



# INSTALLATION AND OPERATION MANUAL

## FREESTANDING PELLET FIRED STOVE



**www.nficertified.org**

We suggest that our pellet hearth products be installed and serviced by professionals who are certified in the U.S. by the National Fireplace Institute® (NFI) as NFI Pellet Specialists or who are certified in Canada by Wood Energy Technical Training (WETT).



**Wood Energy  
Technical Training**  
[www.wettinc.ca](http://www.wettinc.ca)



**RETAIN THESE  
INSTRUCTIONS  
FOR FUTURE  
REFERENCE**

### Freestanding Model Cascade

These appliances must be properly installed and operated in order to prevent the possibility of a house fire. Please read this entire owner's manual before installing and using your pellet stove. Failure to follow these instructions could result in property damage, bodily injury or even death. Contact your local building or fire officials to obtain a permit and information on any installation requirements and inspection requirements in your area.



P/N 775,024M Rev. C, 12/03

## IMPORTANT WARNINGS

**CAUTION:** Read this manual thoroughly before starting installation. For your safety, follow the installation, operation and maintenance instructions exactly without deviation. Failure to follow these instructions may result in a possible fire hazard and will void the warranty. If this appliance is not properly installed, a house fire may result. Contact local building or fire officials about requirements and installation inspection in your area.

1. **DO NOT CONNECT THIS UNIT TO A CHIMNEY FLUE CONNECTED TO ANOTHER APPLIANCE.**
2. Do not connect this appliance to air ducts or any air distribution system.
3. Do not install a flue damper in the exhaust venting system of this appliance.
4. Do not use class B venting intended for gas appliances as a chimney or connector pipe on a pellet-fired appliance.
5. The minimum clearances must be maintained for all combustible surfaces and materials including; furniture, carpet, drapes, clothing, wood, papers, etc. Do not store firewood within this clearance space.
6. **INSTALLATION DISCLAIMER** - This stove's exhaust system works with negative combustion chamber pressure and a slightly positive chimney pressure. Therefore, it is imperative that the exhaust system is gas tight and installed correctly. Since Lennox Hearth Products has no control over the installation of your stove, Lennox Hearth Products grants no warranty, implied or stated for the installation or maintenance of your stove, and assumes no responsibility for any consequential damage(s).
7. Burning any kind of fuel consumes oxygen. If outside air is not ducted to the appliance, ensure that there is an adequate source of fresh air available to the room where the appliance is installed.
8. The stove will not operate using natural draft, nor without a power source for the blower and fuel feeding systems.
9. Never use gasoline, gasoline-type lantern fuel, kerosene, charcoal lighter fluid, or similar liquids to start or "freshen up" a fire in this heater. Keep all such liquids well away from the heater while it is in use.
10. **CONTINUOUS OPERATION:** When operated correctly, this appliance cannot be overfired. Continuous operation at a maximum burn can, however, shorten the life of the electrical components (blowers, motors, and electronic controls), and is not recommended. Typical approved operation would include running at the low to mid range setting with occasional running on the maximum setting during the coldest periods of the winter. The blower speed control should be turned to high when operating the stove on the high heat setting.
11. **CAUTION: NEVER PUT FINGERS NEAR AUGER.** Pellet fuel is fed to the UltraGrate™ by a screw auger. This auger is driven by a high torque motor. The auger is capable of doing serious harm to fingers. Keep pellets in the hopper at all times and keep fingers away from auger. The auger can start and stop automatically at any time while the stove is running.
12. **CAUTION: HOT WHILE IN OPERATION.** An appliance hot enough to warm your home can severely burn anyone touching it. Keep children, clothing and furniture away. Contact may cause skin burns. Do not let children touch the appliance. Train them to stay a safe distance from the unit.
13. **APPROVED FUEL:** This appliance is designed specifically for use only with pelletized wood fuels only. With its advanced UltraGrate™ technology, this appliance is designed and approved for the burning of wood residue pellets with up to 3% ash content. This appliance is NOT approved to burn cardboard, nut hulls, cherry pits, corn, etc. regardless if it is in pellet form. Failure to comply with this restriction will void all warranties and the safety listing of the stove. Consult with your authorized Lennox Hearth Products dealer for more information on approved pellet fuels.
14. **FLY ASH BUILD-UP:** For all wood pellet fuel-burning heaters, the combustion gases will contain small particles of fly ash. This will vary due to the ash content of the fuel being burned. Over time, the fly ash will collect in the exhaust venting system and restrict the flow of the flue gases. The exhaust venting system should be inspected regularly and cleaned as necessary.
15. **SOOT FORMATION** Incomplete combustion, such as occurs during startup, shutdown, or incorrect operation of the room heater will lead to some soot formation which will collect in the exhaust venting system. A precautionary inspection on a regular basis is advisable to determine the necessity of cleaning. The exhaust venting system should be inspected regularly and cleaned as necessary.
16. **DISPOSING OF ASHES:** Any ashes removed from the pellet stove must be deposited in a metal container with a tight-fitting lid. The closed container of ashes should be placed on a noncombustible floor or on the ground, well away from all combustible materials, outside of the dwelling pending final disposal. If the ashes are disposed of by burial in soil or otherwise locally dispersed, they should be retained in the closed container until all cinders have been thoroughly cooled.
17. **SAVE THESE INSTRUCTIONS.**
18. See the listing label on the appliance or see *Safety / Listing Label*, page 32.

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### LISTING / TESTING

Listing: The listing laboratory is ITS (Intertek Testing Services) and the listing mark is Warnock Hersey.

Testing: In accordance with the specifications and procedures listed in UL 1482 & ASTM E1509 for solid fuel room heater, this appliance has been independently tested to UL, ULC and CSA standards. UL 1482 states requirements for installations as a freestanding room heater. The safety listing label is located on an inside hopper surface of the pellet stove. Please read this safety label carefully. It contains important information about installation and operation of this appliance. This appliance is tested and listed for residential installation according to current national and local building codes as:

- A Freestanding Room Heater
- A Manufactured (Mobile) Home Heater

### EPA (Environmental Protection Agency)

Status: EPA Exempt - Pellet appliances that are designed with the combustion air supply exceeding the 35 to 1 (by weight) ratio are exempt from EPA regulations and are "non-affected facilities."

**PRODUCT IS SUBJECT TO CHANGE WITHOUT NOTICE.**

**CONGRATULATIONS ON THE PURCHASE OF YOUR NEW PELLET STOVE MANUFACTURED BY LENNOX HEARTH PRODUCTS.**

**When you purchased your new pellet stove, you joined the ranks of thousands of concerned individuals whose answer to their home heating needs reflects their concern for aesthetics, efficiency and our environment. We extend our continued support to help you achieve the maximum benefit and enjoyment available from your new pellet stove.**

**It is our goal at Lennox Hearth Products to provide you, our valued customer, with an appliance that will ensure you years of trouble free warmth and pleasure.**

**Thank you for selecting a Lennox Hearth Products stove as the answer to your home heating needs.**

**Sincerely,  
All of us at Lennox Hearth Products**

### PACKAGING LIST

The assembled pellet stove model Cascade, is packaged with an accessory package which contains the following:

- One - Installation and operation instructions manual
- One - Warranty
- One - Power cord
- One - Grate scraper
- One - Door handle
- One - Ash lip and screws
- One - Video

### USING THIS MANUAL

Please read and carefully follow all of the instructions found in this manual. Please pay special attention to the safety instructions provided in this manual. The homeowner's *care and operation instructions* included here will assure you have many years of dependable and enjoyable service from your appliance.

## PLANNING YOUR INSTALLATION

### QUESTIONS TO ASK LOCAL BUILDING OFFICIAL

A correct installation is critical and imperative for reducing fire hazards and perilous conditions that can arise when wood pellet burning appliances are improperly installed. The installer must follow all of the manufacturers' instructions.

The installation of this appliance must conform to local codes and applicable state and federal requirements. Familiarity with these requirements before installation is essential. Important considerations to discuss with local building officials include:

1. Applicable codes (i.e. Uniform Mechanical Code, State or Regional Codes.)?

Electrical codes:

In USA, NEC, ANSI / NFPA 70-2002.

In Canada, CSA C22.1

**Power Supply Requirements** – The power cord must be plugged into a standard, 115 volt, 60 Hz grounded electrical outlet. The approximate power requirement is 250 watts. The power supply cord must be routed to avoid contact with any of the hot or sharp exterior surface areas of the stove. When installed in a manufactured (mobile) home appliance must be electrically grounded to the steel chassis (see pages 6 and 7, *Manufactured (Mobile) Home Requirements* for additional requirements). These requirements must be met unless otherwise specified by state or local authorities.

**WARNING: ELECTRICAL GROUNDING INSTRUCTIONS: THIS APPLIANCE IS EQUIPPED WITH A THREE-PRONG (GROUNDING) PLUG FOR YOUR PROTECTION AGAINST SHOCK HAZARD AND SHOULD BE PLUGGED DIRECTLY INTO A PROPERLY GROUNDED THREE-PRONG RECEPTACLE. DO NOT CUT OR REMOVE THE GROUNDING PRONG FROM THIS PLUG. DO NOT ROUTE POWER CORD UNDER OR IN FRONT OF APPLIANCE.**

2. Local amendments?
3. Is a permit required - cost?  
You may wish to contact your insurance company to ask if they require this.
4. Is outside combustion air required?
5. Rooms where the installation is not allowed?

### INSTALLATION / MAINTENANCE STANDARDS

*National Fire Protection Association* – The primary NFPA standard that refers to installation and maintenance of pellet appliances and venting is NFPA 211: Chimneys, Fireplaces, Vents, and Solid Fuel appliances, Latest Edition.

### SELECTING A LOCATION

The design of your home and where you place your stove will determine its value as a source of heat. A wood stove depends primarily on air circulation (convection) to disperse its heat, and therefore, a central location is often best. There are other practical considerations, which must be considered before a final selection of locations is made.

- ◆ Existing Chimneys
- ◆ Pellet Fuel Storage
- ◆ Aesthetic Considerations
- ◆ Roof Design (rafter locations & roof pitch)
- ◆ Room Traffic
- ◆ Proximity to Combustibles
- ◆ Electrical Wiring

The installation of this stove will require some research. Once your options are determined, consult with your local building department who will be able to give you the necessary installation requirements for your area (Is a building permit required?, Rooms where installation may not be allowed?, etc.).

**WARNING: CHECK ALL LOCAL BUILDING AND SAFETY CODES BEFORE INSTALLATION. THE INSTALLATION INSTRUCTIONS AND APPROPRIATE CODE REQUIREMENTS MUST BE FOLLOWED EXACTLY AND WITHOUT COMPROMISE. ALTERATIONS TO THE STOVE ARE NOT ALLOWED. DO NOT CONNECT THE STOVE TO A CHIMNEY SYSTEM SERVING ANOTHER STOVE, APPLIANCE, OR ANY AIR DISTRIBUTION DUCT. FAILURE TO FOLLOW THESE INSTRUCTIONS WILL VOID THE MANUFACTURERS WARRANTY.**

### SMOKE DETECTORS

Since there are always several potential sources of fire in any home, we recommend installing smoke detectors. If possible, install the smoke detector in a hallway adjacent to the room (to reduce the possibility of occasional false activation from the heat produced by the stove). If your local code requires a smoke detector be installed within the same room, you must follow the requirements of your local code. Check with your local building department for requirements in your area.

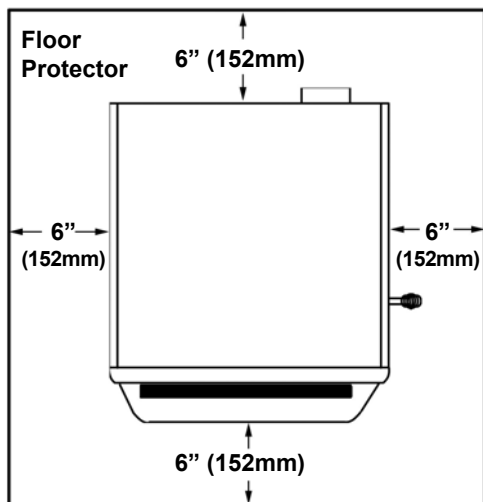
# INSTALLATION

## FLOOR PROTECTION - Cascade

This appliance requires noncombustible floor protection. If the floor protection is to be stone, tile, brick, etc., it must be mortared or grouted to form a continuous non-combustible surface. If a chimney connector extends horizontally over the floor, the protection must cover the floor under the connector and at least 2" to either side.

A noncombustible floor protector must fully cover the area beneath the appliance and extend 6" to the front, 6" to the sides, and up to 6" from the back as illustrated below.

**\*Note: When installed at clearances less than 6", floor protection is only required to extend to the wall.**



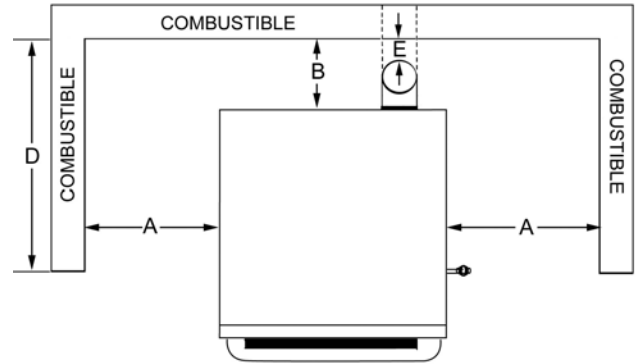
Note: Recommended clearance zone from the front of the appliance to combustibles is 4 feet minimum.

## MINIMUM CLEARANCES TO COMBUSTIBLES

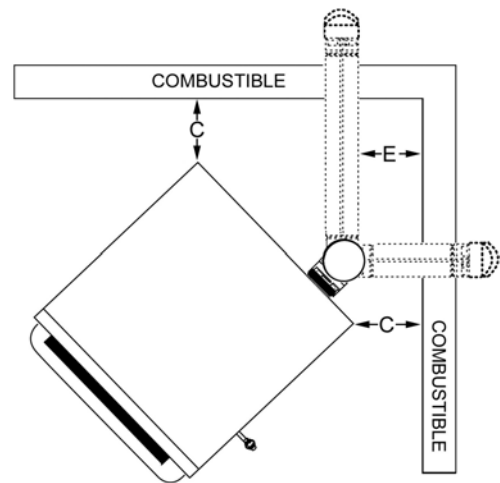
Standard residential or manufactured (mobile) home installation. These appliances require the following minimum clearances to combustibles:

Model: <b>Cascade</b>	Manufactured (Mobile) Home or Residential Installation	
	Horizontal Flue – Directly Through Wall	Interior Vertical Flue
■ Clearance to Combustibles	inch / millimeter	inch / millimeter
A - Sidewall to unit	4" / 102 mm	4" / 102 mm
B - Backwall to unit	1" / 26 mm	9" / 229 mm
C - Sidewall to unit Corner	1" / 26 mm	1" / 26 mm
D - Maximum Depth of Alcove	●24" / 610 mm	●24" / 610 mm
E - Flue to Wall	3" / 77 mm	3" / 77 mm
F – Ceiling Height above stove top	21 1/2" / 522 mm	21 1/2" / 522 mm
● Alcove Measurements: Height, Minimum - 49" / 1245 mm Width Minimum - 32" / 813 mm Depth Maximum – 24"		

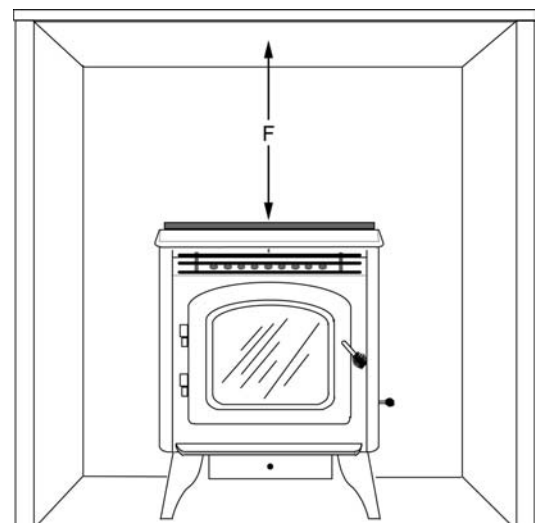
Rear Wall or Alcove



Corner



Rear Wall or Alcove



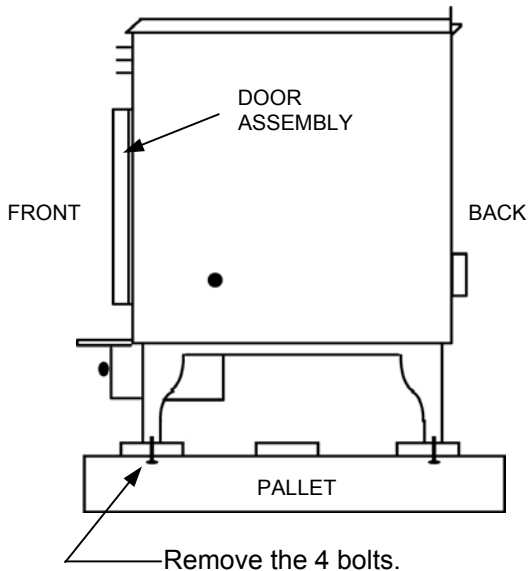
■ Minimum clearances specified may not allow for ease of operation and maintenance (please take this into account when planning the installation). If installed to the minimum clearances, removal of the appliance may be necessary for servicing.



