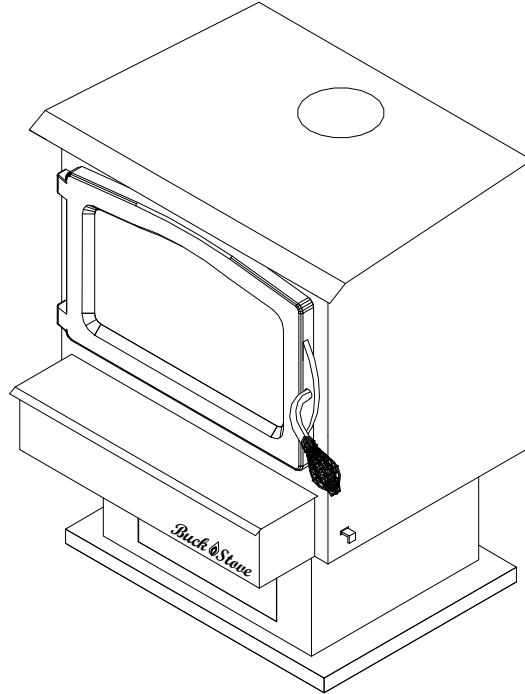


# MODEL FS 21 NON-CATALYTIC UNIT



## FEATURES

PREPARATIONS                      INSTALLATION  
OPERATION                              MAINTENANCE                      SAFETY

### SAFETY NOTICE

IF THIS HEATER IS NOT PROPERLY INSTALLED, A HOUSE FIRE MAY RESULT. FOR YOUR SAFETY, FOLLOW THE INSTALLATION INSTRUCTIONS. CONTACT THE AUTHORITY HAVING JURISDICTION (SUCH AS MUNICIPAL BUILDING DEPARTMENT, FIRE DEPARTMENT, FIRE PREVENTION BUREAU, etc.) CONSULT BEFORE INSTALLATION TO DETERMINE THE NEED TO OBTAIN A PERMIT. KEEP THESE INSTRUCTIONS FOR FUTURE USE.

TESTED AND LISTED BY:  ITS/WARNOCK HERSEY, MIDDLETON, WI

MANUFACTURED BY NEW BUCK CORPORATION  
200 ETHAN ALLEN DRIVE  
P.O. BOX 69  
SPRUCE PINE, N.C. 28777  
www.buckstove.com

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# TABLE OF CONTENTS

Important Instructions.....	2
SECTION I: Introduction.....	3
SECTION II: Residential /Mobile Home Freestanding Installation and Clearances.....	4
Floor Protection.....	5
A. Vertical Exit Using Single Wall Pipe /Listed 2100° UL 103 HT chimney w/out Close Clearance/Pipe Shields.....	6
B. Vertical Wall Exit Using Single Wall Pipe and Elbow /Listed 2100° UL 103 HT Chimney and T-BOX assembly w/out Close Clearance/Pipe Shields.....	8
C. Vertical Exit Using DVL Close Clearance Pipe /Listed 2100° UL 103 HT chimney with Close Clearance/Pipe Shields.....	10
D. Vertical Wall Exit Using DVL Close Clearance Pipe ,and Elbow /Listed 2100° UL 103 HT Chimney and T-BOX assembly with Close Clearance/Pipe Shields.....	12
Out Side Air Installation.....	14
SECTION III: Alcove Installation and Clearances.....	17
Floor Protection.....	18
Alcove Installation Clearances.....	19-20
Installation of Close Clearances Shields.....	22
SECTION IV: Operation.....	23
Ash Removal.....	24
SECTION V: Optional Motor Installation.....	25
SECTION VI: Wood Heater Safety.....	28
SECTION VII: Troubleshooting.....	29
LIMITED WARRANTY.....	30

# INSTALLATION, OPERATION, AND MAINTENANCE INSTRUCTIONS MODEL FS 21

## READ THIS FIRST

### IMPORTANT INSTRUCTIONS

#### WARNING

THIS UNIT GENERATES A LOT OF HEAT, SO TREAT THE UNIT WITH CARE. **HOT WHILE IN OPERATION!** KEEP CHILDREN, CLOTHING AND FURNITURE AWAY. CONTACT MAY CAUSE SKIN BURNS.” “DO NOT USE CHEMICALS OR FLUIDS TO START THE FIRE.” “DO NOT BURN GARBAGE OR FLAMMABLE FLUIDS.” DO NOT CONNECT TO ANY DISTRIBUTION DUCT OR SYSTEM. READ ALL INSTRUCTIONS BEFORE INSTALLING AND USING THE APPLIANCE. FAILURE TO FOLLOW INSTRUCTIONS MAY RESULT IN PROPERTY DAMAGE, BODILY INJURY OR EVEN DEATH. SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCES.

- The New Buck Corp. non-catalytic systems have been tested by ITS, Warnock Hersey to ANSI/UL Standards: UL 1482-2000: UL 1482 (2010).
- Install and operate your units according to instructions provided in this manual. Local building codes may apply; therefore, contact your local building inspector or fire marshal for necessary installation requirements and permits which may go beyond these instructions. The authority having jurisdiction should be consulted before installation to determine the need to obtain a permit.
- **If appliance is installed in mobile homes:  
“DO NOT INSTALL IN SLEEPING ROOMS.”**
- **NOTE: When burning any unit or appliance that combust fuel for heat, such as coal, oil, wood or natural and (L.P.) liquid petroleum gas. We highly recommend the use of smoke and carbon monoxide detectors in your home.**
- The Model FS 21 is approved for use in specified Pre-Fabricated fireplaces (ZCF’s). Use the list on Page 11 or contact your dealer for additional units.
- Examine the masonry fireplace and chimney prior to installation of the fireplace accessory to determine that the construction meets the minimum fireplace construction requirements illustrated in the instructions, that it is free from cracks, loose mortar, creosote deposits and other blockage, or other signs of deterioration.

#### CAUTION

DO NOT USE MORE THAN ONE STOVE TO A CHIMNEY. DO NOT USE A FLUE INTENDED FOR A GAS APPLIANCE.

