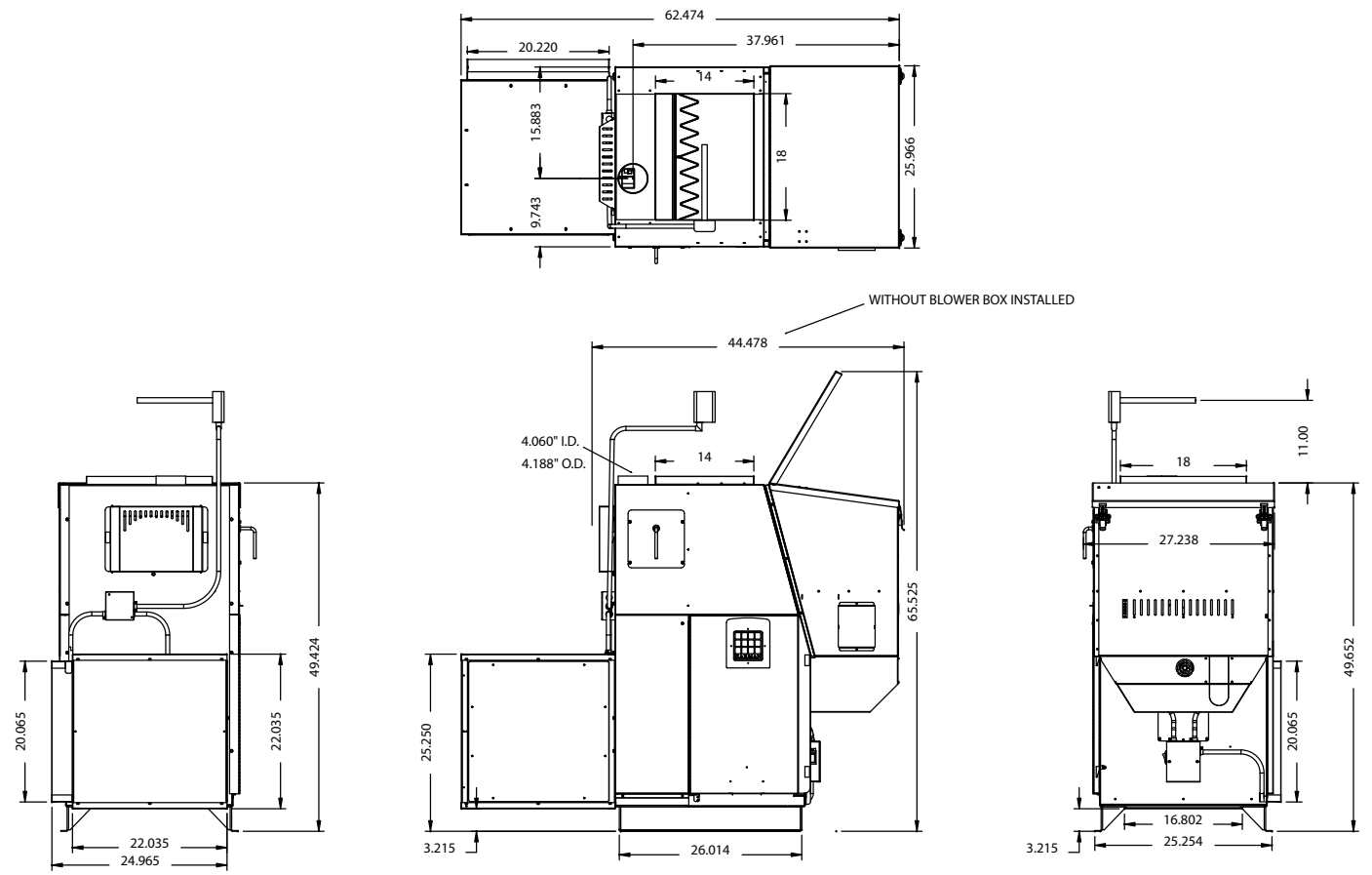


Figure 3.1

B. Clearances to Combustibles

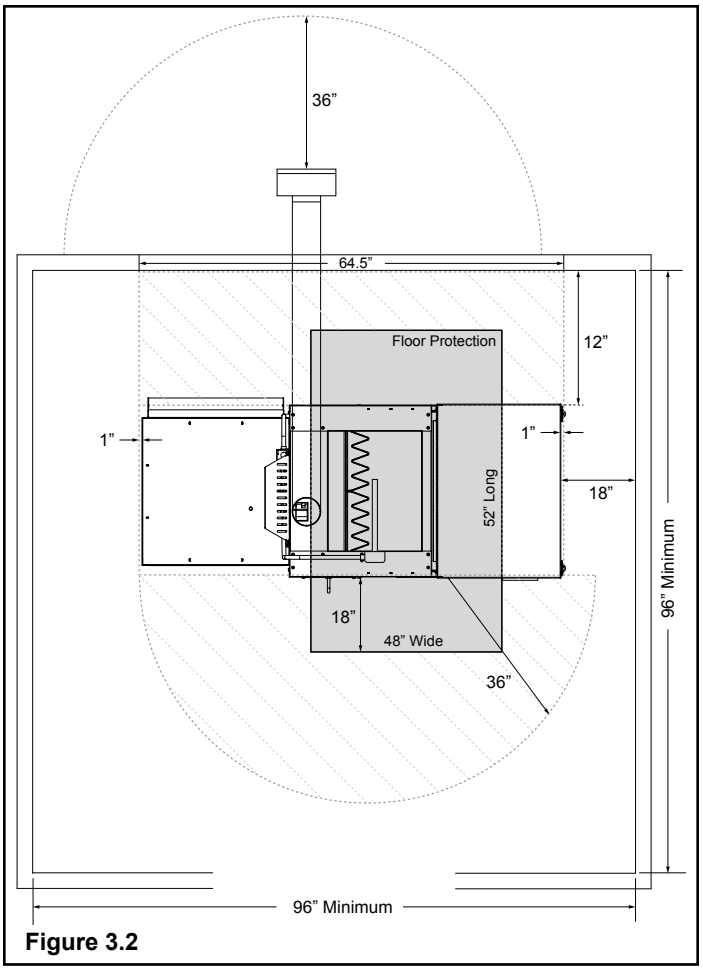


Figure 3.2

NOTE: All Clearances are Minimum Clearances

If installing the furnace in a room separated from the remaining living spaces, the minimum size of the room must be no smaller than 8' x 8'. Figure 3.2. The reason for this is heat build-up and required space for service and normal operation. This is the minimum size of the room even if it is built of non-combustible material.

High and low air vents MUST be installed between the room and the remaining living space. Each vent should be at least 72 square inches in area. (The vent size will need to be increased if there is no return air ducting system.)

The striped areas are the minimum clearances to combustibles which is 36" from stove body, not the hopper or blower.

The shaded area indicates the required floor protection area. The furnace requires 48" x 52" of floor protection centered around the skid plate footprint. Flooring should be a minimum of 26 gauge sheet metal covering the installation clearance area and 18" in front of, and 8" to either side of the ash pan door.

The 18" clearance from the hopper end is a manufacturer's recommendation for adding pellets and/or servicing the feeder mechanism.

The minimum clearance to the top of the plenum is 4". Fig. 3.3

Note the minimum height to the bottom of the supply duct if it crosses the hopper.

The minimum duct configuration to a living space above the furnace is as shown below. An offset of at least 24" MUST be installed between the plenum and the floor register. The register size MUST have an area of at least 240 square inches.

The minimum ceiling height is 6'6". This is set by the clearance to combustibles (28") from the top of the of the furnace. See Figure 3.3.

NOTE: Install vent at clearances specified by the vent manufacturer.

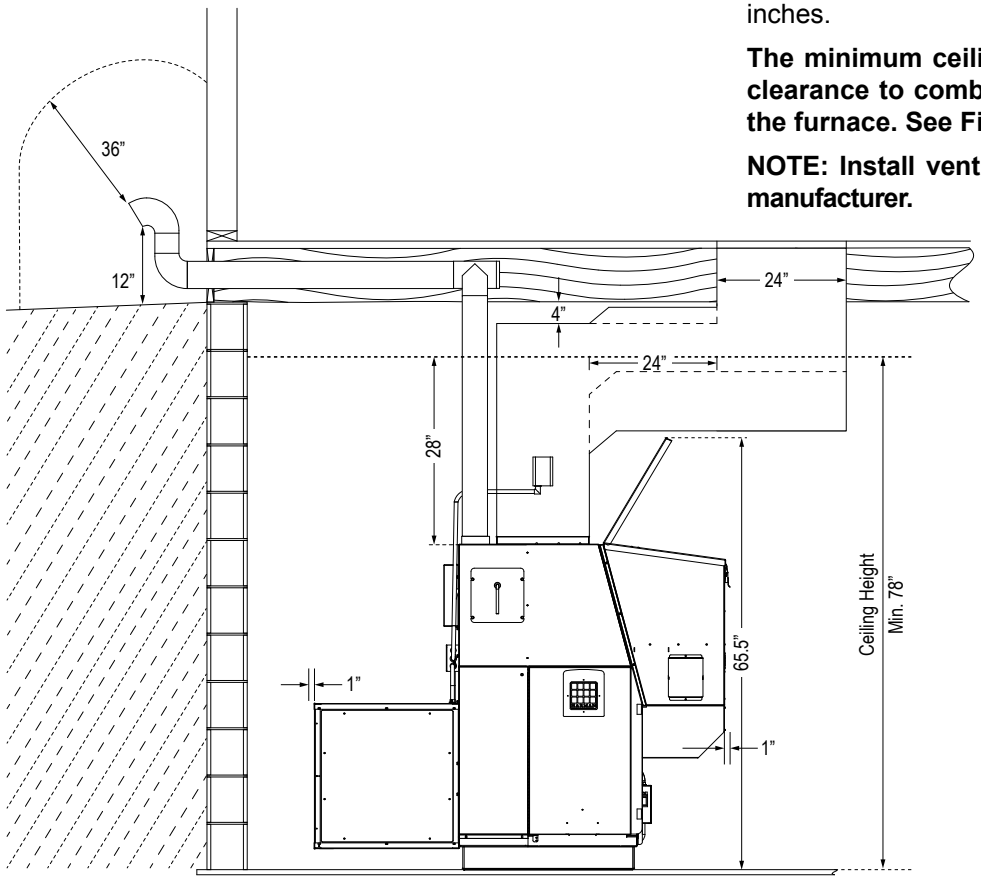


Figure 3.3

⚠ CAUTION

When installing a floor register, the temperature of the discharge air MUST be taken into consideration (The discharge air temperature may be high enough to cause burns if not properly operated and maintained.)

⚠ CAUTION

The Blower Motor full load AMPS MUST be checked. A plenum damper may be required to adjust the motor full load AMPS to the motor nameplate rating.

C. Floor Protection

The shaded area indicates the required floor protection area. The furnace requires 48” x 52” of floor protection centered around the skid plate footprint. Flooring should be a minimum of 26 gauge sheet metal covering the installation clearance area and 18” in front of, and 8” to either side of the ash pan door. Fig 3.4

Minimum Size floor protection is 48" X 52". **Only needed when installed on a combustible floor.**

Floor protection dimensions for the front and sides are measured from the appliance door opening in The United States.

