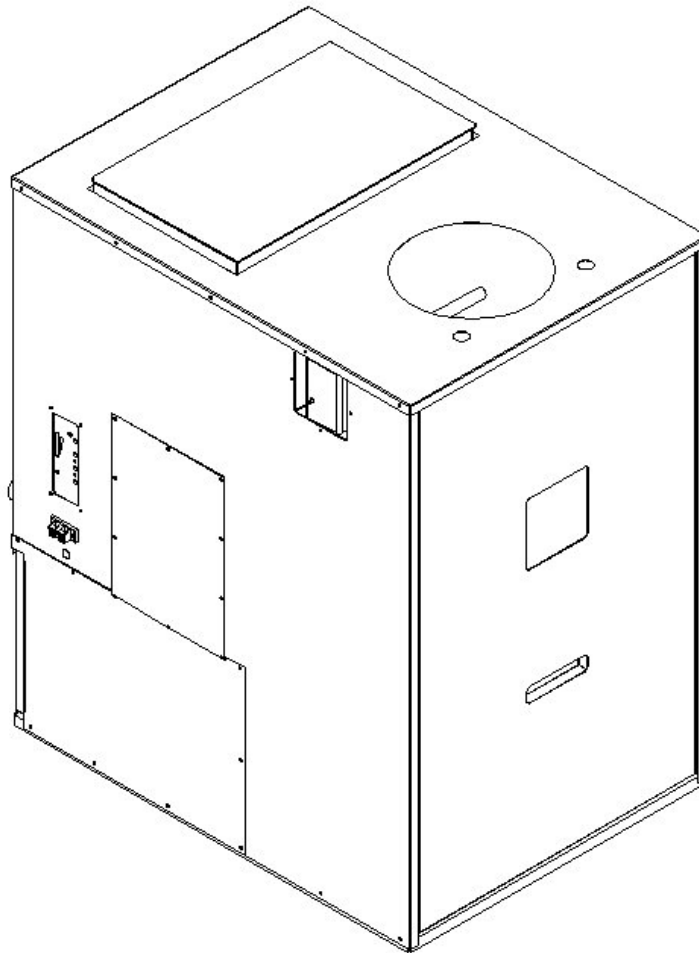


# Installation & Operations Manual



## SCF 050 FURNACE



"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."

"Contact local building or fire officials about restrictions and installation inspection requirements in your area."

**Save these Instructions**

210

SCF-050 Manual

# TABLE OF CONTENTS

|  |       |
|--|-------|
| General Information .....  | 4     |
| Installation Check List .....  | 5     |
| Furnace Layout Diagram.....  | 6     |
| Furnace Dimensions, Location & Clearances .....                        | 7-8   |
| Exhaust Venting.....   | 10    |
| Venting - Approved Materials .....                                     | 10    |
| Venting-Typical PL Vent Components .....                               | 11    |
| Venting - Determining Materials .....                                  | 12    |
| Venting - Termination Requirements .....                               | 13    |
| Venting: Termination Clearance Requirements .....                      | 15    |
| Venting – Into an existing Chimney.....                                | 16    |
| Combustion Air .....   | 17    |
| Connecting to Existing Duct Work.....                                  | 18-19 |
| Mobile Home Installation .....   | 20    |
| Thermostat Hook-Up .....   | 21    |
| SCF-050 Operation .....  | 22    |
| Installation Check .....   | 22    |
| Preventing Chimney Fires.....  | 22    |
| Approved Fuels .....   | 23    |
| Burning Corn, Wheat, Rye, Pellets, Cherry Pits, Distiller’s Grain..... | 23-24 |
| Operating Instructions.....  | 25    |
| Control Board Features .....   | 26    |
| Pre-Lighting & Lighting instructions.....                              | 27-29 |
| Shutting Off the furnace.....  | 29    |
| Diagnostic & Safety Features .....                                     | 29-31 |

|   |       |
|---|-------|
| Combustion Air Damper – Location and Adjustments.....         | 31-35 |
| Thermostat Control & Pilot Settings.....                      | 36    |
| <b>SCF-050 Maintenance</b> .....                              | 36    |
| St. Croix Clinker Theory.....                                 | 36-37 |
| Clinker/Ash Removal.....                                      | 37    |
| Daily Maintenance .....                                       | 38-40 |
| Periodic Maintenance.....                                     | 41-43 |
| Yearly Maintenance .....                                      | 44-45 |
| Safe Operation.....   | 45    |
| Wiring Schematic.....   | 46    |
| Electrical Layout.....  | 47    |
| <b>Canadian Requirements</b>                                  |       |
| Installation.....   | 48    |
| Operation.....  | 48    |
| Supplementary Furnace.....                                    | 49    |
| <b>Troubleshooting &amp; Frequently Asked Questions</b> ..... | 50-54 |
| Warranty.....   | 55    |
| Furnace Info & Notes.....                                     | 56    |

## GENERAL INFORMATION SAFETY PRECAUTIONS

***SAFETY NOTICE: The furnace must be properly installed in order to prevent the possibility of a house fire! These installation instructions must be strictly observed! The Maintenance schedule must be followed as described in this manual. Failure to follow instructions may result in property damage, bodily injury or even death.***

The furnace's exhaust system works with negative combustion chamber pressure and a slightly positive chimney pressure. Therefore, it is imperative that the air intake and exhaust system be airtight and installed correctly. Do not install a flue damper in the exhaust vent of this unit.

Do not connect this unit to a chimney flue serving another appliance.

### **BUILDING PERMIT**

Contact the local building officials to obtain a permit and information on any local installation restrictions and inspection requirements.

### **DEFINITION OF "FURNACE"**

The word "Furnace" as used in this manual is interpreted to mean a corn, wheat, rye or wood pellet burning Add On Furnace. This model is not intended as the sole source of heat.

### **SAFETY TESTING**

The furnace has been independently tested and listed by Warnock Hersey Laboratories in accordance with the proposed ASTM Standards and the applicable portions of UL 1482 and ULC S627/B366.2, and Oregon Administrative Rules 814-23-901 through 814-23-909, stating requirements for installation as a shop heater or Add On Furnace and for mobile home installations. The safety-listing label is located on the inside of the removable front panel of the unit. Please refer to label for pertinent information.

### **DISCLAIMER OF WARRANTY**

Since Even Temp Company has no control over the installation of the furnace, Even Temp Company grants no warranty, implied or stated, for the installation of the furnace and assumes no responsibility for any special, incidental or consequential damages.

### **MANUFACTURED BY:**

Even Temp Inc  
Hwy 34  
Waco, NE, 68467

# **BEFORE INSTALLATION THOROUGHLY READ AND UNDERSTAND THIS MANUAL**

## **SAFETY NOTICE**

**PLEASE READ THE ENTIRE MANUAL BEFORE INSTALLING AND USING YOUR NEW FURNACE. FAILURE TO FOLLOW INSTRUCTIONS MAY RESULT IN PROPERTY DAMAGE, BODILY INJURY, OR EVEN DEATH.**

## **INSTALLATION CHECK LIST**

**FOR USE IN THE U.S. AND CANADA, MOBILE HOME APPROVED**

**CHECK WITH LOCAL AUTHORITIES AND OBTAIN NEEDED PERMITS**

**WE RECOMMEND INSTALLATION BY A QUALIFIED PROFESSIONAL.**

**BEFORE STARTING THE FURNACE FOR THE FIRST TIME**

1. Under certain conditions outside combustion air is recommended. Use only approved parts. When using outside air for combustion check that the outside air inlet is connected to draw fresh air from outside the building.
2. All joints of PL vent and single wall stainless steel pipe should be fastened by at least 3 screws and correctly installed. (Follow vent manufacturer's instructions). Seal all joints with high temperature silicone to create an airtight seal.
3. **WARNING:** The high temperature paint on this Furnace may take several hours of burning at a high fuel setting to cure fully. During this time, an odor that is not harmful may be evident. When odors are present, the area around the Furnace should be well ventilated.
4. **Caution:** The high temperature paint can be easily scratched prior to burning the Furnace.

### **CAUTION**

**FAILURE TO FOLLOW THE INSTRUCTIONS IN THE INSTALLATIONS MANUAL MAY RESULT IN A HOUSE FIRE. PLEASE FOLLOW INSTALLATION AND MAINTENANCE INSTRUCTIONS.**

# SCF 050

## Furnace Layout

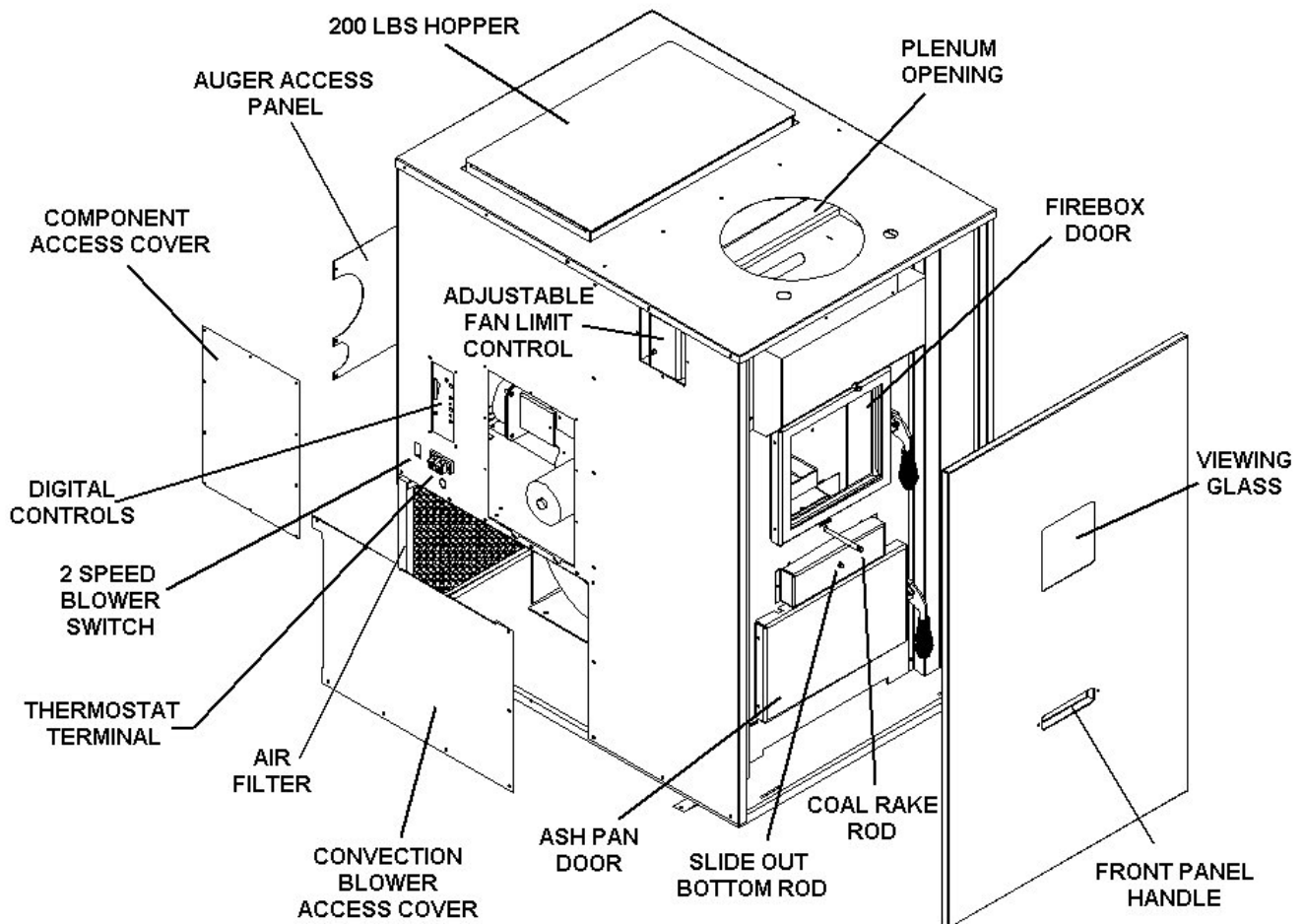


Figure 1

The SCF-050 has a large Heat Exchange system, allowing for more heat to be exchanged. The burn system used in the furnace is the St. Croix Patent Pending “**Clinker Removal System**”. This burn pot allows the clinker to be removed without losing the fire in the pot. This eliminates the need of having to constantly re-light the furnace after removing the clinker.

## Furnace Dimensions

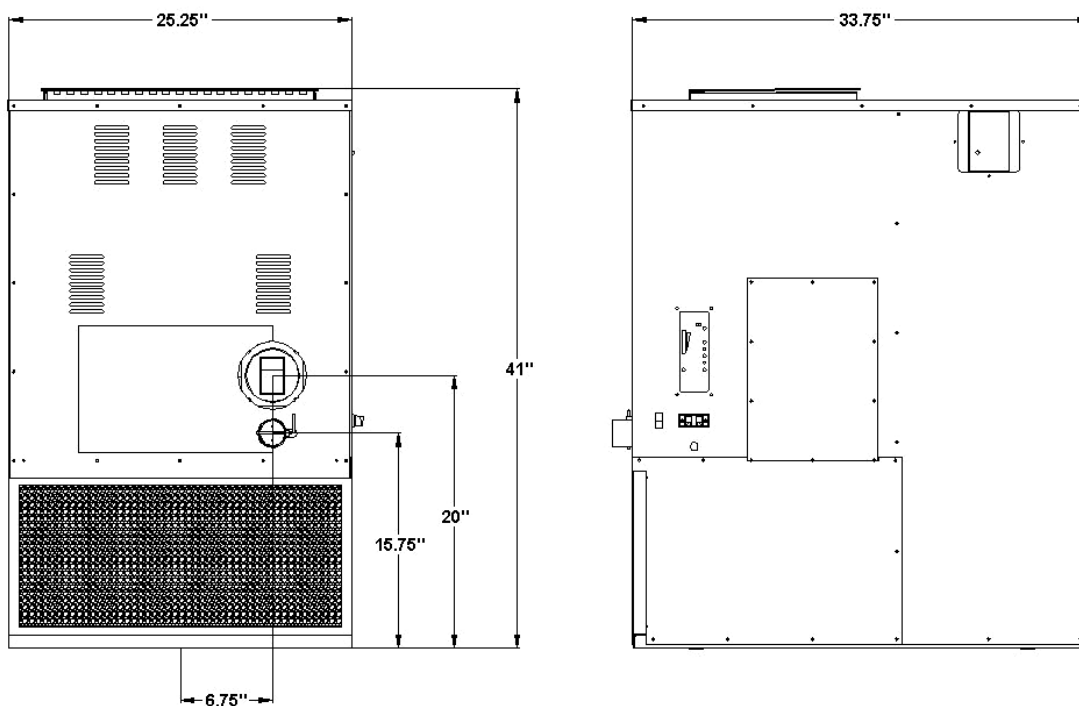


Figure 2

## Furnace location

When finding a location to install the furnace, several things need to be kept in mind. Consider the following things: **Service Access, Venting, Return air Duct, Supply air Duct and Electrical.**

**Service Access.** The front panel is removable to allow access to the ash pan and the firebox for regular maintenance. The Control Board is mounted on the left side. There are also 2 access panels on the left side. The smaller cover gives access to the following components: Combustion Fan, Vacuum Switch and Proof of Fire Switch. The larger cover allows access to the Convection Blower for maintenance when needed. The Fan Limit Control is also located on the left side.

**Supply Air.** The SC 050 Furnace may be connected to a gas, oil or Electric/Heat pump system with existing duct work.

**Return Air.** The furnace does not need to be connected directly to the existing cold air return system, but it is recommended.

**Venting.** The location should be as close as possible to an outside wall for venting purposes. The furnace requires 4" PL Vent pipe. The shortest vent system with minimal elbows is the best.

# Clearances & Access for Service & Maintenance

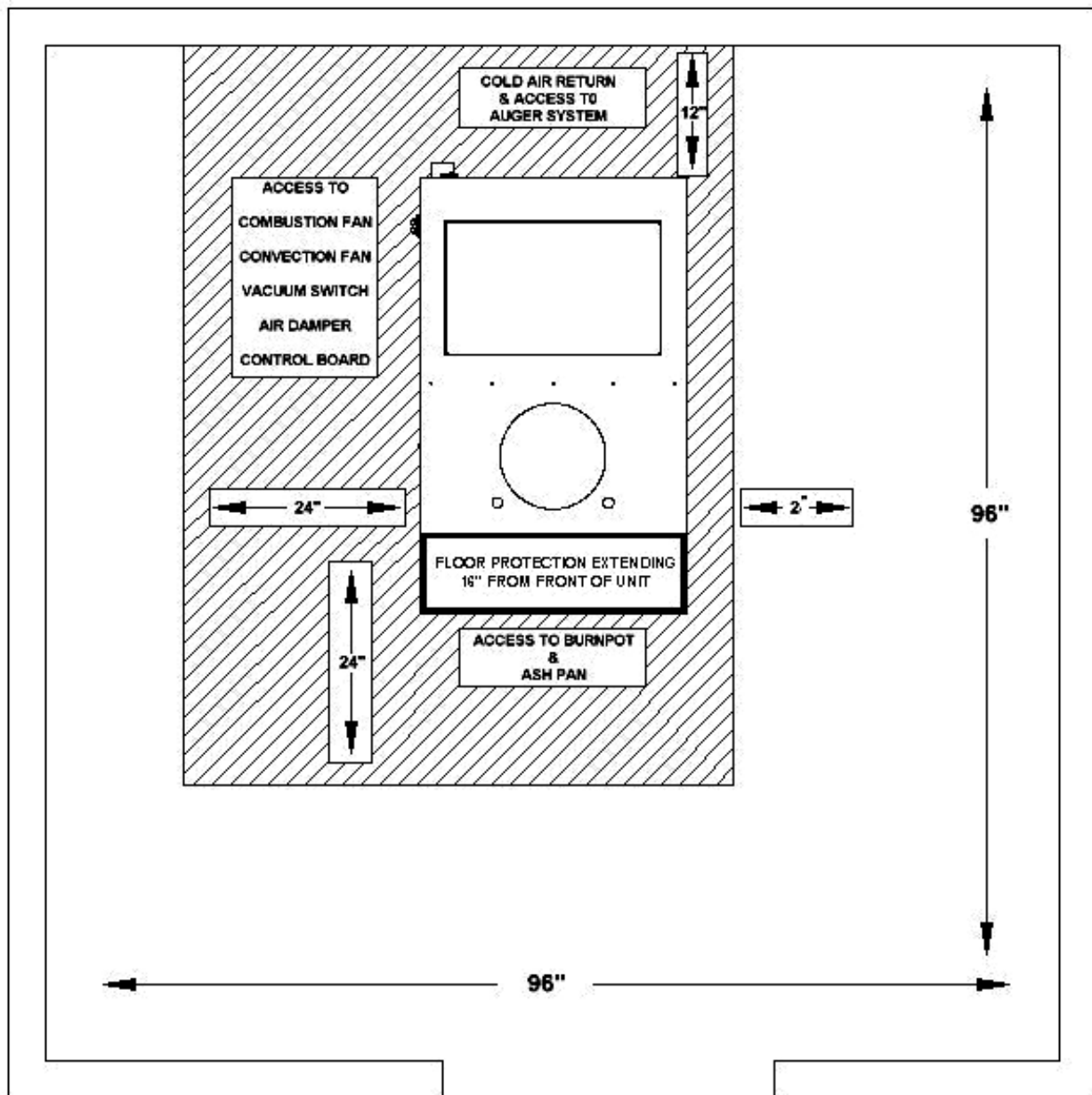


Figure 3

**FLOOR PROTECTION** - The furnace should be installed on a non-combustible surface extending 16" in front of the unit.

**LEFT SIDE** – Minimum clearance to combustibles on the right side of the furnace is 2"

**ACCESS FOR SERVICE AND MAINTENANCE** – The remaining clearances shown above are required to allow access to components during service and maintenance.