## CAUTION

YOUR CHIMNEY OR FLUE MUST BE CORRECTLY SIZED. A CHIMNEY OR FLUE THAT IS TOO SMALL OR LARGE IN DIAMETER, OR TOO SHORT, CAN CAUSE YOUR STOVE TO SPILL SMOKE WHEN THE DOOR IS OPENED.

## SECTION I

### INTRODUCTION

Your new MODEL FS 21 is a non-catalytic unit designed to meet the most stringent emissions standards without the use of a catalytic combustor. This effect is achieved through the use of secondary air which is mixed with primary air in the unit's firebox.

**For peak performance, we suggest the use of hard seasoned natural wood, loading wood length way from front to rear.**

**NOTE: Soft woods such as pine, create more creosote, clogging of chimney, and produce a less efficient burn performance.**

**You should not burn trash or garbage, artificial or paper logs, gift wrapping, treated or painted wood or any type of coal.**

**“DO NOT USE CHEMICALS OR FLUIDS TO START THE FIRE.”**

**“DO NOT BURN GARBAGE OR FLAMMABLE FLUIDS.”**

The primary air, which is controlled by the user, burns the wood. Secondary air is admitted into the firebox through the secondary air tubes at the top of the firebox. This secondary air burns the impurities in the smoke released from the initial wood burning. The temperature necessary for this combustion is maintained through the firebrick refractory. If any more technical information is necessary, contact your local dealer.

A factory-built prefabricated chimney may be used for your unit when installed in compliance with the manufacturer's specification and uniform building code.

These units may also be used with optional room air blower. To order the optional motor assemblies you must specify the stove model number and give one of the following part number:

\*Model 21 Motor Assembly—MA 210715

For operation and use of these electrical assemblies, see instructions provided with the motor assembly kits.

## SECTION II

# RESIDENTIAL / MOBILE FREESTANDING INSTALLATION AND CLEARANCES

Select an installation location that will give the best airflow from the front of the heater to the remainder of the home

### PREPARING THE STOVE FOR INSTALLATION

1. Inspect the unit for any obvious physical damage.
2. Plug the power cord into a 115V AC outlet to test the motor and fan when optional motor is being used. "Do not run power cord under unit or in high traffic areas".
3. Check the primary air draft control to ensure that it slides freely.
4. Remove any items from within the firebox.

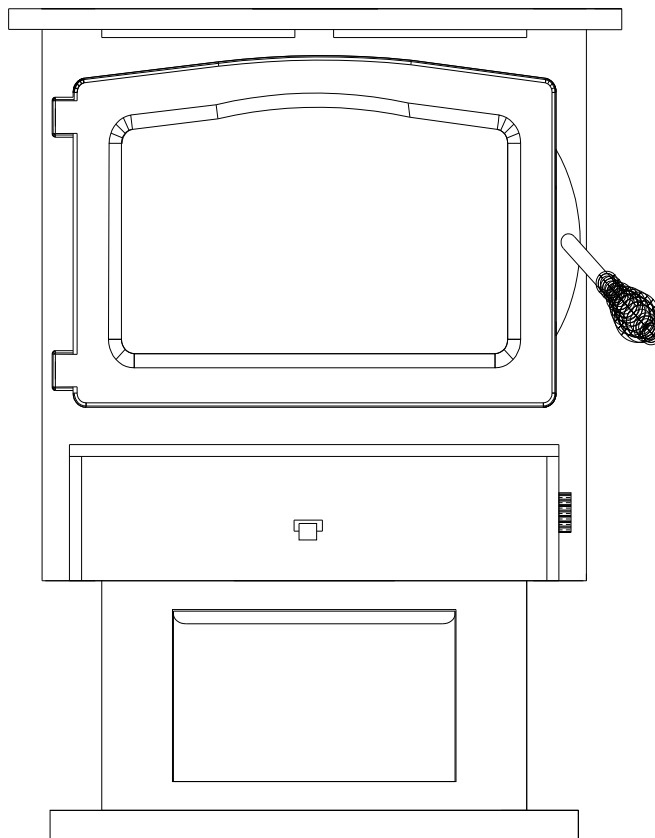


Figure 1

### Chimney

This model is designed for connection to any listed 2100° UL103 HT chimneys and parts. This room heater must be converted to (1) a chimney complying with the requirements for Type HT chimneys in the Standard for chimneys, Factory-Built, Residential, Type and Building Heating Appliance, UL 103, or (2) a code approved masonry chimney with a flue liner.

## Floor Protection:

Floor protection must be 3/8" minimum thickness non-combustible material or equivalent.

### How to use alternate materials and how to calculate equivalent thickness

An easy means of determining if a proposed alternate floor protector meets requirements listed in the appliance manual is to follow this procedure:

1. Convert specification to R-value:  
R-value is given—no conversion is needed.  
K-factor is given with a required thickness (T) in inches:  
C-factor is given:  $R=1/C$
2. Determine the R-value of the proposed alternate floor protector.  
Use the formula in step (1) to convert values not expressed as "R"  
For multiple layers, add R-values of each layer to determine the overall R-value.
3. If the overall R-value of the system is greater than the R-value of the specified floor protector, the alternate is acceptable.

#### Example:

The specified floor protector should be 3/4" thick material with a K-factor of 0.84.

The proposed alternate is 4" brick with a C-factor of 1.25 over 1/8" mineral board with a K-factor of 0.29.

Step (a): Use formula above to convert specification to R-value.  $R = 1/K \times T = 1/0.84 \times .75 = 0.893$

Step (b): Calculate R of proposed system. 4" brick of  $C=1.25$ , therefore  $R_{brick} = 1/C = 1/1.25 = 0.80$  1/8" mineral board of  $K = 0.29$ , therefore  $R_{min.bd.} = 1/0.29 \times 0.125 = 0.431$

Step (c): Compare proposed system R of 1.231 to specified R of 0.893. Since proposed system R is greater than required, the system is acceptable.