Floor Protection Requirements		US
J	Sides	8"
K	Front	18"

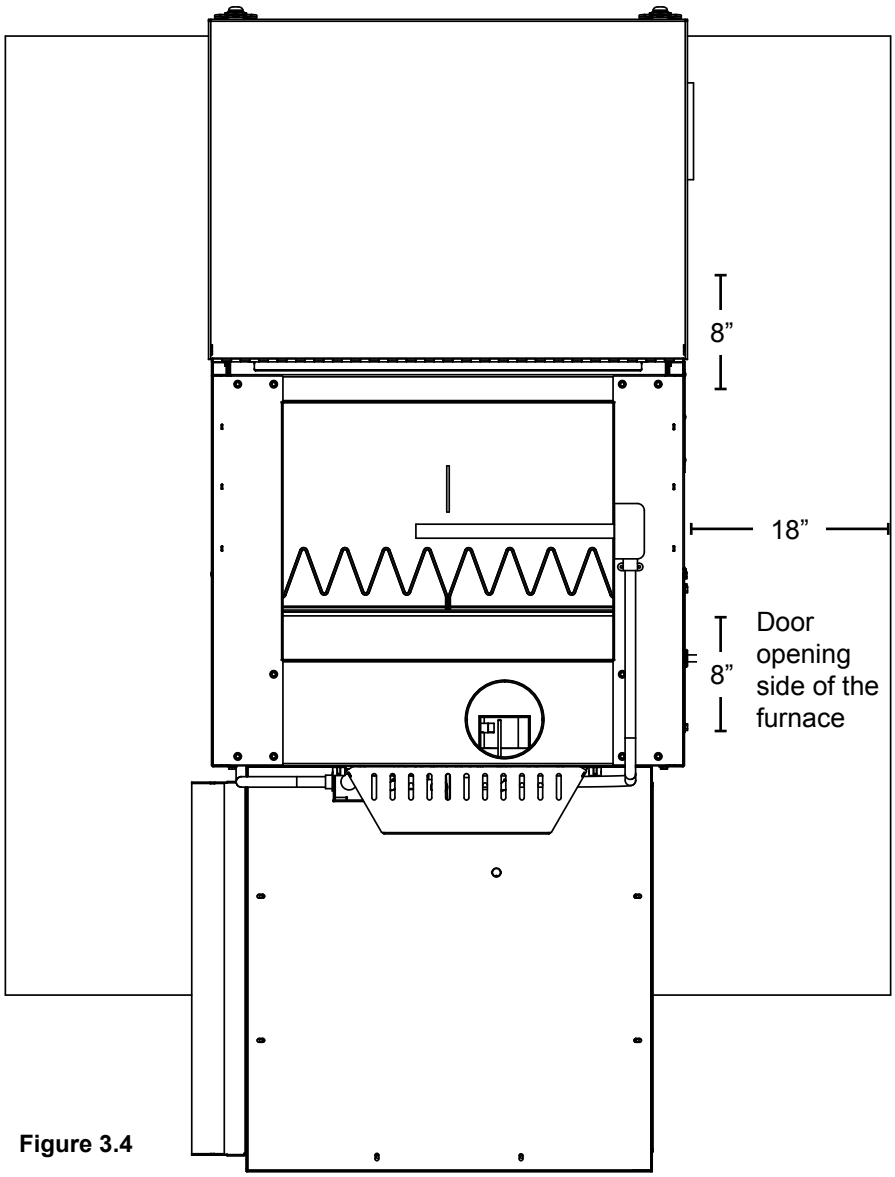


Figure 3.4

4 Termination Location and Vent Information

A. Vent Termination Minimum Clearances

This is the minimum venting configuration.
NOTE: This would only be allowed with non-combustible walls.

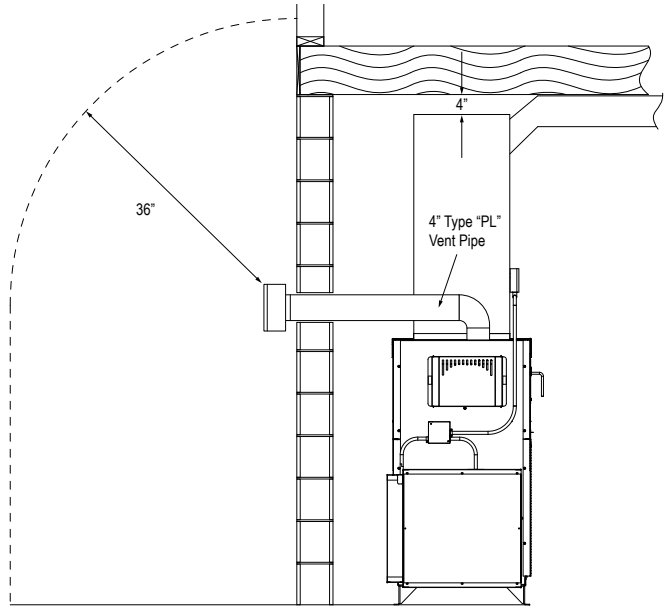


Figure 4.1

The minimum vent configuration is a 90° or Tee on a starter collar and a 24" length horizontal through an exterior wall. A cap or other bird screen on the end should direct the flue gases down and away from the structure. Figure 4.1.

The maximum horizontal length is 18 feet. The minimum termination height above the exterior grade is 18". The maximum total length of any configuration is 30 feet.

NOTE: Cleanout Tee's should always be used on the transitions to horizontal pipe to allow easy access for cleaning.

The venting configuration graph allows for (one) 90°. or Tee fitting in any configuration.

If more 90's, T's, or 45's are needed the total length must be adjusted to allow for the added restriction.

Up to four (4) additional 90's, Tee's, or equivalent 45's can be added as long as the overall length is adjusted in accordance with the values listed below.

(See the Venting Configuration Graph under Section B "Locating Your Appliance & Chimney")

Each Vertical ----- 90°	or T	subtract 2.5 feet
Each Vertical ----- 45°		subtract 1.5 feet
Each Horizontal - 90°	or T	subtract 5.0 feet
Each Horizontal - 45°		subtract 2.5 feet

Any exterior venting (vent pipe exposed to outside ambient temperatures) should be kept to a minimum, due to potential condensation problems.

This is especially important in high humidity cold weather climates, such as maritime areas, lake shores, and low river valleys.

NOTE: Use only 4" diameter "PL" venting system. Be sure to inspect and clean exhaust venting system regularly.

NOTE: Read and follow all of the vent pipe manufacturers' instructions on the proper installation and support of the vent pipe. Adhere to all clearances.

INSTALLATION IS TO BE PERFORMED BY A QUALIFIED INSTALLER.

DO NOT INSTALL A FLUE DAMPER IN THE EXHAUST VENTING SYSTEM OF THIS UNIT.

DO NOT CONNECT THIS UNIT TO A CHIMNEY FLUE SERVING ANOTHER APPLIANCE.

INSTALL VENT WALL PASS-THROUGH AT CLEARANCES SPECIFIED BY THE VENT MANUFACTURER.

NOTE: All installation clearances and restrictions must be adhered to.

NOTE: Read and follow all of the vent pipe manufacturers' instructions on the proper installation and support of the vent pipe. Adhere to all clearances.

⚠ WARNING

KEEP COMBUSTIBLE MATERIALS SUCH AS GRASS, LEAVES, ETC. AT LEAST 3 FEET AWAY FROM THE POINT DIRECTLY UNDER THE VENT TERMINATION. (BETWEEN THE VENT AND THE GROUND)

⚠ CAUTION

KEEP COMBUSTIBLES AWAY FROM FLUE OUTLET.

⚠ WARNING

CHIMNEY AND FLUE PIPE MUST BE CLEAN AND IN GOOD CONDITION.

B. Venting Configuration Graph

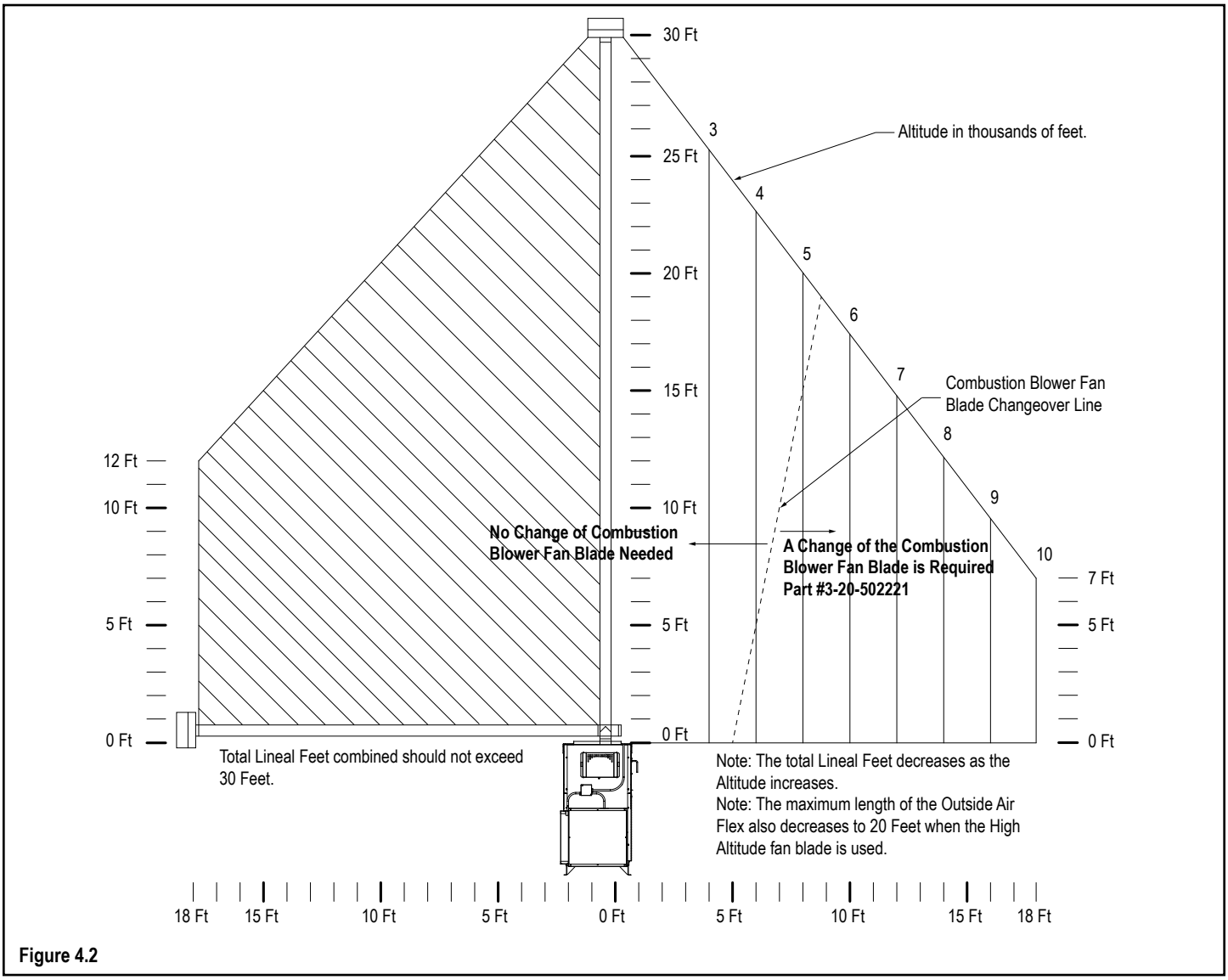


Figure 4.2

To reduce probability of reverse drafting during a power failure, Hearth & Home Technologies strongly recommends:

- Installing the pellet vent with a minimum vertical rise of five feet. Preferably terminating above the roof line.
- Installing an outside air connection to the appliance.

To prevent soot damage to exterior walls, and to prevent re-entry of soot or ash into the home:

- Maintain specified clearances to windows, doors and air inlets, including air conditioners.
- Vents should not be placed below ventilated soffits.
- Avoid venting into alcove locations.
- Vents should not terminate under overhangs, decks or onto covered porches.
- Maintain minimum clearance of 12” from the vent termination to the exterior wall.

Hearth & Home Technologies assumes no responsibility for, nor does the warranty extend to, smoke damage caused by reverse drafting of pellet appliances under power failure conditions.

Hearth & Home Technologies strongly recommends the use of outside air for all pellet furnace applications.

Per national building codes, consideration must be given to combustion air supply for all appliances in the vicinity of the pellet boiler. Failure to supply adequate combustion air for all appliance demands may lead to backdrafting of those appliances. Consult with your HVAC Professional to determine that all combustion air requirements are met.

When the appliance is side-wall vented: The air intake is best located on the same exterior wall as, and lower than the exhaust vent outlet.

When the appliance is roof vented: The air intake is best located on the exterior wall oriented towards the prevailing wind direction, during the heating season.

C. Locating Your Appliance & Chimney

Location of the appliance and chimney will affect performance. Figure 4.3

- Install through the warm airspace enclosed by the building envelope. This helps to produce more draft, especially during lighting and die-down of the fire.
- Penetrate the highest part of the roof. This minimizes the effects of wind loading.
- Locate termination cap away from trees, adjacent structures, uneven roof lines and other obstructions.
- Minimize the use of chimney offsets.
- Consider the appliance location relative to floor and ceiling and attic joists.

⚠ CAUTION

- DO NOT CONNECT THIS UNIT TO A CHIMNEY FLUE SERVICING ANOTHER APPLIANCE.