# Caution

**INSTALLATION IS TO BE PERFORMED BY A QUALIFIED INSTALLER OR DEALER.**

**ADHERE TO ALL CLEARANCES SPECIFIED BY THE MANUFACTURER OF THE VENTING SYSTEM USED.**

**ADHERE TO ALL CLEARANCES SPECIFIED IN THE INSTALLATION INSTRUCTIONS OF THIS FURNACE.**

**THIS FURNACE USES A POSITIVE PRESSURE VENTING SYSTEM. DO NOT INSTALL A FLUE DAMPER IN THE EXHAUST SYSTEM OF UNIT**

**DO NOT CONNECT THIS FURNACE TO A CHIMNEY SYSTEM THAT IS CONNECTED TO ANOTHER APPLIANCE.**

**DO NOT INSTALL THIS UNIT IN A SLEEPING ROOM**

## ATTENTION

**CONDENSATION:** When planning the installation of your Furnace, keep in mind that condensation is detrimental to exhaust systems. Corn, Wheat, & Rye have higher moisture content than pellets and can be more susceptible to condensation forming in certain types of installations. Install the Furnace with a minimum of the system exposed to the cold temperatures outside the envelope of the house. Check with the manufacturer of your venting system that they honor the warranty of their PL Vent with the use of corn.

## ATTENTION

**BATTERY BACKUP:** We strongly recommend using a battery backup system if the furnace is installed using horizontal venting only. This prevents any smoke from entering your home in the event of a power failure.

## VENTING: APPROVED MATERIALS

The Furnace requires a venting system approved for pellet Furnaces by a certified testing lab. Approved pellet Furnace venting materials are: 1) PL vent, a double wall vent with a stainless steel liner; and 2) Single wall rigid or flexible stainless steel pipe. PL Vent and Single wall vent is available through manufacturers such as: Energy Vent LTD, James A. Ryder, Simpson DuraVent and Selkirk Metalbestos and is carried by many local pellet Furnace dealers. In this manual approved venting will be referred to a “PL vent” or “Single wall vent”. All single wall vent adaptors must be stainless steel.

NOTE: TYPE “B” GAS VENT MUST NOT BE USED IN THE INSTALLATION OF THIS FURNACE

Examples of venting system components follow:



High temperature ceramic roping reduces potential fly ash escaping through joints.

Stainless steel inner liners resist corrosive flue gas damage to the system.

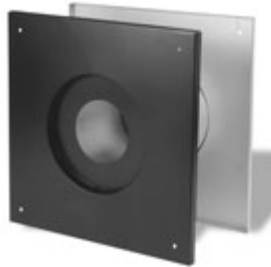


Flex pipe should be stainless steel, 4 ply construction with a total thickness of approx. .07 inches.

## TYPICAL PL VENT COMPONENTS



*RAIN CAP  
VERTICAL OR  
HORIZONTAL*



*WALL THIMBLE*



*CHIMNEY  
ADAPTER*



*SUPPORT BRACKET*



*ADJUSTABLE LENGTH  
PIPE*



*SINGLE TEE  
w/TEE CAP*



*SINGLE REDUCTION  
TEE w/TEE CAP*



*DOUBLE TEE  
w/TEE CAP*



*PIPE ADAPTER*



*INCREASER*



*45° ELBOW*



*90° ELBOW*

## VENTING: DETERMINING MATERIALS

### TYPE OF MATERIALS:

1. *PL Vent must be used.*

2. **Exception: Single wall stainless steel may be used inside an existing chimney.** (No clearances to combustibles are needed on single wall stainless steel adaptors, rigid or flex pipe installed within a chimney.)

3. A clean out “tee” (PL Vent or “Quick-Connect Exhaust”) must be installed directly to the furnace and at the bottom of each vertical run of the exhaust system. These tees are to assist in periodically cleaning the pipe. Single or double clean-out tees may be used. **The exhaust system must be installed so the entire system can be cleaned without disassembly.**

NOTE: ADHERE TO THE PL VENT CLEARANCES TO COMBUSTIBLES AS REQUIRED. STRICTLY OBSERVE THE PL VENT MANUFACTURER’S SAFETY SPECIFICATIONS.

### QUANTITY OF MATERIALS:

1. It is recommended that the vent system be installed with a **minimum of three feet (3’) of vertical rise** above the exhaust port on the back of the furnace.

FAILURE TO PROVIDE THE NATURAL DRAFT THAT RESULTS FROM A VERTICAL RISE MAY RESULT IN SMOKE BEING RELEASED INTO THE HOUSE WHEN ELECTRICITY TO THE UNIT IS INTERRUPTED WHILE BURNING OR SMOLDERING FUEL REMAINS IN THE BURN GRATE. (*See “Battery Backup” on page 9*)

2. It is not recommended to run vertical venting outside the heated environment where the furnace is installed. Running a venting system in a cold environment may cause the flue temperatures to cool down too much for adequate drafting. See figures 5 & 6 on pages 15 & 16.

Additional vertical exhaust venting should be provided when using:

a. More than one (1) elbow or tee; and/or

b. Horizontal runs of over three (3) feet. (*Horizontal runs over 10 feet not recommended*)

3. For a venting system ending in a horizontal run, the exhaust pipe must be terminated by a listed end cap or a PL vent elbow (45 or 90 degrees). Note: End caps or elbows must vent exhaust gases away from the building.

4. For termination above the building roofline a rain cap is required.

5. The exhaust pipe on all Furnaces is 4” O.D. to accommodate a pipe adaptor.

## VENTING: TERMINATION REQUIREMENTS

In determining optimum vent termination, carefully evaluate external conditions especially when venting directly through a wall. Since you must deal with odors, gases, and fly ash, consider aesthetics, prevailing winds, distances from air inlets and combustibles, location of adjacent structures and any code requirements.

1. Exhaust must terminate above combustion air inlet elevation.
2. Do not terminate vent in any enclosed or semi-enclosed area, (i.e. Carports, garage, attic crawl space, etc.) or any location that can build up a concentration of fumes.
3. Vent surfaces can get hot enough to cause burns if touched by children. Non-combustible shielding or guards may be required

**The type of installation must first be considered before determining the exact location of the venting termination in relation ship to doors, window, cavities or air vents. See figures 4a and 4b below.**

- a. **Without** Outside Air connected to the unit. For These types of installations please refer to the dimensions listed below in figure 4a.

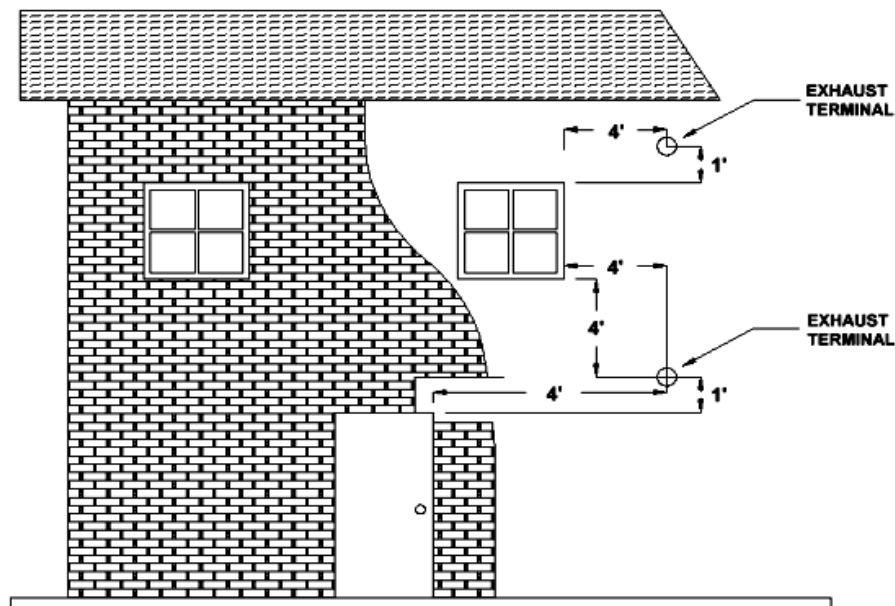


Figure 4a

|                              |                                     |
|------------------------------|-------------------------------------|
| 4' (1.2 m) BELOW             | a door, window, cavity, or air vent |
| Or                           |                                     |
| 4' (1.2 m) HORIZONTALLY FROM | a door, window, cavity, or air vent |
| Or                           |                                     |
| 1' (305 mm) ABOVE            | a door, window, cavity, or air vent |

- b. **With** Outside Air Connected to the unit. In this manner the appliance is a Direct Vent Appliance (sealed Combustion System) as listed in NFPA 211-6.

*3.3.3.2 Direct Vent Appliance (Sealed Combustion System Appliance) A system consisting of an appliance, combustion air and flue gas connections between the appliance and the outside atmosphere, and a vent cap supplied by the manufacturer, and constructed so that all the air for combustion is obtained from the outside atmosphere and all flue gases are discharged to the outside atmosphere.*

Special Venting Arrangements are listed in NFPA 211-31

*10.7.1.2 The Vent Terminal of a Direct Vent Appliance with an input of 10000 BTU/Hr or less shall be located at least 6" from any opening into a building, and such an appliance with an input of over 10000 BTU/Hr, but not over 50000 BTU/Hr shall not be located less than 9" from any opening through which vent gases could enter a building, and the vent terminal of such appliance with an input over 50000 BTU/Hr shall be located not less than 12" from the opening.*

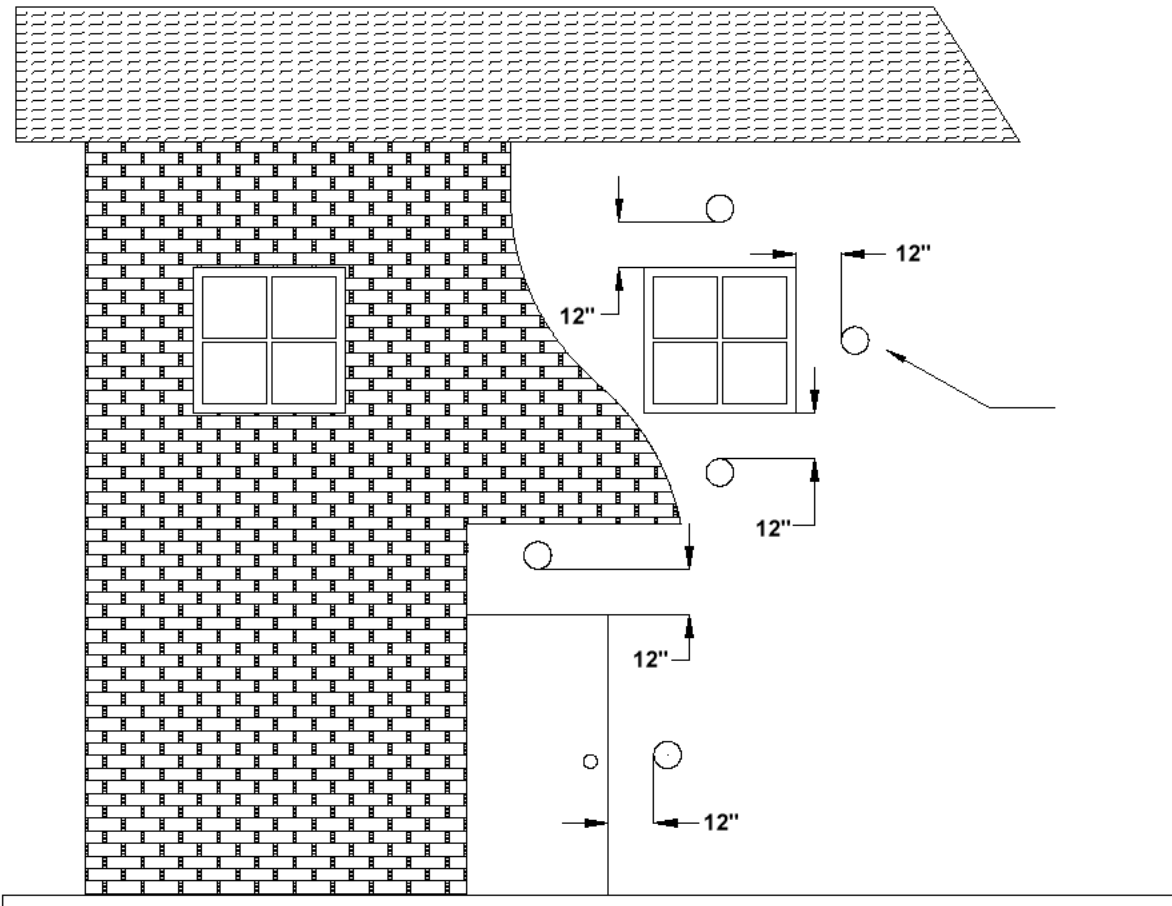


Figure 4b

1' (305 mm) ABOVE, BELOW OR HORIZONTALLY FROM a door, window, cavity, or air vent.

## VENTING: TERMINATION CLEARANCE REQUIREMENTS

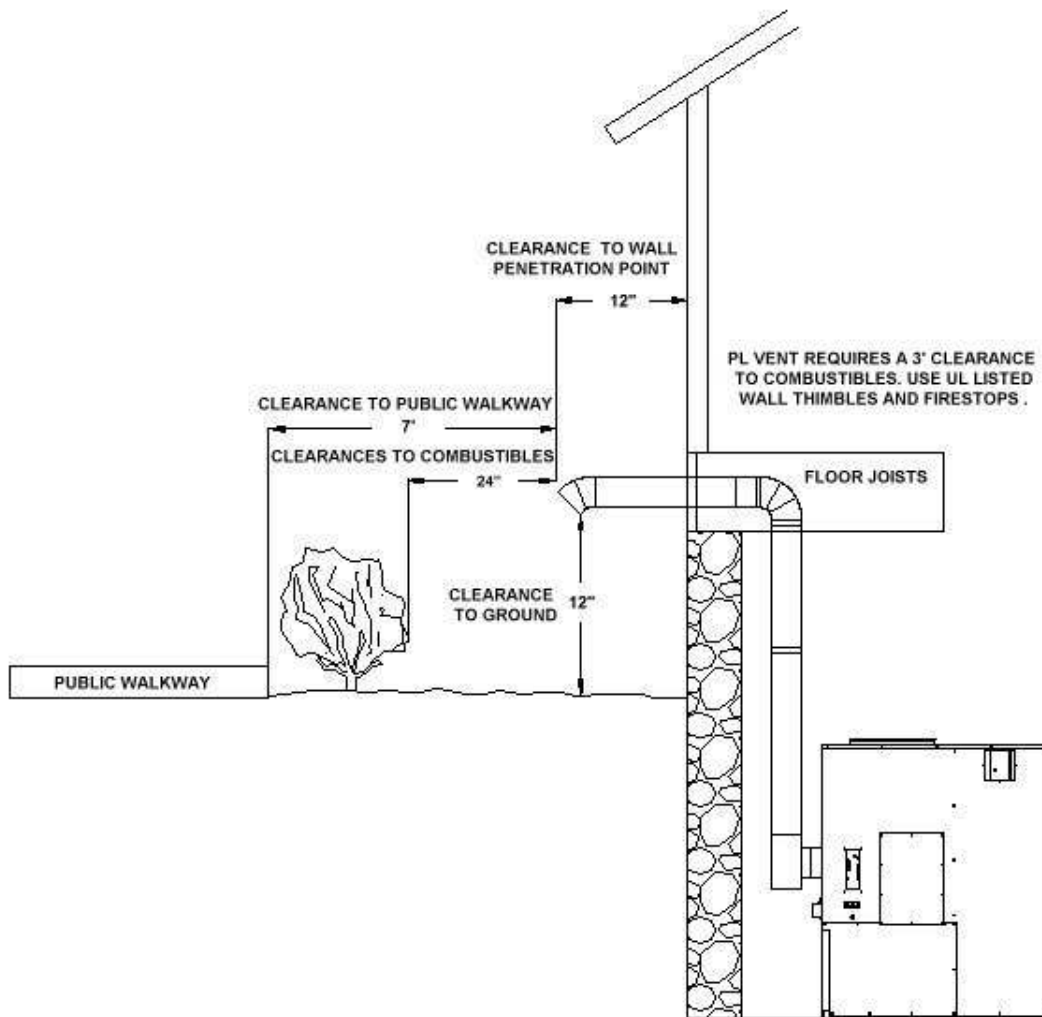


Figure 5

THE EXHAUST TERMINATION LOCATION MUST BE AT LEAST

|             |   |
|-------------|---|
| 1' (305 mm) | ABOVE the ground level  |
| 7' (2.1 m)  | FROM a public walkway   |
| 1' (305 mm) | FROM The wall penetration point   |
| 3' (915mm)  | FROM a gas meter/regulator assembly   |
| 2' (610 mm) | FROM any adjacent combustibles such as:<br>Adjacent buildings, fences, protruding parts<br>of the structure, roof eaves or overhangs,<br>plants, shrubs, etc. |