#### Definitions:

$$\text{Thermal conductance} = C = \frac{\text{Btu}}{(\text{hr})(\text{ft}^2)(\text{°F})} = \frac{\text{W}}{(\text{m}^2)(\text{°K})}$$

$$\text{Thermal conductance} = K = \frac{(\text{Btu})(\text{inch})}{(\text{hr})(\text{ft}^2)(\text{°F})} = \frac{\text{W}}{(\text{m})(\text{°K})} = \frac{(\text{Btu})}{(\text{hr})(\text{ft})(\text{°F})}$$

$$\text{Thermal conductance} = R = \frac{(\text{ft}^2)(\text{hr})(\text{°F})}{\text{Btu}} = \frac{(\text{m}^2)(\text{°K})}{\text{W}}$$

Install in accordance with 24 CFR, Part 3280 (HUD).

## PREPARING THE ROOM HEATER LOCATION

1. Select an installation location that will give the best airflow from the front of the heater to the remainder of the home.
2. Place the protective floor pad in position.
3. Place the unit on the pad making sure the minimum clearance specifications are met.
4. If connecting to an existing masonry flue, first ensure that the flue conforms to the **NFPA-211** Code and/or consult your local code for proper procedures.

NOTE: This model is designed for connection to: any Listed 2100° UL 103 HT. TYP chimney also any Listed UL DVL Close Clearance pipe or single wall minimum 24 ga. blued or black pipe. Follow pipe manufacturer's instructions carefully.

## CHIMNEY

This room heater must be converted to (1) a chimney complying with the requirements for Type HT chimneys in the Standard for Chimneys, Factory-Built, Residential, Type and Building Heating Appliance, UL 103, or (2) a code approved masonry chimney with flue liner.



**CAUTION:** Certain installation types require the use of certain chimney types. Please follow these instructions exactly.

## HOW TO LOCATE CHIMNEY EXIT AND INSTALL

### Residential Installation

#### A. Vertical Exit using (6" Single wall minimum 24 ga. blued or black pipe and any Listed 2100° UL 103 HT. Chimney)

**Without optional close clearance shield, and pipe shield.**

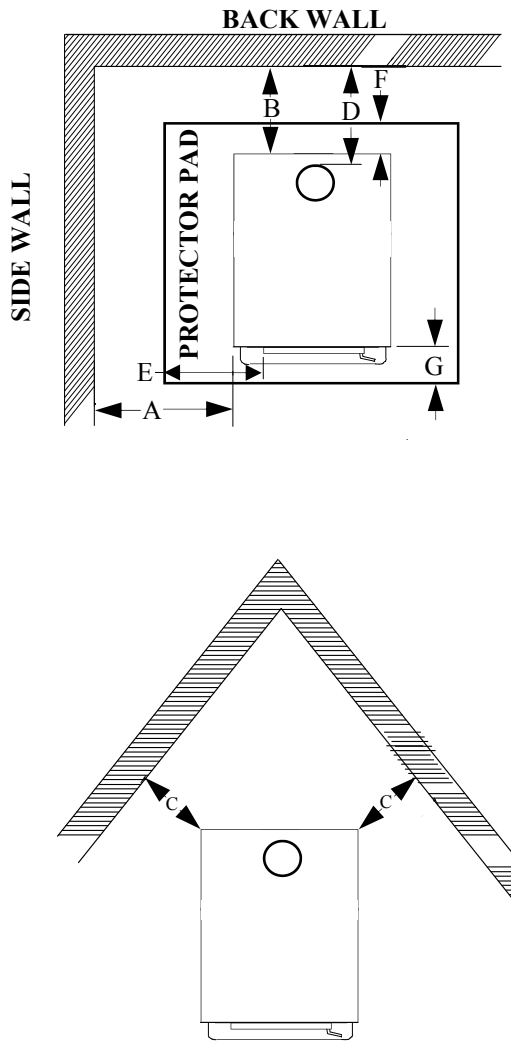
**NOTE: For minimum clearances (See Page 7, Figure 2).**

1. Suspend a plumb bob from the ceiling above the unit so that the weight is hanging in the center of the flue exit. (A small weight on a string will serve as a plumb bob). Mark the ceiling where the string is suspended to locate the center of the chimney.
2. After locating the center of the hole, install the ceiling support box, chimney or chimney connector, flashing and rain cap per the chimney manufacturer's instructions and local building codes for installation through combustible walls or ceilings.
3. Now connect the stove and ceiling support box using 6" Single Wall minimum 24 ga. blued or black pipe (DO NOT USE GALVANIZED PIPE). Connect each section so the crimped end faces downward and secure each section to each other using at least three (3) sheet metal screws or rivets. Single wall pipe is to be connected with (3) sheet metal screws or rivets to connector collar on heater.(See Page 7, Figure 3).



**A. Vertical exit using (6" Single wall minimum 24 ga. blued or black pipe and any listed 2100° UL 103 HT. TYPE Chimney)  
Without optional close clearance shield and pipe shield  
Model FS 21 minimum clearance to combustibles**