## INSTALLATION

### REMOVE APPLIANCE FROM PALLET

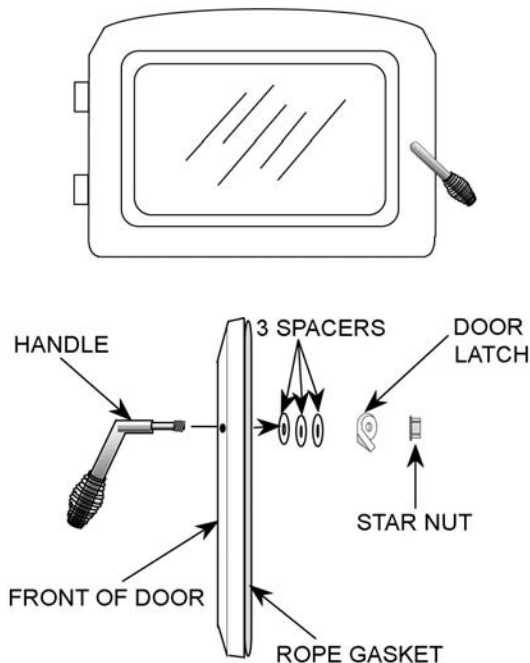
1. After removing the packaging from the stove, lift the hopper lid, and remove any pre-packaged items that were shipped in the hopper. Also open the door assembly and remove any pre-packaged items.
2. Using a 3/8" socket or open end wrench, remove the four bolts from the leg bottoms that secure the stove to the wooden pallet.



### INSTALL DOOR HANDLE ONTO DOOR ASSEMBLY

1. Remove door handle from packaging and attach to door as illustrated below.

#### Front View of Door Assembly

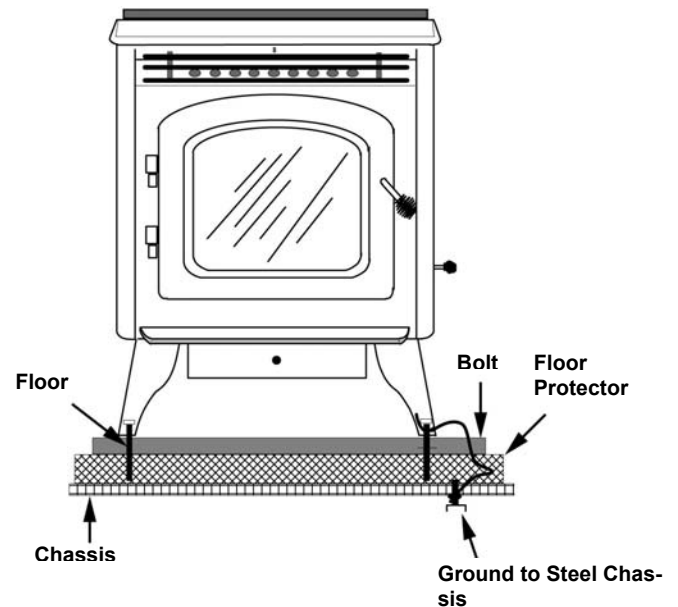


### MANUFACTURED (MOBILE) HOME INSTALLATION Model – Cascade

In addition to the standard installation instructions, the following instructions may be required by local, state or federal building codes:

- Stove must be permanently bolted to the floor.
- An outside air inlet must be provided for combustion and be unrestricted while unit is in use. Use a galvanized or stainless steel pipe for the duct. The minimum size for the duct shall be not less than 50% of the cross sectional area of the flue outlet (the outside air inlet on the stove is 2" diameter).
- Stove must be permanently electrically grounded to the steel chassis of the home. The location selected for ground attachment to the stove must be dedicated for this purpose.
- See pages 7 through 13 for additional information on venting requirements.
- Do not install appliance in a sleeping room.
- The structural integrity of the manufactured home floor, walls, ceiling and roof must be maintained.

NOTE: The grounding of this product, at installation, must comply with NFPA-70 standards, CSA C22.1 in Canada, as well as any local codes.



## INSTALLATION

### MANUFACTURED (MOBILE) HOME EXHAUST VENT PIPE INSTALLATION GUIDELINES

Use only "PL" pellet vent pipe listed to UL641 and ULC S609. Pipe should extend at least 3 feet above the part of the roof through which it passes. The top of the pipe should be at least 2 feet above the highest required elevation of any part of the manufactured (mobile) home within 10 feet of the pipe (see *Manufactured [Mobile] Home Chimney Height Requirements*, on page 9).

If the exhaust vent exits the manufactured (mobile) home at a location other than the roof, and exits at a point 7 feet or less above the ground level on which the manufactured (mobile) home is positioned, a guard or method of enclosing the pipe shall be provided at the point of exit for a height of up to 7 feet. The openings, if any, in this guard shall not allow a 3/4" rod to pass through. A 1/2" rod could pass through but should not be able to touch the pipe when inserted through the opening a distance of 4 inches.

### INSTALLATION CHECK LIST

It is strongly recommended that you have an authorized Lennox Hearth Products dealer install your stove. If you install your stove yourself, you should review your installation plan with your authorized Lennox Hearth Products dealer.

**Check list:** Check off each item as you proceed with the installation process.

- Read the ENTIRE stove installation section first.
- Determine the appropriate measurements and locations for your installation.
- Follow the general installation directions under Installation.
- Be sure to pre-fit all items before you install, fasten, or set up the stove permanently.

#### Prior to lighting your stove:

- Review the *Important Warnings* section (page 2).
- Review *Fuel Specifications* (page 17).
- Review and follow instructions in the Care and Operation Section (pages 14 to 17).
- Plug power cord connector into corresponding connector on the back of appliance.

#### After you have begun operation of your stove:

- Review the routine cleaning / maintenance information.
- Enjoy the warmth from your new Lennox Hearth Products pellet stove!

## INSTALLATION

### VENTING REQUIREMENTS

It is recommended that only an authorized dealer install your pellet stove. The specified installation requirements must be followed to ensure conformity with both the safety listing of the appliance and local building codes. All clearances, installation instructions and precautions specified by the vent manufacturer must be followed.

**Selecting a Location** - Review the appliance clearance requirements before installing the venting system (see page 5). Position the appliance far enough away from walls to allow adequate room for servicing. Choose the appliance location with the least amount of interference with the house framing, plumbing, wiring, etc.

**Preferred Vent Configuration** – For the best performance, we recommend a vent run design which runs vertically and terminates above the roofline. This design will allow natural draft to improve the flow of flue gases and will aid in combustion and stove performance.

**Type of Pipe** - This stove requires type “PL” vent pipe (pellet vent pipe, sometimes referred to as “L-Vent pellet vent”), listed to UL 641 and ULC S609. Connect the pellet vent pipe or the “tee” to the flue collar using a minimum of three screws and seal as specified in “Pipe / Liner Joint Requirements” on this page. Do not use class B gas chimney or single wall chimney as a substitute.

**Size of Pipe** -These pellet appliances are approved for use with the following vent sizes: 3” (75mm) standard, or 4” (100mm). See page 10 for determining correct size vent to use. Use a 3” (75mm) to 4” (100mm) adapter (Cat. No. 14M81) or a 3” (75mm) to 4” (100mm) “tee” in order to run 4” (100mm) pipe.

Note: If installation requires in excess of 11 feet (3 1/3 meter) of pipe, it is recommended that 4” (100 mm) pipe be used.

**Offsets** - In every installation, a single or double clean-out “tee” is recommended for every ninety-degree offset (this tee will help collect ash residue and will allow for routine cleaning without the need to disconnect sections of pipe).

*Note: Offsets and horizontal runs accumulate fly ash and soot, which reduces the exhaust flow and performance of the stove.*

Total Offsets in venting system should not exceed 270° total in direction change.

**Horizontal Runs** - The maximum total horizontal run must not exceed 10 feet (3.1 meters).

Horizontal run of pipe requires 1/4” (7mm) rise per foot.

**Pipe Clearances / Requirements** – See pipe manufacturers instructions for installation of venting components and clearances. Follow pipe manufacturers installation precautions for passing pipe through a combustible wall or ceiling (i.e. use an approved thimble).

*Notes:*

*Pellet vent pipe requires 3” (75mm) clearance from outside of pipe unless otherwise specified by vent manufacturer - all diameters: 3” (75mm) and 4” (100mm).*

*A support bracket must be installed every 4’ (1.2m) of pellet vent pipe on the exterior wall of the house unless otherwise specified by vent manufacturer.*

**Pipe / Liner Joint Requirements** - All pipe joints must be secured with a minimum of 3 screws. ALL horizontal joints must be sealed gas tight. Use RTV silicone with a rating of at least 570° F (969° C), or Interam to provide a complete seal at the flue collar and on all joints.

**Connection to Masonry Chimney through a Wall** - Be sure to verify the construction of a masonry chimney, as it may have combustible framing.

The use of single wall flex or rigid 24 gage stainless steel pipe as a liner is approved.

**Connection to an Existing Class A Chimney** - - A chimney adapter can be used to make the connection from 3” (75mm) or 4” (100mm) pellet vent pipe (listed to UL 641 & ULC S609) to existing UL chimney system. Verify with the pipe manufacturer that your pipe brands will interconnect.

**Horizontal-Vent Installations:** On all horizontal-vent installations (short, horizontal runs with no vertical pipe); care should be taken when choosing a location for terminating the vent. It is not recommended to directly vent the exhaust on the prevailing wind side of the house. It is recommended that when an appliance is vented directly through a wall, a minimum of 8’ (2.5m) of vertical pipe should be installed to create some natural draft. This will reduce the possibility of smoke or odor entering the dwelling during appliance shutdown or loss of power.



## INSTALLATION

### VENT TERMINATION

Do not terminate vent in an enclosed or semi-enclosed area such as: carports, garage, attic, crawl space, under a deck, porch, narrow walkway, closely fenced area, or any location that can build up a concentration of fumes such as a stairwell, covered breezeway etc.

Vent surfaces can get hot enough to cause burns if touched. Adults should supervise children when they are in the area of a hot stove. Non-combustible shielding or guards may be required.

**Termination Cap:** The termination of the outside chimney of the pellet stove shall be located in accordance with the following:

- A. Higher than 3' (.92m) above any forced air inlet (air conditioner, etc.) located within 10' (3m).
- B. Not less than 4' (1.2m) below, 4' (1.2m) horizontally from or 1' (3.1m) above any gravity air inlet (door, window, etc.) which flue gases could re-enter the dwelling.
- C. Not less than 2' (.6m) from combustible materials such as an adjacent buildings, fences, protruding parts of the structure, roof overhang, plants and shrubs, etc. and not less than 7' (2.1m) above grade when located adjacent to the public sidewalks (access). The final termination of the exhaust system must be configured so that flue gases do not jeopardize the safety of people passing by, overheat combustible portions of nearby structures or enter the dwelling.
- D. Not less than 3' (.92m) below an eave (maximum overhang of 3' (.92m) or any construction that projects more than 2" (51mm) from the plane of the wall.
- E. The distance from the bottom of termination to grade is 12" (305mm) minimum. This is conditional upon plants and nature of grade surface: Be careful to choose a location for the vent termination, which does not expose people or shrubs to high heat from the exhaust gases. The exhaust gases are not hot enough to ignite grass, plants and shrubs located in the vicinity of the termination although they should be a minimum of 3' (.92m) away. The grade surface under the termination must not be a lawn.
- F. Since sparks may escape from the exhaust pipe of any stove, use caution when positioning the vent pipe. Refer to pipe manufacturer's instructions when installing and terminating the exhaust). The vent pipe should be horizontal and never run the pipe in a downward direction (recommend a 1/4" (7mm) rise per foot horizontal).

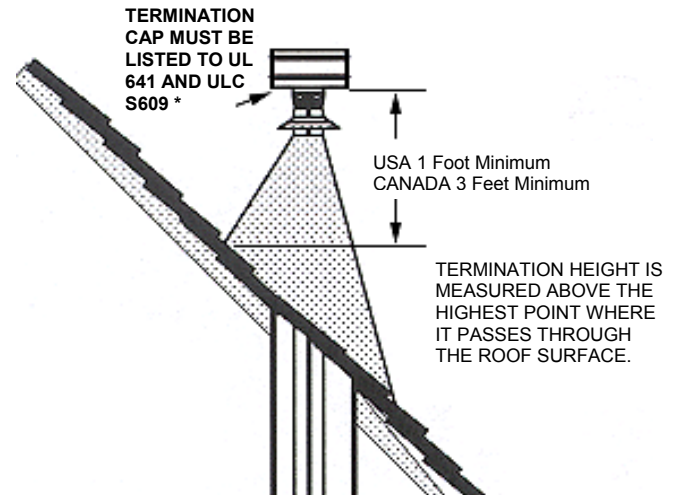
#### Notes:

- It is not recommended to terminate exhaust vent on the prevailing wind side of the house.
- It is not recommended using a termination cap with a screen (fly ash can collect in a screen resulting in blockage).

### Site Built Residential Home

#### Chimney Height Requirements

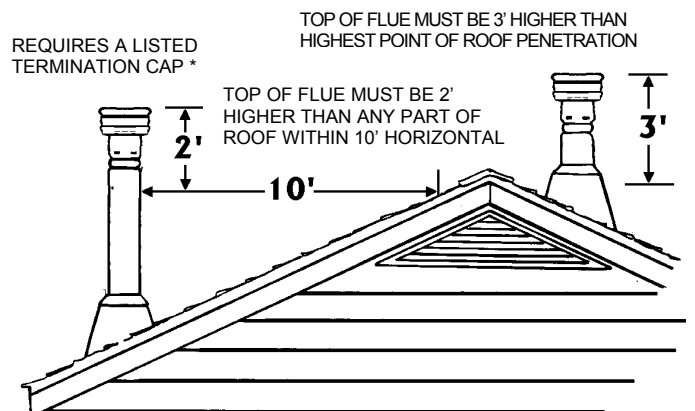
The vent termination height required is - USA, 1-foot minimum; Canada 3-feet minimum above the roof penetration point as illustrated below (Ref. USA - National Standard, NFPA 211, Clause 7-4.1 and Canada National Standard CSA B365-01, Clause 5.6). Check with your local building official for additional requirements for your area.