## Venting into an Existing Chimney

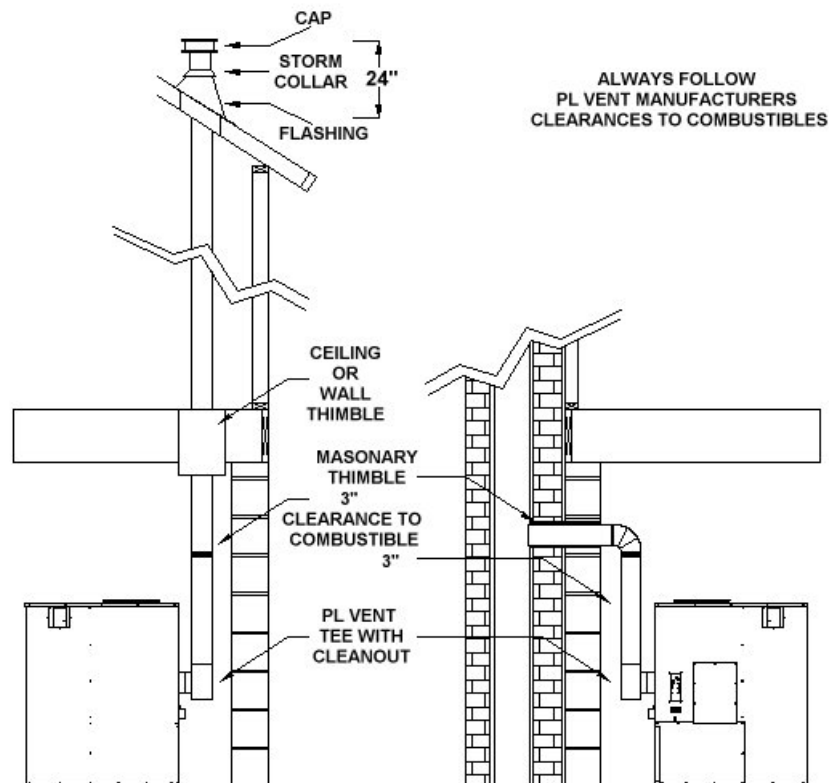


Figure 6

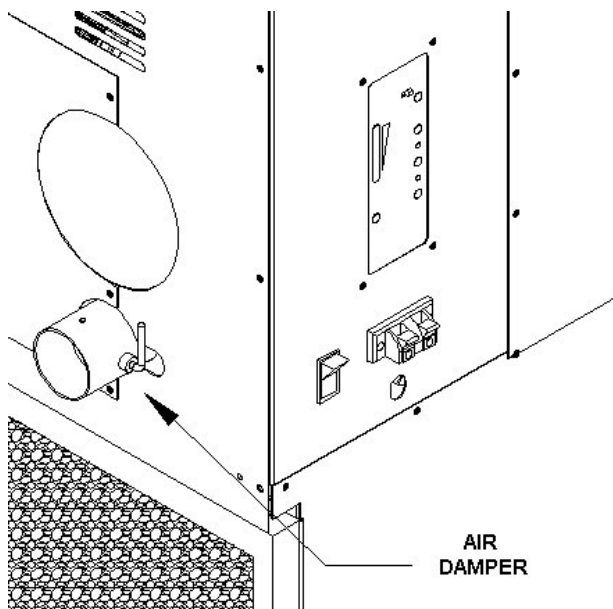
The Furnace may be connected to an existing Class A chimney or a masonry chimney which meets the minimum requirements of NFPA 211.

1. If the Furnace's exhaust is connected to a masonry chimney, the masonry chimney must be free of cracks that could leak exhaust gases or fly ash. **A relining of the chimney with either PL vent or single wall stainless steel pipe may be necessary to bring the chimney into compliance.**
2. When chimneys are relined, a chimney chase cap that reduces the outlet of the chimney to the size of the liner is required. Extend the exhaust vent above the chimney chase cap and finish it off with a rain cap. **A single wall liner may need to be wrapped with insulation to maintain adequate exhaust temperatures when outside temperatures drop below freezing, causing the flue temperatures to become too low.**
3. Venting into the side of an existing masonry chimney must be done through a masonry thimble. When wall penetration is necessary to access a masonry chimney, use a listed PL vent wall thimble. (Figure 6).
4. When venting into a Class A steel chimney use an appropriate PL Vent adapter.



# COMBUSTION AIR

1. Under certain conditions it is recommended that the Furnace be connected to an outside source of combustion air to improve Furnace performance. Flexible metal hose, such as ClevFlex, or rigid metal pipe, (conduit), must be connected around (NOT INSIDE) the combustion air inlet tube (Figure 7). Be careful not to pinch or bend the outside air pipe with too small a radius which may e terminated flush with the outside wall but should be protected from wind and weather by a hood. Note: The outside air pipe must terminate above the maximum snow line.



**WARNING**

**USE THE AIR INTAKE DAMPER FOR ADJUSTING COMBUSTION INLET AIR ONLY! OTHER METHODS OF RESTRICTING OR BLOCKING COMBUSTION INLET AIR ARE STRICTLY PROHIBITED!**

Figure 7

2. Outside air may be drawn from a semi-enclosed attic or crawl space or any semi-enclosed space. Take care not to draw cold air past water pipes that may freeze.
3. Increase the outside air pipe diameter to 3" for runs over ten (10) feet and elevation over 4,000 feet. Note: Long runs should be avoided.
4. Terminate the outside air pipe below the exhaust vent outlet.
5. An open mesh screen should be placed over the outside air pipe opening to prevent birds or rodents from nesting in the opening. Use an elbow or shield to prevent prevailing winds from blowing directly into the outside air intake pipe. NOTE: Mesh screen should be no smaller than one-fourth inch (1/4") by one-fourth inch (1/4").

**WARNING: OUTSIDE COMBUSTION AIR IS REQUIRED FOR ALL MOBILE HOME INSTALLATIONS!**

## Connecting To Existing Duct Work

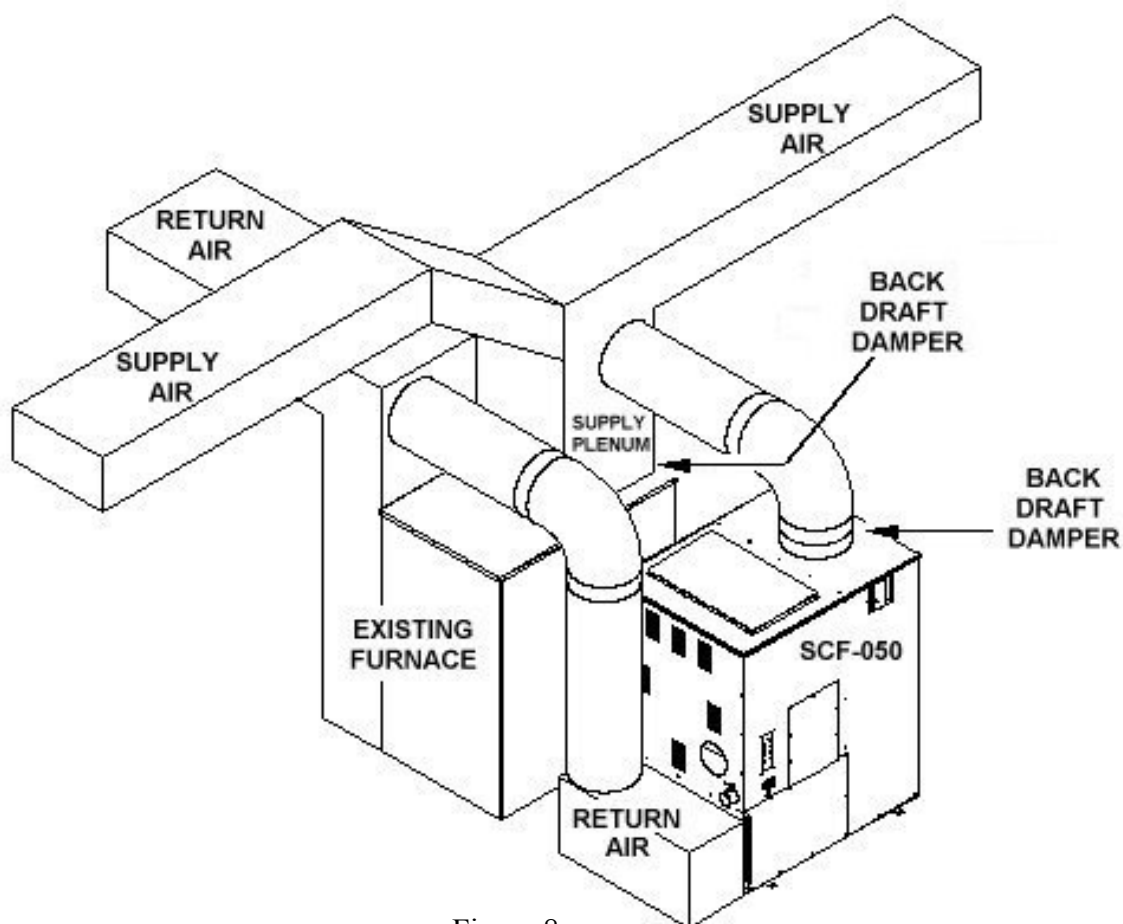


Figure 8

The SCF-050 may be connected to the existing ductwork of a Gas, Oil or Electric / Heat Pump furnace. The duct work of the furnaces may not be hooked in series with each other. This means the Warm Supply Air of the SCF-050 may not be hooked the Cold Air Return of the existing furnace. See example in figure 8 above. The Cold Air return of the SCF-050 is connected to the Return Air Duct of the existing furnace. The Warm Air Supply of the SCF-050 connects to the Supply Plenum of the existing furnace. **Back Draft Dampers** must be used in the SCF-050 Warm Air duct and in the Warm Air Plenum of the existing furnace to prevent the air flow from reversing. It is recommended to enter the Supply plenum of the existing furnace above the Air Conditioning A coil. The materials used for the Warm-Air supply duct must have a minimum temperature rating of 250 degrees F. The Plenum of the SCF-050 must be constructed of metal. Once installed as an Add On furnace check the Static pressures in the ductwork to make sure they do not exceed the limits on the existing Central furnace or of the SCF 050. Running both furnaces at the same time should not cause any nuisance tripping of the High Limits in either unit.

**Follow all instructions when connecting to existing ductwork. Connecting the Warm Air Supply to the Cold Air return may cause harm to the existing furnace and may void the warranty of both the existing furnace and the SCF-050.**

**CAUTION: Do not connect an air conditioning system to this unit.**

## Blower Specs

The Blower is a 2-Speed blower. (600 – 800 CFM) When connecting this unit to a duct system, the high speed should be used. If the Furnace is to be used as a stand-alone shop heater, the option is available to select the 600 CFM setting or the 800 CFM setting. The slower speed will produce higher air temperatures because the air moves slower through the heat exchange system, allowing it to become hotter.

## Minimum Duct Size

Round: 10"

Rectangular: 6" x 15"

Intake Air Duct should be 10% larger

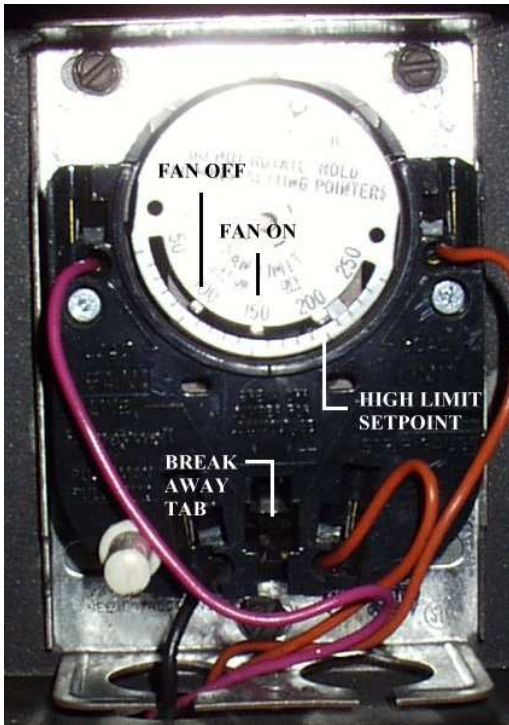
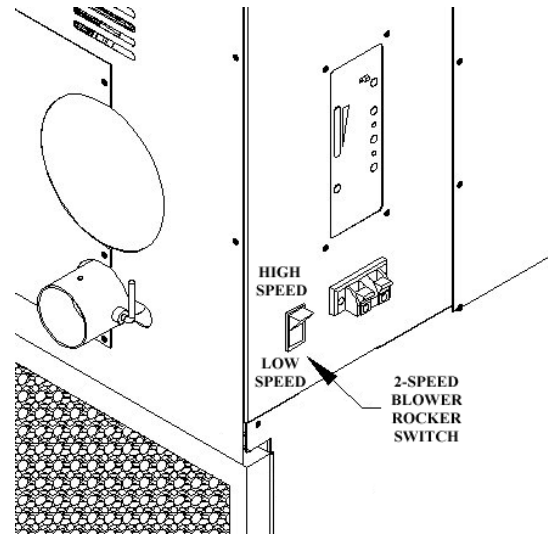
Maximum Static Pressure: .4"

Velocity: 1400 FPM at the above mentioned duct sizes.

A larger duct size will produce less Air Flow noise; the above-mentioned sizes are the minimum allowed.

## Fan Limit Control

The Furnace uses a Fan Limit Control built into the furnace centered below the 10" plenum opening. The High Limit function of this control is set at a maximum setting of 200 degrees F.



### **CAUTION: DO NOT TAMPER WITH THE HIGH LIMIT SETTING.**

There are two adjustable Fan Control Settings. They control when the Convection Blower turns on, and when the Blower turns off. This will help control the temperature of the air coming out of the registers. These settings may be adjusted to accommodate customer preference. If the air seems too cool, simply adjust the Fan Off setting higher to shut the blower down sooner. Factory settings are shown in figure 9.

The Fan limit has a Break-Away Tab that has been removed. When replacing a Fan Limit Control, be sure to remove the tab as shown in figure 9.

# Mobile Home Installation

Unit must be installed in accordance with the:  
**Manufactured Home and Safety Standard (HUD), CFR 3280, Part 24**

The Furnace has been tested and listed for mobile home installations. In addition to all previously detailed requirements, mobile home installations must observe the following:

1. **WARNING: DO NOT INSTALL IN A SLEEPING ROOM.**
2. **WARNING: COMBUSTION AIR MUST COME FROM THE OUTSIDE OF THE MOBILE HOME! FAILURE TO DO SO MAY CREATE NEGATIVE PRESSURE WITHIN THE MOBILE HOME AND COULD DISRUPT PROPER VENTING AND OPERATION OF THE PELLET FURNACE.**
3. **CAUTION: THE STRUCTURAL INTEGRITY OF THE FLOORS, WALLS, CEILING AND ROOF MUST BE MAINTAINED.**

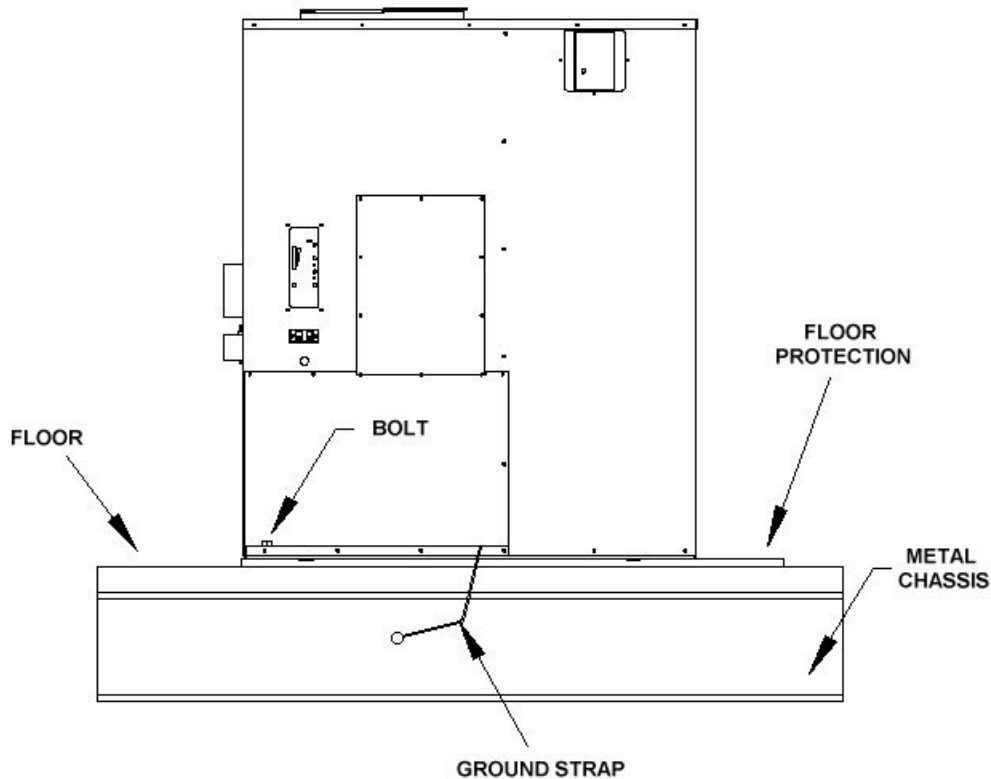


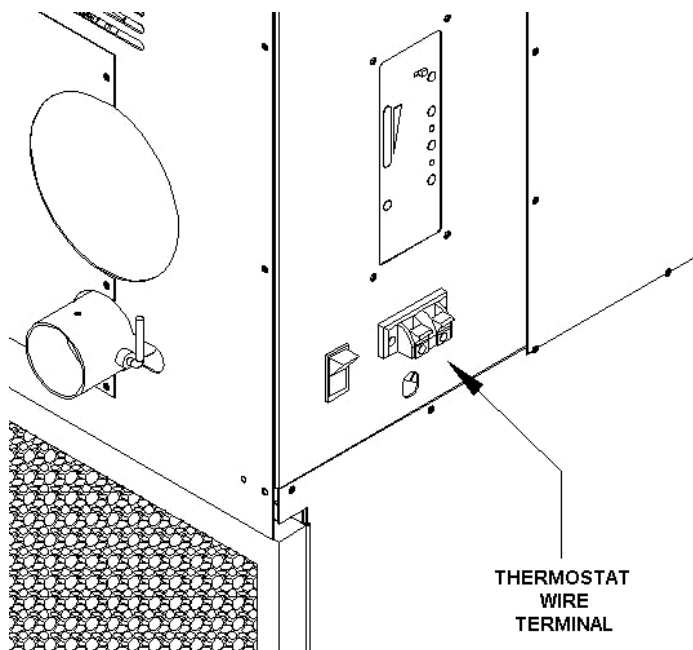
Figure 10

4. Permanently bolt the Furnace to the floor.
5. Electrically ground the Furnace and pedestal to the metal chassis of the home. Use a number eight, (8) gauge or larger copper wire.
6. Maintain an effective vapor barrier at location where PL vent exits the structure.
7. Check any other local building codes or other codes that may apply.
8. Do not use components other than those specified for use with this unit.
9. Floor protection requirement must be followed precisely.
10. PL Vent must be used for exhaust venting. (Single wall vent is not allowed). Follow PL Vent manufacturer's installation directions and observe all listed clearances to combustibles.