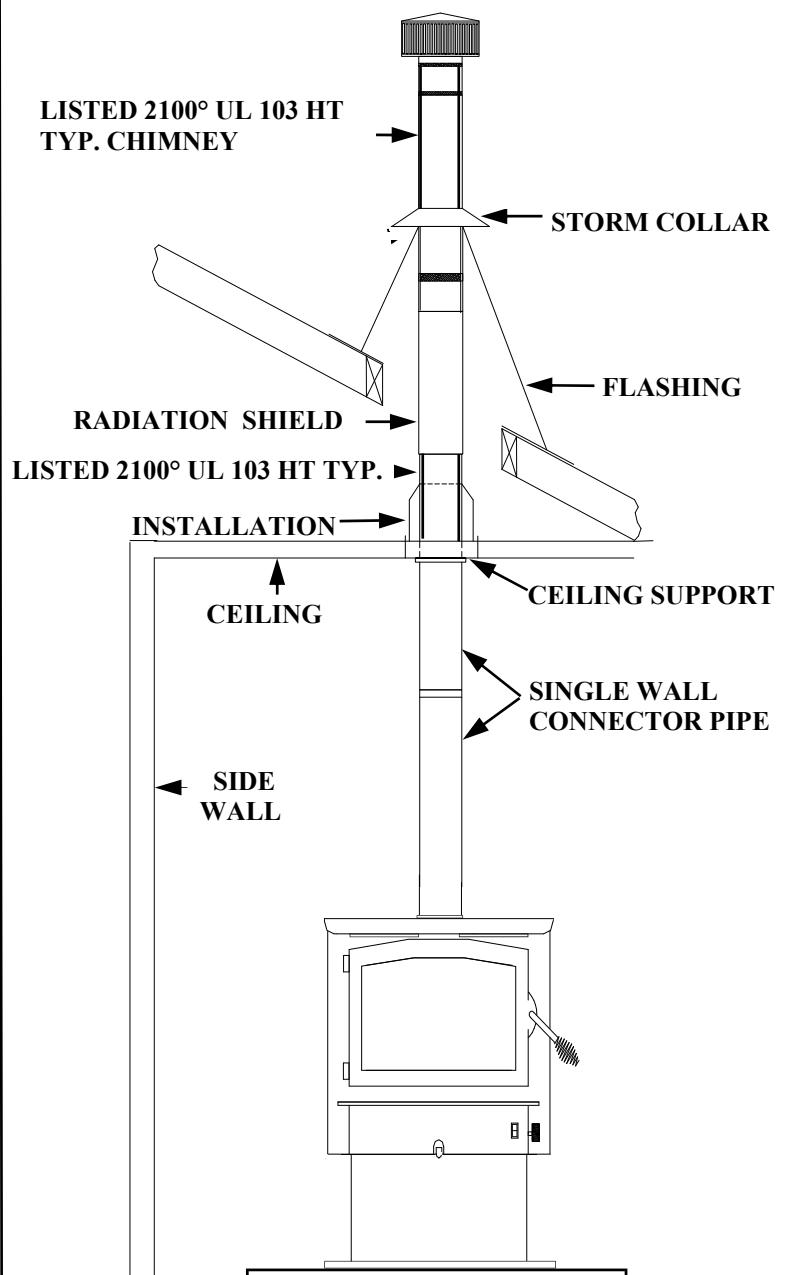
Figure 2.



A B C D E F G

MODEL 21 25" 13" 13" 15.5" 8" 6" 16"

Figure 3.



**NOTE:** All clearances are to combustibles without close clearance shields and pipe shield, using 6" Single Wall minimum 24 ga. blued or black pipe and minimum floor protector . The clearances above may be reduced. Follow **NFPA-211** codes if available or follow instructions on (Pages 10, and 11).

# HOW TO LOCATE CHIMNEY EXIT AND INSTALL

## Residential Installation

- B. Vertical Wall Exit using (6" Single Wall minimum 24 ga. blued or black pipe with elbow and any Listed 2100° UL HT chimney and Listed 2100° UL HT. T-Box assembly) Without optional close clearance shields and pipe shield.**

**NOTE: For minimum clearances (See Page 9, Figure 4).**

1. Mark the plumb line on the wall directly behind the center of the heater.  
(See Page 9, Figure 5).  
**NOTE: When using 6" Single Wall minimum 24ga. blued or black pipe "maintain 18" minimum clearances" between pipe and ceiling."**
2. Place the vertical portion of the heater pipe and the elbow in position and project a point onto the plumb line level with the center of the elbow.
3. Measure up so there will be at least 1/4" rise per foot of horizontal connector pipe, maintaining clearances to the ceiling as noted in (Page 9, Figure 5). This will give you the center of the hole for the chimney penetration.
4. After locating the center of the penetration, install the tee-box and chimney as per the chimney manufacturer's specifications.
5. Connect the chimney collar to the tee-box using 6" Single Wall minimum 24 ga. blued or black pipe. (DO NOT USE GALVANIZED PIPE). Connect each section so the crimped end faces downward and secure each section to each other using three (3) sheet metal screws or rivets. Single wall pipe is to be connected with three (3) sheet metal screws rivets to connector collar on heater.(See Page 9, Figure 5).

**B. Vertical wall exit using (6" Single wall minimum 24 ga. blued or black pipe with elbow and any listed 2100° UL 103 HT. TYPE Chimney and Listed 2100° UL HT. T-Box assembly). Without optional close clearance shield and pipe shield Model FS 21 minimum clearance to combustibles**

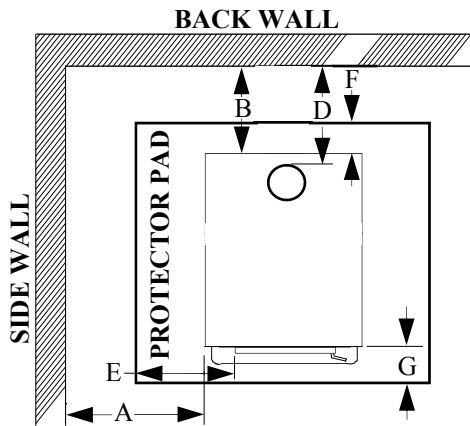
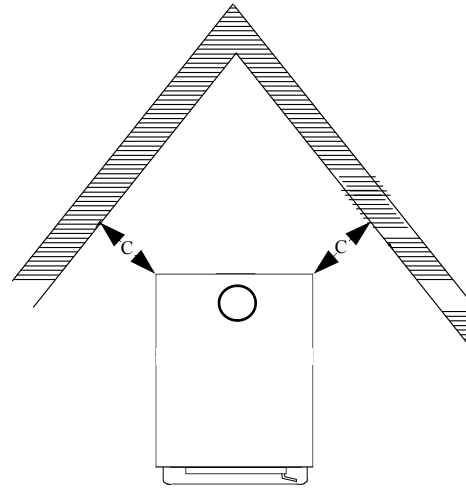


Figure 4.



	A	B	C	D	E	F	G
MODEL 21	25"	13"	13"	15.5"	8"	6"	16"

**NOTE:** All clearances are to combustibles without close clearance shields and pipe shield, 6" Single Wall minimum 24 ga. blued or black pipe with elbow and minimum floor protector. Clearances above may be reduced. Follow NFPA-211 codes if available or follow instructions on (Pages 12, and 13).