### Manufactured (Mobile) Home

#### Chimney Height Requirements

The chimney must extend 3' (.92m) above the level of roof penetration and a minimum of 2' (.61m) higher than any roof surface within 10' (3m) (see below). Check with your local building officials for additional requirements for your area.



To pass inspection in nearly any jurisdiction, the chimney must meet both safety and exhaust flow requirements. The (3' by) 2' by 10' rule applies to both masonry and factory built chimneys.

**\* Ref. NFPA 211 Clause 7 – 4.1.2, Vents installed with a listed cap shall terminate in accordance with the terms of the cap's listings.**

# INSTALLATION

## DETERMINING SIZE OF PIPE TO INSTALL

To determine what diameter pipe to use in an installation (3" or 4"), first find the "equivalent pipe length" using the following guidelines, then plot this figure and the altitude on the chart.

Fill out the installation chart, and calculate your total equivalent pipe length. After you have the total equivalent pipe length, use the *Pipe Selection Chart* below to determine if your installation requires 3" or 4" exhaust pipe.

### INSTALLATION CHART

Type of Pipe	# of El-bows or Feet of pipe		Equivalent Feet	Total Equivalent Feet
90° Elbows		x	5 Ft. (1.5m)	
45° Elbows		x	3 Ft. (1m)	
Horizontal Pipe		x	1 Ft. (.3m)	
Vertical Pipe		x	.5 Ft. (.15m)	

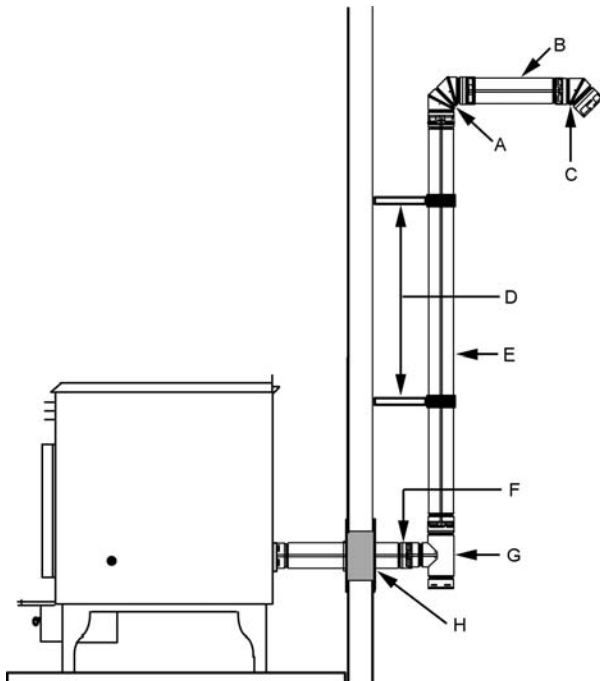
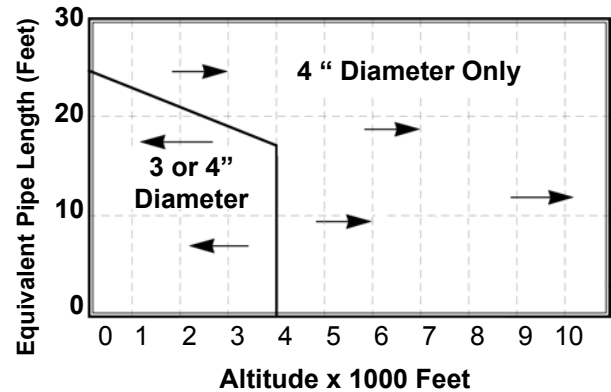
- A- 90 Degree Elbow
- B- 1' Horizontal Pipe
- C- 45 Degree Elbow
- D- Standoff Braces
- H- Wall Thimble

- E- 8' Vertical Pipe
- F- 2' Horizontal Pipe
- G- 90 Degree Tee

### SAMPLE INSTALLATION CHART

Type of Pipe	# of El-bows or Feet of pipe		Equiva-lent Feet	Total Equivalent Feet
90° Elbows / Tee (A & G)	2	x	5 Ft. (1.5m)	10 (3m)
45° Elbows (C)	1	x	3 Ft. (1m)	3 (1m)
Horizontal pipe (B & F)	3	x	1 Ft. (.3m)	3 (1m)
Vertical pipe (E)	8	x	.5 Ft. (.15m)	4 (1.2m)
				Total = 20

### PIPE SELECTION CHART



## INSTALLATION

### INSTALLING YOUR FREESTANDING PELLET STOVE Standard Horizontal Vent Installation

**All PL Venting Components must be listed to UL 641 & ULC S609**

1. Locate the proper position for the type "PL" wall thimble. Avoid cutting wall studs when installing your pipe. Use a saber saw or keyhole saw to cut the proper diameter hole through the wall to accommodate the wall thimble. Use extreme caution to avoid cutting into power lines within the wall of the home. The hole size will depend on the brand of pellet vent that you are using. Install the wall thimble in the hole.

ALL INTERLOCKING PIPE CONNECTIONS WITHIN THE ROOM MUST BE SEALED WITH RTV AND SECURED WITH A MINIMUM OF 3 FASTENERS PER CONNECTION.

2. Position the stove approximately 12" (.3m) from the wall on the floor pad. Push listed type "PL" pipe through wall thimble. Squeeze a bead of high temperature silicone (RTV) sealer around the end of the machined portion of the 3" (75mm) pipe connector on the back of the stove. Firmly push on a section of listed type "PL" pipe until inner pipe liner pushes into the bead of RTV sealer.

3. Push the stove (with pipe attached) towards wall. Pipe will go through the wall thimble. Do not position the back of the stove closer than 1" (25mm) from the wall.

Note: Greater back clearance will improve the serviceability of the stove.

4. Install listed type "PL" 45-degree elbow with rodent screen or cap (optional) on outside end of pipe. The rodent screen should be no less than 1/2" (13mm) mesh and may clog with soot and ash if left unattended during the burn season.

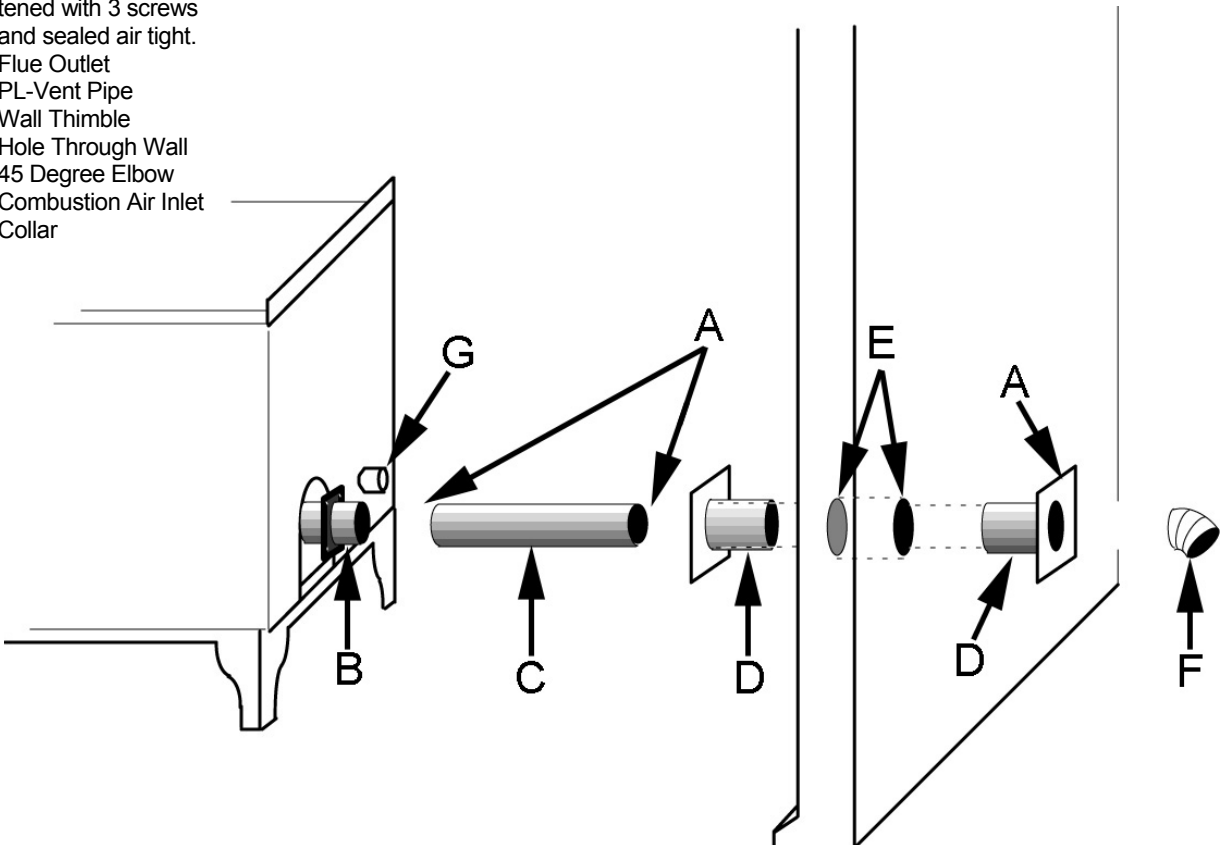
NOTE: The end of the exhaust pipe must extend a minimum of 12" (.3m) from the outside of the building.

5. If the installation includes a source of outside combustion air; cut a separate hole through the wall for the fresh air tube. This tube should be 1-5/8" (42mm) [min.] diameter, steel only. Connect outside air pipe to air inlet on stove. This tube must be terminated with a 90 degree elbow or hood.

NOTE: Combustion air may also be drawn from a vented crawl space under the home. All joints for connector pipe are required to be fastened with at least three screws. If vented horizontally, joints shall be made gas-tight in a manner as specified above. Install vent at clearances specified by the vent manufacturer.

#### Standard Horizontal Exhaust Installation (Direct Vent)

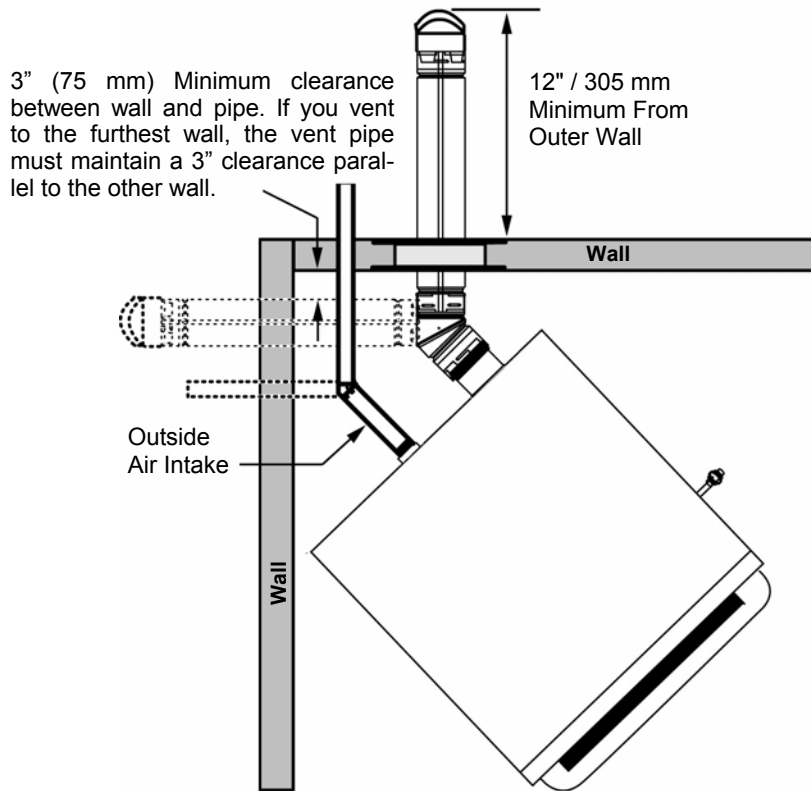
- A. Joints must be fastened with 3 screws and sealed air tight.
- B. Flue Outlet
- C. PL-Vent Pipe
- D. Wall Thimble
- E. Hole Through Wall
- F. 45 Degree Elbow
- G. Combustion Air Inlet Collar



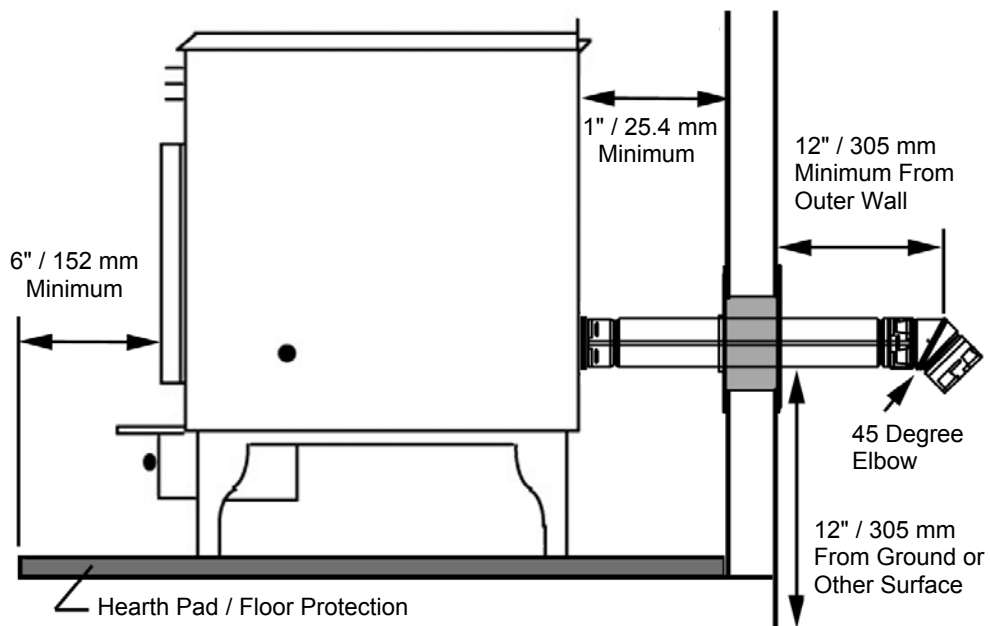
# INSTALLATION

## Standard Horizontal Installation Configurations

**Corner Through the Wall  
Top View Illustration**



**Horizontal Vent Through the Wall  
Side View Illustration**



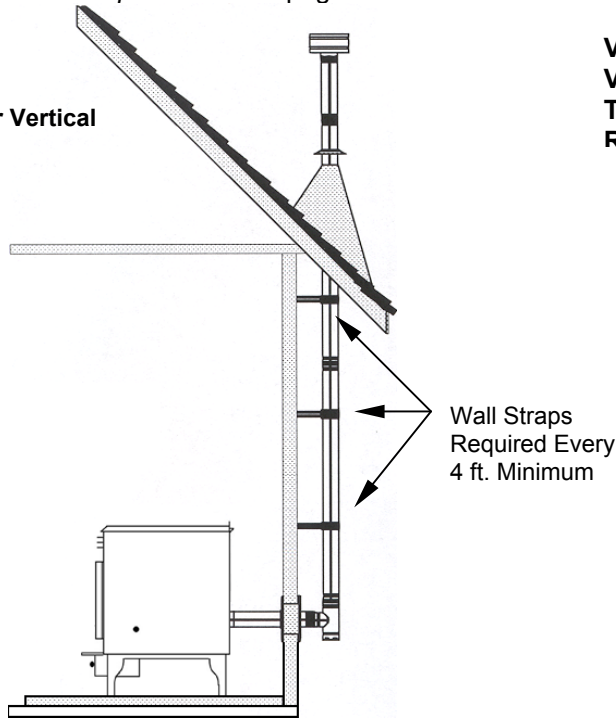
# INSTALLATION

## INSTALLATION CONFIGURATIONS / STANDARD VENTING OPTIONS

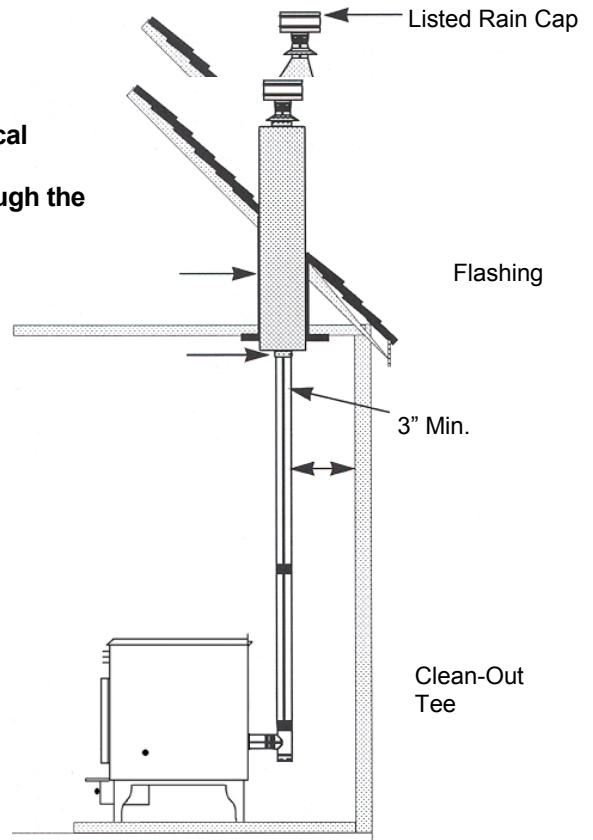
This appliance may be connected to an existing flue or by installing type "PL" vent pipe (listed to UL 641 & ULC S609). If a liner is run all the way to the top of the existing chimney, the existing flue should be sealed with a steel plate. Start a vertical run with a Tee at the back of the stove. Other options are illustrated below. Note: See *Vent Termination Requirements* on page 9.