**DO NOT CONNECT THE SCF-050 FURNACE TO A DOWN FLOW FURNACE SYSTEM.**

## Thermostat Hook Up

**NOTE: Installers must determine a neutral location of where to mount the Thermostat in order for accurate room temperature measurements.**



### Wiring Connections

To hook up a thermostat, connect the wires from the thermostat to the external Wire Terminal on the left side of the Furnace. The external Terminal has been pre-wired to the thermostat connections on the back of the control board.

For Information on how the Thermostat operates, please read the section covering thermostat operations.

Figure 11

# SCF-050 OPERATION

**CAUTION: Operate this unit only with the fuel hopper lid closed. Failure to do so may result in emission of products of combustion from the hopper under certain conditions. Maintain hopper seal in good condition**

## INSTALLATION CHECK

Proper installation is essential for safety, effective Operation, Warranty Coverage, Insurance requirements and to meet Local Building Codes. Installation Requirements are described in the first section of this manual. Verify the installation is correct before firing up the furnace for the first time.

When burning corn, wheat, rye & Distiller's Grain Pellets care should be taken in how the venting system is installed. To burn grains & Grain products, the moisture content should be 15% or less. This is much higher than the moisture content of wood pellets and can result in condensation forming in the venting system in certain installations. The chimney system should stay within the warm envelope of the house as much as possible. Only penetrate the exterior of the home where the exhaust system will terminate.

**REMEMBER: Condensation from burning corn, wheat, rye & Distiller's Grain is detrimental to the venting system. Only buy venting systems that are warranted with burning corn.**

## PREVENTING CHIMNEY FIRES

Chimney fires can be prevented by properly operating the Furnace and by periodic inspection and cleaning of the chimney. When wood is burned 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 associated with a slow burning fire. As a result, creosote residue accumulates on the flue lining. When ignited this creosote can result in an extremely hot chimney fire.

The chimney and chimney connector should be inspected at least once every two months during the heating season to determine if a creosote build-up has occurred. If a significant layer of creosote has accumulated (3 mm or more) it should be removed to reduce the risk of a chimney fire. Use of an appropriately sized chimney brush or the services of a professional chimney sweep are recommended.

The chimney and chimney connector should be inspected at least once every two months during the heating season to prevent the system from getting plugged with Fly ash. Clean the exhaust system if needed. Use of an appropriately sized chimney brush or the Services of a Professional chimney sweep are recommended.

## **APPROVED FUELS – Corn, Pellets, Wheat, Rye, Cherry Pits & Distiller’s Grain Pellets.**

**Corn, Wheat, Rye, Distiller’s Grain** must be 15% or less moisture content. The keys to satisfactory performance are: proper operation of the stove, diligent maintenance and burning only dry, clean, quality corn, wheat & rye. Grain dust must be screened prior to using.

**NOTE: Corn, Wheat, Rye & Distiller’s Grain with excessive grain dust must be screened, by sifting with the appropriate size mesh screening. Large pieces of cob may plug the auger. No Standards exists for these fuels. Inspect fuel before buying.**

### **SATISFACTORY PERFORMANCE**

Clinkers and Ash are a by-product of burning the fuels listed above and are not caused by your Furnace. Furnace performance can be quickly and severely reduced if poor quality fuel is used. *(See section covering the “Clinker Removal” on page 37 for more information).* A CONTINUOUS BURN MAINTENANCE SHEDULE IS PROVIDED AS AN EXAMPLE ON PAGE 38 IN THE DAILY MAINTENANCE SECTION. Using a thermostat will cause variations in the maintenance. Check the burnpot frequently in the beginning to establish a maintenance schedule based on use of furnace. Contact your dealer for more information on where to get high quality fuel to burn in your new SCF - 050.

Store fuel in a tight container or use other methods to ensure they do not become rain soaked or absorb moisture from damp or wet floors. This will also prevent rodents from becoming a problem. Do not store fuel within Furnace installation clearances or within the space required for clinker removal. The Furnace is not warranted against damage caused by poor quality fuel, incorrect operation, poor maintenance or incorrect installation.

#### **Pellets, Cherry Pits**

Clinkers and Ash are by-products of pellet & Cherry pit combustion and are not caused solely by your Furnace. Furnace performance can be quickly and severely reduced if poor quality fuel is used. **Contact your dealer for more information on APFI approved wood pellet fuels. No Standard exists for Cherry Pits.**

**NOTE:** Pellets with excessive sawdust should be screened by sifting with 1/4" mesh screening.

To burn **Pellets, Cherry Pits & Distiller’s Grain Pellets** in the standard burn pot in the furnace the side shields of the pot **must** be removed (See Figure 12 on page 24). The frequency of removal of ash from the pot should be determined by the owner/user of the furnace. It will vary depending on fuel consumption of the unit. *(See section covering the “Clinker Removal” on page 37 for more information).* A CONTINUOUS BURN MAINTENANCE SHEDULE IS PROVIDED AS AN EXAMPLE ON PAGE 38 IN THE DAILY MAINTENANCE SECTION. Using a thermostat will cause variations in the maintenance. Check the burnpot frequently in the beginning to establish a maintenance schedule based on use of furnace.

Store Pellets under cover on a wooden pallet or other methods to ensure they do not become rain soaked or absorb moisture from damp or wet floors. Do not store pellets within Furnace installation clearances or within the space required for ash removal. **The Furnace is not warranted against damage caused by using poor pellets, incorrect operation, improper maintenance or incorrect installation.**

To burn **Pellets, Cherry Pits & Distiller's Grain Pellets** detach the side shields by loosening the 2 screws holding the shield in place and lift off of the burnpot. Do not discard this part, but save it for future use in the event you switch back to burning corn, wheat or rye.

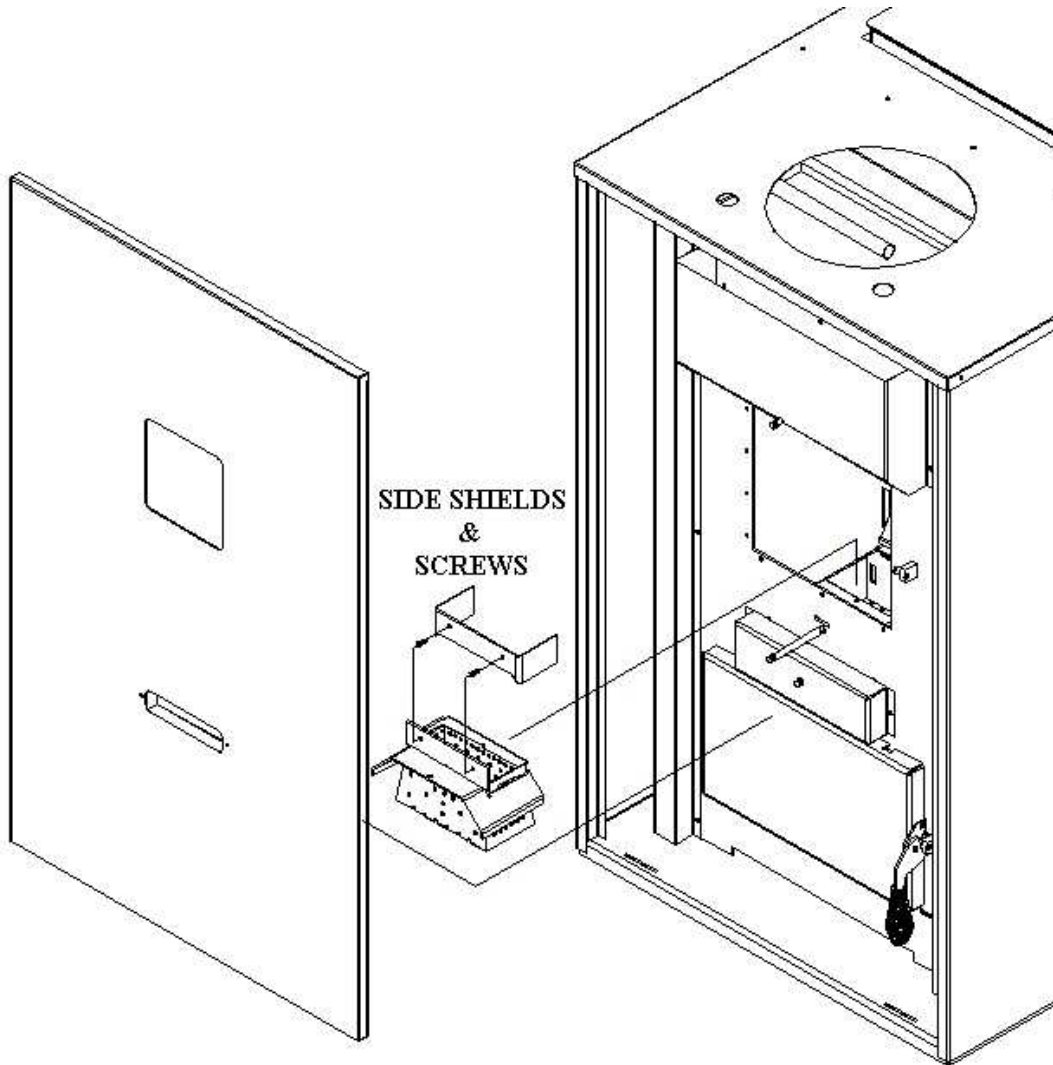


Figure 12

**The Side Shield must be removed when burning pellets, Cherry Pits & Distiller's Grain Pellets**



## OPERATING INSTRUCTIONS

*A different type of heater.* The SCF-050 is a furnace. FOLLOW THESE OPERATING INSTRUCTIONS EXACTLY AS STATED TO ENSURE SAFE AND RELIABLE OPERATION.

1. Carefully read this “Operation and Maintenance” manual in its entirety BEFORE lighting your Furnace for the first time.
2. Obtain final inspection and approval of installation from local building officials.
3. Have your dealer demonstrate all the operational and maintenance steps necessary for proper use of the furnace. **Sign and return the warranty card** to the address listed on the back page.
4. Some odors may be given off during the first few hours of burning during initial break-in. These odors are normal and not harmful. However, ventilating the room until the odors disappear is recommended.
5. The furnace will become HOT while in operation. Keep children, clothing and furniture away from all hot surfaces.

***WARNING: Direct contact with the furnace firebox during operation may cause skin burns.***

6. To avoid the possibility of smoke and/or sparks entering the room always keep firebox and ash pan doors closed whenever the furnace is operating.
7. A certain amount of carbon monoxide may be produced within the Furnace as a by-product of combustion. All exhaust vent connections must be sealed with **RTV silicone** to assure a gas tight seal. **Any leaks into a confined area caused by faulty installation or improper operation of the furnace could produce dizziness, nausea and in extreme cases, death.**
8. Under certain circumstances an outside source of combustion air may be needed and is required on all mobile home installations. If room air is used to supply combustion air, room air starvation, operation of exhaust fans and icing of air vents can adversely affect proper furnace operation.
9. Smoke detectors, installed in the same general area as the Furnace, may be activated if the Furnace door is left open and smoke is allowed to enter the area.

**CAUTION: NEVER ADD FIRE STARTER TO A HOT FURNACE.**

**CAUTION - Hot Surfaces**

- **Keep Children away.**
- **Do not touch during Operation.**

# Control Board Features

The Control Board controls all functions of the furnace by monitoring sensors that are in the system. These sensors serve 2 purposes.

- a. General Operation of the Furnace.
- b. Safety Features, to shut the unit down in the event the sensors detect a problem in the unit.

The Control Board also has Diagnostic Capabilities to help in diagnosing 3 areas in the furnace. These areas are:

1. High Temperature Limit.
2. Proof of Fire Sensor
3. Vacuum in the Firebox

A closer look at the Control Board to the right in figure 13 will explain how the board works. There are five buttons labeled 1 through 5, a slide switch labeled 6 and a LED Light bar with 5 Heat Settings. **The LED Light bar is also used during the Diagnostic process, see page 29 for more details.**

The buttons on the board function as follows: (Refer to Figure13. The touch pad buttons are labeled with the white numbers 1 through 5)

1. The Heat Level button (1) will advance the setting between level 1 and 5. Once you reach level 5, it will drop back to level 1. Each level has a LED light to indicate where the board is set.

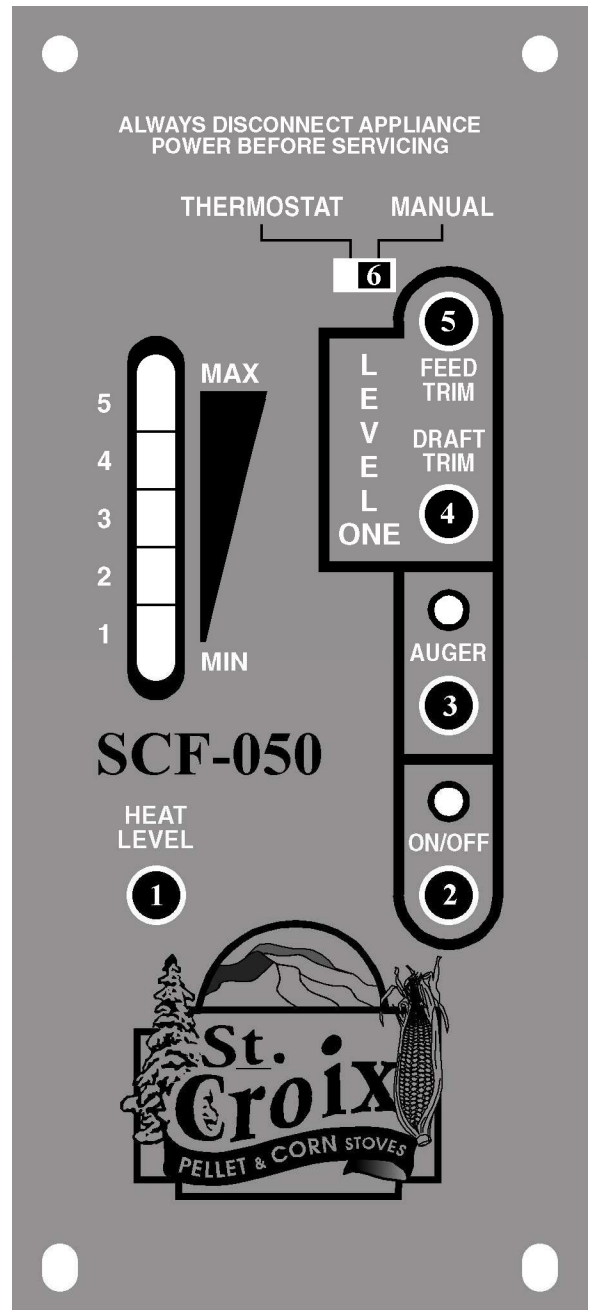


Figure 13

2. The On/Off button (2) turns the Furnace On and Off. It will also reset the board after the board has sensed a problem and is flashing a Diagnostic code.
3. The auger button (3) will allow the customer to manually auger fuel into the burn pot on start up when needed. This is particularly helpful in priming the Auger Tube when it is empty.
4. The Draft Trim button (4) allows for adjusting the Exhaust fan voltage on Heat Level 1 only. Push the button and the all of the LED Lights in the light bar will flash once. This decreases the voltage approximately 5 volts below the default setting. Push the button a second time and all of the LED Lights in the light bar will flash twice. This increases the voltage approximately 5 volts above the default setting. Pushing the button a 3<sup>rd</sup> time will reset the voltage to the default setting. This adjustment is available to fine tune the #1 Heat Level draft setting. This would only be used in the case the furnace was hooked up to a tall Vertical Chimney (to decrease the draft if needed) or if it was connected to a Chimney with a long Horizontal run (to increase the draft if needed).
5. The Feed Trim button (5) will allow the Fuel feed rate to be adjusted on Heat Level 1 only. Heat Level 1 should be seen as the Pilot setting of the furnace, when operating on a Thermostat. Pushing the Feed Trim button (5) will switch between the different adjustments. Heat Level one can be adjusted in the following ways:
  - a. The first LED only indicates the Normal #1 setting. (2.5 second on time). This is the highest Pilot setting and may be used when heating a larger size home.
  - b. The first and fourth LED lights indicate the #1 **Low** setting. (2.0 second on time) This is the medium Pilot setting and may be used when heating a medium size home where less heat is needed when the unit is running in pilot mode.
  - c. The first and fifth LED lights indicate the #1 **High** setting. (1.50 second on time) This is the lowest Pilot setting and may be used when heating a small size home where minimal heat is needed when the unit is running in pilot mode.