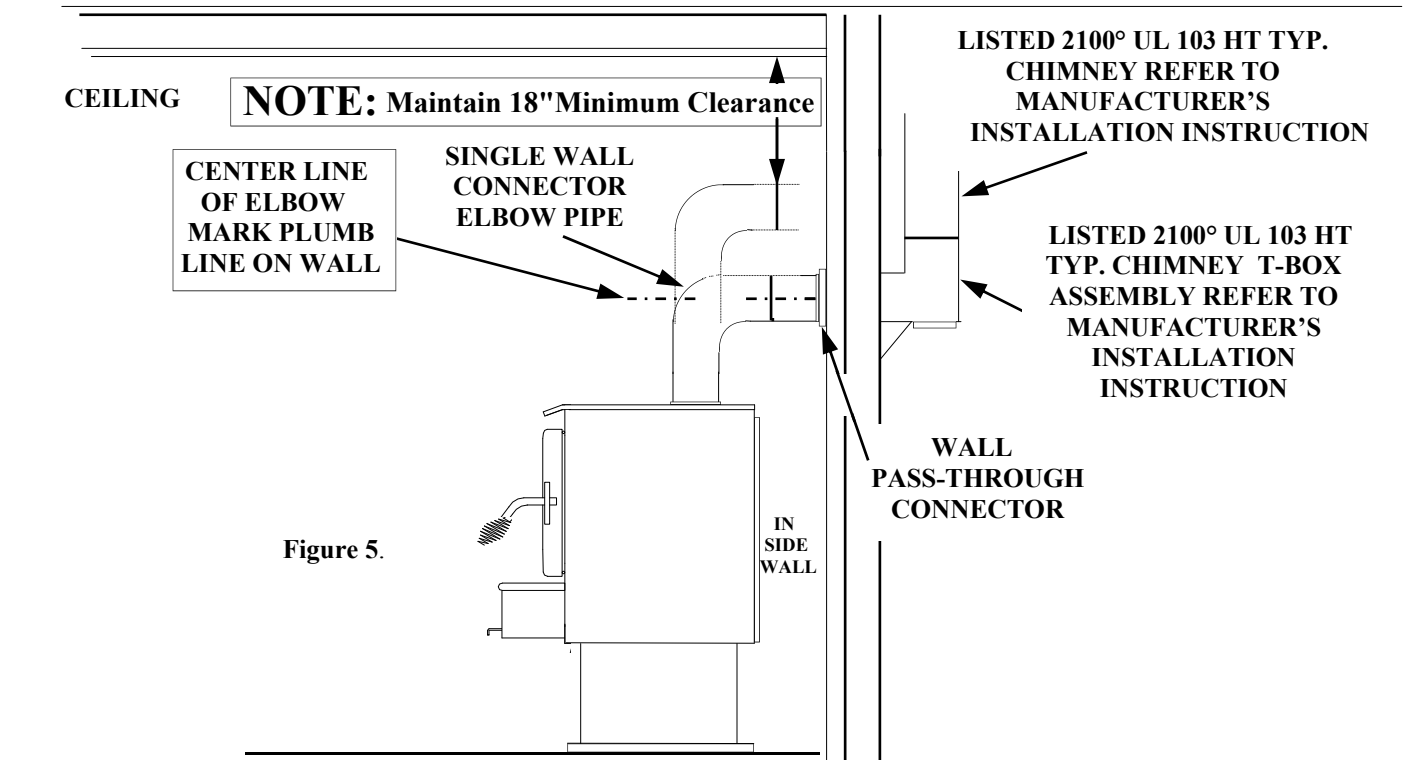


Figure 5.

# HOW TO LOCATE CHIMNEY EXIT AND INSTALL

## Residential and Mobile Home Installation

### C. Vertical Exit using (6" DVL Close Clearance pipe and any Listed 2100° UL 103 HT chimney). With optional close clearance shield and pipe shield.

**NOTE: For installation of optional close clearance shields and pipe shield (See Page 22).**

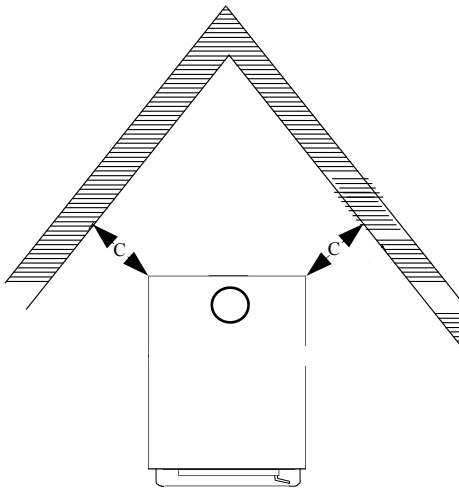
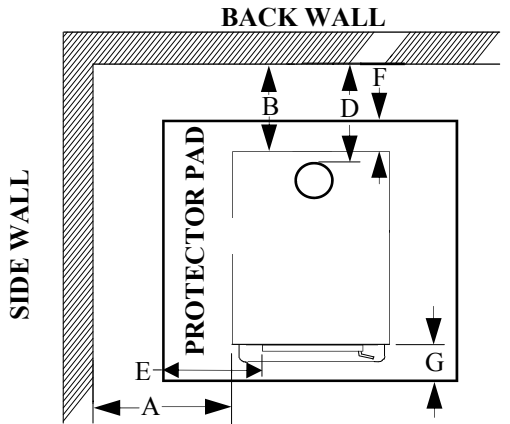
**NOTE: For minimum clearances (See Page 11, Figure 6).**

**For Required Out Side Air in Mobile Homes (See Page 14).**

1. Suspend a plumb bob from the ceiling above the unit so that the weight is hanging in the center of the flue exit. (A small weight on a string will serve as a plumb bob). Mark the ceiling where the string is suspended to locate the center of the chimney.
2. After locating the center of the hole, install the ceiling support box, chimney or chimney connector, flashing and rain cap per the chimney manufacturer's instructions and local building codes for installation through combustible walls or ceilings.
3. Now connect the stove and ceiling support box using DVL close clearance pipe. Connect each section per manufacturer's instructions. Secure each section to each other using minimum (3) sheet metal screws or rivets.  
DVL close clearance is to be connected with (3) sheet metal screws or rivets to connector collar on heater (See Page 11, Figure 7).