**Preferred Installation – Vertical Vent Through the Roof.**  
*This venting configuration allows for the best stove performance. The vertical pipe promotes natural draft and with the chimney inside the dwelling, the flue gases stay warm, thus rising at a consistent rate.*

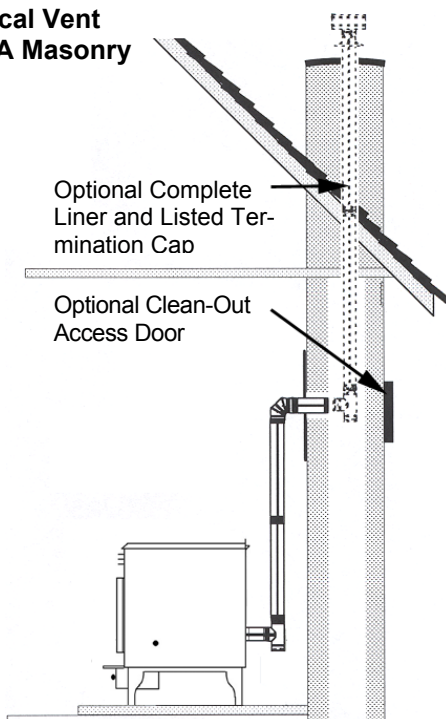
**Exterior Vertical Vent**



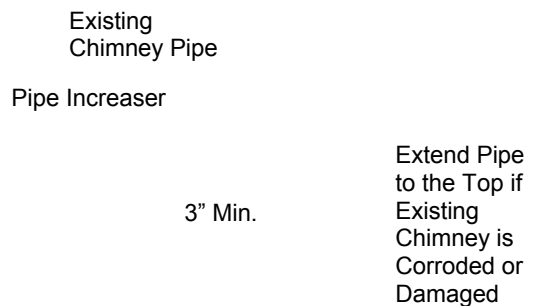
**Vertical Vent Through the Roof**



**Vertical Vent Into A Masonry Flue**



**Interior Vertical Vent into an Existing Class A Chimney**





## CARE AND OPERATION

**Heat Output Switch** - The Heat Output switch activates both the convection and combustion blowers and the auger motor. If the exhaust does not reach operation temperature within 25 minutes, the stove will automatically shut down. If this occurs, repeat the lighting procedure (pre-lighting instructions).

**“OFF” position** - The “Off” position on the Heat Output switch will turn the stove off by turning off the auger motor. The remaining fuel in the grate will safely burn up. Once the stove has cooled sufficiently the blowers will shut off automatically.

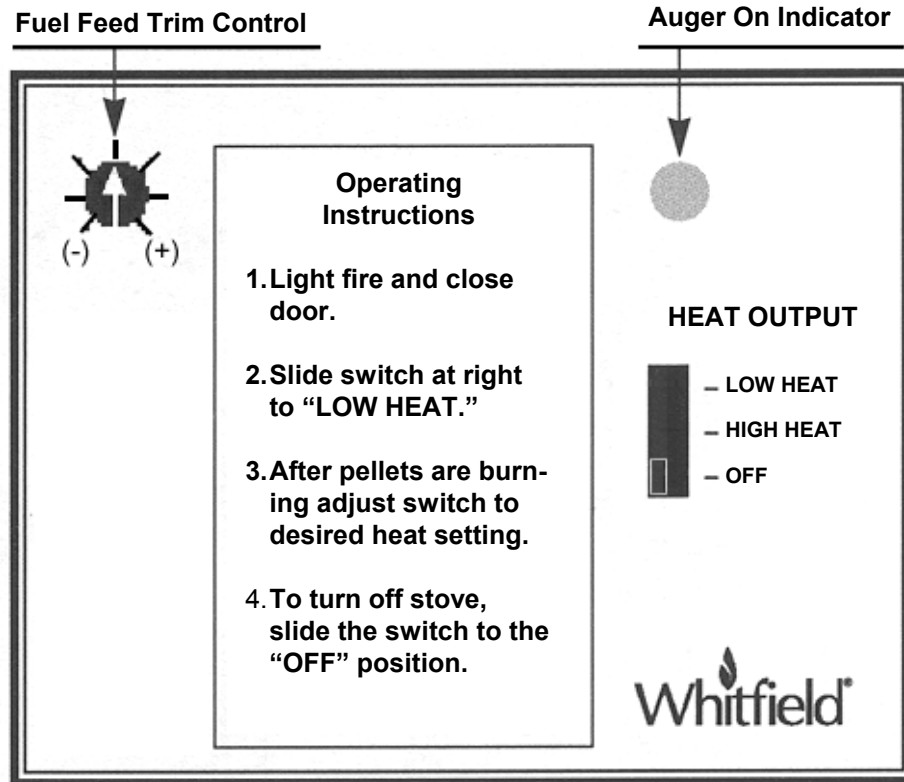
**“HIGH HEAT” position** - The “High Heat” position on the Heat Output switch will increase the fuel feed rate and blower speed for maximum heat output.

**“LOW HEAT” position** - The “Low Heat” position on the Heat Output switch will decrease the fuel feed rate and blower speed.

**Auger “On” Light** - The red L.E.D. light on the control panel indicates when there is power to the auger motor. Under normal operation, this light will blink on and off.

**Fuel Feed Trim Control** - The fuel feed trim control on the control panel should be used when the damper control will not correct a poor combustion problem. Turning the trim control counter clockwise will decrease the amount of fuel entering the UltraGrate™ and turning the trim control clockwise will increase the amount of fuel entering the UltraGrate™. The trim adjustments compensate for fuel differences. Factory set “ON” time is 1.9 seconds. The trim range is 1.6 to 4.5 seconds. Factory “OFF” time for low is fixed at 4.2 seconds and for high it is fixed at 2 seconds

### CONTROL BOARD



**Note:** This control board is not thermostat or igniter capable.

## CARE AND OPERATION

### FUEL DELIVERY RATE

The feed rate switch manages the fuel delivery rate by controlling the amount of time the auger motor will run as follows:

Feed Rate Setting	Auger Motor ON / OFF Time (seconds)	Auger "ON Time" Trim (seconds)	* Lb.'s per hour fuel delivery	◆Approximate BTU per hour fuel delivery	Burn Time (hours)
Low =	1.9 on / 4.2 off (+/- 5%)	1.6 to 4.5 seconds	1.5 Lb.'s / hr.	12,600 BTU / hr	40
High =	1.9 on / 2 off (+/- 5%)	1.6 to 4.5 seconds	3.5 Lb.'s / hr.	30,000 BTU / hr	17

\* Feed rates are approximations only. Actual feed rate will vary depending on size, quality and length of fuel used and variations in line voltage.

◆ Estimated heat input based on fuel value of 8,400 BTU per lb. of fuel.

Note: It is normal for some ash to build up on the inner glass surface at the lower burn settings.

### INITIAL START-UP / EMPTY HOPPER OR FEED TUBE:

During an initial start-up, or in the case where the hopper has run out of fuel, it will be necessary to prime the auger feed system.

#### To prime the auger feed tube:

1. Ensure all packing material and foreign objects are removed from the hopper. Fill the hopper with recommended pellet fuel and plug the stove into the wall outlet.
2. Move the Heat Output switch on the control panel to the "HIGH HEAT" position to activate the auger and blowers.
3. Look through the combustion chamber door and when you can see the first pellets dropping into the grate, the auger is fully primed. This will take up to 10 minutes.

### STARTING YOUR PELLET STOVE

1. After the auger is fully primed, adjust the Heat Output switch to the "OFF" position.
2. Place a small amount of an approved (non-volatile) gel fire starter on top of the pellets in the UltraGrate™ (if chips are used as firestarter, place chips in UltraGrate™ first then place pellets on top). Consult with your authorized Lennox Hearth Products dealer for approved fire starting products). **DO NOT USE FLAMMABLE LIQUIDS TO START YOUR STOVE.**
3. Light the fire starter in the UltraGrate™ with a match and close the door.
4. After approximately 10 seconds, move the Heat Output switch on the control panel to the "LOW HEAT" position. You will notice that the fire will become active and there will be air coming from the heat exchanger tubes and pellets will now begin to feed into the UltraGrate™.
5. After the fire is burning well, adjust the Heat Output switch to the desired setting. Adjust the damper control if necessary for proper combustion. Look for a brisk, bright yellow to whitish flame.

Remember, different brand fuels feed at different rates.

### TURNING OFF YOUR STOVE

Move the Heat Output switch to the "OFF" position. This will stop the fuel feed and any remaining fuel in the grate will safely burn up. The blowers will continue to run until the stove has cooled off sufficiently and will then shut off automatically.

## CARE AND OPERATION

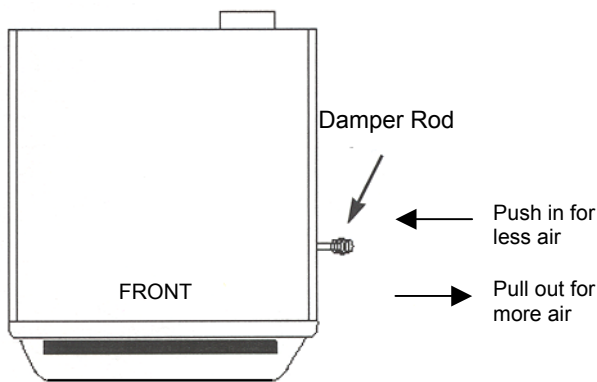
### DAMPER OPERATION

The damper is a plate that helps control the amount of airflow supplied for combustion. With the damper pushed in all the way, the airflow is at its minimum. As the damper is pulled out, more air is allowed to flow.

It is very important to preset your damper prior to burning your pellet stove.

The Damper Control is located on the right side of the stove. **The damper should be pushed all the way in toward the stove during initial operation.** It may need to be manually adjusted outward depending on the type of pellet fuel being burned. The damper control adjusts the amount of combustion air to the UltraGrate. When the damper has been correctly adjusted, you will observe a brisk, yellow-to-whitish flame. Fuel should not “pile-up” in the grate. The proper air settings will vary from stove to stove due to installation, altitude, and the fuel being burned.

Top View of Stove



**DAMPER ADJUSTMENT:** It will be necessary to monitor the appearance of the flame during the first 4-8 bags of pellets. If your flame is smoky red / orange with evidence of soot at the top of the flame, you need more combustion air; pull the damper out slightly and re-evaluate the appearance of the flame. It may be necessary to continue this process, moving the damper outward incrementally until proper combustion is attained (the flame should become yellow and begin to “dance”). If the flame is “short” at the higher burn rates, or if the pellets are burning up in the grate before new pellets are fed into the fire, push the damper slightly inward and monitor the flame. Continue the process of moving the damper incrementally and evaluating the flame until proper flame appearance is achieved.

Once the damper has been properly set it should not need adjusting unless you are changing from a premium grade pellet to a standard or high ash pellet, in which case the damper may need to be pulled out to help prevent the accumulation of ash in the grate.

### DAMPER ADJUSTMENT GUIDELINE

**Lack of Combustion Air:** By opening the damper, this will increase combustion air delivery. Symptoms of insufficient combustion air include; unburned fuel, lazy smoky or red / orange flame, excessive ash or soot, excessive buildup on glass, fuel may “pile-up.”

Contributing factors:

- High Altitude – Lack of oxygen
- Restrictive Venting (elbows, horizontal runs, cold external chimneys, etc.).
- Dirty / Poor Quality Fuel.

Note: Excessive amounts of fly ash built-up in the grate, clinkers in the grate or leakage of air (if the grate is not properly seated) will starve the fire for air. See *Routine Maintenance*, on pages 18 and 21 for information on cleaning the stove.

**Excessive Combustion Air:** By closing the damper, this will reduce combustion air delivery. Symptoms of excessive air include; fuel burns too quickly (results in smoking or smoldering pellets or pellets burn up before new pellets are fed), white to yellow flame, etc. If the damper is open too much, the burning pellets will lift off the grate and fly up into the air much like popping corn does.

Contributing factor:

- Venting system providing excessive draft.

**Correct Combustion Air / Proper Burn Characteristics:** When the damper is correctly set, the burning pellets should move (wiggle) around slightly and the flame should be bright yellow and “dance.”

### Pellet Feed / Pellet Size:

The pellet feed system is designed to handle a wide range of pellet sizes up to a maximum of 5/16" diameter. Different pellets may feed at considerably different rates. You may notice a difference in the burn if you change pellet fuel sizes. The longer the pellet, the slower it will feed and vice versa. If the stove will not stay burning at the minimum fuel feed setting, those particular pellets may not be feeding fast enough. If this happens, reduce the amount of combustion air by adjusting the damper (see *Damper Adjustment* on this page).

## CARE AND OPERATION

### Long Burn Time:

When operated correctly, this appliance cannot be over-fired. Continuous operation at a maximum burn can, however, shorten the life of the electrical components (blowers, motors, and electronic controls), and is not recommended. Typical approved operation would include running at the low setting with occasional running on the maximum setting during the coldest periods of the winter. The lower heat setting is recommended for overnight operation or when the room is vacated for long periods of time.

Note: See *Fuel Delivery Rate* on page 15 for burn times.

### AUTOMATIC SAFETY FEATURES

**Power Outage:** During a power outage, the stove will shut down safely. It will not automatically restart when the power is restored. However, a momentary power interruption may not shut your stove down. Following a loss of power a small amount of smoke will likely leak from the top of the window glass, the hopper and from the combustion air intake, if the stove is vented horizontally. This will not persist for more than 3 to 5 minutes and will not be a safety hazard. **Your smoke alarm could go off.** To re-light the stove, follow the normal procedure for starting your stove.