**The adjustments described in points 4 and 5 remain in effect as long as the unit is plugged in. If the unit gets unplugged or if there is a power failure the settings are lost and the adjustments would need to be reset.**

### **Pre-Lighting Instructions**

When lighting your Furnace for the first time, or any time you have run out of fuel, fill the hopper. The auger tube will be empty and it helps to hold the “Auger Button” in until you hear fuel drop into the burn pot. Fuel is fed from the hopper to the burn pot by a high torque motor that is capable of doing SERIOUS harm to fingers. Keep fingers and other objects away from the auger.

**WARNING: - Risk of Fire.**

- Do not operate with the Firebox door or Ash Removal doors open
- Do not store Fuel or other Combustible material within marked Installation Clearances.
- Inspect and Clean Flues and Chimneys regularly.

**Danger: Risk Of Fire or Explosion**

- Do not burn Garbage, Gasoline, Drain Oil or other Flammable Liquids.

**WARNING: The auger can start at any time while the Furnace is running**

**CAUTION: The Coal Rake must be pulled out and the Slide Out Bottom pushed in to Operate the Furnace. (See Furnace layout on page 1)**

**REMEMBER: If burning pellets in the standard Burn pot, be sure to remove the side shields of the burn pot first.**

**Lighting Your Furnace.**

1. Make sure there is fuel in the hopper.
2. Add one cup of **Pellets** to the burn pot (not more and not less). Do not try to start your Furnace with corn, wheat or rye. Add a generous amount of starter gel to the pellets.
3. This next item is optional, but it will give an immediate boost to the start up procedure. Crumple up half of a newspaper page with some pellets, light the gel and toss the paper and pellets on top of the Coal rake in the burn pot.
4. Close the door and push the On/Off button on the control board. (*Button #2*)

If the optional method described in point 3 was used allow the pellets to ignite on top of the Coal Rake for several minutes and then pull the Coal rake out of the burn pot and drop the top layer of pellets on top of the burning pellets in the bottom of the pot.

At this point all that needs to be done is to monitor the burn pot to make sure the Furnace starts up properly. Once the On/Off button has been pushed the Start Up program takes over.

The Start up Program works as follows:

- a. The Combustion Fan comes on at high speed and the control board checks to make sure the Vacuum switch locks in. (See section on Diagnostic features on page 29)

- b. When the board senses the Vacuum switch the exhaust fan speed drops to the #1 setting and runs for 5 minutes.
- c. After 5 minutes the board checks for “Proof of Fire” and starts feeding fuel on the #1 setting. (See section on Diagnostic Features on page 29) If the board senses P.O.F. then the Furnace has started successfully.
- d. If the board fails to sense P.O.F. it will repeat the last step and continue feeding fuel on the #1 setting for 5 minutes.
- e. The board will check for P.O.F. again. If the board still fails to sense the Proof of Fire switch the Furnace will go into “Safety shutdown” (See section on Diagnostic Features on page 29.)

If this happens, repeat steps 1 through 4 from the section on Lighting Your Furnace.

### **Shutting The Furnace Off** *(Refer to Figure 13)*

1. Press the On/Off switch (2) once; the lights will go off and the fire will go out in a few minutes. The board essentially goes into “Safety shutdown”.
2. As long as the temperature within the Furnace remains above 110°F the Combustion (Exhaust) Fan will continue to run. When the P.O.F. switch drops out the Combustion fan will run for another 10 minutes and finally shut down completely.
  4. NEVER unplug the Furnace to shut it off. Doing so may cause a significant amount of smoke to enter the room.

### **Diagnostic Features of the Control Board**

The #2 LED and the #3 LED lights on the LED Light bar as show in figure13 will flash to give a diagnostic code to help in diagnosing problems that may occur.

These conditions fall into 2 categories:

- a. Heat related issues.
- b. Vacuum related issues.

The Diagnostic Lights flash as follows:

1. The **Proof of Fire** switch. This switch will sense the temperature of the Exhaust rising during start up. If the Exhaust temperature does not reach 110 degrees F, or if during use the temperature drops below 110 degrees F, the Furnace will go into “**Internal Alarm**” and the Auger will quit feeding fuel. Once the Furnace completes the safety shutdown, the #3 LED will start blinking. *(See Figure 13 on Page 26)*
2. The **High Limit** switch. This sensor will sense if the unit reaches temperatures that are too high for normal operation. If this happens the Auger will quit feeding and the #2 and #3 LED lights will flash simultaneously. *(See Figure 13 on Page 26)*
3. The **Vacuum** switch. For the Furnace to operate correctly the firebox needs to be sealed. During the first 30 seconds after the Furnace has been turned on the control board will check to see if the switch senses negative pressure (Vacuum) in the firebox of the Furnace. If there is no negative pressure, the Furnace will go into “Safety shutdown” and the #2 LED will start blinking. *(See Figure 13 on Page 26)*

“**Power Reset**”. If all the lights on the control board are lit up and the board is unresponsive you must unplug the Furnace, wait 10 seconds and plug the Furnace back in to reset the board.

“**Internal Alarm**”. When the control board becomes unresponsive, the control board is in Internal Alarm. The control board has sensed one of the Safety sensors. This may cause the furnace to go out. In some cases, after waiting approximately 45 seconds the furnace will start resounding to the control board again. Many times, the cause of this is a change in the vacuum inside the Furnace. This may be caused by excessive wind, opening the Firebox door or opening the Ash Pan door. The control board will monitor the vacuum switch and resume normal operation if the vacuum returns to normal.

## Safety Features

**WARNING: These safety features are designed to protect life and property. Bypassing these features voids all warranties and the safety listing of the Furnace.**

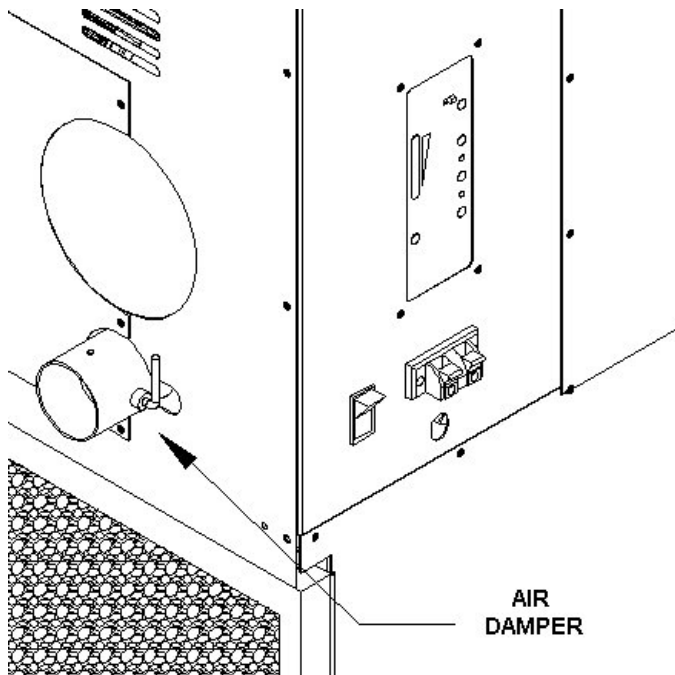
1. “**High Limit**” switch”, an overheat safety switch will shut off the fuel feed if the Furnace reaches temperatures above normal operating temperature. This is a “Normally Closed” switch and is part of the Fan limit control. If the High limit switch trips several times, the problem in the Furnace *must* be diagnosed before the Furnace is put back in service, (Defective Room Fan, dirty Room Fan, dirty Return Air Filter, defective Fan Limit Control or possibly a bad Control Board)
2. **Proof of Fire switch** also called the **P.O.F.** This senses the temperature rise in the exhaust system. The switch is “Normally Open” and closes the circuit at 110 degrees.

The Furnace will shut down if temperatures above 110 degrees F are not sensed during start up or if the temperature drops below 110 degrees during normal operation.

3. **Vacuum switch** also called the **Negative pressure switch**. When the Furnace is turned on the Exhaust fan will create a negative pressure in the firebox. The control board continually checks to see if Negative Pressure (vacuum) is present during operation of the Furnace. If the exhaust venting system becomes clogged or obstructed, the firebox door or ash pan door are left open or the exhaust fan quits working the control board will go into "Safety shutdown". There is a 60 second window to allow for cleaning the glass and removing the clinker before then Furnace shuts down. This is sufficient for the Daily Maintenance

**The SCF-050 has been Safety Tested by an accredited, independent laboratory.**

### Combustion Air Damper



Do not neglect to adjust the Combustion Air damper during the break in period of your new Furnace (*See Figure 14 to the left*). Your Furnace is equipped with an air inlet damper. The purpose of this damper is to adjust combustion airflow to match the characteristic of each specific air inlet and chimney configuration. The damper is preset at the factory with a setscrew. The damper will most likely only need a small adjustment during the break in period. To know if the damper needs to be adjusted you should learn to recognize how Corn, wheat or rye or Pellets burn in this furnace system.

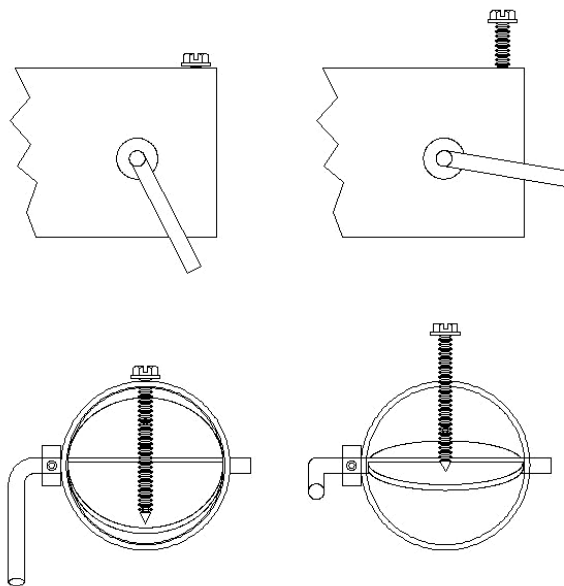
When burning corn, wheat, rye & Distiller's

Grain pellets  
the burn pot  
should be

**"BALANCED"**. This means the fuel that is being augered into the burn pot rapidly turns into glowing coals. If you see a lot of unburned fuel in the pot, an adjustment may be needed. In an unbalanced pot the corn, wheat or rye will quickly stick together and prevent the proper flow of combustion air. The pot will overload and the fire will go out.

Figure 14

When burning pellets or Cherry Pits make sure to check for the formation of creosote in the unit and venting system. Constantly running the Furnace on a low setting with too much combustion air may cause creosote to form. Burn pot temperatures can be “too cool” when burning on low with too much draft. Once the damper is adjusted for your installation, it should not be necessary to make any further adjustments to the damper. The combustion air is automatically increased every time the feed rate is advanced on the control board. If you notice a difference in the operation of the Furnace, first check to see if the Furnace needs cleaning. Then check to see if there is a change in the fuel you are burning. The moisture content of your Grains may be too high or the quality of the pellets you are burning may have changed. Break-in requires the burning of 15 bushel of fuel or 15 bags of pellets or a continuous burn for two weeks.



EXAMPLES OF DAMPER SETTINGS

The setscrew is a useful tool in making adjustments to the Air Intake damper. Adjust the damper by turning the screw **one half turn** clockwise and place the damper blade against the screw. Wait 10 minutes to allow the burn to adjust to the new setting. Making too many changes in a short period of time will not allow for an accurate adjustment.

Figure 15

**If you experience problems adjusting the Furnace during the Break-In Period, contact your dealer.** The figure below may be used to gage the approximate damper setting when making an adjustment. Some chimney systems will fall outside the norm, for example, a chimney with excessive draft or one with a long horizontal run. In dealing with technical support, the terminology listed in figure 16 may be used to clarify where your damper needs to be set.

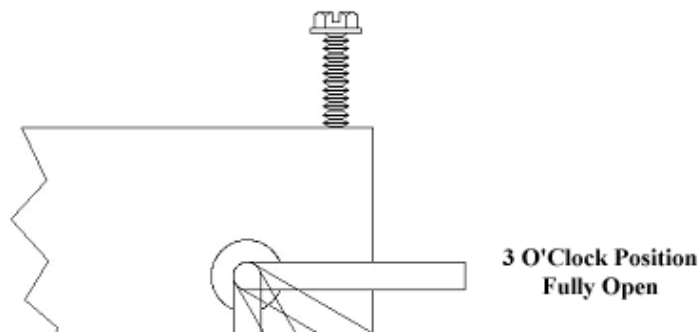




Figure 16

### **Damper Adjustment Procedure.**

Once the Furnace has been lit for the first time, the damper will need to be adjusted. The process is different for Grains than Pellets. This may take some time, so please be patient during this process. This Damper Adjustment process only needs to be done once. After the damper has been adjusted to the unique installation in your home, the control board will do the rest.

As was stated earlier there is a setscrew in the damper and the damper has been preset at the factory. This setting will most likely work for 90 % of the most common installations. Long horizontal runs might need the damper opened. Tall vertical runs might need the damper to be closed a little, etc. To adjust the damper, use the setscrew to make the adjustments. To make an adjustment turn the screw  $\frac{1}{2}$  turn clockwise to open the damper or  $\frac{1}{2}$  turn counter clockwise to close the damper. Turning the setscrew counterclockwise will not move the damper, so remember to use the damper handle to bring the damper up to the screw. After making an adjustment wait at least 15 minutes to see how the burn pot reacts to the change.

## Terminology used when burning Grain (corn, wheat, rye & Distiller's Grain)

1. **Balanced** burn pot. This means the rapidly turns into red-hot coals once it is in the burn pot.
2. **Lag time**. This is the time it takes for the corn, wheat or rye to start burning and the burn pot to become balanced. Corn, wheat or rye will tend to stick together in a clump in the burn pot if the fuel feeds in faster than it's burning.
3. **Overloaded** burn pot. Once the fuel has formed a clump in the burn pot the pot will overload and slowly the fire will die out.

## Procedure for adjusting the damper when burning Grain:

- a. Once the Furnace is burning, leave the control board on the #1 setting for ½ an hour. This will allow the Furnace to warm up before any adjustments to the damper are made. After ½ an hour look in the burn pot to see if the burn pot is balanced. Unless there weren't enough coals in the pot when the corn, wheat or rye started feeding into the pot during start up, the Furnace should be burning fine and an adjustment is most likely not needed.
- b. Advance the heat setting to #2 and let the Furnace burn at this setting for ½ an hour. Check the burn pot to see if it is balanced. Most likely the Furnace will be burning fine at this point, because the damper was preset at the factory.
- c. Advance the heat setting to #3 and let the Furnace burn at this setting for ½ an hour. Check the burn pot to see if it is balanced. **Remember:** Look at the coals in the pot, not at what the flame looks like. Most likely the damper will not need to be adjusted.
- d. Advance the heat setting to #4 and let the Furnace burn at this setting for ½ an hour. Check to see if the pot is balanced. This is where a damper adjustment *might* need to be made. As the heat setting reaches the higher settings the "**Lag time**" can become too long if the air isn't adjusted correctly. If you notice that the coals are being covered up with unburned fuel, adjust the damper to give it more air. **Remember:** Only turn the setscrew one ½ turn **clockwise** to open the damper (If the pot has started overloading, you may need to use a screwdriver to break up the clump of corn, wheat or rye in the burn pot to allow for proper airflow). Wait 15 minutes to see if the burn pot becomes balanced. Repeat this step as many times as needed until the burn pot becomes balanced.
- e. Advance the heat setting to #5 and let the Furnace burn at this setting for ½ an hour. Check the burn pot to see if it is balanced. A small damper adjustment might need to be made at this time to make sure the "**Lag time**" isn't too long. **Remember:** Only turn the setscrew one 1/2 turn **clockwise** to open the damper. Wait 15 minutes to see if the burn

pot becomes balanced. Repeat this step as many times as needed until the burn pot becomes balanced.

If the Furnace has been connected to an existing Chimney system that has good natural draft, the procedure mentioned in the last 2 points above may actually require that the damper gets closed slightly instead of opened to compensate for the additional draft in the chimney system.

The process of adjusting the damper when burning Corn, wheat or rye will take about 3 hours, but it only needs to be done once at the initial burn. This will adjust the Furnace to the unique circumstances of your home.

### **Procedure for adjusting the damper when burning Pellets:**

When burning pellets in the Furnace, the adjustment to the damper will most likely need to be made when the Furnace is running in the pilot mode.