May allow flue gases to enter the house

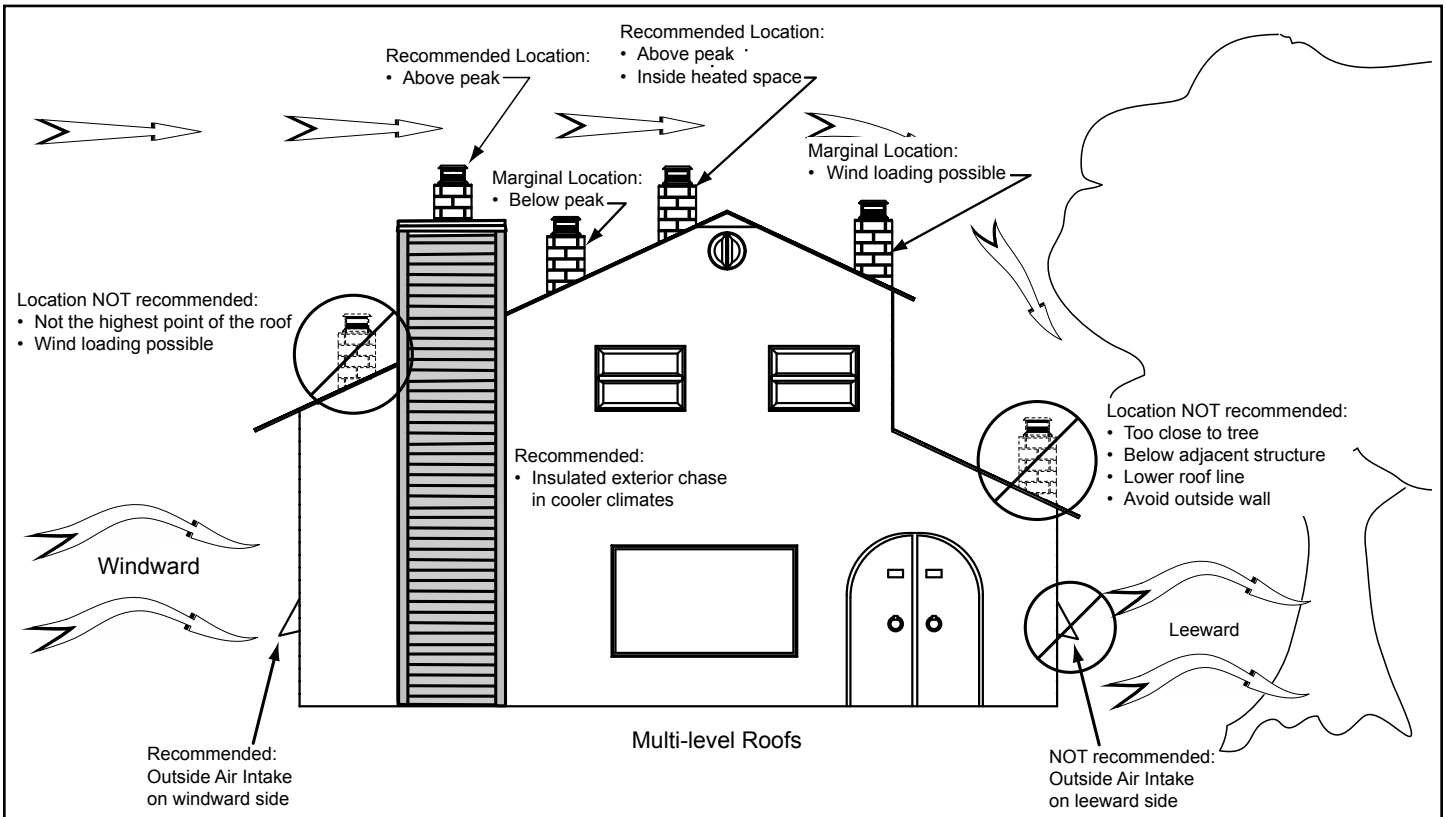


Figure 4.3

Requirements for Terminating the Venting

WARNING: Venting terminals must not be recessed into a wall or siding.

NOTE: Only PL vent pipe wall pass-throughs and fire stops should be used when venting through combustible materials.

NOTE: Always take into consideration the effect the prevailing wind direction or other wind currents will cause with flyash and /or smoke when placing the termination.

In addition, the following must be observed:

A. The clearance above grade must be a minimum of 12”.

B. The clearance to a window or door that may be opened must be a minimum of 48” to the side, 48” below the window/door, and 12” above the window/door. (**with outside air installed, 12” to the side or below**)

C. A 12” clearance to a permanently closed window is recommended to prevent condensation on the window.

D. `The vertical clearance to a ventilated soffit located above the terminal within a horizontal distance of 2 feet (60 cm) from the center-line of the terminal must be a minimum of 18”.

E. The clearance to an unventilated soffit must be a minimum of 12”.

F. The clearance to an outside corner is 11” from center of pipe.

G. The clearance to an inside corner is 12”.

H. A vent must not be installed within 3 feet (90 cm) above a gas meter/regulator assembly when measured from the horizontal center-line of the regulator.

I. The clearance to service regulator vent outlet must be a minimum of 6 feet.

J. The clearance to a non-mechanical air supply inlet to the building or the combustion air inlet to any other appliance must be a minimum of 48”.

K. The clearance to a mechanical air supply inlet must be a minimum of 10 feet.

L. The clearance above a paved sidewalk or a paved driveway located on public property must be a minimum of 7 feet.

M. The clearance under a veranda, porch, deck or balcony must be a minimum of 12 inches. **(see B also)**

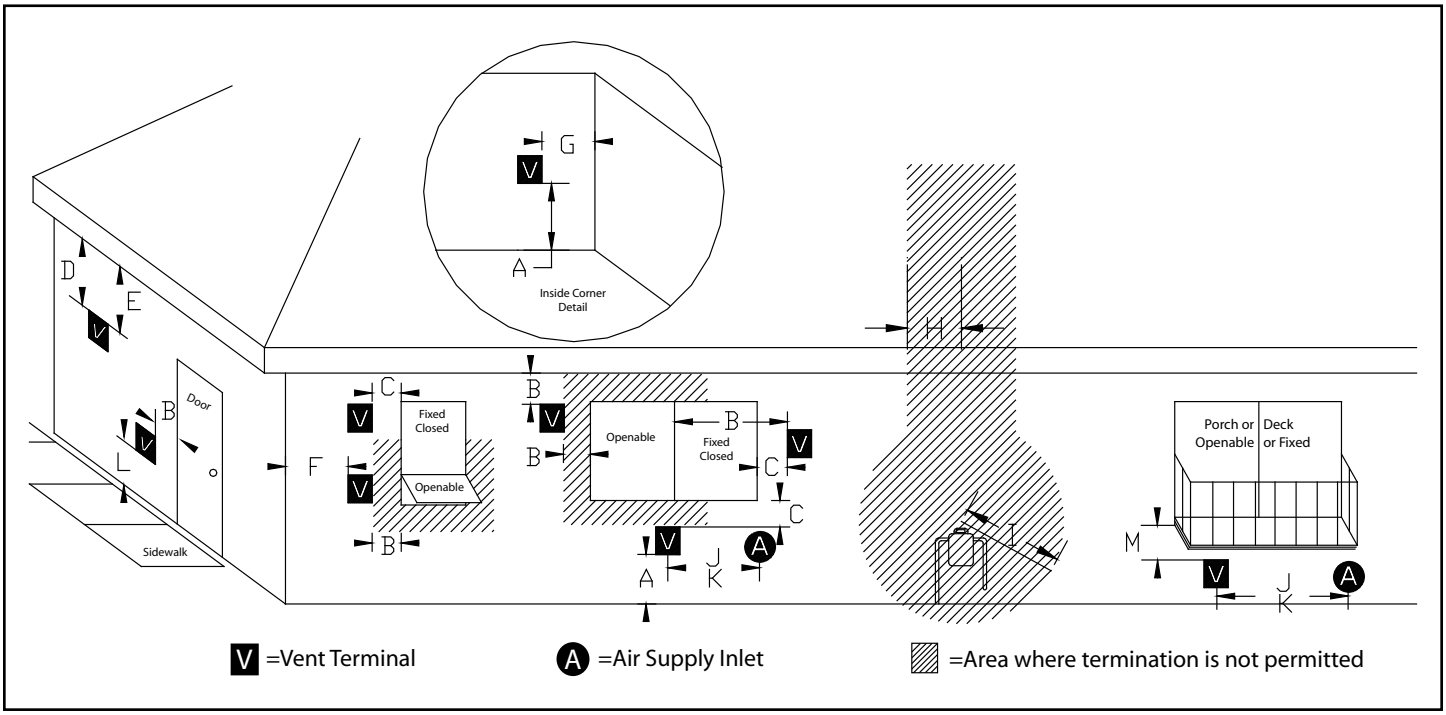
NOTE: The clearance to vegetation and other exterior combustibles such as mulch is 36” as measured from the center of the outlet or cap. This 36” radius continues to grade or a minimum of 7 feet below the outlet.

Certain Canadian and or Local codes or regulations may require different clearances.

A vent shall not terminate directly above a side-walk or paved driveway which is located between two single family dwellings and serves both dwellings.

Only permitted if veranda, porch, deck, or balcony is fully open on a minimum of 2 sides beneath the floor.

NOTE: Where passage through a wall, or partition of combustible construction is desired, the installation shall conform to CAN/CSA-B365. (if in Canada)



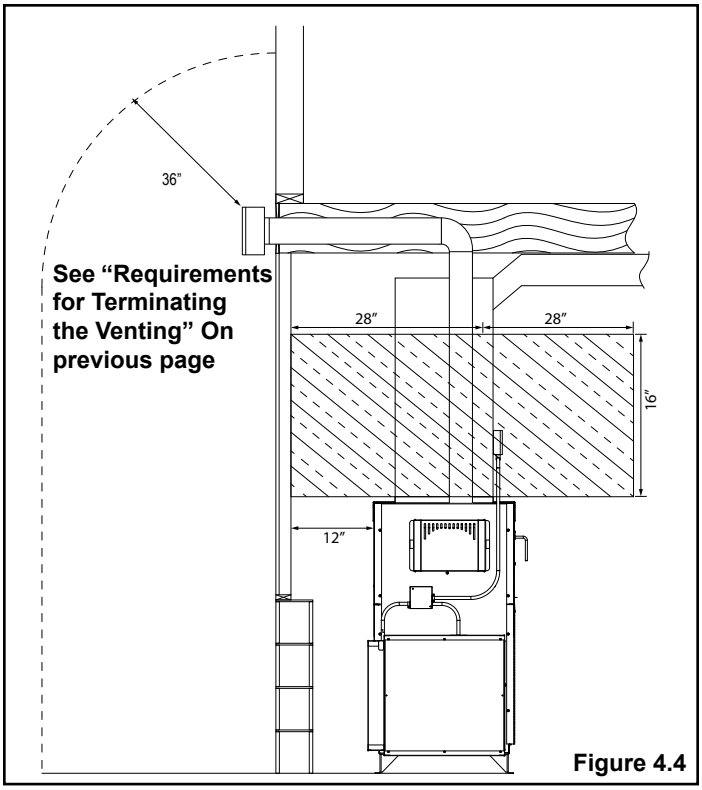


Figure 4.4

Chimneys taller than 20' above the connection will require a draft test to determine if the draft is too high.
Note: The High Burn Draft should not exceed .85 IWC. Some form of a restrictor plate may be required at the top of high chimneys to reduce the draft. See Section C "Draft" for test procedures and readings.

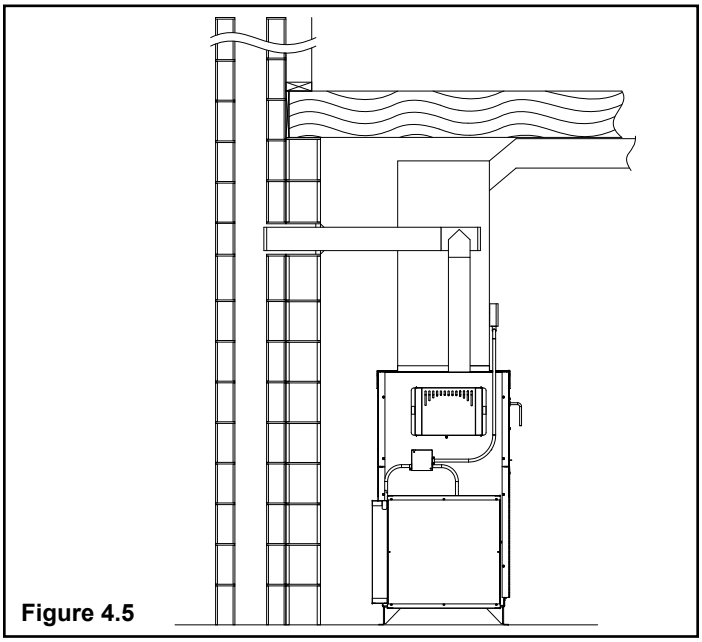


Figure 4.5

The shaded area is where the clearance for the PL vent pipe must be maintained at 3". After the venting leaves the shaded area it may be installed as per the vent manufacturer instructions. (Only listed 4" pellet vent wall pass-throughs and fire stops may be used.) See Figures 4.4 & 4.6.