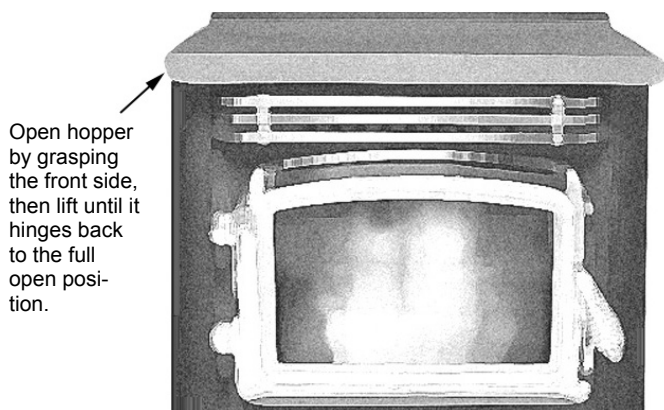
NOTE: If the area in which you live is prone to frequent power outages, it is recommended that a minimum of 8ft (2.5m) of vertical vent pipe be included in the installation to induce a natural draft in the event of a power outage.

**Overheating:** A high limit disc (thermal switch) will automatically shut down the stove if it overheats. The stove will need to be manually re-lit. Allow up to 45 minutes cooling time before re-lighting. If the overheating continues, contact your authorized Lennox Hearth Products dealer for more information.

### Pellet Fuel Hopper

It is recommended to open the hopper lid by grasping it on the side as shown in the following picture.

**Open Hopper Lid by Grasping the Front Side**  
**Be very careful not to touch other hot areas on stove!**



**Fuel Specifications:** Using the UltraGrate™ burn system, this appliance has been designed to burn wood residue pellets with up to 3% ash content. Agricultural pellets (i.e...corn, alfalfa etc.) are not permitted to be burned in the stove. Dirty fuel will adversely affect the performance of the stove.

**Caution: The use of unapproved, dirty, wet and / or high salt content fuel will void the warranty!**

Wood pellets manufactured to the Pellet Fuels Institute (P.F.I.) certification standard are available in two grades, standard and premium. The primary difference between the two is the ash content of the pellets.

The P.F.I., specification for standard grade & premium grade residential pellet fuel is as follows:

- CHLORIDES (Salt): Less than 300 p.p.m..
- BULK DENSITY: 40 lb. / cu. ft. minimum
- MOISTURE CONTENT: 8% maximum
- ASH CONTENT: < 3% maximum (standard grade) < 1% maximum (premium grade)
- FINES: 0.5% maximum through a 1/8" screen

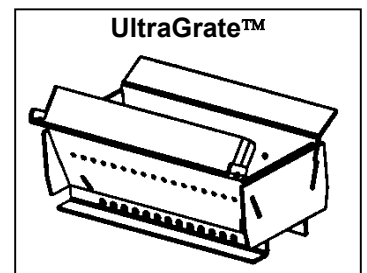
**Clinkering:** Silica (or sand) in the fuel, along with other impurities, can cause clinkering. A clinker is a hard mass of silica formed in the burning process. Clinkering is a function of the fuel, (not the stove), but adversely affects the performance of the stove by blocking off the air passages in the grate. Even P.F.I. approved pellet fuel may tend to clinker. A clinker can be removed from the UltraGrate™ and placed in the ash pan with the use of the grate scraper / ash pan tool furnished with your stove. See *Routine Maintenance* on pages 18 and 21 for more information on cleaning.

**Ash:** The frequency of removal of the ash and maintenance performed on the stove is directly proportional to the ash content of the fuel and the operation duration of your pellet stove. Low ash fuel may allow longer intervals between cleaning, however, a stove burning high ash fuel may need to be cleaned as often as everyday.

PLEASE NOTE: Lennox Hearth Products has no control over the manufacturing of pellet fuel and will not be held responsible for poor stove performance or any damage caused by inferior pellet fuels.

### FUEL FEED RATES

Different brands of pellets will feed at varying rates due to their size and density (length and diameter). This may require a slight adjustment in the damper adjustment (see page 16) or the fuel feed trim control to compensate (see page 14).



## ROUTINE MAINTENANCE

\* Inspect your stove at minimum frequency stated until you establish a minimum frequency required for your installation (frequency will vary depending upon fuel BTU value / ash content, usage, and misc. installation variables).

### ROUTINE CLEANING

Note: Stove will need to be shut off and cooled enough to handle before routine cleaning is performed. Always disconnect power before doing any routine cleaning.

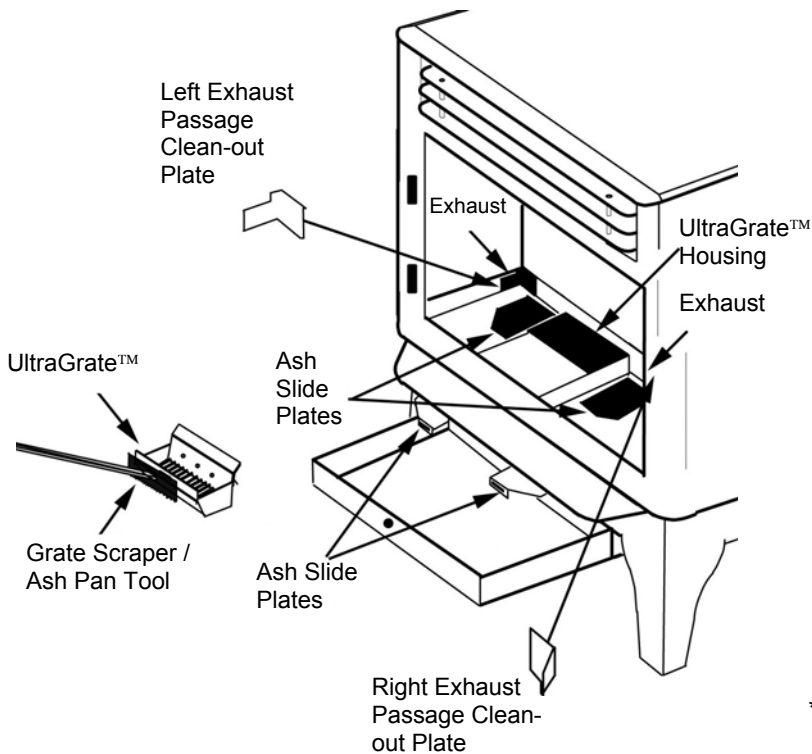
The following areas need to be inspected during routine cleaning:

- UltraGrate™ (burn grate)
- Ash Slide Plates
- Ash Pan
- Heat Exchange Tubes
- Exhaust Passages and Vent Pipe

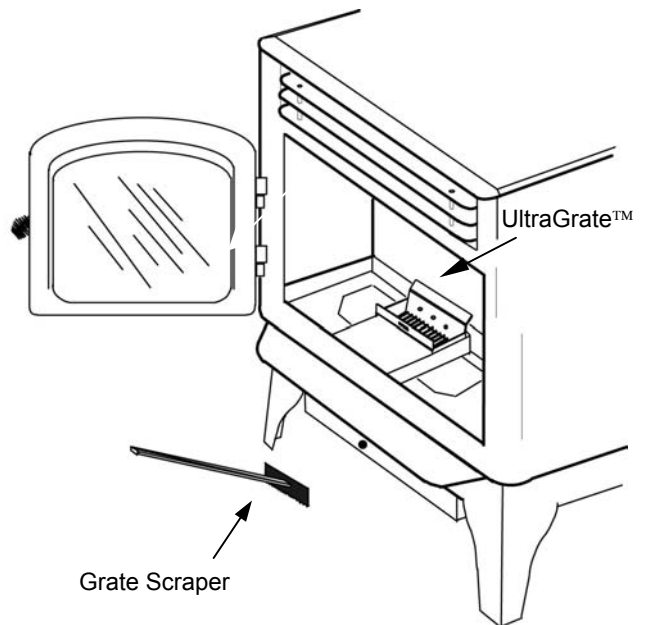
### ULTRAGRATE™ (BURN GRATE)

The UltraGrate™ should be inspected periodically to assure that the air holes have not become clogged with ash or clinkers. The UltraGrate™ can easily be cleaned with the grate scraper / ash pan tool, or it can be removed for cleaning. It is very important to monitor the ash build up under the UltraGrate™, as excessive amounts of ash will block combustion air from entering the grate, causing pellets to pile-up in the grate.

Maintenance Reference Diagram



Cleaning UltraGrate™



\* (Recommended Frequency of 1 day – 2 weeks)

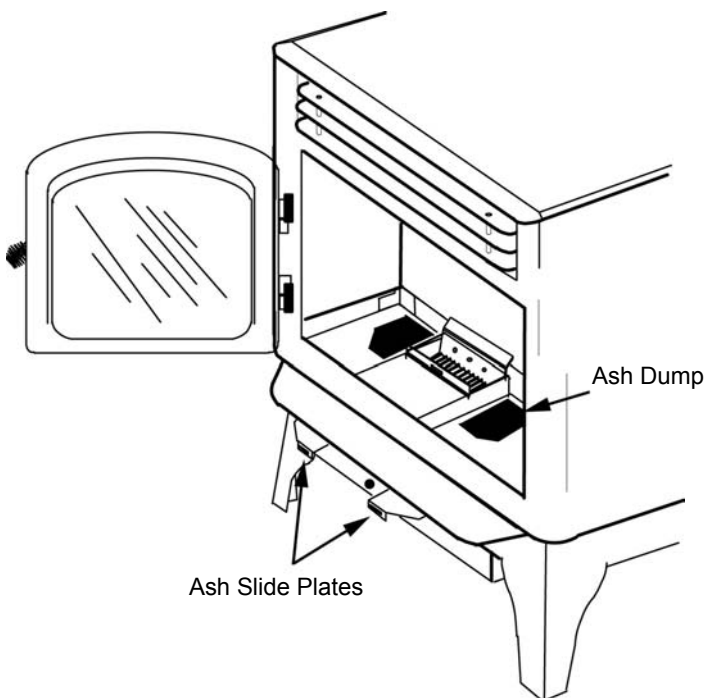


## ROUTINE MAINTENANCE

### ASH SLIDE PLATES

Ash that accumulates around the grate can be “dropped” into the ash pan by simply opening the two ash slide plates. The ash slide plates are located under the ash lip of the stove. Using the grate scraper / ash pan tool, grasp each plate and pull it toward you. This will allow the ash to dump or be swept into the ash pan below. Do not operate your stove with the ash slide plates open! This will cause poor combustion and the pellets will pile up in the grate. NOTE: It is recommended to pull the ash slide plates every half ton of fuel burned, this will vary depending on the ash content of the fuel being burned.

#### Cleaning Firebox with Ash Slide Plates



(Recommended Frequency of 1 day – 2 weeks)

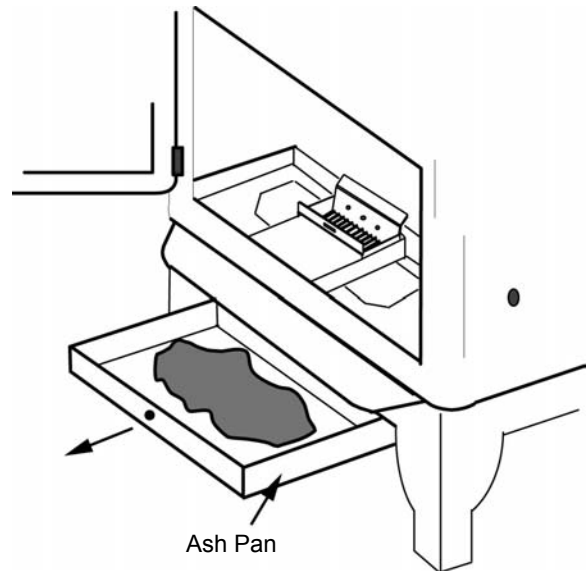
**NOTE:** Make sure to fully close the plates when finished. Failure to close the ash release slide plates completely may cause the fuel to burn poorly (due to reduced airflow through the grate), which may then cause pellets to “pile up” in the grate.

### ASH PAN

**NOTE:** Periodically check for ash build up under the UltraGrate™. If the ash is allowed to build up to the bottom of the UltraGrate™, there will be a loss of combustion air and the pellets will start to pile up on the grate.

**Proper Disposal of Ashes:** NEVER place ashes in a cardboard box or any other combustible receptacle. Ashes should be placed in a metal container with a tight fitting lid. The closed container of ashes should be placed on a noncombustible floor or on the ground, well away from all combustible materials, pending final disposal. If the ashes are disposed of by burial in soil or other wise locally dispersed, they should be retained in the closed container until all cinders have thoroughly cooled.

#### Emptying Ash Pan

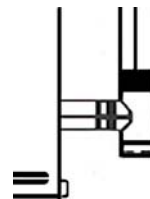


(Recommended Frequency of 2 days – 2 weeks)

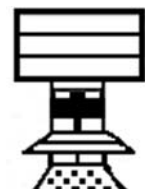
### EXHAUST PASSAGES AND VENT PIPE

Inspect frequently and clean when necessary. Fly ash will accumulate at all bends in the exhaust system. Note: Large amounts of fly ash build-up will create a lack of combustion air. Removing the Tee cap on vertical installations will allow an inspection of the ash build-up in the exhaust Tee and will help you to decide how frequently more extensive cleaning must be performed.

#### Clean-Out Tee



#### Rain Cap



(Recommended Frequency of 1-2 months)

## ROUTINE MAINTENANCE

### HEAT EXCHANGER TUBES

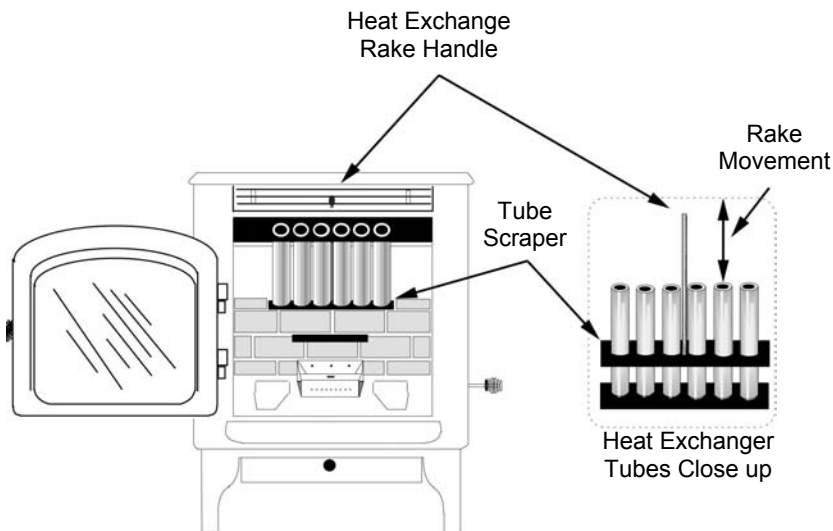
**ENSURE STOVE IS COLD BEFORE CLEANING HEAT EXCHANGE TUBES.**

Remove fly ash from heat exchange tubes as follows:

1. Ensure the door is secured closed.
2. Open the hopper lid (see *Pellet Fuel Hopper*, page 17).
3. Using the hole in the handle of the grate scraper tool, "grab" onto the heat exchange rake handle located above the door (in the center).
4. Pull the grate scraper tool back and forth several times (upward and forward, then back) to rake a way fly ash from the heat exchange tubes.

Note: If a more thorough cleaning of heat exchange tubes is desired, the baffle plate in front of the tubes can be easily removed (slide baffle plate forward until screw heads clear the notches on each side, then remove baffle). With baffle plate removed, use a small brush to clean between tubes (see pages 27 and 30, item #30).