**C. Vertical exit using (6" DVL Close Clearance pipe and any listed 2100° UL 103 HT. TYPE Chimney).  
With optional close clearance shield and pipe shield  
Model FS 21 minimum clearance to combustibles**

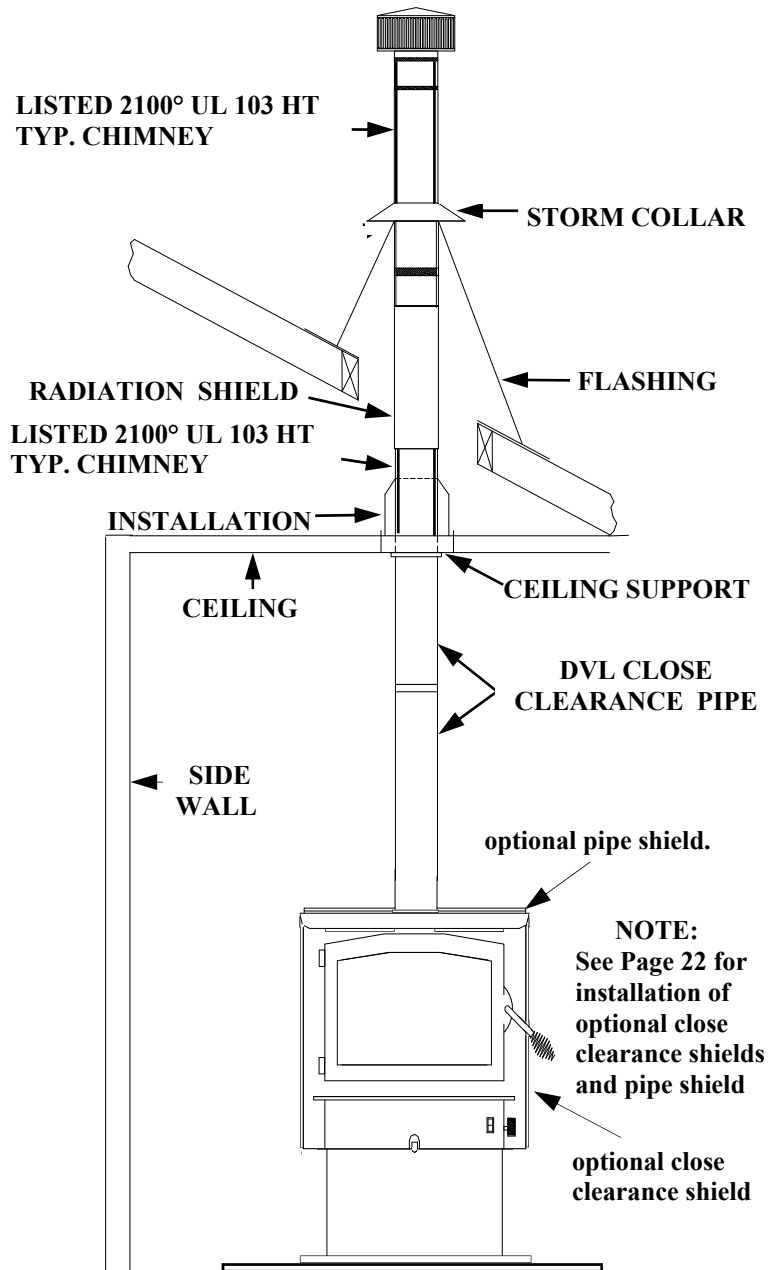
Figure 6.



A B C D E F G

MODEL 21 19" 7" 7" 8.5" 8" 6" 16"

Figure 7.



**NOTE:**  
See Page 22 for  
installation of  
optional close  
clearance shields  
and pipe shield  
optional close  
clearance shield

**NOTE:** All clearances are to combustibles with optional close clearance shields and pipe shield, using DVL Close Clearance pipe, and minimum floor protector.

# HOW TO LOCATE CHIMNEY EXIT AND INSTALL

## Residential and Mobile Home Installation

### D. Vertical Wall Exit using (6" DVL Close Clearance Pipe and elbow and any Listed 2100° UL HT chimney and Listed 2100° UL HT T-Box assembly)

With optional close clearance shield and pipe shield.

**NOTE: For installation of optional close clearance shields and pipe shield (See Page 22).**

**NOTE: For minimum clearances (See Page 13, Figure 8).**

**For Required Out Side Air in Mobile Homes (See Page 14).**

1. Mark the plumb line on the wall directly behind the center of the heater.  
(See Page 13, Figure 9).  
**NOTE: When using DVL Close Clearance Pipe , “maintain manufacturer’s minimum clearances” between pipe and ceiling.**
2. Place the vertical portion of the heater pipe and the elbow in position and project a point onto the plumb line level with the center of the elbow.
3. Measure up so there will be at least 1/4" rise per foot of horizontal connector pipe, maintaining clearances to the ceiling as noted in (Page 13, Figure 9). This will give you the center of the hole for the chimney penetration.
4. After locating the center of the penetration, install the tee-box and chimney as per the chimney manufacturer's specifications.
5. Connect the DVL close clearance pipe to the tee-box per manufacturer’s instructions. DVL close clearance pipe is to be connected with (3) sheet metal screws or rivets to connector collar on heater.(See Page 13, Figure 9).