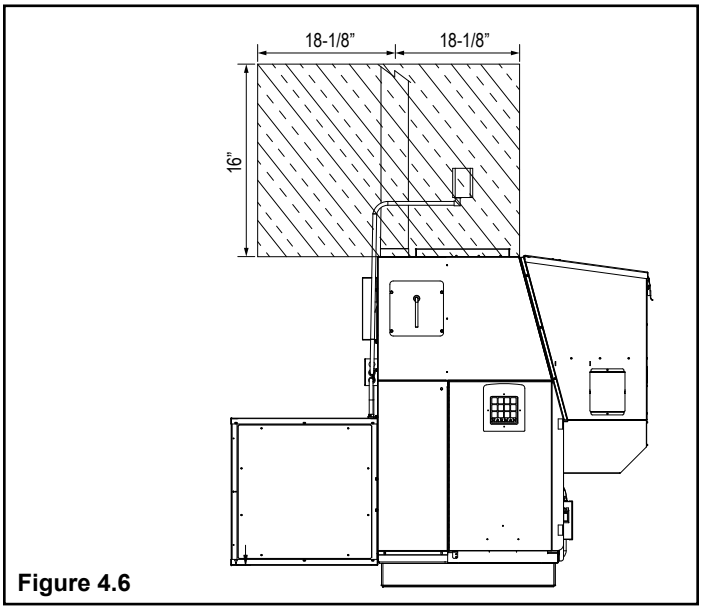


Figure 4.6

This furnace may be used and installed into an existing masonry or Class A metal chimney.
Certain Canadian and Local Codes may require that the chimney be fully relined. See Figure 4.5.
This Furnace May Not be vented into a chimney flue serving another appliance.
The chimney should be cleaned and or inspected before installation.

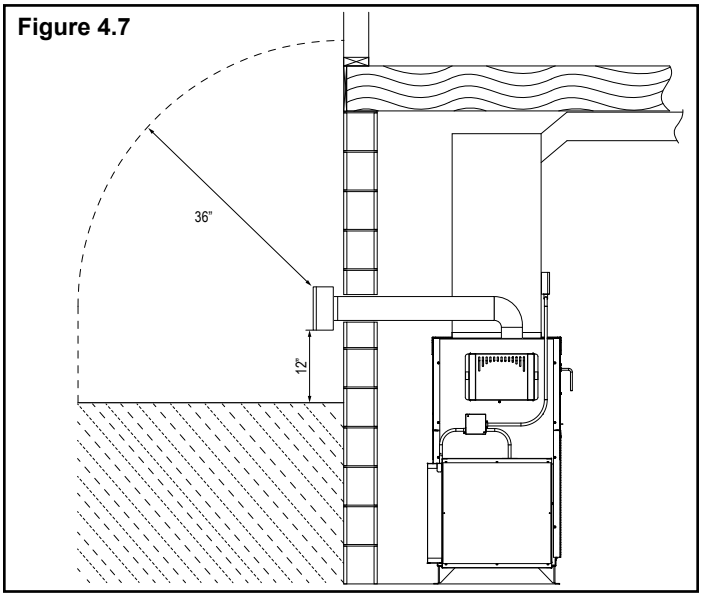


Figure 4.7

Creosote - Formation and Need for Removal - When wood is burned slowly, it produces tar and other organic vapors, which combine with expelled moisture to form creosote. The creosote vapors condense in the relatively cool chimney flue of a slow-burning fire. As a result, creosote residue accumulates on the flue lining. When ignited, this creosote makes an extremely hot fire. The pellet vent pipe should be inspected at least twice monthly during the heating season to determine if a creosote buildup has occurred. If creosote has accumulated it should be removed to reduce the risk of a chimney fire.
Guidance on minimizing creosote formation and the need for periodic creosote removal: The chimney should be inspected during the heating season to determine if a creosote build-up has occurred. If a significant layer of creosote has accumulated (3mm or more) it should be removed to reduce the risk of a chimney fire.

D. Draft

Draft is the pressure difference needed to vent appliances successfully. When an appliance is drafting successfully, all combustion by products are exiting through the chimney.

Considerations for successful draft include:

- Preventing negative pressure
- Location of appliance and chimney

To measure the draft or negative pressure on your appliance use a magnahelic or a digital pressure gauge capable of reading 0 - 1 inches of water column (W.C.).

The appliance should be running on high for at least 30 minutes for the test of high burn draft.

With the furnace running on high you should have a negative pressure equal to or greater than the number given in the chart below. If you have a lower reading than you find on the chart, your appliance does not have adequate draft to burn the fuel properly.

Cold draft test should be done prior to lighting unit. Minimum should be:

Minimum Vacuum Requirements:	**.35**

⚠ WARNING

INSPECT FLUE PIPES, FLUE PIPE JOINTS, AND FLUE PIPE SEALS REGULARLY TO ENSURE THAT SMOKE AND FLUE GASES ARE NOT DRAWN INTO, AND CIRCULATED BY, THE AIR-CIRCULATION SYSTEM.

E. Negative Pressure

⚠ WARNING

Risk of Asphyxiation! *Negative pressure can cause spillage of combustion fumes and soot.*

Negative pressure results from the imbalance of air available for the appliance to operate properly. It can be strongest in lower levels of the house.

Causes include:

- Combustion air requirements for furnaces, water heaters and other combustion appliances
- Location of return-air vents to furnace or air conditioning
- Imbalances of the HVAC air handling system
- Upper level air leaks such as:
  - Recessed lighting

To minimize the effects of negative air pressure:

- Install the outside air kit with the intake facing prevailing winds during the heating season
- Ensure adequate outdoor air for <u>all</u> combustion appliances and exhaust equipment
- Ensure furnace and air conditioning return vents are not located in the immediate vicinity of the appliance
- Avoid installing the appliance near doors, walkways or small isolated spaces
- Recessed lighting should be a “sealed can” design
- Attic hatches weather stripped or sealed
- Attic mounted duct work and air handler joints and seams taped or sealed

NOTICE: *Hearth & Home Technologies assumes no responsibility for the improper performance of the chimney system caused by:*

- *Inadequate draft due to environmental conditions*
- *Downdrafts*
- *Tight sealing construction of the structure*
- *Mechanical exhausting devices*

F. Avoiding Smoke and Odors

Negative Pressure, Shut-down, and Power Failure:

T**o reduce the probability of back-drafting or burn-back in the pellet burning appliance during power failure or shut-down conditions, the stove must be able to draft naturally** without exhaust blower operation. Negative pressure in the building will resist this natural draft if not accounted for in the pellet appliance installation.

Heat rises and leaks out at upper levels. This air must be replaced with cold air from outdoors, which flows into lower levels of the building.

Vent Pipe

Be sure to use approved pellet vent pipe wall and ceiling pass- through fittings to go through combustible walls and ceilings. Be sure to use a starting collar to attach the venting system to the furnace. The starting collar must be secured to the flue stub with at least three screws, and sealed with high temp silicone caulking.

Pellet venting pipe (also known as PL vent) is constructed of two layers with air space between the layers. This air space acts as an insulator and reduces the outside surface temperature to allow a clearance to combustibles of only 1 inches. The sections of pipe lock together to form an air tight seal in most cases; however, in some cases a perfect seal is not achieved. For this reason and the fact that the PF-120 operates with a positive vent pressure, we specify that the joints also be sealed with silicone.

Where passing through an exterior wall or roof, be sure to use the appropriate pass-through device providing an adequate vapor barrier. Venting manufacturers generally provide these pas-through devices.

Vent Configurations:

To reduce probability of reverse drafting during shut-down conditions, Hearth & Home Technologies strongly recommends:

- Installing the pellet vent with a minimum vertical run of five feet, preferably terminating above the roof line.
- Installing the outside air intake at least four feet below the vent termination.

To prevent soot damage to exterior walls of the building and to prevent re-entry of soot or ash into the building:

- Maintain specified clearances to windows, doors, and air inlets.
- Vents should not be placed below ventilated soffits. Run the vent above the roof.
- Avoid venting into alcove locations.
- Vents should not terminate under overhangs, decks or onto covered porches.
- Maintain minimum clearance of 12 inches from the vent termination to the exterior wall. If you see deposits developing on the wall, you may need to extend this distance to accommodate your installation conditions.

Hearth & Home Technologies assumes no responsibility for, nor does the warranty extend to, smoke damage caused by reverse drafting of pellet appliances under shut-down or power failure conditions.

G. Fire Safety

To provide reasonable fire safety, the following should be given serious consideration:

- Install at least one smoke detector on each floor of your home.
- Locate smoke detector away from the heating appliance and close to the sleeping areas.
- Follow the smoke detector manufacturer's placement and installation instructions and maintain regularly.
- Conveniently locate a Class A fire extinguisher to contend with small fires.
- In the event of a hopper fire:
  - Evacuate the house immediately.
  - Notify fire department.

⚠ WARNING

Fire Risk:
Hearth & Home Technologies disclaims any responsibility for, and the warranty will be voided by, the following actions:

- Installation and use of any damaged appliance.
- Modification of the appliance.
- Installation other than as instructed by Hearth & Home Technologies.
- Installation and/or use of any component part not approved by Hearth & Home Technologies.
- Operating appliance without fully assembling all components.
- Do NOT Overfire.

Or any such action that may cause a fire hazard.

⚠ WARNING

DO NOT RELOCATE OR BYPASS ANY OF THE SAFETY CONTROLS IN THE ORIGINAL FURNACE INSTALLATION.

⚠ WARNING

Inspect appliance and components for damage. Damaged parts may impair safe operation.

- Do NOT install damaged components.
- Do NOT install incomplete components.
- Do NOT install substitute components.

Report damaged parts to dealer.

H. Outside Air Installation

Per national building codes, consideration must be given to combustion air supply to all combustion appliances. Failure to supply adequate combustion air for all appliance demands, may lead to back-drafting of those and other appliances.

When the appliance is side-wall vented: The air intake is best located on the same exterior wall as the exhaust vent outlet and located lower on the wall than the exhaust vent outlet.

When the appliance is roof vented: The air intake is best located on the exterior wall oriented towards the prevailing wind direction during the heating season.

The outside air connection will supply the demands of the pellet appliance, but consideration must be given to the total house demand. House demand may consume some air needed for the stove, especially during a power failure. It may be necessary to add additional ventilation to the space in which the pellet appliance is located. Consult with your local HVAC professional to determine the ventilation demands for your house.

To install outside air use 3" non-combustible flex pipe Figure 4.8. There is a break-away hole on the rear panel of the PF-120 stove which must be removed before connecting the flex pipe. The pipe should be run outside and terminate to the side or below the vent pipe outlet so the flue outlet is more than 12" from the inlet cover. The maximum length run of this pipe is 15 feet. The Inlet cover should be used to keep birds, rodents, etc. out of the pipe Figure 4.8.

You may choose to use the optional Direct Vent Wall Pass-through Kit which incorporates the venting pass-through and outside air inlet into one component. Figure 4.9.

Inlet Cover part#
1-10-09542

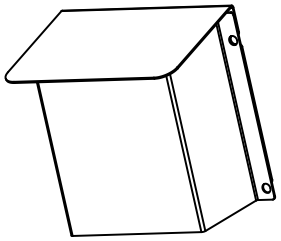


Figure 4.8

Direct Vent Wall Pass-through Kit
(Part #1-00-677177)

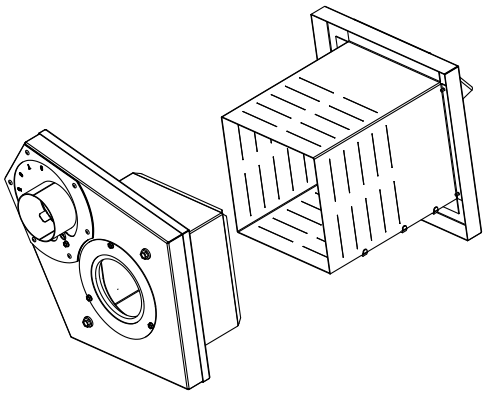


Figure 4.9

5 Appliance Set-Up

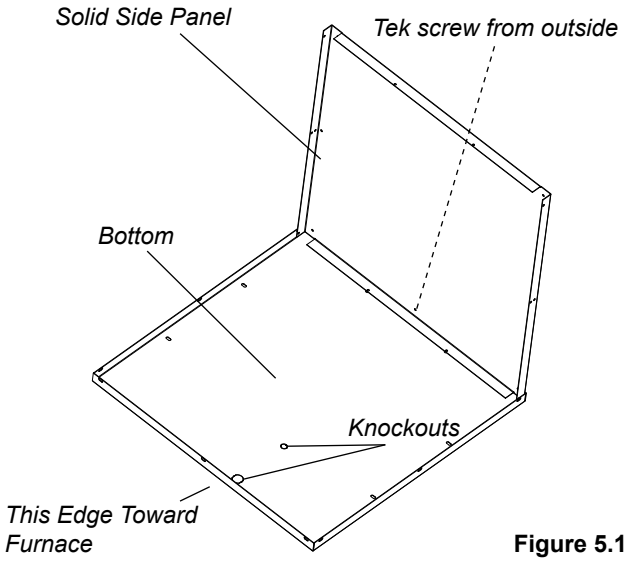


Figure 5.1

A. Return Air Box Assembly

The cold air return filter box can be assembled with the filter frame on either side or the back, provided there is access to the combustion blower and flue area.