#### Removing Fly Ash from Heat Exchange Tubes

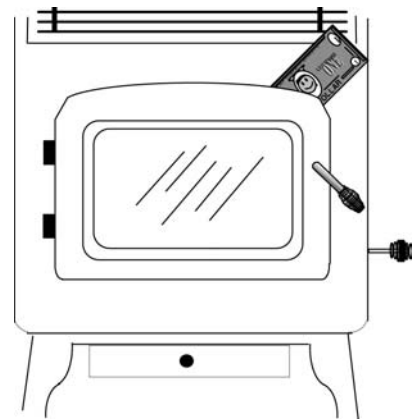


Recommended Frequency of 2 days – 2 weeks

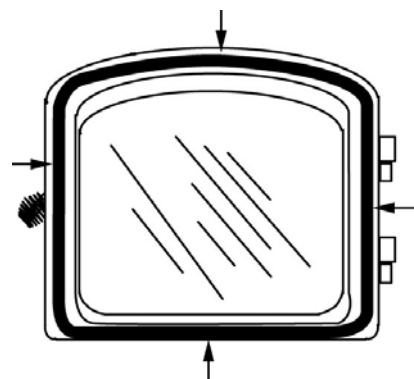
### DOOR ROPE GASKET

The condition of the rope gasket around the door and windows should be checked periodically and replaced or repaired if necessary. A strip of paper or a paper bill (i.e. one-dollar bill) may be used to perform a test of the integrity of the door seal. Close the door on the paper in several different locations and pull. It is normal to feel only a slight amount of friction. The door gasket does not need to be "tight" in all area since a small amount of air drawn into the stove around the gasket is not hazardous or detrimental to the performance of your stove.

#### Check seal with paper strip or dollar bill (Front view of stove)



#### As a minimum, check seal at points indicated below (Inside view of door)



Recommended Frequency of 1 year

## ROUTINE MAINTENANCE

### WINDOW WASH

Periodically insert a small piece of cardboard (a business card) between the window trim and the window. Slide the card back & forth a few times to clear any dust or fibers from the window wash gap. Open the door and repeat from the other side of the glass.

#### Window Wash



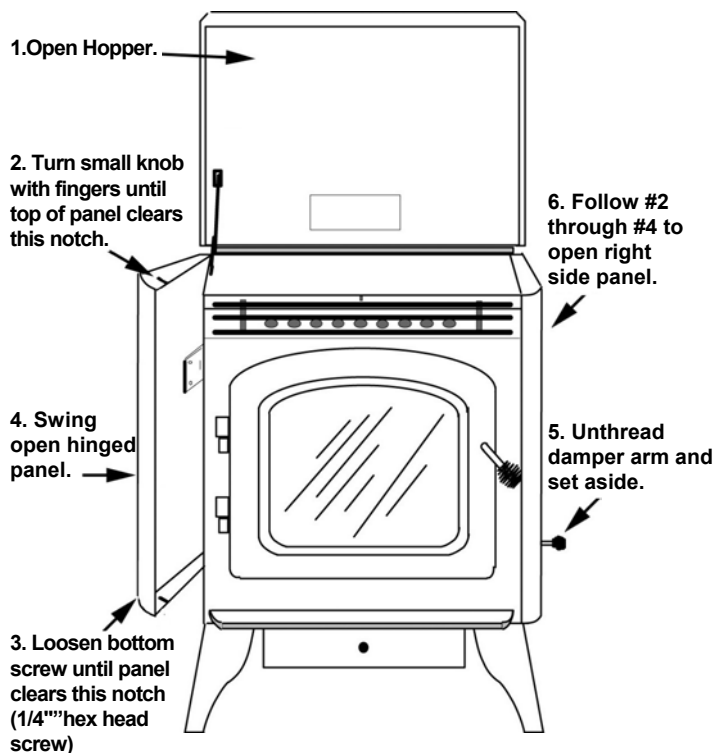
(Recommended Frequency of 1 year)

**Note: The air wash gap should be approximately .075" to .090."**

### REAR STOVE COMPARTMENT

The rear stove compartment should be cleaned periodically (a minimum of once a year). DISCONNECT ELECTRICAL CORD PRIOR TO CLEANING STOVE. Any household dust, pet hair or sawdust should be vacuumed or wiped out of the rear compartment of the stove, room air blower, and combustion blower (paying special attention to vacuuming out the intakes of both blowers). The electrical components should be wiped clean.

To access the rear stove compartment, see following illustration and instructions for opening side panels.



### MOTOR LUBRICATION

**The blowers are permanently lubricated by the manufacturer.** Do not apply oil to any part of the blower. Doing so may cause damage.

### SMALL AREA PAINT TOUCH-UP

*The stove body is painted with a quality high-temperature stove paint. Use only model TSPK-B Stove Paint, Catalog # 70K99. Do not touch-up your stove with any other paint.*

Using one small piece of 320 grit sand paper and lightly sand the blemish so that the edges are "feathered" or smooth to the touch between the painted and bare surfaces. Do not let the sand paper gum up with paint, as this will cause scratches on the metal surface. If there are any scratches, use 600 grit sandpaper instead. Mask off surfaces you do not want painted. Paint lightly over the bare surface first as this will act as an undercoat. Then paint over a larger area in smooth even strokes to blend.

### CONTROL BOARD REMOVAL PROCEDURE

**UNPLUG STOVE BEFORE FOLLOWING THIS PROCEDURE.**

The electronic control board is located on the left-hand side of the stove. It is mounted to the side panel with four nuts. The control board can be removed or replaced by performing the following procedure.

Note: The control cable is fitted with a quick-disconnect plug that snaps into the back of the control board. The blower and motor wires are all part of the stove wiring harness.

1. With the stove unplugged, open the left side panel by removing the two bolts located on the top and bottom side of the panel. Pull the edge closest to the door firmly away from the stove and swing side panel open.
2. Disconnect the wiring harness from the control board.
3. Locate and remove the four nuts that secure the control board to the side panel of the stove.
4. To re-install your control panel, reverse procedures above.
5. Plug the stove into your wall outlet.

(Recommended Frequency – N/A). The electronic control board is very reliable and should be one of the last components replaced when troubleshooting a stove operational problem.

## SPECIFICATIONS - Model Cascade

Flue Size	3" Rear
Width, Overall	24" / 610mm
Depth, Overall Stove	22 1/8" / 562mm
Depth, w/3" Tee	28 1/4" / 718mm

Height, Overall	28 1/4" / 724mm
Height (Floor to Stove Top)	27 1/2" / 699mm

Floor to Rear Flue Center	14" / 356mm
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Facing Back of Unit, Left Side to Center of Rear Flue Outlet	6 3/4" / 172mm
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Floor to Rear Outside Air Inlet	11" / 279mm
------------------------------------	-------------

Facing Back of Unit Right Side to Center of Air Inlet	5" / 127mm
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Floor Protection Requirements	+ Front, Sides & Back = 6"
----------------------------------	----------------------------

Hopper Capacity	60 lbs.
-----------------	---------

Burn time	◆ 17-40 hours
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Fuse, Control Board	8 Amp, 250 Volt*
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Heat Input (Max.)	◆ 12,600-30,000 BTU / hr
Overall Efficiency	Up to 81%

Emissions	◆ 1.3 gram / hr (varies w/ size and type of fuel) EPA exempt
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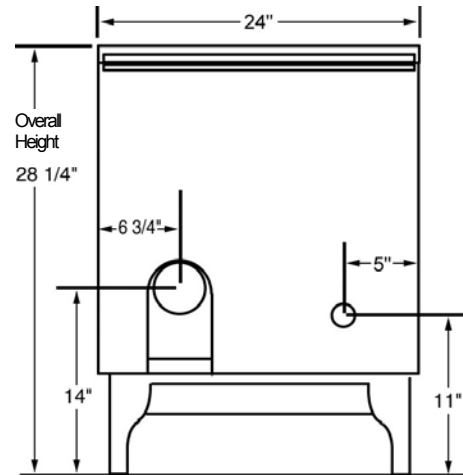
Ship Weight	165 lbs.
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Convection Blower (Room Air Blower)	102 CFM; 2.10 Amps, 2200 RPM
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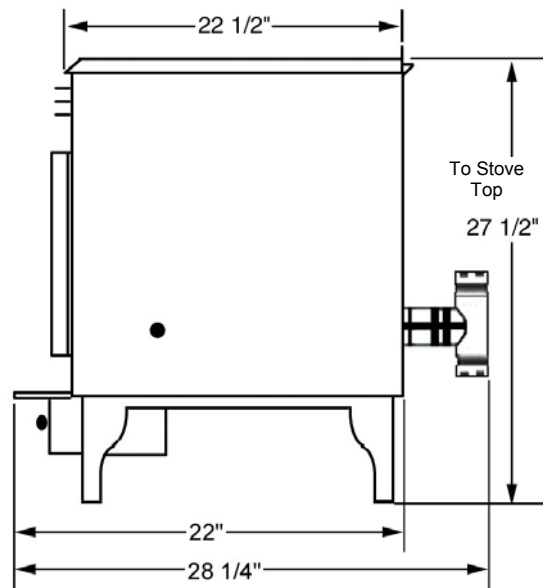
Auger Motor	1 RPM; .4 Amps
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Combustion Blower (Draft Inducer)	56 CFM; 2.10 Amps, 2200 RPM
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BACK VIEW



SIDE VIEW



**Note: Dimensions shown are approximations only (+/- 1/4")**

+ **Non-combustible thermal rated floor protection must be used when installed on carpet (see *Floor Protection*, page 5). When installed at clearances less than 6", the floor protector is only required to extend to the wall.**

◆ **Fuel delivery and burn times will vary depending on size and type of fuel used. Estimated heat input based on fuel value of 8400 BTU per lb.**

\* **Fuses are rated as "fast blow."**

## DEFINITIONS

### **Air Wash**

To inhibit buildup of soot on the door glass, air is delivered to the glass through an air wash system located in the doorframe surrounding the glass.

### **Auger**

It transfers the fuel down the burner tube into the UltraGrate™.

### **Auger Motor**

Motor specifications are: .4 Amp, 1 rpm (revolutions per minute). It drives the auger to deliver fuel to UltraGrate™.

### **Blower, Convection (Room Air)**

The blower's function is to transfer the heat from the appliance to heat the room air. Specifications: CFM - 66 low, 102 high; RPM – 1350 low, 2200 high; Current Draw – 2.10 Amps.

### **Blower, Combustion (Draft Inducer)**

The combustion blower has a radial impeller to deliver more air to the UltraGrate™. It pulls air into the UltraGrate™ by creating a negative pressure. This is done by extracting the exhaust gases out of the firebox and pushing the exhaust downstream to the flue exit. Specifications: CFM - 33 low, 56 high; RPM – 1350 low, 2200 high; Current Draw – 2.10 Amps.

### **Disc, Convection High Limit (L190-20F, N / C)**

If the temperature of the convection air chamber reaches 190° F., the high limit auto reset will “trip” and stop the flow of electricity to the auger motor. It will not automatically reset until it has cooled below 170° F).

### **Disc, Low Limit (F140-10F, N / O)**

At stove temperatures above 140 F, this disc closes contacts and allows power flow to the auger motor

### **UltraGrate™ (Burn Grate)**

This is where combustion occurs.

### **Hopper**

The hopper is where the pellets are stored.

### **Heat Output Switch**

This is the main power switch, which controls power to the feed system auger motor, combustion blower and convection blower. It has 3 feed rate settings, which controls the burn rate.

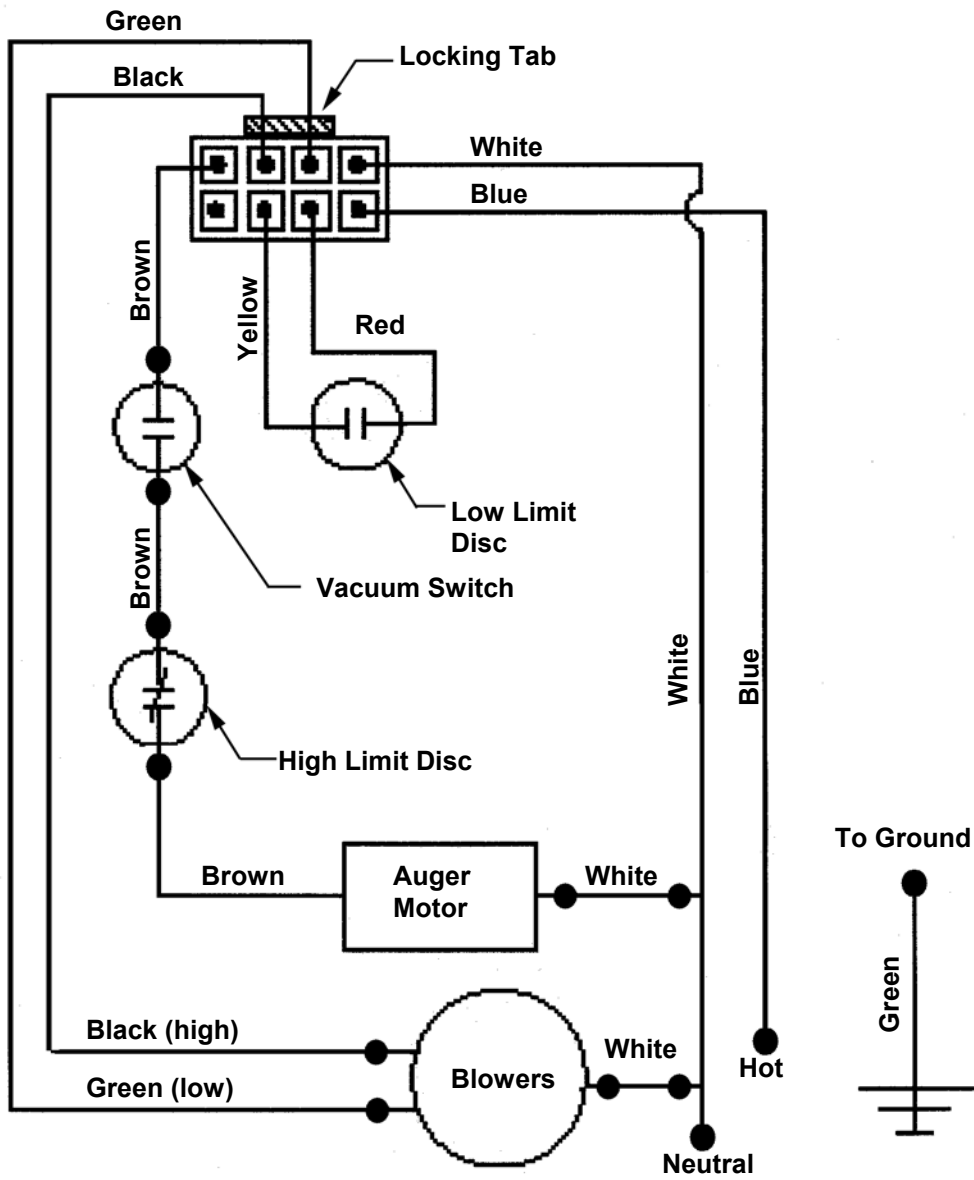
### **Pressure Switch**

The pressure switch is a safety device used to shut off the feed system (auger motor) if there is too much back pressure in venting system. Some possible causes are as follows:

- ◆ The venting system is obstructed.
- ◆ High altitude or other misc. environmental conditions affecting exhaust flow.
- ◆ Improper venting system.