**D. Vertical wall exit using (6" DVL Close Clearance pipe with elbow and any listed 2100° UL 103 HT. TYPE Chimney and Listed 2100° UL HT T-Box assembly)  
With optional close clearance shield and pipe shield  
Model FS 21 minimum clearance to combustibles**

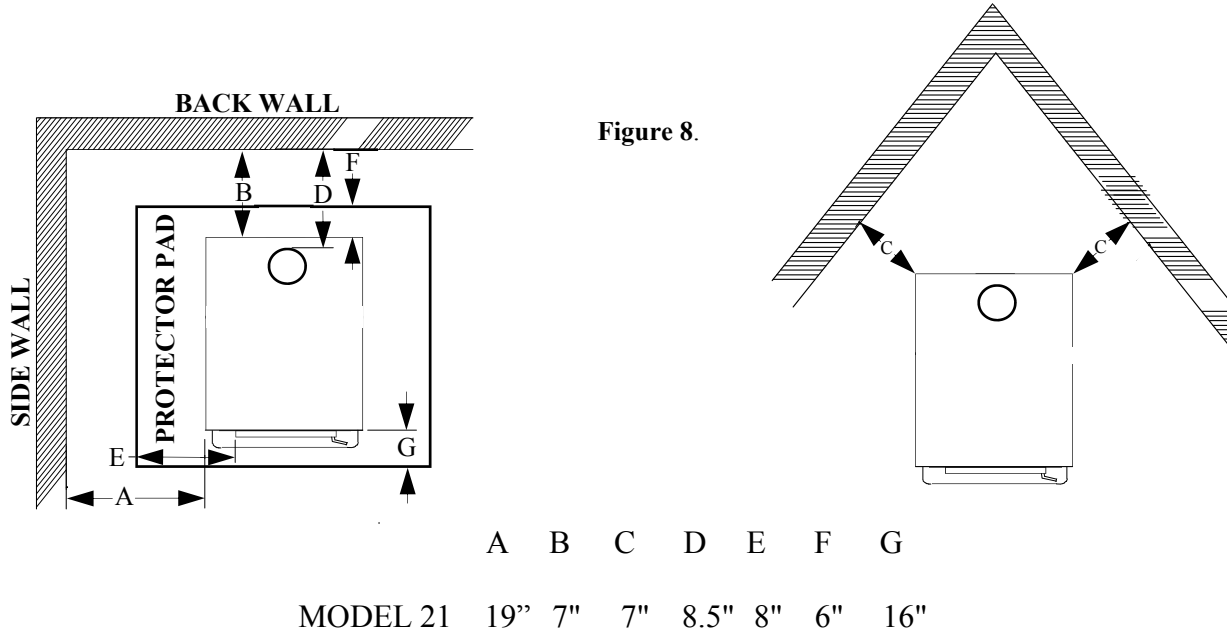


Figure 8.

**NOTE:** All clearances are to combustibles with close clearance shields and pipe shield, DVL Close Clearance pipe with elbow and minimum floor protector.

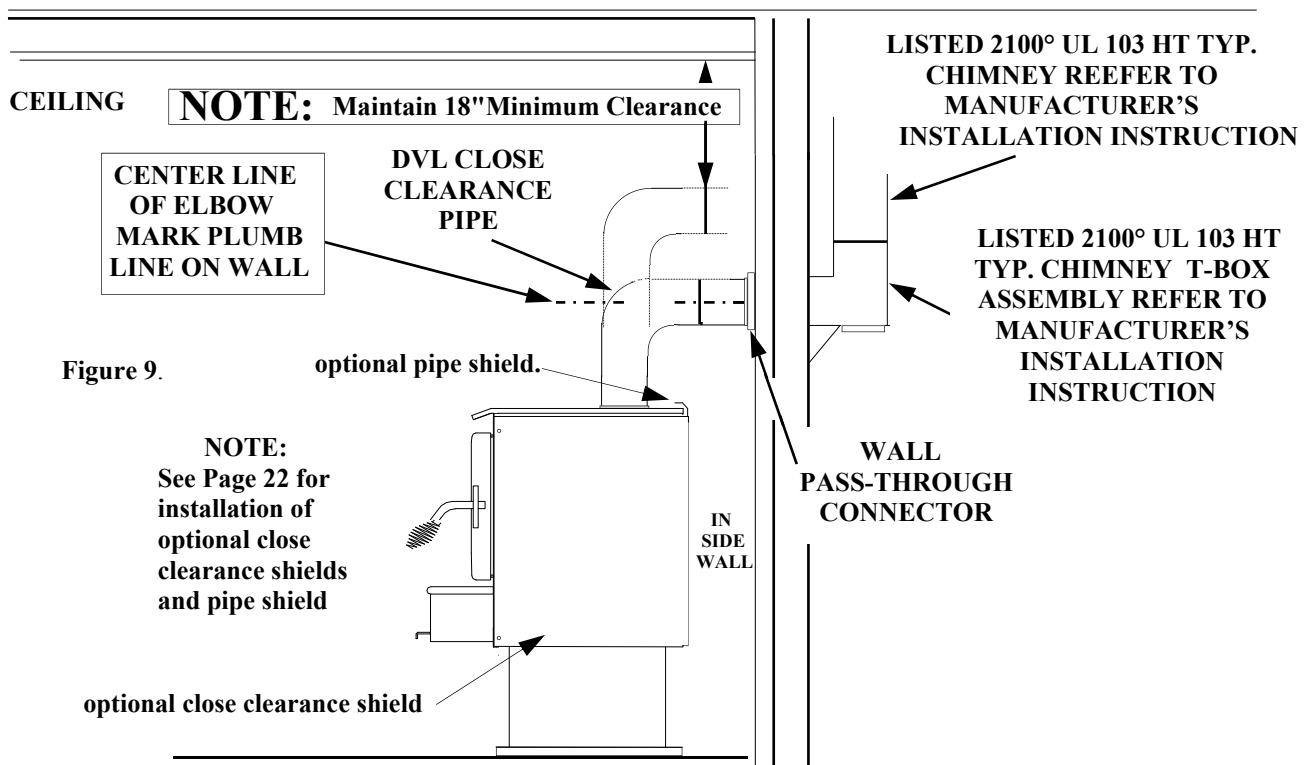


Figure 9.

# OUT SIDE AIR INSTALLATION

Select an installation location that will give the best airflow from the front of the heater to the remainder of the home.