1. Place the bottom on the floor. The edge closest to the knockouts will be the edge towards the furnace. See Figure 5.1.
2. Place the desired vertical panel inside the bottom tray and hold into place with one Tek screw in the bottom middle hole. (solid panel shown) See Figure 5.1.

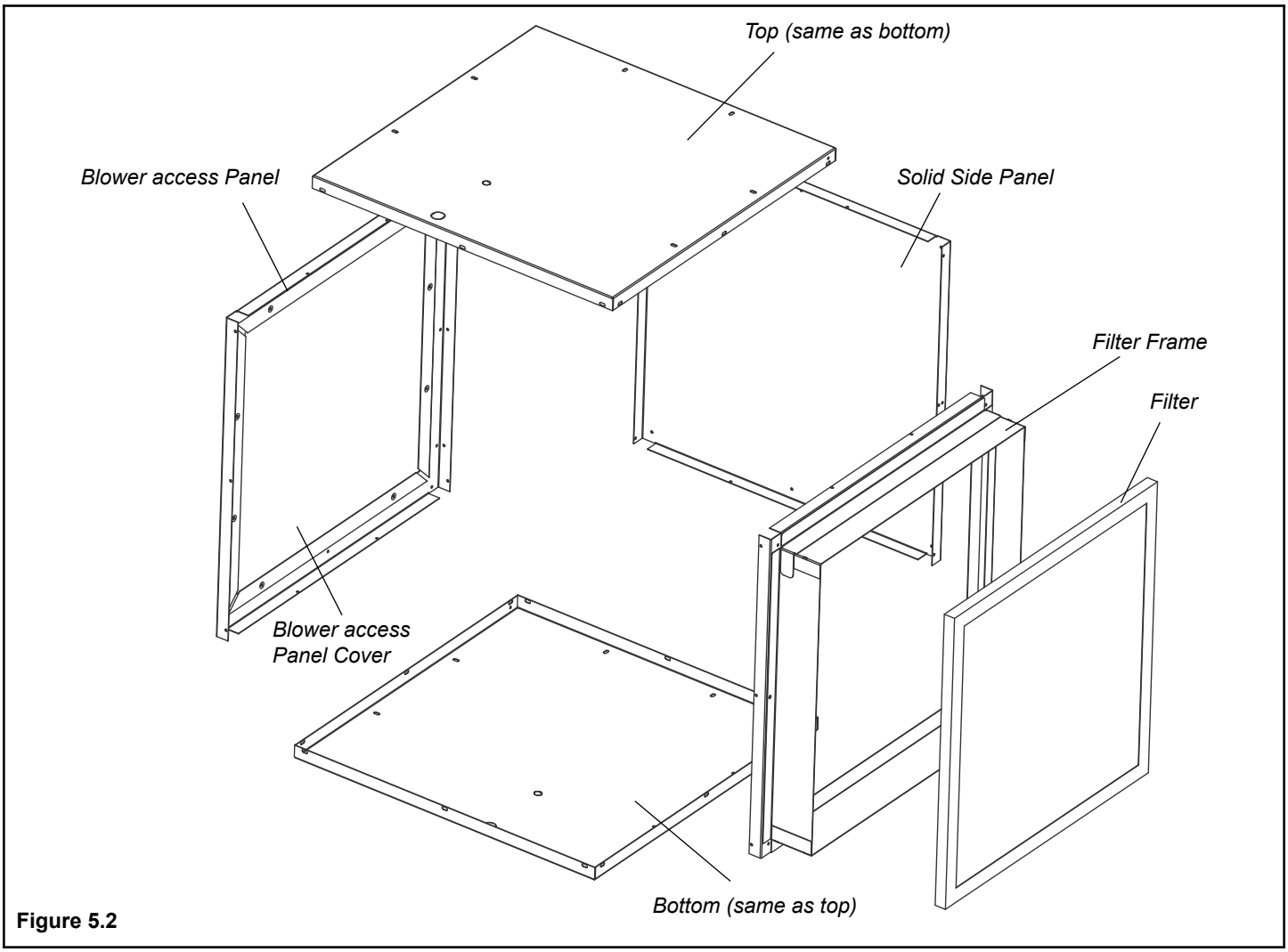


Figure 5.2

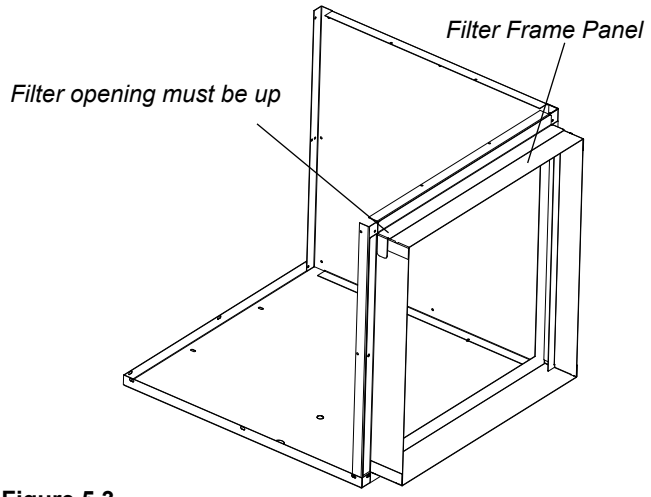


Figure 5.3

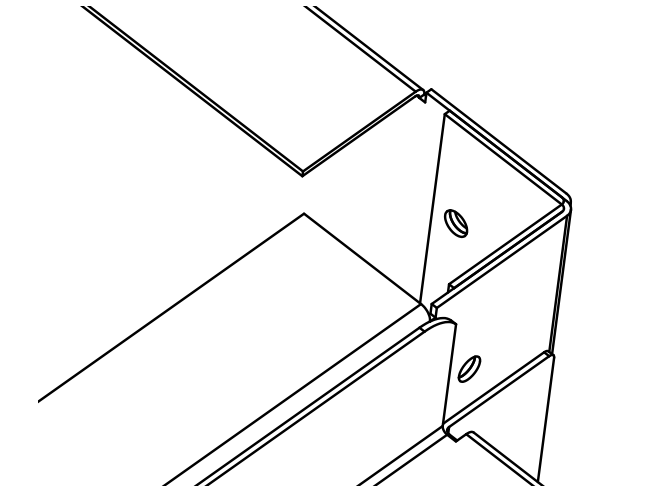


Figure 5.4

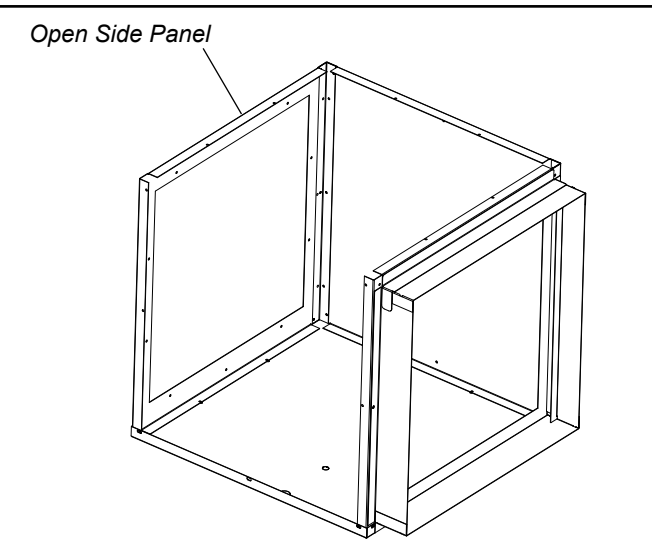


Figure 5.5

Filter Box Assembly, Cont'd

3. Place the filter frame panel inside the bottom and inside the solid panel corner. See Figure 5.4 for corner detail. Make sure that the filter opening is up Figure 5.3 Hold the filter panel to the solid panel with a Tek screw in the middle hole of the solid panel, and one in the bottom middle hole under the filter opening.

NOTE: Do not put any screws into any of the top holes at this time.

4. Place the remaining panel, (in this case the blower access panel) in the bottom panel and into the corner of the solid panel Figure 5.5. Make sure that the panel is in the upright position. There are no cover mounting holes in the bottom edge of this panel. Hold the panel into place with one Tek screw in the middle hole of the solid panel and one in the bottom middle hole of the blower access panel.

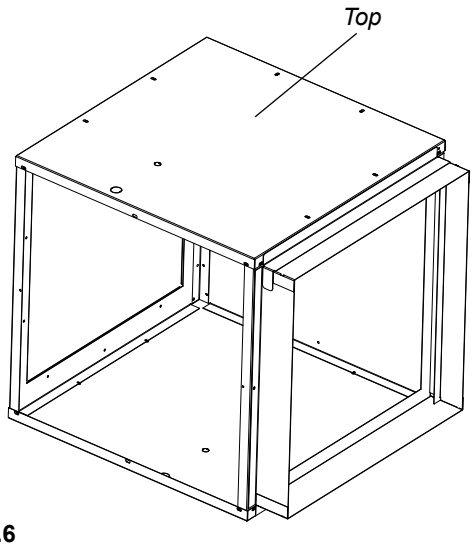


Figure 5.6

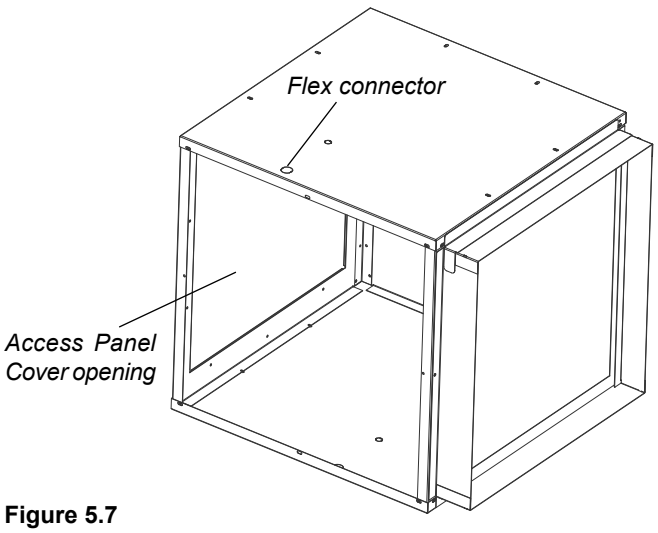


Figure 5.7

Assembling Filter Box, Cont'd

5. Place the top on the filter box as shown in Figure 5.6. At this time all Tek screws can be inserted around the filter box.

Note: Except for the (6) screws that attach the blower access panel in place.

There should not be any screws protruding from the box on the side toward the furnace. Also DO NOT put a screw into the top center of the filter panel as a screw in this location will interfere with the filter access cover.

6. Pry out the two knockouts in the top of the box and install the flex connector and the switch. See Figure 5.7. **Note:** Make sure that the setscrew on the flex connector is not pointing toward the furnace end of the box when the locknut is fully tightened. The filter box is now ready to install onto the furnace.

Note: The blower should be mounted on the furnace before the filter box for ease of distribution blower installation.

Note: It is best to wait until the blower, filter box, and cold air return duct work is installed before installing the filter and side panel.

7. After the Filter Box is installed on the furnace the electrical wiring needs to be completed. A decision must be made as to which speed suites your installation.

   Black - Hi
   Yellow - Med-Hi
   Orange - Med-Low
   Red - Low

(Note: the purple wire on the 1638 cfm blower is neutral, and gets spliced to the white neutral wire.)