# WIRING DIAGRAM – Model Cascade



**TROUBLESHOOTING** *Qualified Technicians Only*  
**Unplug Appliance Before Performing Any Troubleshooting or Maintenance**

PROBLEM	CAUSE(S)	SOLUTIONS
1. Fire burns with a lazy orange flame. Pellets build up in the grate and the window soots up.	There is insufficient combustion air.	<p>Remove any clinkers or ash from the bottom of the grate that might be obstructing the primary air holes.</p> <p>Change to a better grade of fuel if necessary.</p> <p>Check that the damper has been properly adjusted (see <i>Damper Adjustment Guidelines</i> on page 16).</p> <p>Inspect heat exchange tubes for ash buildup and remove ash if necessary.</p> <p>Clean internal exhaust ducts.</p> <p>Check if door is sealing properly (see "Door Rope Gasket" on page 20 for test procedure).</p> <p>Check for blockage in the air inlet tube or exhaust pipe. Clean as necessary.</p> <p>Close ash slide plates.</p> <p>Have your authorized Lennox Hearth Products dealer check your combustion blower.</p>
2. Fire goes out or stove shuts down automatically	<p>The hopper is empty</p> <p>Pellets are not feeding.</p> <p>The high limit disc has tripped.</p> <p>There is too much combustion air for the amount of fuel.</p>	<p>Refill hopper.</p> <p>See <i>pellets will not feed</i> on this page.</p> <p>Allow stove to cool for 1 hour and re-light. If the stove has been operating at a medium to high burn rate and the convection (room air) blower has been turned down low then the blower should be turned up higher. If this problem persists (particularly at lower burn rates), then the high limit disc should be replaced by your authorized Lennox Hearth Products dealer.</p> <p>Adjust the damper to reduce combustion airflow. (see <i>Damper Adjustment Guidelines</i> on page 16).</p>
3. Pellets will not feed.	<p>Stove has run out of fuel.</p> <p>The auger motor or circuit board may be defective. The pressure switch tap or hose may be blocked.</p> <p>Back pressure in venting tripping pressure switch.</p> <p>High limit disc may have been tripped.</p> <p>Self-aligning bearing in auger motor may be mis-aligned.</p>	<p>Refill hopper.</p> <p>Check to ensure that there is no blockage in the pressure tap or hose. Have your authorized Lennox Hearth Products dealer diagnose the problem and clean or replace any necessary parts.</p> <p>If new installation check for excessive 90° bends, long horizontal runs or excessive vertical run of 3" pipe. Possibly change to 4" pipe. If older installation check for excessive ash accumulation in pipe or other obstructions. Clean out pipe.</p> <p>Allow stove to cool.</p> <p>Gently tap the auger motor.</p>

**TROUBLESHOOTING** *Qualified Technicians Only*  
**Unplug Appliance Before Performing Any Troubleshooting or Maintenance**

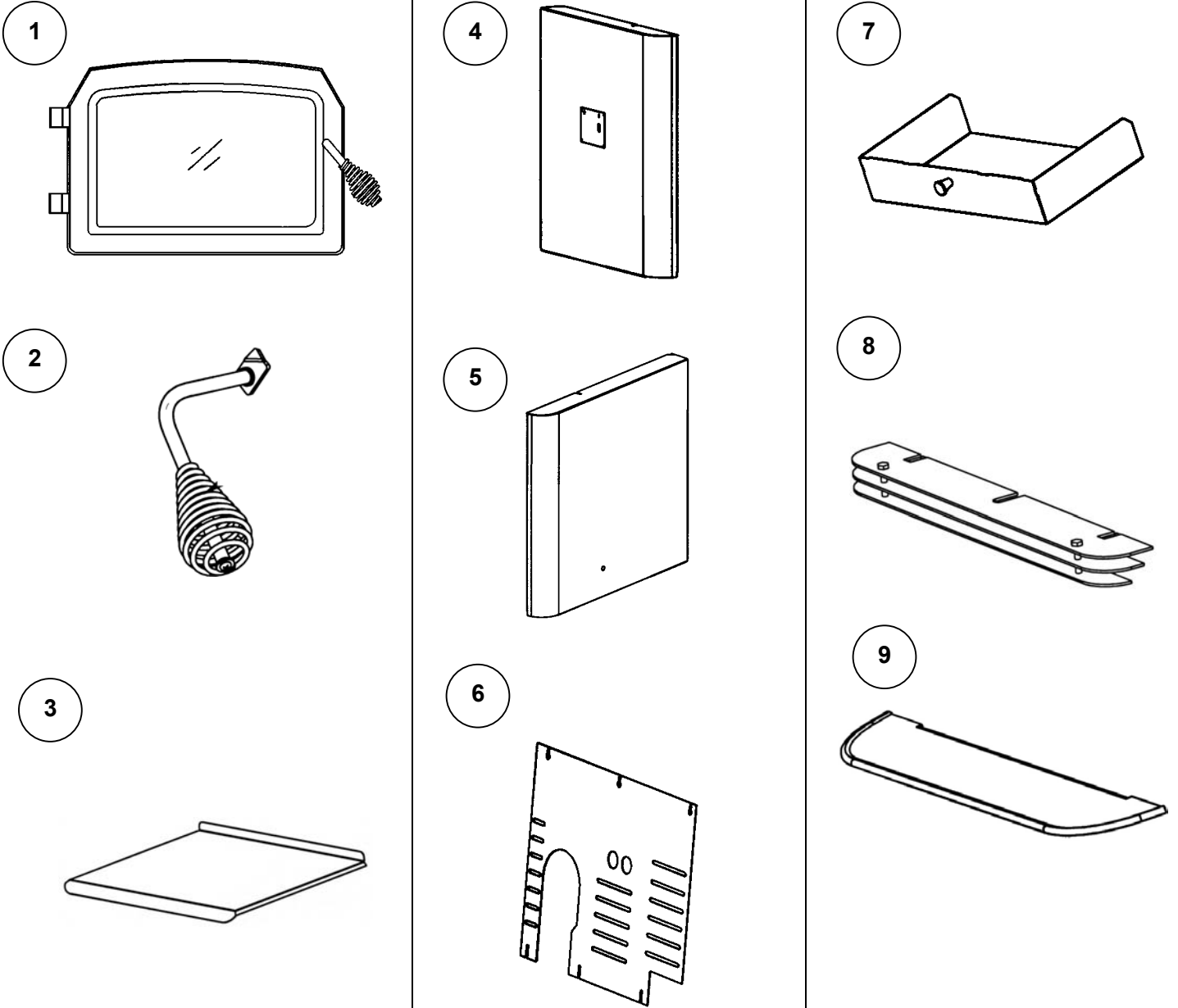
<b>PROBLEM</b>	<b>CAUSE(S)</b>	<b>SOLUTIONS</b>
4. Blowers will not operate.	There is no power to the stove.  There is no power to the control board.	Check that the stove is plugged in to the wall outlet.  Check to see if your circuit breaker has tripped.  Check the wire connections on the high limit disc and Control board.
5. There is soot or fly ash in the house.	The window is being cleaned when the stove is operating.  There is leakage at the joints between the combustion fan, connection or exhaust pipe connections. This will be evidenced by dust on the impeller of the convection fan, and in the heat exchanger area.  The vacuum cleaner is leaking.	Turn off stove before cleaning to prevent dispersion of ash and soot into the room.  Seal up any leaks in the exhaust system with room temperature vulcanizing silicone sealer (RTV).  DO NOT use a standard household vacuum or "shop vac" as the filters will leak the fine particles of ash. Clean the stove with an approved ash vacuum ONLY.
6. Stove runs for 25 minutes then shuts down.	The exhaust gases are not up to temperature.  The low limit disc is not operating correctly.  The wires to the low limit disc are loose or disconnected.	Re-light stove if necessary.  Replace the low limit disc.  Check the connections between the disc and the wiring harness. Make sure that the connections between the disc and harness terminals are secure.
7. Blowers will not shut off after the fuel has been switched off and the stove has cooled down.	The low limit disc has failed in the closed position.	Replace the low limit disc.
8. Blowers will not operate when the Heat Output switch is moved from the "OFF" position.	There is no power to the blower.	Check that the stove is plugged in to the wall outlet.  Check to see whether the circuit breaker has tripped.  Check the wire connections between the high limit disc and the control board and blower.

## REPLACEMENT PARTS LISTS / DIAGRAMS

<b>Door Parts</b>	
17150183 (1)	Door Assembly, Painted, Metallic Black
17157100	Gasket Kit, Door and Glass
17150084	Glass, Door (Includes clips, screws and gasket)
17150086 (2)	Handle Assembly, Painted, Metallic Black
<b>Body Components</b>	
17150046 (9)	Ashlip with Gold Tone Trim, Painted, Metallic Black
17152018 (7)	Ashpan Assembly, Black
17150030 (10)	Leg Set, Painted, Metallic Black
17150147 (8)	Louver Assembly, Painted, Metallic Black
17100161 (6)	Panel, Back, Metallic Black, Painted
17152118	Panel, Left Side, Black
17150163 (4)	Panel, Left, Painted, Metallic Black
17150164 (5)	Panel, Right Side, Painted, Metallic Black
17150150 (3)	Panel, Top, Painted, Metallic Black (Hopper lid)
<b>Electrical Parts</b>	
12046300 (12)	Auger Motor
17140110 (15)	Blower Kit, Exhaust & Room Air
17150027 (11)	Control Board
12150162 (17)	Disc, High Limit, Room Air Blower Jacket (L190-20F, Bakolite) Pkg. of 3
12150080 (16)	Disc, Low Limit, Fan (F140-10F, Bakolite), Pkg. of 3
12055908	Fuse, 6 Amp, Fast Acting, Pkg. of 12
12058820 (18)	Power Cord (52L17)
17150075 (19)	Pressure / Vacuum Switch (Hose, 12056003, not included)
12056003	Hose, Pressure Switch
17150126 (20)	Wiring Harness
<b>Auger System Components</b>	
17150239 (26)	Auger, Shaft (helix)
12041300 (24)	Collar & Screw Set, Auger (Pkg. of 3)
17150058 (25)	Plate (flange), Auger End
61050003	Gasket, Auger Flange
<b>Miscellaneous Parts</b>	
12050004 (30)	Brush, Cleaning
12021101	Bushing, Nylatron
12051100	Bushing, Oilite
17150029 (27)	Damper Rod Assembly, Kit, Black (w/ handle)
17151029 (27)	Damper Rod Assembly, Kit, Brown
61040040	Gasket, 3" Quick Disconnect (Pkg. of 10)
61057210 (14)	Gasket, Exhaust Blower, 1/8" Lytherm (Pkg. of 5)
61057203 (13)	Gasket, Room Air Blower (Pkg. of 5)
12151412 (28)	Knob, Ashpan (Pkg. of 6)
17150028	Knob, Control Board (Slide), Set of 3

## REPLACEMENT PARTS LISTS / DIAGRAMS

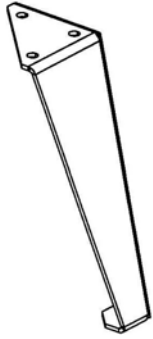
17100034	Plate, Ash Clean-Out, Left
17100035	Plate, Ash Clean-Out, Right
12055500 (29)	Tool, Grate Scraper
<b>Firebox Parts</b>	
17100061	Baffle, Heat Exchange
17150025 (21)	Clip Set, Firebrick and Retainer
16050246 (22)	UltraGrate, Replacement



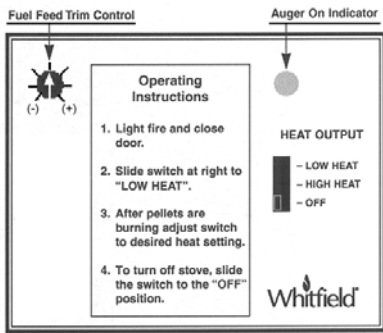


# REPLACEMENT PARTS LISTS / DIAGRAMS

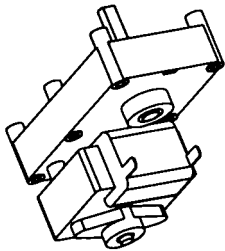
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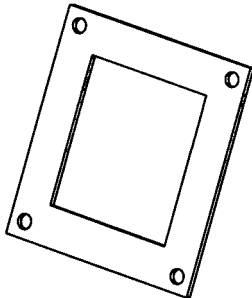
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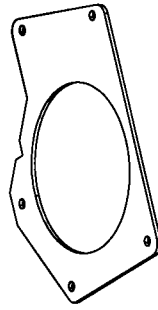
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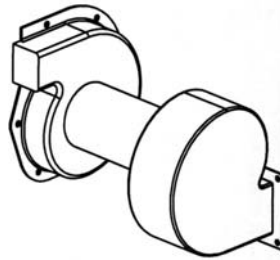
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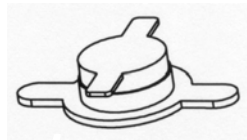
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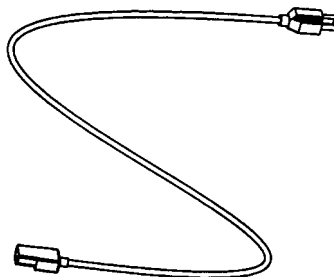
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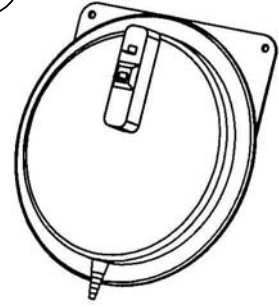
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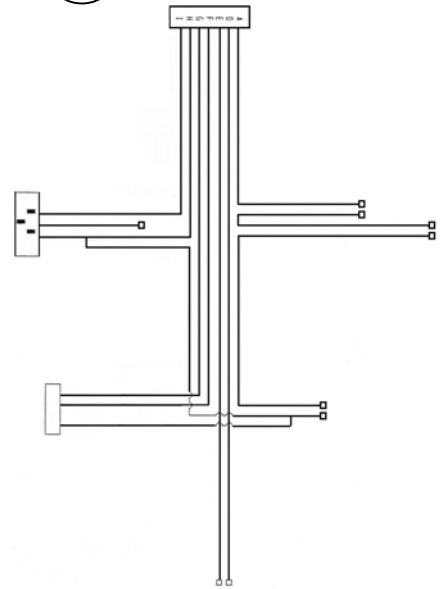
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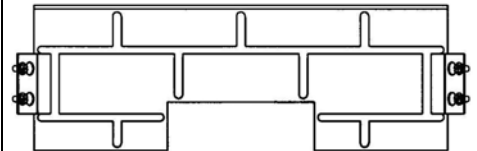
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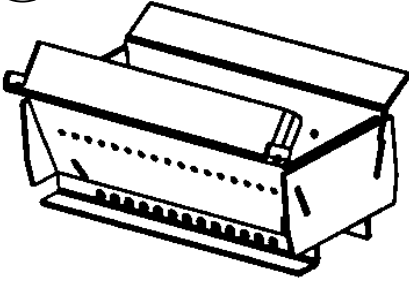


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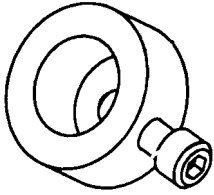


# REPLACEMENT PARTS LISTS / DIAGRAMS

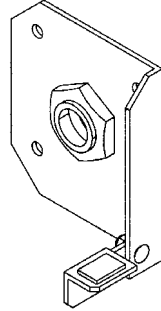
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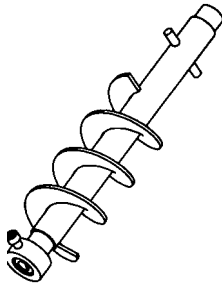
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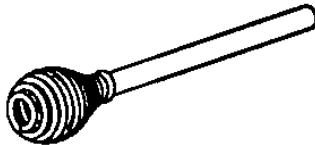
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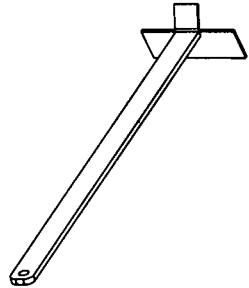
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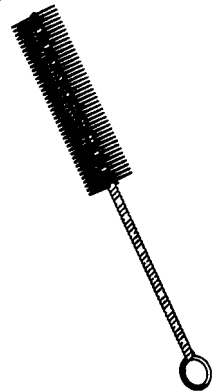
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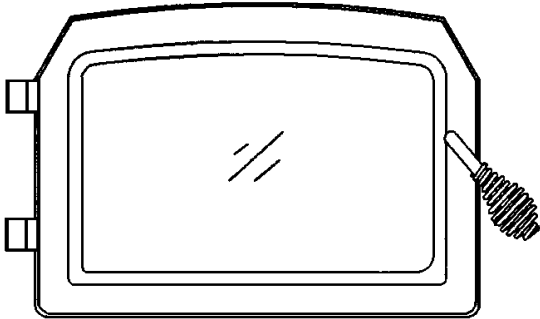


# OPTIONAL ACCESSORIES DIAGRAMS

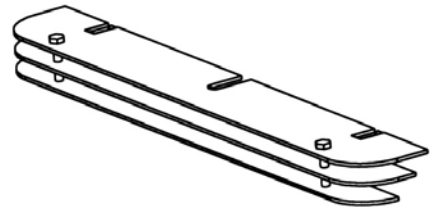
## Optional Accessories

Item #	Catalog #	Model #	Description	Notes
1	H0469	DKCA-G	Door Kit, Cascade, Gold	
2	14M45	TKCA-G	Trim Kit, Cascade, Gold	
3	14M80	QDPC – 3	Quick Disconnect Pipe Connector, 3"	
	70K99	TSPK – B	Touch-up Spray Paint Kit, Black	Metallic Black 12oz Spray Can

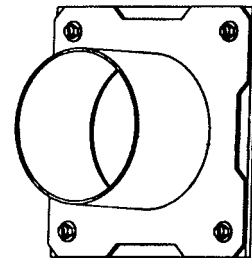
1



2



3



3" diameter

# CASCADE PELLET STOVE SAFETY LABEL

Note that your serial number is printed on the safety label located on the back of the stove. Your stove's serial number is preceded by a "WH-" (Example WH-000000).