- a. If a *heavy* black shiny build (difficult to wipe off) up is noticed, on the glass and inner surfaces, after the furnace runs on the low (pilot) setting for extended periods of time, the damper must be closed some. This may require the Furnace to run in pilot mode for a while to become noticeable. If this build up is noticed, close the damper 50% to start out with, and place the setscrew against the damper blade. Use this as the starting point to make additional adjustments with the setscrew. Some build up is normal and may be removed during the maintenance schedule.
- b. Once the adjustment has been made for the pilot setting slowly advance the Furnace to the #5 Heat Level and observe the flame. If black soot (wipes off easily) builds up on the glass and black smoke is visible at the tips of the flames turn the setscrew one ½ turn counterclockwise and bring the damper blade up against the screw. Wait 5 – 10 minutes before attempting another adjustment. An occasional wisp of black smoke is normal every now and then.

## Thermostat Control & Pilot Settings

The Furnace may be controlled with a thermostat to help maintain a more constant temperature. A Multi-Fuel furnace, such as the SCF 050, will be a little slower in reacting to a thermostat than the typical Gas, Electric or Oil fired furnace. With this in mind we have incorporated 3 Pilot settings on the control board (See Point 5 on Page 29). This will allow the heat output during the pilot stage to be matched to the size of the home. A larger home will require more heat than a small one. Keep in mind that the furnace is constantly producing some heat that helps heat the home while the furnace is in pilot mode. If the home seems too warm, and the Thermostat is never calling for heat, a lower pilot setting may be a better fit for the home.

**Remember: Choosing a lower Pilot setting may require the damper to be fine-tuned to match the lower feed rate. Monitor how the furnace is operating after a change is made and adjust the damper if needed.**

## SCF-050 MAINTENANCE

**The St. Croix clinker theory.** *And why we do what we do.*

Some manufacturers of multi-fuel Furnaces use complicated stirring mechanisms to break up the clinker in the burn pot. **We feel that is a mistake.**

We believe that corn, wheat, rye or Distiller's Grain pellets do not burn as well when it is disturbed during the burn process. These fuels need high temperatures and proper airflow in the burn pot to burn properly. That energy is stored in the clinker that is being formed in the burn pot. It glows red-hot and provides the heat needed to ignite the corn, wheat or rye that is being fed into the burn pot. When the clinker is broken up, that constant source of energy is lost and now it becomes more difficult to burn these fuels. When corn, wheat, rye and distiller's grain is not burning properly it tends to stick together and form a clump in the burn pot. It is impossible for air to flow through this clump and soon the pot will overload and the fire goes out. This is where some manufacturers use the stirring mechanism to break up the clump of fuel to maintain proper airflow and others use large burn pots to handle this problem (Smaller burn pots are better). The truth is neither is needed. The St. Croix burn system allows the corn, wheat, rye & distiller's grain to be burned efficiently and completely in a relatively small burn pot. Very little residue ends up in the ash pan.

When burning **Pellets or Cherry Pits** in the standard pot in the furnace, ash will build up in a similar manner as the clinker does when burning corn, wheat, rye or distiller's grain. The pot is maintained the same way as described in the following section covering the removal of the clinker. The time it takes the pot to fill up with ash depends on the quality of the pellets and on the quantity of pellets burned. The interval of dumping the ash is directly related to the rate of

burn. A Furnace running on a thermostat cycling at a moderate rate will generally last approximately 24 hours. However if the Furnace is running continuously on the highest setting the Ash will need dumping every 10 to 12 hours. **It is the responsibility of the Owner/User of the furnace to determine the frequency of dumping the Ash, based on the rate of burn and the quality of pellets (ash content).**

### **Clinker/Ash Removal.**

Once a clinker/ash has formed in the burn pot, *it must be removed* or the Furnace will go out. The St. Croix Burn system is designed to remove the clinker/ash without losing the fire in the burn pot. It is a 3-part system.

1. The coal rake. This is a “fork” shaped device that will allow the Furnace operator to “shave” the burning coals off the top of the clinker, separating the 2 areas of the burn pot. The burning fuel on top and the clinker on the bottom.
2. The slide out bottom. This allows the bottom to be pulled out so the clinker can drop out of the bottom of the burn pot.
3. The program on the control board. To drop the clinker you set the board on the #1 setting for a couple of seconds and then return the Furnace to the desired setting. This starts a timed delay in the program allowing the clinker to be removed, the coals to be dropped to the bottom of the pot, and the Burn pot to become balanced again before the board resumes on the setting of your choice.

**NOTE: WHEN YOU FIRST OPERATE YOUR FURNACE, CHECK TO DETERMINE THE NEEDED CLEANING FREQUENCY. THE FURNACE REQUIRES A MINIMUM AMOUNT OF DAILY MAINTENANCE. REQUIRED MAINTENANCE DEPENDS LARGELY UPON THE QUALITY OF FUEL BURNED AND THE RATE OF BURN. THE AMOUNT OF DAILY MAINTENANCE WILL INCREASE IF FUEL QUALITY DECREASES AND/OR THE BURNING RATE OF THE FUEL INCREASES.**

**NOTE: FAILURE TO KEEP YOUR FURNACE CLEAN, AS DESCRIBED IN THIS MANUAL, COULD RESULT IN POOR OPERATION, INEFFICIENT FUEL USAGE AND A POSSIBLE SAFETY HAZARD! IT IS THE RESPONSIBILITY OF THE OWNER/USER TO DETERMINE THE NEEDED MAINTENANCE FREQUENCY.**

**CAUTION: THE DOOR AND FRONT PART OF THE FURNACE WILL BE HOT. DO NOT TOUCH ANY PART OF THE FURNACE THAT IS HOT!**

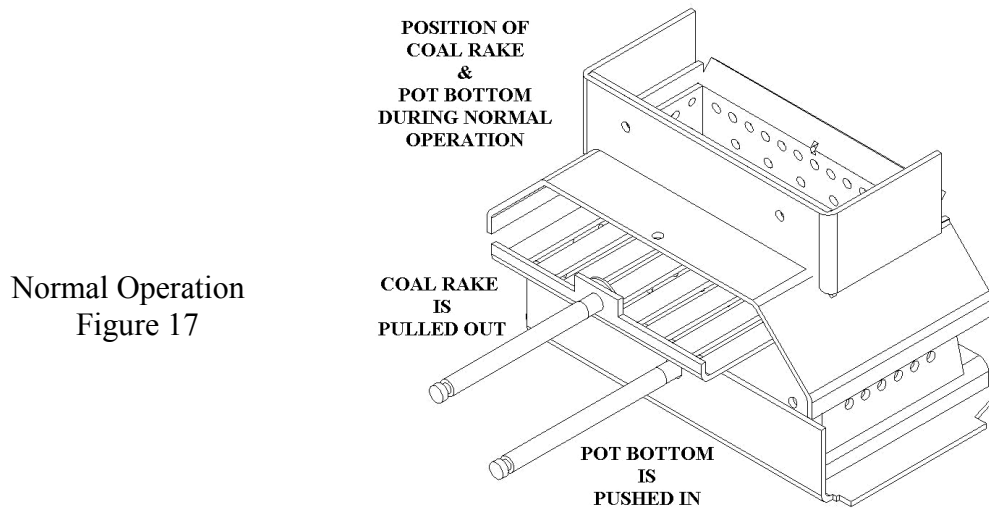
### **Daily Maintenance**

**Example of Schedule for dropping Clinkers and Ash from burn pot:** This may be required more than once a day, depending on the burn rate of the Furnace and the quality of Corn, wheat or rye or pellets used. **Check the furnace frequently at first to establish a Schedule for cleaning the burnpot. If Clinker/Ash is not removed, the burnpot will overload and fuel will spill into the Ashpan.**

1 - Continuous burning of the furnace on the Low burn setting (Pilot) – Approximately every 30 hours for corn, wheat, rye & distiller’s grain and every 20 hours for pellets & Cherry Pits. This may vary depending on the quality of fuel used.

2 - Continuous burning of the furnace at the High burn setting (#5) – **Approximately every 15 hours** for corn, wheat, rye & distiller’s grain and every 20 hours for pellets & Cherry Pits. This may vary depending on the quality of fuel used.

The daily maintenance will mainly focus on 4 areas in the Furnace; removing the clinkers from the ash pan (if needed), dropping the clinker from the burnpot, cleaning the heat exchange tubes and cleaning the glass. A break down of this process consists of these steps:

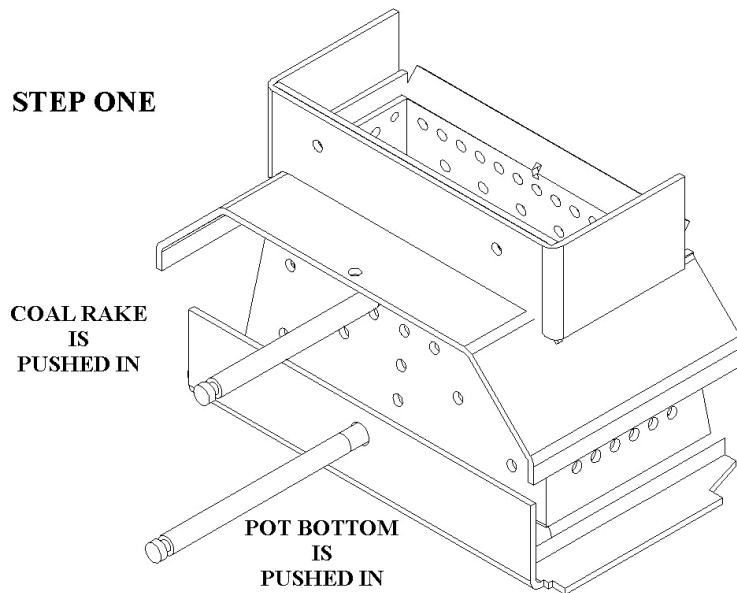


Normal Operation  
Figure 17

**Figure 17 above shows the position of the rods while the furnace is in normal operation. If problems occur while burning, first check to see if the rods are as shown in figure 17.**

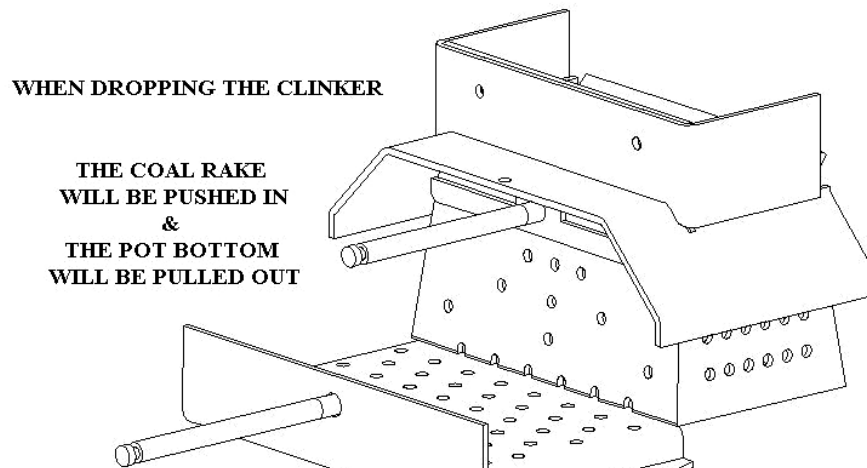
1. **The coal Rake.** The first step is to push the coal rake in and shave the coals off the top of the clinker. Once this is done open the door and add a ¼ cup of pellets on top of the coals (See figure 18). To push in the Coal rake, use the Rod Handle tool shown in figure 20 on page 41.

Figure 18



2. **The ash pan.** Make sure the Ashpan is not too full to receive a clinker. If the Ashpan is too full, the clinker may not drop all the way through. This will not allow the pot bottom to be closed. If this happens, empty the Ashpan and restart the Furnace.
3. **The slide out bottom.** (See figure 19) Now you are ready to drop the clinker from the burn pot. Pull the bottom out in one quick motion and let the clinker drop into the ash pan. Quickly push the bottom in again. To pull out the slide bottom use the Rod Handle tool shown in figure 20 on page 41.

Figure 19



4. **The control board.** Set the heat setting to #1 for a few seconds and return to the setting it was on. This initiates the time delay for dropping the clinker.
5. Dropping the coals back into the burn pot. At this time pull the coal rake back out of the burn pot to drop the coals in the pot. See position of Coal Rake & Pot Bottom in figure 17 on page 38 for normal operation.

The time delay in the program will allow a smooth transition back to where the Furnace was burning before the clinker was dropped.

6. Cleaning the Heat exchange tubes. Now you can pull the tube scraper back and forth a couple of times to keep the tubes clean. If the Tube Scraper feels sticky and difficult to move, check for the presence of creosote on the tubes. If creosote is present a damper adjustment may be needed or the Furnace has become plugged and needs a thorough cleaning. Call Dealer for assistance. To pull the tube scraper back and forth use the Rod Handle tool shown in Fig. 20 on page 41.
7. Use a dry paper towel to clean the glass. Quickly open the door and wipe the glass. The rate of burn will determine how often the window needs cleaning. Prolonged burning at a slow burn rate will result in the need for more frequent window cleaning. Cooling the Furnace and wiping the window daily with a cloth or paper towel will normally keep the window from accumulating difficult to clean residue. Use of a glass cleaner ONLY permitted when the Furnace is cold.

**CAUTION:** Do not slam the door. Do not operate the Furnace with a broken or cracked glass. Replace only with heat resistant ceramic glass supplied by the manufacturer.

There are 2 things to keep an eye on during the cleaning process.

1. If the ash pan door or firebox door were left open for more than 90 seconds the Furnace will go into safety shutdown. You will notice that the Furnace quits augering fuel into the burn pot. Toggle the On/Off switch off and back on. This will reset the board. You will need to use the auger button (#3) to manually feed fuel into the pot for a couple of minutes until the program resumes.
2. If the Furnace has been running for an extended period of time on the #5 setting, the clinker will sometimes stick to the burn pot. If that happens, pull the coal rake back out. Open the door and use a long screwdriver and give the clinker a couple nudges in the pot. (Make sure the burnpot bottom is closed when you do this or you will lose the coals with the clinker) Then repeat the steps for dropping the clinker.

**Remember: The coal rake must be pulled out and the slide bottom pushed in during normal operation of the Furnace. (See Furnace layout on page 6)**

**Remember: The fire door and ash pan doors must be in the latched position during normal operation of the Furnace. (See Furnace layout on page 6)**



## Periodic Maintenance

**CAUTION:** Periodic maintenance should only be done while the Furnace is shut off and cold.

1. **Ashpan.** Empty the ash pan when it appears full (approximately once a week). The frequency of cleaning the ash pan will depend on the quality and amount of fuel being used. Carefully check to make sure the ash pan door is tightly closed after each opening.
2. **Burnpot and Slide-Out Bottom.** Clean burn grate holes whenever needed. Remove the Burnpot and use a small metal object (Nail, Drill Bit, etc) to clean out plugged holes. (See Figure 20 below)

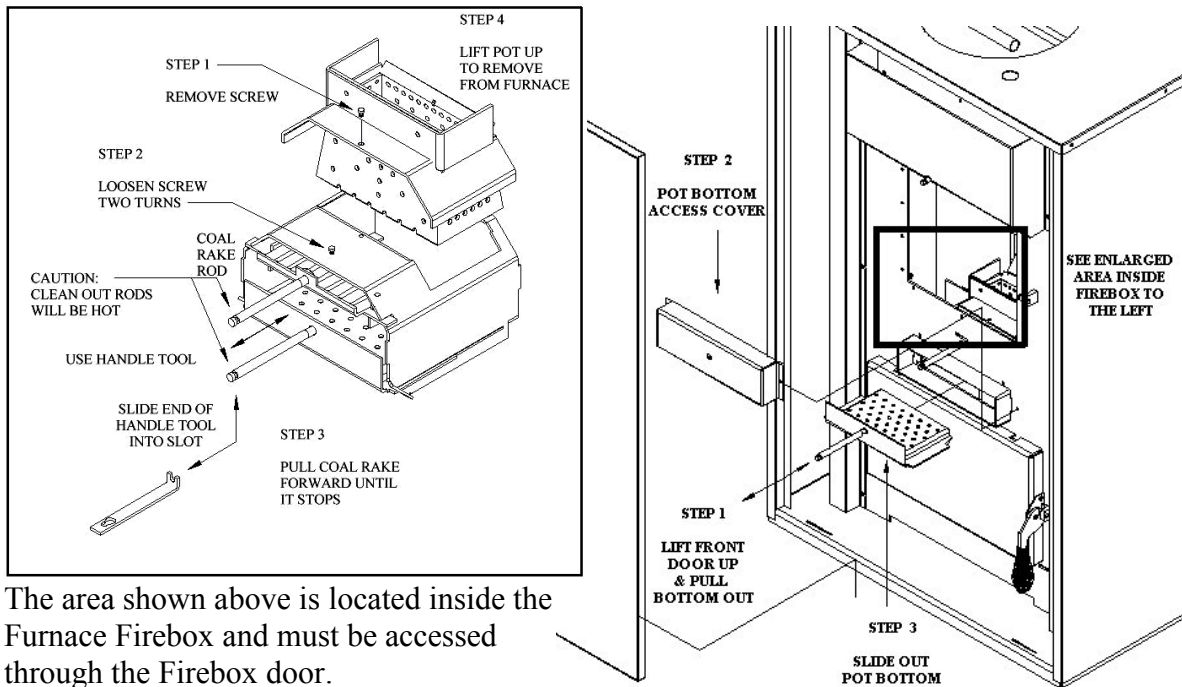


Figure 20

### Burnpot & Slide-out Bottom Removal

To remove the Burnpot from the Furnace the Coal Rake must be pulled back so the pot will clear it. Open the Firebox door of the Furnace and you will see 2 Hex head screws. Follow steps 1 through 4 in the diagram to the left to remove the Burnpot from the Furnace. To remove the Slide-out Bottom follow steps 1 through 3 in the diagram to the right.

3. **Clean-Out Ports.** The Furnace has 3 Exhaust Cleanout Ports located in the LEFT AND RIGHT lower corners of the firebox and behind the Ashpan. Remove covers and clean regularly.