8. Install the access panel cover by hooking the lip at the bottom of the cover over the edge in the filter box. Use 6 Tek screws to secure the access panel.

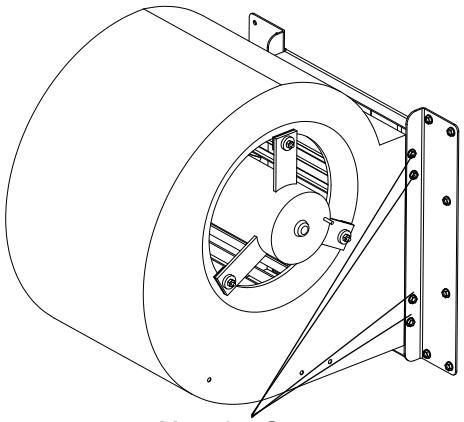


Figure 5.8

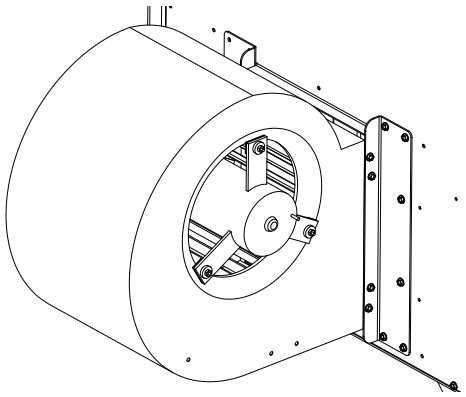


Figure 5.9

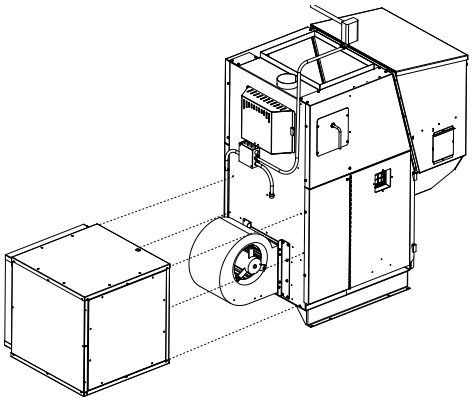


Figure 5.10

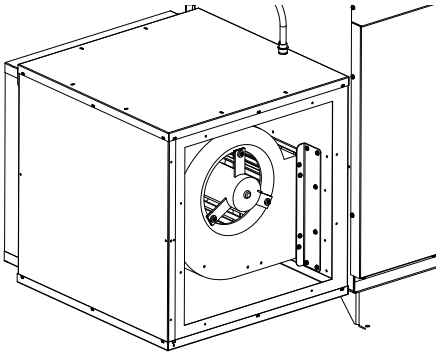


Figure 5.11

B. Blower Assembly

Install the blower mounting brackets on the blower as shown in Figure 5.8.

1. Install (4) Tek screws on each side where shown in Figure 5.8. Start with the two center screws.

NOTE: There are two small holes in the discharge end of the blower that match the two center holes on the small angle of the blower bracket. The two (2) outer holes are drilled by the Tek screws.

2. Mount blower with brackets installed on the furnace as shown in Figure 5.9. Each side will require 6 Tek screws.

NOTE: These Blower Motors are not designed to be operated without any positive static back pressure. OPERATION WITHOUT SUPPLY DUCT WORK OR IN FREE AIR WILL CAUSE MOTOR OVERLOAD AND PREMATURE FAILURE.

⚠ CAUTION

Regardless of the supply air duct size installed, the Distribution Blower Motor **MUST** be checked for running Amperage. Check the motor name plate for the full load AMPS. If the amperage is running higher than that listed, a supply air restricting damper may be required to increase the supply plenum positive static pressure.

3. Mount the filter box on the furnace with (6) #10 x 3/4 Tek screws, 3 on each side Figure 5.10. Visually locate these holes so you are familiar with their location on the filter box and the furnace. Access to the mounting holes can be gained through the blower access panel cover and the filter opening. Figure 5.11.

Note: Two pieces of 2x4 stacked laying flat on the floor 12 inches from the blower opening will support the filter box during installation

C. Firebrick installation-required

The firebrick is shipped in the ash pan. It will need to be placed on the brick shelf Figure 5.12. It can be installed with either face to the fire. Hold the brick longways and slide it down into the slot on the shelf. There is a stop at the rear of the shelf to stop the rearward travel. The brick just sits on the shelf in the upright position.

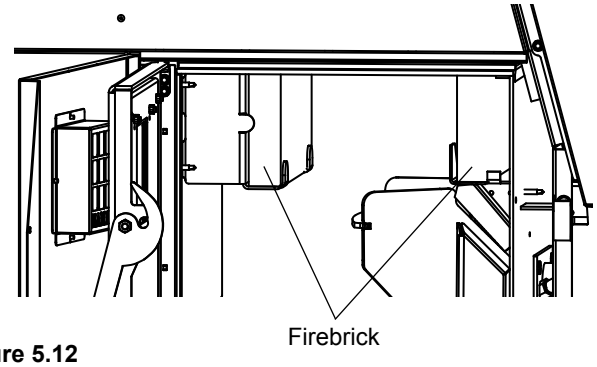


Figure 5.12

D. Wall Control

The Wall Control (Figure 5.13) sends and receives information from the control board through a 4 wire Datacom cable. There is a 100' length of this cable supplied with the furnace. 100' lengths of this cable can also be ordered separately, part #3-20-02583. Alternately, any Datacom cable -CAT3- 2 twisted pair 24ga solid wire can be acquired at a local electrical supply house. Also any CAT3-24ga. solid wire 2, 3, or 4 pair cable can be used because they all have the same pair color combinations. The maximum length of wall control wiring is 100 feet.

The furnace connecting point is a 4 pole screw terminal block on the side of the hopper just around the corner to the right of the control. Follow the wiring instructions on the label alongside the terminal block Figure 5.14.

⚠ CAUTION

With this small gauge of wire, care must be taken not to over-tighten the terminal screws thus, breaking the wire.

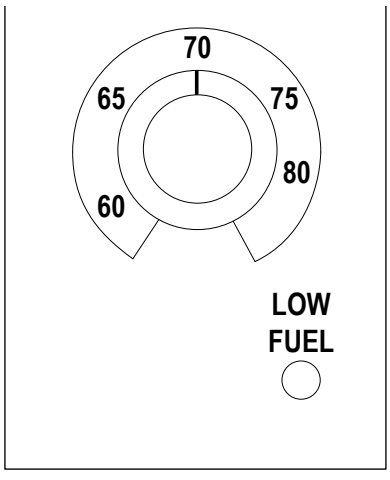


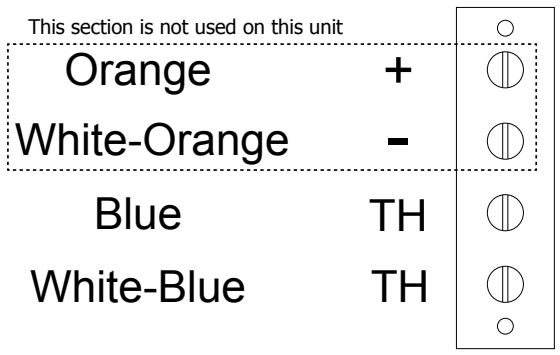
Figure 5.13

There are tie-wrap holes in the face of the hopper approximately every 6" to keep the cable secure and out of the way.

The Wall Control is made to fit on a standard wall case electrical box. It could also be mounted directly to a stud using 2 drywall screws. In either case the screws should be turned in and tested for a snug fit when the Wall Control is slid down over the screws. The Wall Control only hangs on the screws so a good fit is important.

Remove the Wall Control and make the Datacom cable connections with the UY auto splicers provided. **DO NOT STRIP THE WIRES**. Following the wiring diagram on the inside of the Wall Control make each splice. See Figure 5.14. Insert the two matching color wires fully into the two holes of one of the UY connectors. A pair of standard Channel-lock pliers works ideally to squeeze the raised button down into the UY connector body. Extra UY connectors can be purchased. Part # 3-20-00200

NOTE: A pair of needle nose pliers may be helpful to insert the BLUE T-stat wires fully into the connector. Visually inspect to see that the wires are fully inserted before squeezing the UY splicer.

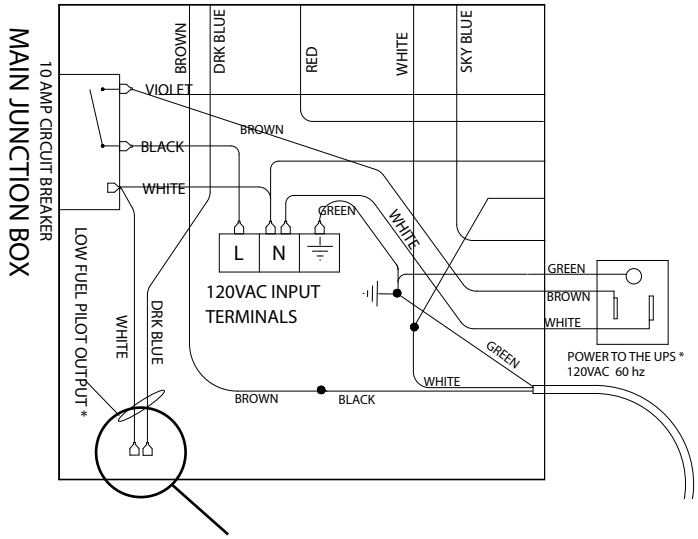


Datacom Cable	Wall Control	
Orange -	Red	(+ LED)
Blue/White-	Blue	(Tstat)
Orange/White-	White or Blk	(- LED)
Blue-	Blue	(Tstat)

Figure 5.14

If installing a bulk hopper auger system:

The PF-120 has a pilot output that energizes when the low fuel sensor is activated. See Wiring diagram below of Main Junction Box.



This pilot output can operate a relay to start and stop the bulk hopper auger motor.

Note: These wires are to operate a relay ONLY.

Note: Power for the bulk hopper auger motor CAN NOT be taken from this junction box.

E. Installing Duct System

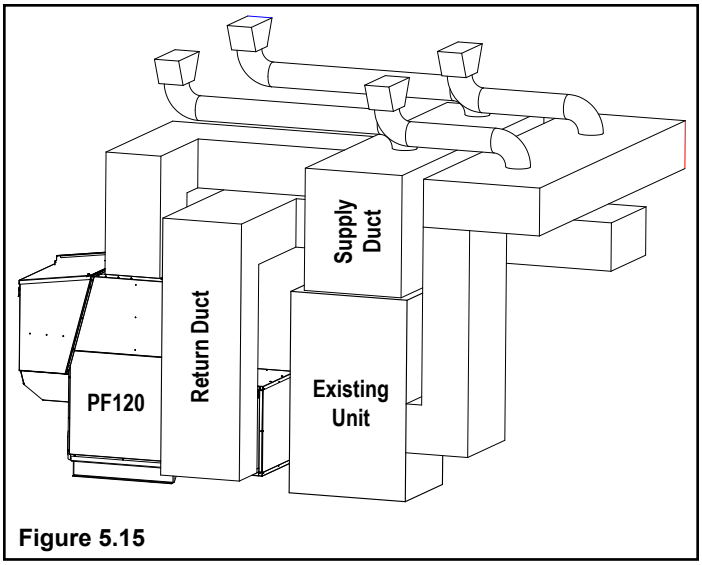


Figure 5.15

Installing Duct

The pellet furnace may be connected to a gas or oil-fired central furnace or heat pump duct system Figure 5.15. Prior to installation, determine whether all requirements for installation including all clearances can be met.

The pellet furnace warm air supply and the cold air return must be installed in a parallel arrangement. EXAMPLE: The warm air supply duct from the pellet furnace is to be connected to the warm air supply of the existing furnace. Also the cold air return duct from the existing furnace is to be connected to the cold air return duct of the pellet furnace. Isolation dampers (2) should be installed in the ductwork. (1) in the warm air supply duct for the existing furnace and (1) in the warm air supply duct of the pellet furnace after or “downstream” of the high limit/fan control. These dampers can be manually operated or fully automatic. In either case, the unit that is not being used must be prevented from being operated. (This also can be done manually or automatically.) **NOTE:** Any control wiring, power wiring needed should be performed by a qualified installer and/or electrician.

The warm-air supply outlet of the pellet furnace shall not be connected to the cold-air return inlet of the existing furnace because of the possibility of overheating components of the existing furnace, causing the existing furnace to operate other than as intended.