**Warnock Hersey**  
**CHUS**


CERTIFIED FOR U.S. AND CANADA. LISTED ROOM HEATER FOR USE WITH APPI/FFI APPROVED PELLETIZED WOOD FUEL ONLY. FOR USE IN MANUFACTURED (MOBILE) HOMES. **MODEL: CASCADE** TESTED TO ASTM E-1509 / UL 1482 / ULC-S627 / CSA B366.2M / WHPN-025 REPORT NO. 476-1129 (APRIL 1995).

INSTALL AND USE ONLY IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. CONTACT LOCAL BUILDING OR FIRE OFFICIALS ABOUT RESTRICTIONS AND INSTALLATION INSPECTION IN YOUR AREA. DO NOT CONNECT THIS UNIT TO A CHIMNEY FLUE SERVING ANOTHER APPLIANCE. SEE LOCAL BUILDING CODE AND MANUFACTURER'S INSTRUCTIONS FOR PRECAUTIONS REQUIRED FOR PASSING A CHIMNEY THROUGH A COMBUSTIBLE WALL OR CEILING. THIS PELLET FIRED APPLIANCE HAS BEEN TESTED AND LISTED FOR USE IN MANUFACTURED HOMES IN ACCORDANCE WITH OREGON ADMINISTRATIVE RULES 814-23-900 THROUGH 814-23-909.

OPERATE ONLY WITH FIREBRICK IN PLACE. WARNING: OPERATE ONLY WITH VIEWING DOOR CLOSED. INSPECT FLUE FREQUENTLY TO PREVENT ACCUMULATION OF SOOT. THE HEATER AND FLUE MUST BE IN GOOD CONDITION. KEEP FURNISHINGS AND OTHER COMBUSTIBLE MATERIALS WELL AWAY FROM HEATER.

**NUMÉRO DE SÉRIE/SERIAL NO.**

**WH-**



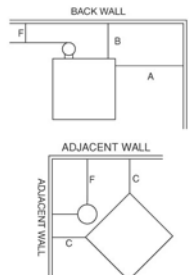
**CAUTION: HOT SURFACES WHILE IN OPERATION. DO NOT TOUCH. CONTACT MAY CAUSE SKIN BURNS.**

**KEEP CHILDREN, COMBUSTIBLE MATERIAL AND FURNISHINGS A CONSIDERABLE DISTANCE AWAY. SEE NAMEPLACE AND INSTRUCTIONS. TYPE OF FUEL: PELLETIZED WOOD FUEL ONLY.**

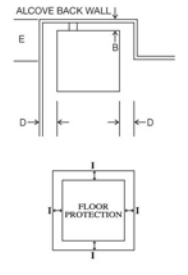
**MINIMUM CLEARANCES TO COMBUSTIBLE MATERIALS**

FREESTANDING STOVE INSTALLATION	MANUFACTURED (MOBILE) HOME OR RESIDENTIAL INSTALLATION	
	HORIZONTAL FLUE-DIRECTLY THROUGH WALL INSTALLATION	INTERIOR VERTICAL FLUE INSTALLATION
SIDEWALL TO UNIT	A 4" / 100 MM	4" / 100 MM
BACKWALL TO UNIT SIDE	B 1" / 25 MM	9" / 230 MM
WALL TO UNIT CORNER	C 1" / 25 MM	1" / 25 MM
ALCOVE TO FUEL HOPPER	D 4" / 100 MM	4" / 100 MM
MAX. DEPTH OF ALCOVE	E 24" / 610 MM	24" / 610 MM
FLUE TO WALL	F 3" / 76 MM	3" / 76 MM
FRONT/REAR/SIDE TO FLOOR PROTECTION OUTSIDE EDGE	I 6" / 150 MM	6" / 150 MM
MINIMUM ALCOVE HEIGHT		49" / 1225 MM
MINIMUM ALCOVE WIDTH		32" / 800 MM

**MODEL CASCADE**




**MODEL CASCADE**



USE 3" / 75mm or 4" / 100mm Type "PL" LISTED PELLET VENT AND COMPLETE COMPONENTS.

**MODEL CASCADE**



Manufactured by:  
Lennox Hearth Products  
1110 West Taft Avenue  
Orange, CA 92865

**Warnock Hersey**  
**CHUS**


HOMOLOGUÉ POUR LES É.-U. ET LE CANADA. RÉPERTORIÉ COMME RADIATEUR INDIVIDUEL À UTILISER UNIQUEMENT AVEC DU BOIS DE CHAUFFAGE GRANULÉ HOMOLOGUÉ APPI/FFI. UTILISER L'APPAREIL DANS DES MAISONS PRÉFABRIQUÉES (MOBILES) COMME FOYER ENCASTRABLE DANS DES FOYERS DE MAÇONNERIE ET FABRIQUÉS EN USINE. **MODÈLE: CASCADE** MIS À L'ÉPREUVE SELON LES NORMES SUIVANTES: ASTM E-1509/UL 1482/ULC-S627/ULC-S628, NUMÉRO DE RAPPORT 476-1129 (AVRIL 1995).

INSTALLER L'APPAREIL ET NE L'UTILISER QU'EN CONFORMITÉ AVEC LES DIRECTIVES D'INSTALLATION DU FABRICANT. COMMUNIQUER AVEC LES AUTORITÉS COMPÉTENTES LOCALES EN MATIÈRE DE BÂTIMENT ET D'INCENDIE POUR CONNAÎTRE LES RESTRICTIONS ET L'INSPECTION DE L'INSTALLATION DANS VOTRE RÉGION. NE PAS RELIER CET APPAREIL À UN CONDUIT DE FUMÉE DESSERVANT UN AUTRE APPAREIL. CONSULTER LE CODE DU BÂTIMENT LOCAL ET LES DIRECTIVES DU FABRICANT EN MATIÈRE DE PRÉCAUTIONS À PRENDRE POUR PASSER UN CONDUIT DANS UN MUR OU UN PLAFOND. CET APPAREIL ALIMENTÉ AUX GRANULES A ÉTÉ MIS À L'ÉPREUVE ET RÉPERTORIÉ POUR UNE UTILISATION DANS LES MAISONS PRÉFABRIQUÉES CONFORMÉMENT AUX RÈGLEMENTS ADMINISTRATIFS DE L'OREGON, 814-23-900 À 814-23-909.

NE FONCTIONNE QUE SI DES BRIQUES RÉFRACTAIRES SONT EN PLACE. AVERTISSEMENT: NE FAIRE FONCTIONNER QUE SI LA PORTE VITRÉE EST FERMÉE. INSPECTER FRÉQUEMMENT LE CONDUIT DE FUMÉE AFIN D'ÉVITER UNE ACCUMULATION DE SUIE.

**NE PAS ENLEVER CETTE ÉTIQUETTE DÉGAGEMENT MINIMUM POUR LES MATÉRIAUX COMBUSTIBLES**

INSTALLATION DU POÈLE AUTONOME	INSTALLATION RÉSIDENNELLE OU DANS UNE MAISON PRÉFABRIQUÉE (MOBILE)	
	INSTALLATION DU CONDUIT DE FUMÉE AL'HORIZONTAL, DIRECTEMENT DANS LE MUR	INSTALLATION INTERIEURE DU CONDUIT DE FUMÉE À LA VERTICALE
DU MUR LATÉRAL À L'APPAREIL	A 4 po/100 MM	4 po/100 MM
DU MUR ARRIÈRE À L'APPAREIL	B 1 po/25 MM	9 po/230 MM
DU MUR AU COIN DE L'APPAREIL	C 1 po/25 MM	1 po/25 MM
DE L'ALCOVE À L'ENTONNOIR DU BOIS DE CHAUFFAGE	D 4 po/100 MM	4 po/100 MM
PROFONDEUR MAX. DE L'ALCOVE	E 24 po/610 MM	24 po/610 MM
DU CONDUIT DE FUMÉE AU MUR DE L'AVANT, L'ARRIÈRE ET LES CÔTÉS AU PLANCHER BORD EXTERIEUR DE PROTECTION	F 3 po/76 MM	3 po/76 MM
MINIMUM ALCOVE HEIGHT		49 po/1225 MM
MINIMUM ALCOVE WIDTH		32 PO/800 MM

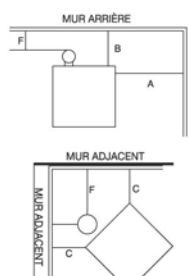


**ATTENTION : SURFACES CHAUDES DURANT LE FONCTIONNEMENT DE L'APPAREIL. NE PAS TOUCHER. UN CONTACT PEUT CAUSER DES BRÛLURES CUTANÉES. TENIR LES ENFANTS, LES MATÉRIAUX COMBUSTIBLES ET L'AMEUBLEMENT À UNE DISTANCE CONSIDÉRABLE DE L'APPAREIL. VOIR LA PLAQUE SIGNALÉTIQUE ET LES DIRECTIVES. TYPE DE CHAUFFAGE : BOIS DE CHAUFFAGE GRANULÉ SEULEMENT.**


LE PLANCHER SUR LEQUEL REPOSE L'APPAREIL DOIT ÊTRE PROTÉGÉ PAR UN MATÉRIAU NON COMBUSTIBLE QUI COUVRE LA PARTIE SOUS L'APPAREIL ET 6 PO À L'AVANT, AU DERRIÈRE ET SUR LES CÔTÉS SELON LES INDICATIONS DONNÉES OU JUSQU'À L'ENDROIT PERMIS LE PLUS PRÈS POUR LES MATÉRIAUX COMBUSTIBLES.

UTILISER UN ÉVENT POUR GRANULES RÉPERTORIÉ «L» DE 3 po/75 mm ET DES COMPOSANTS COMPLETS.

**MODEL CASCADE**

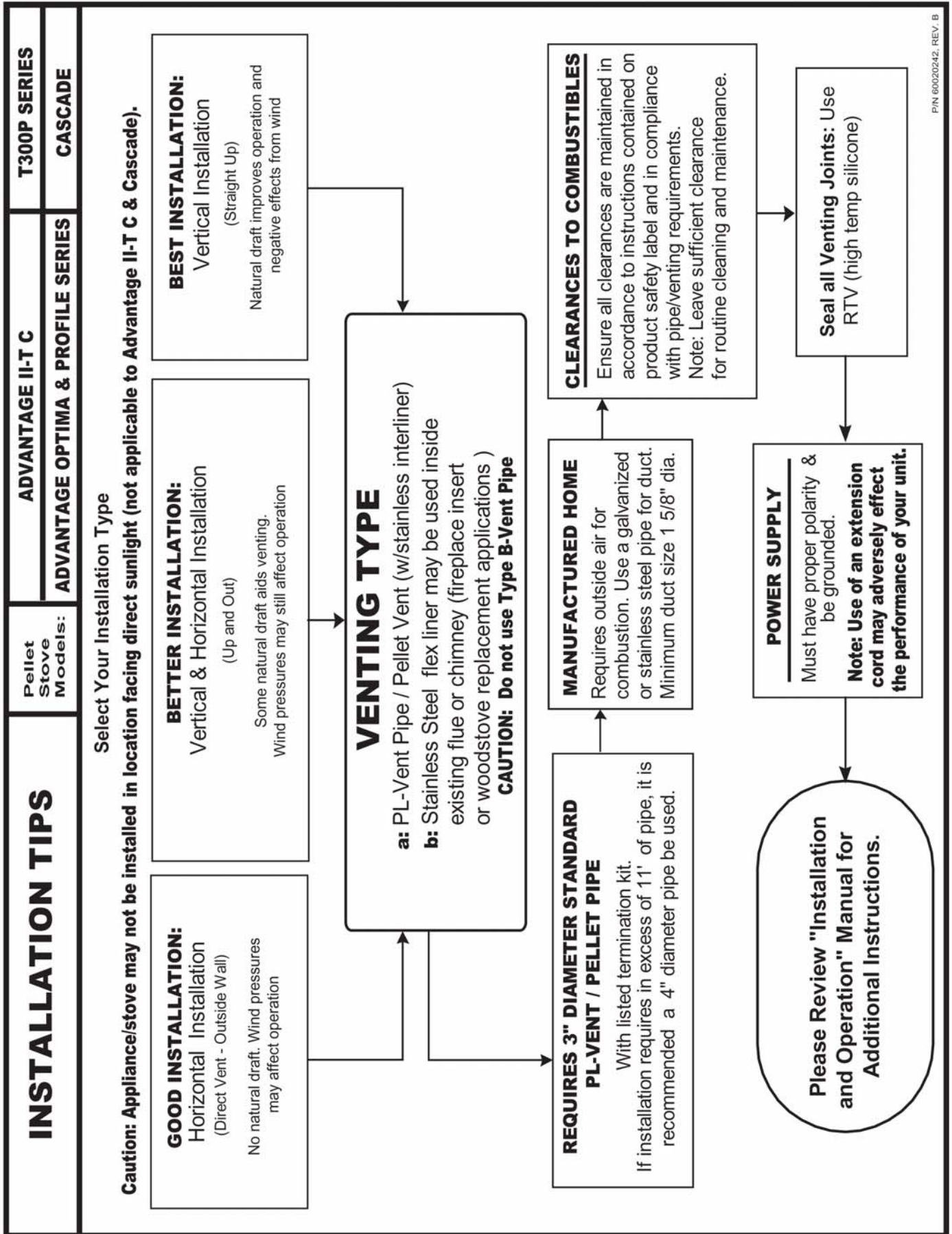


**MODEL CASCADE**



Fabriqué par:  
Lennox Hearth Products  
1110 West Taft Avenue  
Orange, CA 92865

DO NOT REMOVE THIS LABEL





**OWNERSHIP RECORDS**

Dealer's Name:

Dealer's Address:

City:	State:	Zip Code:
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Serial Number:	Date of Purchase:	Date Installed:
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Notes:

**SERVICE AND MAINTENANCE LOG**

Service Date	Service Technician	Service Description
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***LENNOX***<sup>®</sup>  
**HEARTH PRODUCTS**  
1110 West Taft Avenue  
Orange, CA 92865