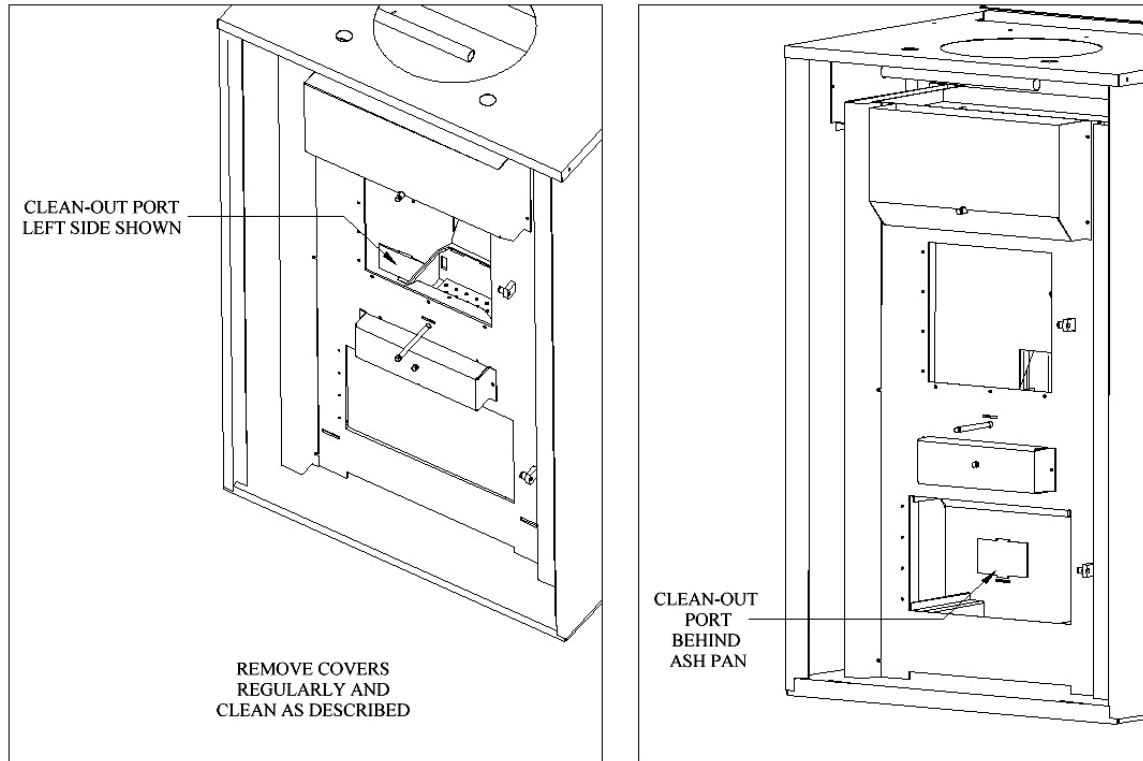


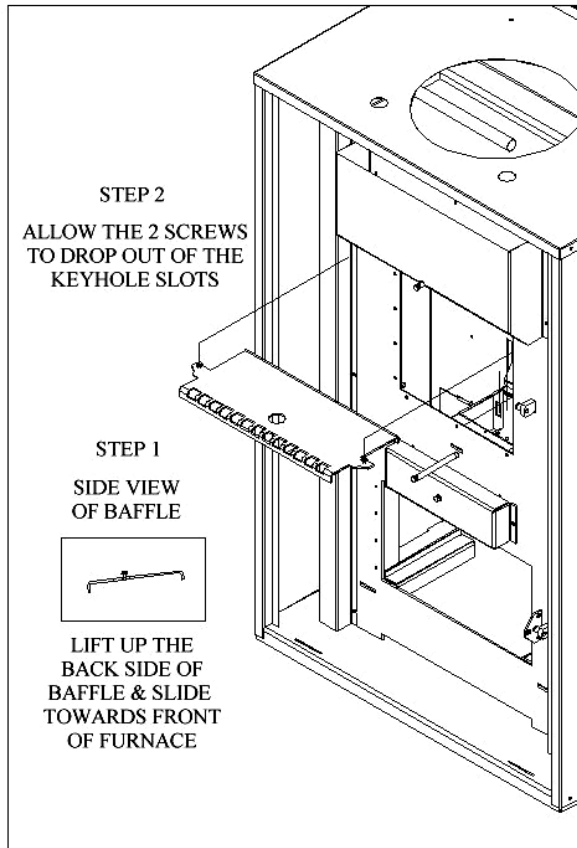
Figure 21

Frequency of cleaning depends on the amount of fuel being burnt and the quality of the Corn, wheat, rye or pellets. **Failure to clean the ash traps will cause the Furnace to become plugged with Fly Ash.**

4. **Heat Exchange Baffle.** Remove the baffle and clean the ashes that accumulate on a regular basis. Once a month or sooner, depending on the quality of fuel being used (*See Figure 22 on Page 43*)

Figure 41 shows how the baffle is removed from the Furnace. Clean the baffle on a regular basis. Frequency of cleaning depends on amount of fuel being burnt and the quality of the fuel. Fuel with low ash content is recommended. **Failure to clean the baffle can cause the Furnace to become plugged with fly ash.**

## Baffle Removal



To remove the baffle, lift the back of the baffle up to clear the inner back of the Furnace and slide towards the front of the Furnace. The baffle will slide out of the keyhole slots and drop down. *When putting the baffle back in the Furnace, make sure the screws are in the keyhole slots and the back of the baffle is lifted up over the inner back to keep the Baffle locked in place.*

Figure 22

- 5. Exhaust System.** Periodic cleaning of the exhaust system is required. Under certain conditions chimneys may plug up rapidly. Dirty/High moisture content Corn, wheat rye or distiller's grain and poor installations require more frequent chimney cleanings. **See Page 22 "Preventing Chimney Fires"**. The products of combustion will also contain small particles of fly ash. The fly ash will collect in the exhaust vent and restrict the flow of the flue gases. Judge the frequency of cleaning by checking the amount of ash that accumulates in the elbows or tee's of the exhaust system. Ask the dealer for suggested frequency of cleaning, equipment needed and procedures for cleaning. Check the Exhaust system and Ash Traps at least once every two months during the heating season.
- 6. Gaskets.** Periodically inspect the condition of the rope gasket around the door, window and ash door. Replace as needed.
- 7. Air Filter.** Check the Return Air Filters at least once a month and replace when needed. The size of the filter is 1" x 12" x 25".

Many dealers offer a Service Contract that will cover Yearly Maintenance. Contact your St. Croix Dealer for assistance in maintaining your Furnace in top condition.

## Yearly Maintenance

Yearly maintenance is designed to assure safe operation, prolong the life of the Furnace and help preserve its aesthetic appeal.

1. **Spring Shutdown.** After the last burn in the spring, cool the Furnace. Remove all fuel from the hopper and the auger. Thoroughly clean the burn pot, burn pot box, ash pan and ash traps behind the ash pan. (To locate the ash traps see figure 21)
2. The exhaust system should be thoroughly cleaned at least annually. Call your dealer for this service.
3. The motor/fan area behind the firebox and under the hopper should be vacuumed annually.

**NOTE: UNPLUG THE FURNACE.** Remove the access panels of the Furnace. Carefully clean or vacuum any dust, cobwebs and household dust. Carefully vacuum around the fan motors. If electrical wires become disconnected call your dealer for service.

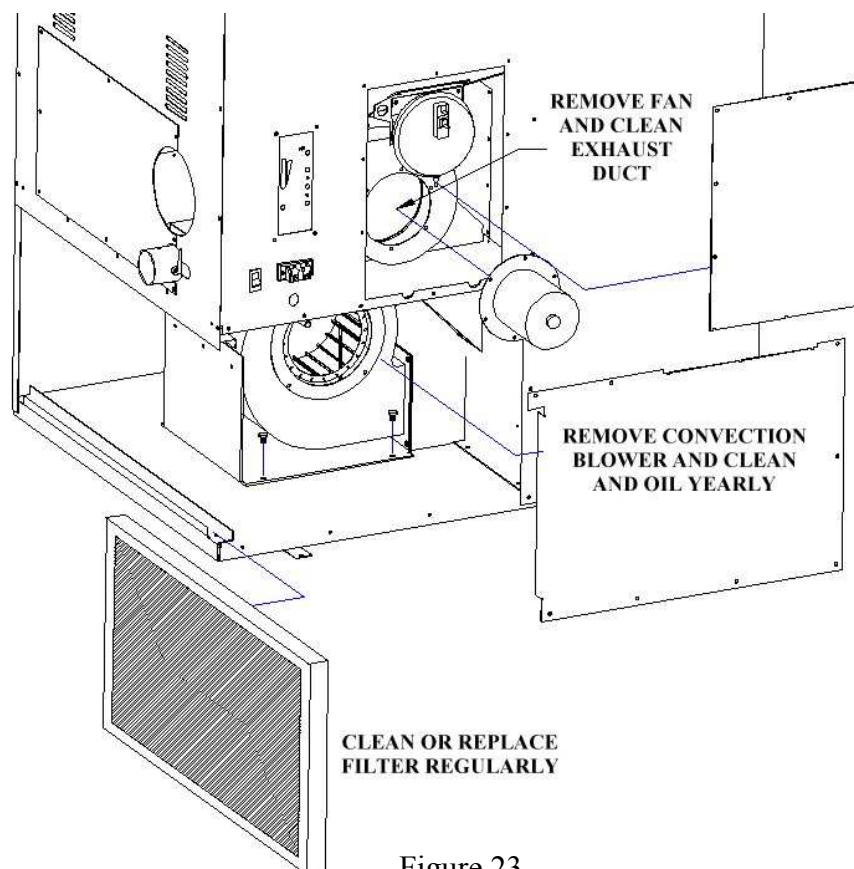


Figure 23

4. The exhaust fan should be removed and cleaned with compressed air annually. Call dealer for this service. Annual oiling of the motors is not needed.

5. The Convection Blower should be removed and cleaned with compressed air annually. There are 2 oil ports on the motor.

**Fall Startup.** Prior to lighting the first fire check the outside area around the exhaust and air intake systems for obstructions. Try all controls to see that they are working prior to lighting a fire.

### **SAFE OPERATION.**

1. **Disposal of Ashes.** Ashes should be placed in a metal container with a tight fitting lid. The closed container of ashes should be placed on a non-combustible floor or on the ground, well away from all combustible materials, pending final disposal. If the ashes are disposed of burial in soil or otherwise locally dispersed, they should be retained in the container until all cinders have thoroughly cooled.
2. **Never use Gasoline,** gasoline type lantern fluid. 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.
3. **Creosote, Soot and Fly Ash:** Formation and Need for Removal. The products of combustion will contain small particles of Fly Ash. The fly ash will collect in the venting system and restrict the flow of flue gases. Incomplete combustion, such as occurs during start-up and shut-down, or incorrect operation of the room heater will lead to some soot or creosote formation which will collect in the venting system. The exhaust system should be inspected regularly during the heating season to determine if creosote buildup has occurred. Check more frequently at first to determine a schedule for cleaning the venting system based on individual use of this furnace. If creosote has accumulated, it should be removed to reduce the risk of a chimney fire.
4. **Do not Overfire this unit.** Follow all instructions regarding the proper use of this heater.

## **Wiring Schematic**

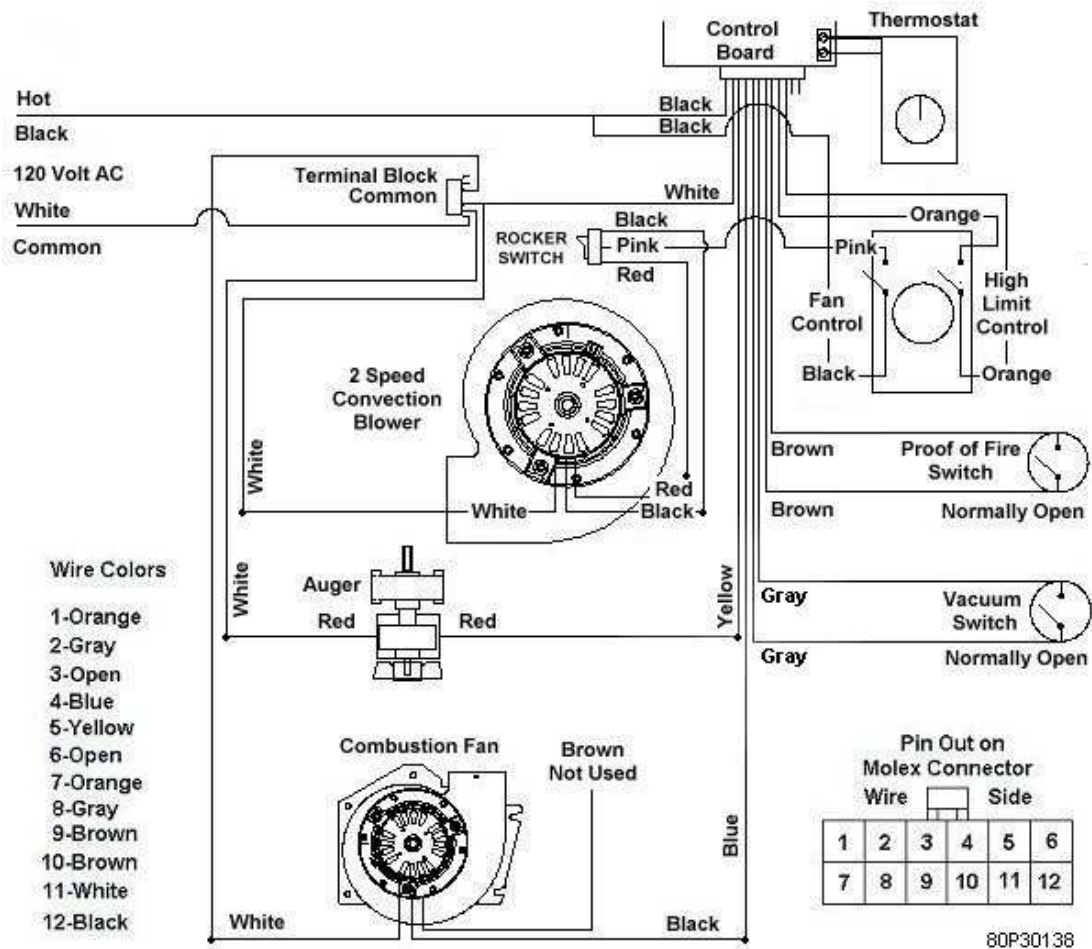


Figure 24

The

Electrical Rating of this furnace is: 120 Volt, 60 Hz, 4 AMP. The minimum recommended circuit is 15 Amp. A dedicated circuit for the furnace is recommended.

**CAUTION:** The electrical components of the Furnace are not owner serviceable. Call your dealer for proper diagnosis of electrical problems and service to those components.

### Electrical Layout

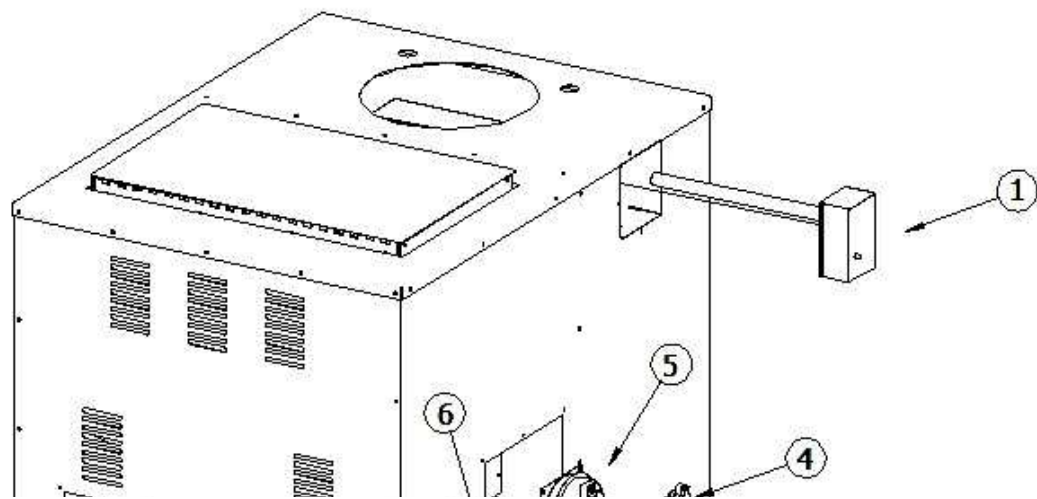


Figure 25

- |    |                      |     |  |
|----|----------------------|-----|--|
| 1. | Fan Limit Control    | 6.  | Control Board                          |
| 2. | Convection Blower    | 7.  | Thermostat Wiring Terminal             |
| 3. | Combustion Blower    | 8.  | Wiring Terminal Block (Inside Cabinet) |
| 4. | Proof of Fire Switch | 9.  | 2-Speed Blower Rocker Switch           |
| 5. | Vacuum Switch        | 10. | Auger Motor                            |

**Additional Canadian Installation requirements.**

1. The fans of this Furnace may cause a negative pressure area in the room where this Furnace is installed. If the Furnace is not connected to a Return Air duct system in the house, provision should be made to provide make-up air to the unit. It is recommended to provide opening equal to 120 Square inches for Return Air to the Furnace room.
2. Outside Combustion Air may be needed if:
  - a. The unit does not vent steadily, smell, experiences smoke rollout, burns poorly, or back drafts whether or not there is combustion present.
  - b. Any of the symptoms listed above are alleviated by opening a window slightly on a calm day.