We recommend that the warm air supply plenum be constructed of sheet metal.

DO NOT USE DUCT ELBOWS HAVING AN INSIDE RADIUS OF LESS THAN 150 MM (6 IN).

Add-on unit shall only be installed on a furnace duct system and chimney that are in good operating condition.

The duct piping must be of metal construction in accordance with NFPA 90B, 2-1.3.

DO NOT CONNECT TO A DOWN FLOW FURNACE.

DO NOT CONNECT DUCTWORK SO THAT A REVERSE FLOW IS POSSIBLE.

Recommendations for Supply Air and Return Air duct sizing.

The speed or velocity of air moving through duct systems increases as the duct decreases in size with the same CFM blower. The sound of air flowing through the duct increases as the velocity increases. Therefore the largest duct size practical should be used.

The velocity to sound level must be taken into consideration when connecting this furnace into an existing duct system.

As a primary source furnace the duct system can be installed to fit the customers needs.

Velocity	**500fpm**	**700fpm**	**900fpm**
Static-In.	W.C.	.3 Minimum to .6 Maximum	
1638 cfm	470 in²	360 in²	290 in²

(These duct sizes are only recommendations.)

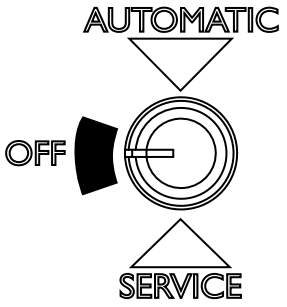
The Return Air duct system should be sized approximately 10 percent larger for heating only systems and 20 percent larger if air conditioning is installed.

⚠ CAUTION

Regardless of the supply air duct size installed, the Distribution Blower Motor **MUST** be checked for running Amperage. Check the motor name plate for the full load AMPS. If the amperage is running higher than that listed, a supply air restricting damper may be required to increase the supply plenum positive static pressure.

NOTE:

It is highly recommended that the furnace control be turned to the “OFF” position when air conditioning is being used, whether or not it is interconnected.



F. Adding Air Conditioning

An easy rule of thumb for A/C CFM blower size is, .75 to 1 CFM for each square foot of conditioned space. (standard 8' ceiling height)

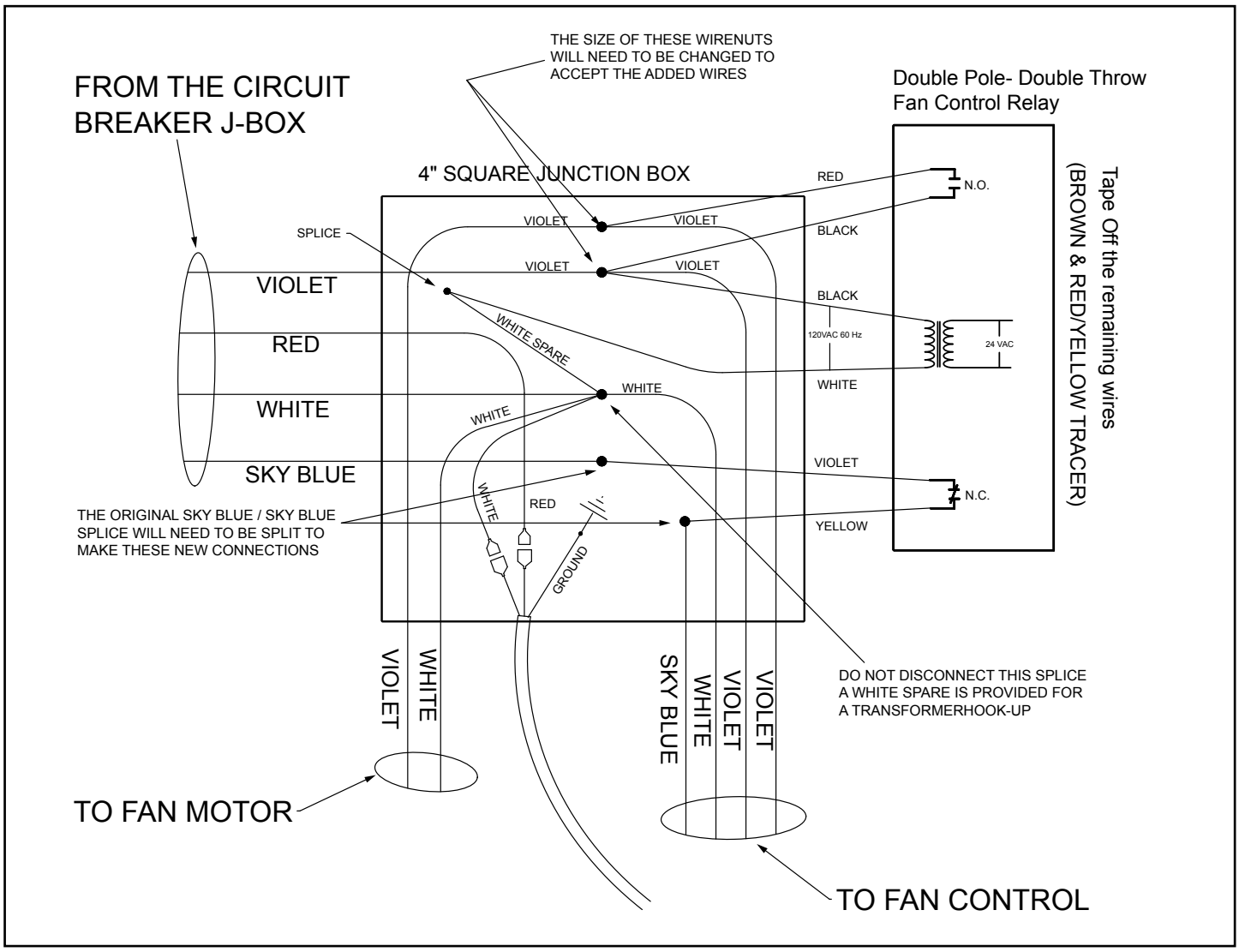
This furnace can be fitted with an air conditioning coil mounted in the supply air plenum.

HHT is not responsible for sizing, duct placement, or interconnections. However we have made adding A/C to the furnace easier with the information listed below.

There is a factory installed junction box ready to accept your A/C relay. The A/C fan control center with 40 va transformer must have a DPDT relay. White Rodgers # 90-112, part # 3-20-38056 is available. Other brands are also acceptable for use.

The wiring should be done as per the wiring diagram below. The low voltage wiring to the outside condensing unit and the cooling thermostat are not shown. See condensing unit diagrams for that information.

This style of relay is used to lock out the feeder system of the pellet furnace when the A/C unit is calling for cooling. This is a fail-safe against both units operating at the same time.



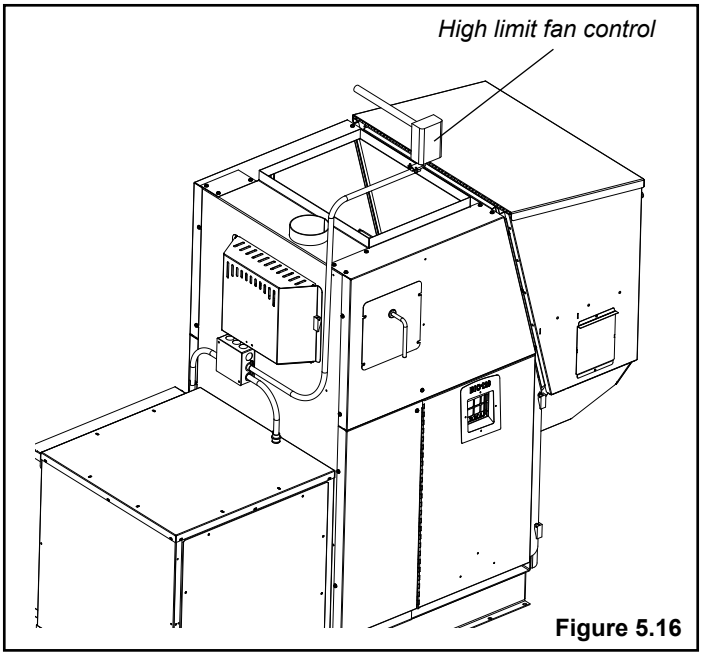


Figure 5.16

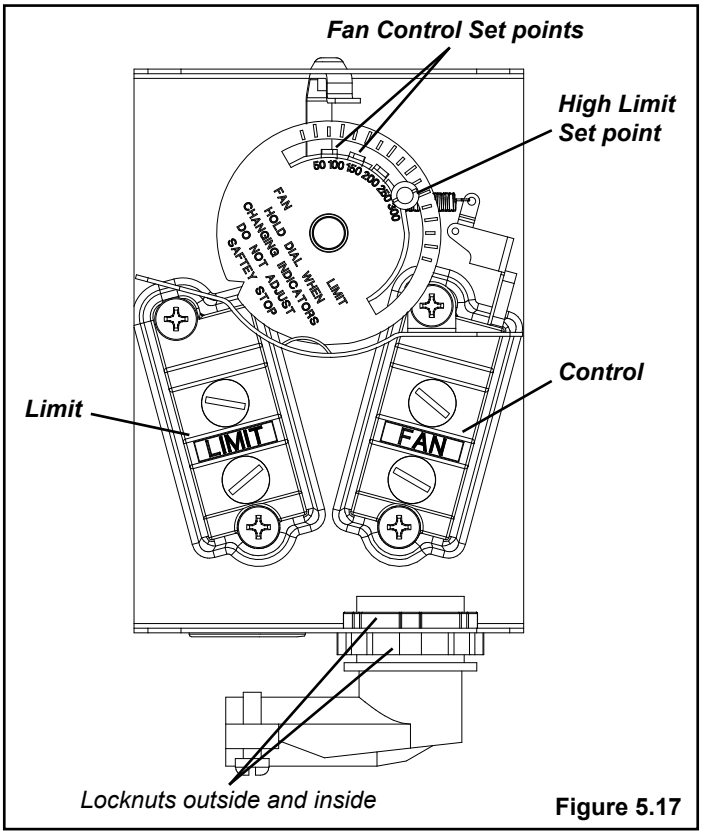


Figure 5.17

NOTE: KEEP THE FAN/LIMIT CONTROL INSTRUCTIONS WITH THE OWNERS MANUAL FOR FUTURE REFERENCE.

NOTE: If fans are used in the fuel storage area, they should be installed so as not to create negative pressure in the room where the solid-fuel-burning appliance is located.

G. Fan/High Limit Control

1. The Fan Control must be placed in the discharge plenum approximately 11 inches above the discharge opening of the furnace, as close to center as possible.

Note: The best place is on the same side as the ash door because of ease of access. Figure 5.16.

2. Install the flex and wiring.
3. Make sure that the flue venting will not interfere with the flex to the Fan Control.
4. Pry out one of the bottom knockouts of the Fan Control. Install the 90° degree flex connector as shown in Figure 5.17. One of the locknuts stay on the outside of the box and one goes on the inside to tighten the connector into place. This allows for maximum room for the wires around the switches.
5. **REMOVE THE COPPER JUMPER BETWEEN THE LIMIT AND CONTROL SWITCHES. (It is not needed.)**
6. Connect the two VIOLET & Black wires to the FAN CONTROL switch. (It doesn't matter which wire is on which screw). Figure 5.17.
7. Connect the WHITE and SKY BLUE wires to the LIMIT switch. (It doesn't matter which wire is on which screw). Figure 5.17.
8. Make sure that all of the wires are out of the way when closing the cover. (Excess twisting and pinching of the wires could cause a short circuit.)
9. **HIGH LIMIT** setup: Rotate the high limit pointer clockwise until it is against the tamper-proof screw. (Never adjust this screw)
10. **FAN CONTROL** setup: Move furthest left pointer to the 120° position, then move the pointer to the right of it to the 150° position. Figure 5.17. This is a good starting point, however, the settings between the 2 pointers may need to be changed if short cycling occurs.

Note: This is the best fan control position we have found during factory testing. These fan control settings can be adjusted if desired.