- c. The house is sealed with a well-sealed vapor barrier and tight fitting windows and doors and/or has any powered devices, which exhaust house air.
- d. There is excessive condensation on the windows during the winter.
- e. A ventilation system is installed in the house

### **Additional Canadian Operation Requirements.**

- 1. Store Corn, wheat, rye or pellets in sealed containers in a dry environment to prevent the fuel from absorbing moisture and becoming damaged.
- 2. Creosote formation and Cleaning.
  - a. Establish a routine for the storage of fuel, care of the Furnace and Firing Techniques.
  - b. Check Daily for Creosote build-up until experience shows how often cleaning is necessary.
  - c. Be aware that the hotter the fire, the less creosote is deposited, and that weekly cleaning may be necessary in mild weather, even though monthly cleaning may be enough in the coldest months. Run the furnace on the hottest setting once a day for 30 – 45 minutes to prevent excessive build-up in the furnace.
  - d. Keep the doors closed and all seals in good condition while operating the furnace.
  - e. INSPECT THE FLUE PIPES, JOINTS AND SEALS REGULARLY TO ENSURE THAT SMOKE AND FLUE GASES ARE NOT DRAWN INTO, AND CIRCULATED BY THE AIR-CIRCULATION SYSTEM.
  - f. CLEANING OF THE HEAT EXCHANGER, FLUE PIPE, CHIMNEY AND DRAFT INDUCER IS ESPECIALLY IMPORTANT AT THE END OF THE HEATING SEASON TO MINIMIZE CORROSION DURING THE SUMMER MONTHS CAUSED BY ACCUMULATED ASH.
  - g. Do Not Use Chemicals or Fluids to Start The Fire.
  - h. Do Not Burn Garbage, Gasoline, Naphtha, Engine Oil, or Other Inappropriate Materials
  - i. The Furnace will not operate during a power failure, unless a Battery Back-up system is used during brief power outages. Prolonged Power Outages will require the use of a Generator to operate the Furnace.

### **Additional Canadian Requirements for Supplementary (Add-On) Furnaces.**

(See label on the inside front panel of the furnace for additional information)

- 1. DO NOT USE DUCT ELBOWS HAVING AN INSIDE RADIUS OF LESS THAN 6“(150mm) ON THE FURNACES.
- 2. DO NOT CONNECT DUCTWORK SO THAT A REVERSE FLOW IS POSSIBLE.
- 3. OPERATE THE (GAS, OIL OR ELECTRIC) FURNACE PERIODICALLY TO ENSURE THAT IT WILL OPERATE SATISFACTORILY WHEN NEEDED.
- 4. CERTIFIED FOR INSTALLATIONS WITH DUCT WORK CONFIGURATIONS SIMILAR TO THAT SHOWN IN FIGURE 8 ON PAGE 18.
- 5. DO NOT RELOCATE OR BYPASS ANY OF THE SAFETY CONTROLS IN THE ORIGINAL (GAS, OIL OR ELECTRIC) FURNACE INSTALLATION.
- 6. DO NOT CONNECT WITH ANY GAS FURNACE THAT HAS NOT BEEN CERTIFIED INITIALLY AS COMPLYING WITH CAN/CGA-2.3



7. THE OPERATION OF THE *GAS* FURNACE MUST BE VERIFIED FOR ACCEPTABLE OPERATION BEFORE AND AFTER INSTALLATION OF THIS ADD-ON FURNACE BY A GAS FITTER WHO IS RECOGNIZED BY THE REGULATORY AUTHORITY.
8. DO NOT CONNECT TO ANY GAS FURNACE THAT IS NOT EQUIPPED WITH A AN AIR-CIRCULATING BLOWER, OR TO A CHIMNEY OR VENT SERVING A GAS FURNACE OR APPLIANCE.
9. This furnace should only be installed on a furnace duct system and chimney that are in good operating condition.
10. This furnace is equipped with a direct drive blower motor. This motor should not be changed with one of lesser speed. A motor with a faster speed may be used. The size of the blower should not be changed. This equipment should be installed, acceptable to regulatory authority, by experienced licensed personnel.
11. The installation of this furnace should comply with the requirements of CAN/CSA-b365. and changes to the installation should comply with CSA B139 (for oil fired), C22.1 (for electric), or CAN/CGA-B149.2 (for gas fired).

## TROUBLESHOOTING & FREQUENTLY ASKED QUESTIONS

The Furnace is very trouble free in operation when properly maintained and quality pellets are used. When the Furnace fails to operate properly, troubleshooting by the operator of the Furnace is limited. Please read the following guide for answers to frequently asked questions

1. When first starting the Furnace remember the auger tube is empty, which will delay feeding fuel to the burn pot. This will in some cases prevent the Furnace from starting.

**Solution:** Prime the burn pot if the auger tube is empty.

2. **My Furnace keeps overloading the burnpot.** First check the moisture content of your corn, wheat or rye. It should be 15% or less. Also make sure you are using clean corn, wheat or rye. Otherwise this is mainly caused by improper combustion.(See **Damper** Adjustment section of the Operations Manual) Besides the damper adjustment there are several areas that can have an effect on the combustion process.

**Solution:** Check all Gaskets, Doors and door Latching Systems for air leaks. Any leaks in these areas will negatively affect the burn process and cause the pot to overload. **Also make sure the slide out bottom is closed all the way.** If this is left open, combustion air will leak out the bottom of the pot area instead of being used in the combustion process.

3. **My Furnace runs for approximately 6 to 10 hours and then overloads the Burnpot.** What's wrong?

**Solution:** This most likely means the combustion process is taking place on top of the "Coal Rake". During normal burning, the "Coal Rake" must be pulled out of the burnpot. This causes the pot to fill up prematurely and overload. The coal rake will be damaged if left in the pot for long periods of time.

4. **My Furnace isn't burning and the number 2 LED light is blinking.** This diagnostic light indicates the vacuum switch no longer senses negative pressure in the firebox area of the Furnace. What caused the Furnace to go out?

- a. The door of the unit was left open longer than 60 seconds. **(See solution)**
- b. The ash pan door was left open for longer than 60 seconds. **(See solution)**
- c. The combustion fan is not running. (Defective fan or control board)
- d. The vacuum switch is defective.
- e. The vacuum hose is disconnected
- f. The vent system is plugged with fly-ash.

**Solution:** **If the fire is out**, re-light the Furnace. **If the fire is still burning** make sure all doors are securely latched and hold down the On/Off button (approximately 5 seconds) until Furnace starts up again. This will re-start the Furnace in the start-up program.

Occasionally use the auger button to manually feed fuel until the auto-feed takes over (Auto feed will start 5 minutes after the Furnace has been restarted).

5. **My Furnace isn't burning and the number 3 LED light is blinking.** This diagnostic light indicates that the Proof of Fire Switch no longer senses a fire in the Furnace. First check to see if there are pellets in the hopper. If there are pellets in the hopper, why did the Furnace go out?
- Unburned fuel in the burnpot means the fire went out before the auger quit feeding.
  - A power Failure could also cause this. If the furnace is still hot when the power comes back on, the feed system will resume. If the fire had gone out in the pot, the feed would continue to run until the Proof of Fire switch dropped out and shut the Furnace down.

**Solution: Too much Combustion Air on the pilot setting.** Adjust the air damper. (See section covering an *Unbalanced Burnpot*). Fuel would still feed until the P.O.F. switch eventually shuts the Furnace down. Adjust the damper. (See *Damper Adjustment* in the Operations Manual)

- The Burnpot being empty will mean the auger quit feeding fuel while there was still a fire in the burnpot. Check to see if there is fuel in the hopper. If the hopper is empty, fill the hopper and re-light the Furnace.
- If there is fuel in the hopper check to see if there is an obstruction in the auger system or if the auger set screw is loose.

**Solution:** Remove obstruction and re-light the Furnace or tighten the setscrew on the auger shaft.

6. **My Furnace isn't burning and the #2 and #3 LED lights are blinking.** This means the high Limit has shut the Furnace down. The Convection Blower could be defective or may need cleaning. The high limit switch may be also defective. It is best to call your dealer for support when trying to troubleshoot the High Limit Switch. Do not use your Furnace if the High Limit switch frequently trips.
7. **I lit the Furnace and the # 2 light started blinking and smoke spills out of the Furnace.** How do I get the Furnace to quit smoking?

**Cause:** The Furnace did not establish a vacuum and shut down. With the fuel in the pot burning, the smoke finds the path of least resistance and leaks out into the house. (See Installation Manual. Minimum vertical height needed, to establish some natural draft and prevent smoke spillage)

**Solution:** Pull the Slide-Out Bottom out and drop the fuel into the ash pan. This will minimize the amount of smoke that can spill into the room.

8. **I turned the Furnace on with the On/Off switch and nothing happens.** First check to see if the Furnace is plugged in and the receptacle has power to it.

**Solution:** Check the fuses on the back of the control board. F2 is the fuse for power in to the board. Replace with a 250 Volt, 5 Amp fuse.

9. **I turned the Furnace on with the On/Off switch and the board lights up and the fans come on, but the auger doesn't feed any fuel.**

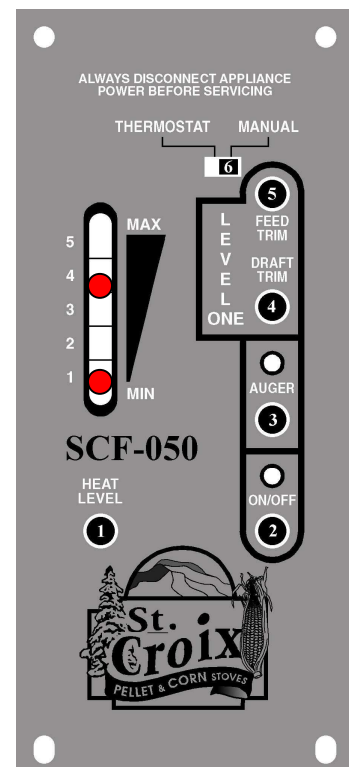
**Solution:** Check the F1 fuse on the back of the control board. This fuse runs the Auger circuit only. Replace with a 250 Volt, 5 Amp fuse.

10. **Why is my glass dirty?** Normal operation of your St. Croix Furnace will produce a white build-up on the glass that wipes off with a dry paper towel. However extended burning on the low setting only will produce a light tan color. These types of build-up on the glass are normal. A heavy black build-up on the glass could indicate a problem.

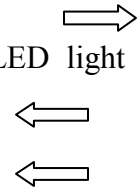
**Solution:** Adjust the combustion air setting to the proper setting. If this doesn't seem to help, make sure the clean out cover plates are installed in the Furnace. It also could be an indication that the Furnace is getting plugged and needs a good cleaning. Refer to the section in the manual that covers the Daily, Periodic and Yearly Maintenance of the Furnace.

11. **How do I adjust my Pilot feed rate settings (#1 setting)?** Not all fuel burns at the same rate. The moisture content of corn, wheat or rye greatly influences how it burns. Burning Pellets requires adjustments to the low burn to prevent Creosote from forming. Following is a description of the function of the Feed Trim button.

**Solution:** The Feed Trim button on the control board allows the feed rate on #1 (Pilot setting) to be increased or decreased. Different types of fuel and the way the Furnace is installed will affect the low burn and needs attention during the break-in period of the Furnace.



a. The default Pilot setting has an On Time of 2.5 seconds. The #1 LED light indicates the default pilot setting. This setting requires little fine tuning.



b. Pressing the Feed Trim button once will turn the #1 and #4 LED lights on at the same time. This reduces the On Time to 2.0 seconds. Less Fuel means more adjusting.

See the figure to the right for details.

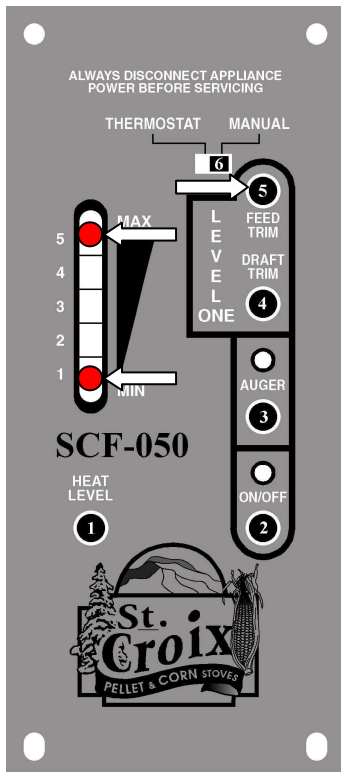


Figure 27

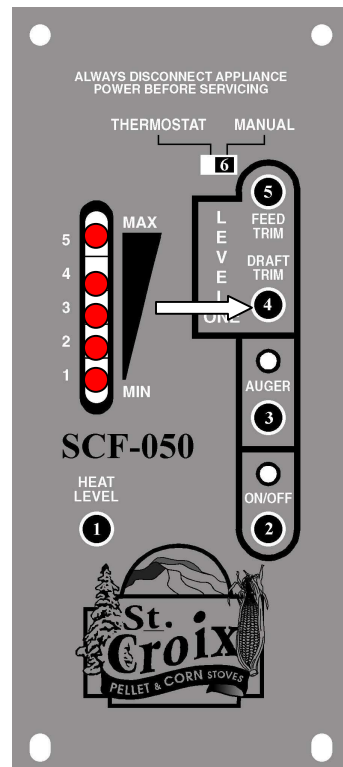
Figure 26

c. Pressing the Feed Trim button again will turn on the #1 and #5 light at the same time. This reduces the On Time to 1.5 seconds. Again, less Fuel means more adjusting.

See figure to the left for more details

Using the feed trim button is also helpful when trying to keep the glass cleaner when burning on the #1 setting. The more fuel on low will usually mean less build up on the glass.

12. **How do I adjust the draft for the Pilot settings (#1** Not all fuel burns at the same rate. The moisture content of or rye greatly influences how it burns. Burning Pellets adjustments to the low burn to prevent Creosote from Following is a description of the function of the Draft Trim



setting)? corn, wheat requires forming. button.

The Draft Trim button will adjust the combustion fan voltages on the #1 pilot setting. There are 2 adjustments that can be made. To adjust the Combustion fan voltages, push the Draft Trim button and you will notice all of the LED lights on the light bar flash once.

The first adjustment (Lights flash once) will lower the combustion fan voltages approximately 5 volts. Using this draft adjustment will be common when burning Pellets.

The second adjustment (Lights flash twice) will raise the voltage approximately 5 volts. This may be used in a venting situation that is restrictive, a long horizontal run or a venting system with excessive elbows for instance.

Figure 28

These questions and answers will usually solve most problems that you run into during the break in period of the Furnace or if a component fails in the Furnace. Before calling your dealer for assistance, please read your **Operations Manual** and perform all the maintenance issues covered in the **Daily and Periodic Maintenance** section of the Manual. If the Furnace still does not operate correctly call your Dealer for Assistance.

**SCF-050**

## **WARRANTY**

The Furnace manufactured by Even Temp, Inc. is warranted for five (5) years, to the original owner, against defects and workmanship on all steel parts (excluding the burn grate) and two (2) year on electrical components from the date of sale to the original owner. There specifically is no warranty on the paint, glass, burn grate and all gaskets. There is no written or implied performance warranty on the Furnace, as the manufacturer has no control over the installation, daily operations, maintenance or the type of fuel burned.

This warranty will not apply if the Furnace has not been installed, operated and maintained in strict accordance with the manufacturer's instructions. Burning other than quality corn, wheat, rye or pellets may cause Furnace damage and could void the warranty.

The warranty does not cover damage or breakage due to misuse, improper handling or modifications.

A warranty registration card is provided. The card is to be checked and signed and returned to factory, by the owner. Appropriate information is to be noted on the card.

All claims under this warranty must be made through the dealer where the Furnace was purchased. If an inspection by the dealer indicates that a warranty claim is justified, and that all conditions of this warranty have been met, the manufacturer's total responsibilities and liabilities shall be to repair or replace, at the manufacturer's option, the defective part(s). All costs of removal, shipment to and from the dealer or manufacturer, any losses during shipment and reinstallation and any other losses due to the Furnace being removed shall be covered by the owner of the Furnace.

NEITHER THE MANUFACTURER, NOR THE SUPPLIERS TO THE PURCHASER, ACCEPT RESPONSIBILITY, LEGAL OR OTHERWISE, FOR THE INCIDENTAL OR CONSEQUENTIAL DAMAGE TO PROPERTY OR PERSONS RESULTING FROM THE USE OF THIS PRODUCT. ANY WARRANTY IMPLIED BY LAW, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS, SHALL BE LIMITED TO ONE (1) YEAR FROM THE DATE OF ORIGINAL PURCHASE. WHEN A CLAIM IS MADE AGAINST THE MANUFACTURER BASED ON THE BREACH OF THIS WARRANTY OR ANY OTHER TYPE OF WARRANTY EXPRESSED OR IMPLIED BY LAW, MANUFACTURER SHALL IN NO EVENT BE LIABLE FOR ANY SPECIAL, INDIRECT, CONSEQUENTIAL OR OTHER DAMAGES OF ANY NATURE WHATSOEVER IN EXCESS OF THE ORIGINAL PURCHASE PRICE OF THIS PRODUCT. ALL WARRANTIES BY MANUFACTURER ARE SET FORTH HEREIN AND NO CLAIM SHALL BE MADE AGAINST MANUFACTURER ON ANY ORAL WARRANTY OR REPRESENTATION.

Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitations of implied warranties, therefore the limitations of exclusions set forth in this warranty may not apply to you. This warranty gives you specific legal rights, and you may have other rights, which vary from state to state.

## Notes:

After the break in period, please note any adjustments that were made to the Feed Trim and Draft Trim on the control board in the area below. In the event of a power failure or if the units gets unplugged the trim settings will be lost.

**Draft Trim: Circle one (See point 4 on page 27)**

**Default Draft**

**Low Draft**

**High Draft**

**Feed Trim: Circle one (See point 5 on page 27)**

**Default Pilot**

**Medium Pilot**

**Low Pilot**

Serial Number:

Date of Purchase:

Dealer Information:



**Even Temp, Inc.  
P.O. Box 127  
Waco, NE 68460**

**EMAIL:** [support@stcroixstoves.com](mailto:support@stcroixstoves.com)  
**WEB ADDRESS:** [www.stcroixstoves.com](http://www.stcroixstoves.com)