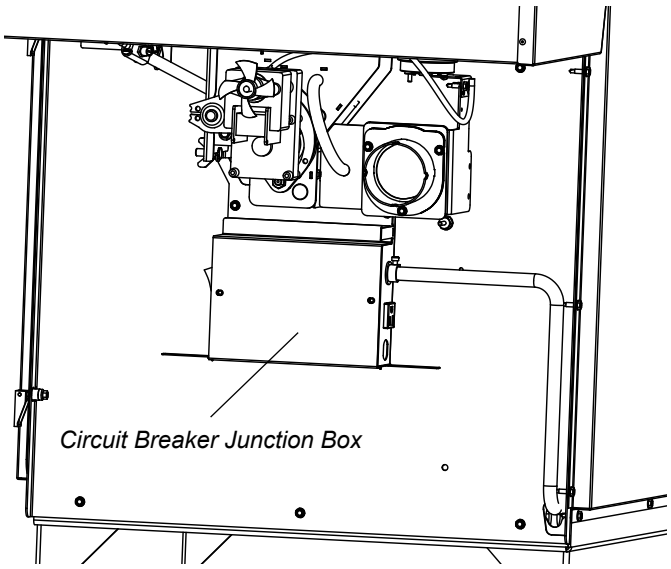


Figure 5.18

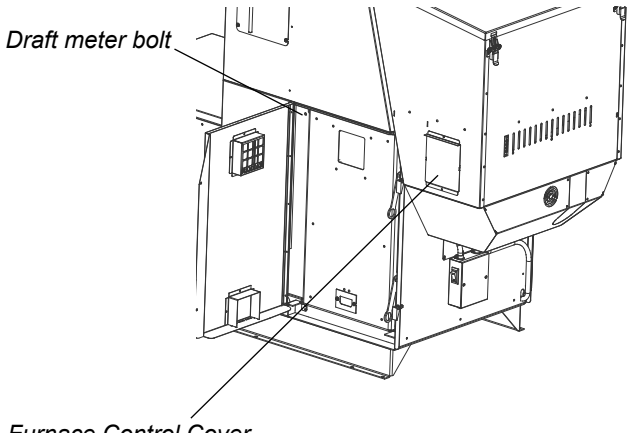


Figure 5.19

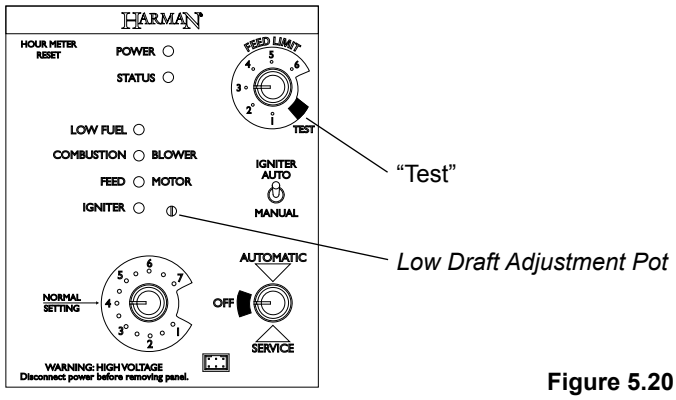


Figure 5.20

H. Installing Electrical Power

To install power to the furnace first remove the cover on the circuit breaker junction box. Figure 5.18.

Inside you will find the main terminal block. Reference Section 6, Item B "Wiring Diagram" of this manual for location of main terminal block and proper power connections. In the bottom of the box a knockout hole is provided for the incoming wire and bulk hopper relay.

The **minimum** recommended circuit is 15 Amp 120 VAC, 60 Hz. This furnace should be the only appliance on the circuit.

This furnace should never be powered by the use of an extension cord.

The recommended high and low voltages are, 130 VAC, 60 Hz maximum high voltage, and 113 VAC, 60 Hz minimum low voltage.

The furnace will continue to operate at voltages as low as 105 VAC, although it can not be guaranteed that automatic ignition will occur. Also, there is the possibility of a distribution blower motor overload.

NOTE: If other sources of electrical power are to be used (such as a generator) for normal operation or emergency operation, this source should be checked before installation. Many generators and inverters may not supply 120 VAC. 60Hz. power stable enough to operate the control board properly. (Control board damage could occur).

Checking & Recording the Low Draft:

After the venting is completed, the firebox low draft will need to be checked and possibly adjusted. After removing the 3/8" bolt from the draft hole shown in Figure 5.19, insert the draft meter tube. The inner ash door and the hopper lid must be latched during this test. (It is recommended that the draft meter have a scale of 0 to 1" WC.)

Turn the Feed Adjuster to "Test". this will start the combustion blower and allow you to check and record the High Draft _____ - IWC date _____ (There is no adjustment for the High Draft)

After the first 60 seconds, the "Test" mode lowers the combustion blower voltage to the Low Burn voltage. During this lowered voltage cycle the **low burn draft must be checked** and adjusted if necessary. The recommended low draft setting should be between -.45 & -.55 IWC. Depending on the amount of vertical rise, it may not be possible to get a low draft reading in this range. In this case, a maximum low draft of -.55 is acceptable.

The adjustment screw is through the small hole to the right of the Igniter Light. Figure 5.20. Adjusted the Low Draft to _____ -IWC.

Don't forget to turn off of "Test" mode.

6 Reference Material

A. Safety Reminders

When installing and operating your PF-120, respect basic safety standards. Read these instructions carefully before you attempt to install or operate the PF-120. Failure to do so may result in damage to property or personal injury and may void the product warranty.

Consult with your local building code agency and insurance representative before you begin your installation to ensure compliance with local codes, including the need for permits and follow-up inspections.

Due to high temperatures, this furnace should be placed out of traffic and away from combustible materials.

Children and adults should be alerted to the hazards of high surface temperatures and should stay away to avoid burn to skin and/or clothing.

Young children should be carefully supervised when they are in the same room as the furnace.

Clothing and other flammable materials should not be placed on or near this furnace.

Installation and repair of this furnace should be done by a qualified service person. The appliance should be inspected before use and at least annually by a qualified service person. More frequent cleaning will be required. It is imperative that control compartments, burners, and circulating air passageways of this furnace be kept clean.

After installation of the add-on, maintain the air flow through the oil or gas furnace to the specifications of the manufacturer of the oil furnace.

The installation of a solid fuel furnace shall comply with the applicable requirements of CSA B365, if changes are made to the installation of the oil furnace, they shall comply with CSA B139.

The installation of a gas furnace shall comply with the applicable requirements of CSA B365, and if changes are made to the installation of the gas furnace, including clearances for servicing, these shall comply with CSA B149.1 and CSA B149.2.

- **IF APPLICABLE - OPERATE THE ELECTRIC FURNACE PERIODICALLY TO ENSURE THAT IT WILL OPERATE SATISFACTORILY WHEN NEEDED.**
- **THE OPERATION OF THE GAS FURNACE MUST BE VERIFIED FOR ACCEPTABLE OPERATION BEFORE AND AFTER INSTALLATION OF THE ADD-ON APPLIANCE BY A GAS FITTER WHO IS RECOGNIZED BY THE AUTHORITY HAVING JURISDICTION."**
- **DO NOT CONNECT TO ANY FURNACE THAT HAS NOT BEEN CERTIFIED INITIALLY AS COMPLYING WITH ANSI Z21.47/CSA 2.3 OR ITS PRECEDENTS.**
- **DO NOT CONNECT TO ANY FURNACE THAT IS NOT EQUIPPED WITH AN AIR-CIRCULATION BLOWER.**
- **DO NOT CONNECT, UNDER ANY CIRCUMSTANCES, TO THE CHIMNEY OR VENT SERVING A GAS FURNACE OR GAS APPLIANCE.**
- **IF APPLICABLE - OPERATE THE GAS-FIRED UNIT PERIODICALLY TO ENSURE THAT IT WILL OPERATE SATISFACTORILY WHEN NEEDED.**

⚠ CAUTION

THE FURNACE IS HOT WHILE IN OPERATION.

KEEP CHILDREN, CLOTHING AND FURNITURE AWAY. CONTACT MAY CAUSE SKIN BURNS.

⚠ WARNING

KEEP COMBUSTIBLE MATERIALS SUCH AS GRASS, LEAVES, ETC. AT LEAST 3 FEET AWAY FROM THE POINT DIRECTLY UNDER THE VENT TERMINATION.

⚠ WARNING

USE OF IMPROPER FUELS, FIRE STARTERS OR ALTERING THE FURNACE FOR HIGHER HEAT OUTPUT MAY CAUSE DAMAGE TO THE FURNACE AND COULD RESULT IN A HOUSE FIRE. USE ONLY APPROVED FUELS AND OPERATION GUIDELINES

⚠ CAUTION

This appliance must be vented to the outside.

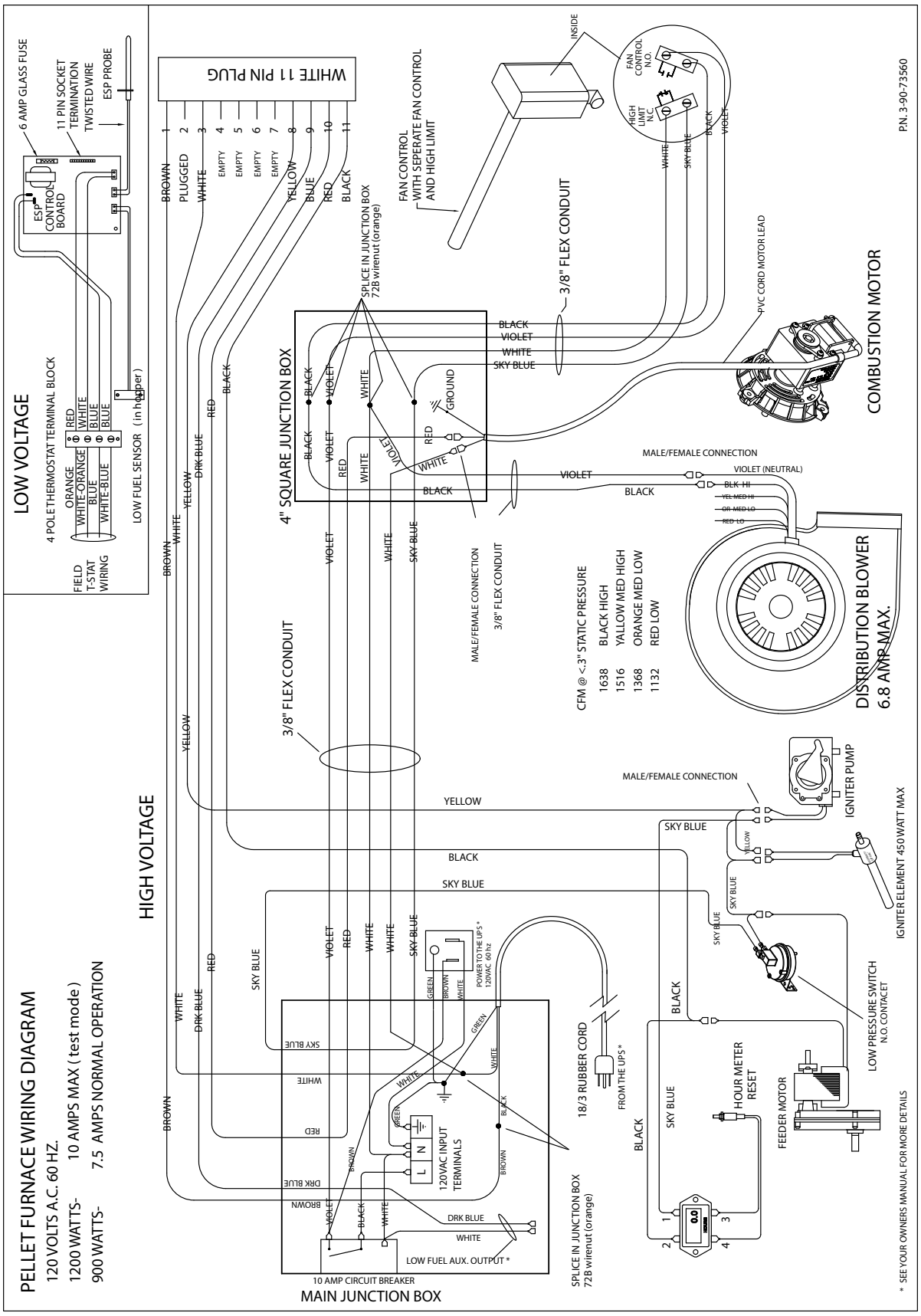
⚠ CAUTION

THE BLOWER ITSELF SHALL NOT BE CHANGED

⚠ CAUTION

THE EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE INSTRUCTIONS OF THE MANUFACTURER AND IN A MANNER ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION BY EXPERIENCED PERSONNEL. WHEN REQUIRED BY THE AUTHORITY HAVE JURISDICTION, SUCH PERSONNEL SHALL BE LICENSED TO PERFORM THIS SERVICE.

B. Wiring Harness



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For the location of your nearest Harman® dealer,
please visit www.harmanstove.com.