## TOOLS FOR INSTALLATION

Drop cloth; 3/32" Metal drill bit; 5/16" magnetic socket chuck adapter; 5/16" wrench (box or socket) or adjustable wrench; Jigsaw with masonry, metal and wood blades

## CAUTION

**THE STRUCTURAL INTEGRITY OF THE MOBILE HOME FLOOR MUST BE MAINTAINED.  
(MOVE OPENING AND/OR REPOSITION HEATER LOCATION IF NECESSARY).**

1. Remove the protective plastic wrapping from the unit, inspect the unit for any obvious physical damage.
2. Plug the power cord into a 115V AC outlet to test the motor and fan when optional motor is being used. "Do not run power cord under unit or in high traffic areas". Unplug power cord when installing or moving unit.
3. Check the primary air draft control to ensure that it slides freely. (See Figure 10).
4. Remove any items from within the firebox. Spread a dropcloth on the floor behind the heater, tilt the heater so that the back is on the drop cloth.
5. Take a large flat screwdriver or pliers and remove the Two (2) 2" x 2" knockouts, one on bottom of pedestal also one located inside pedestal on outer bottom of stove. (See Figure 10).
6. Stand heater upright and place it on the pad making sure the minimum clearance specifications are met. (See Pages 10,12).
7. Lightly mark with a pencil the location of the pedestal on the protective pad. Open ash door and locate two holes in bottom of base for securing the pedestal to pad and floor and mark holes location on pad. (See Figure 10A). Place heater out of the way of the installation area.
8. Now use a 3/8" masonry bit and drill two (2) holes in the protective pad for securing the pedestal to pad. Be careful to drill only through the pad and not into the floor. Change the bit to a 1/4" metal bit and drill through the floor. (See Figure 10A).
9. Hole for outside air tube may be located anywhere under pedestal base. Cut a 4-1/4" diameter hole in the pad and continue through the floor. (See Figure 10A).
10. Obtain the outside air duct from the box and slip the duct down through the 4-1/4" hole until the face of the outside air duct with screen wire contacts the pad. Secure the outside air duct to the pad using the four (4) #10x1 screws provided. (See Page 13, Figure 10B).
11. Now, reposition the heater and set on the pad being sure to line the stand up with the reference marks. Using the four (2) 3/8" x 1-1/2" lag bolts provided, secure the heater and pad to the floor of the home.

## CAUTION

**IF A THICK FLOOR PROTECTOR IS USED, YOU MAY HAVE TO USE LONGER LAG BOLTS.**

12. **NOTE:** If home is underpinned, you must run duct through underpin as shown. (See Page 15, Figure 10C).

Figure 10.

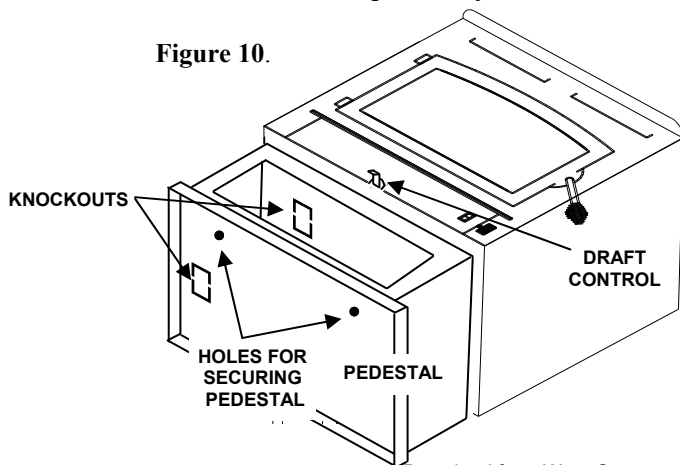
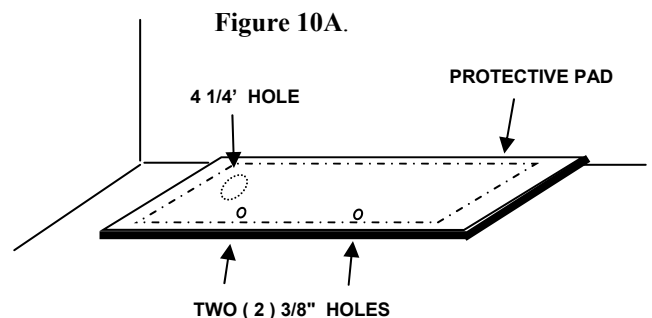
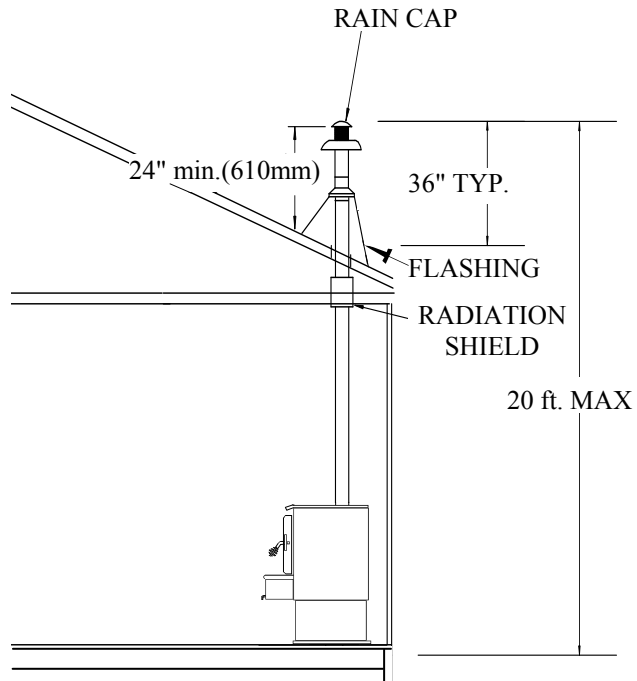
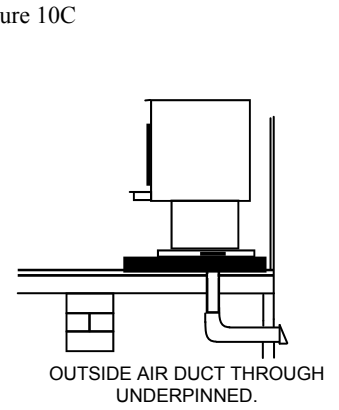
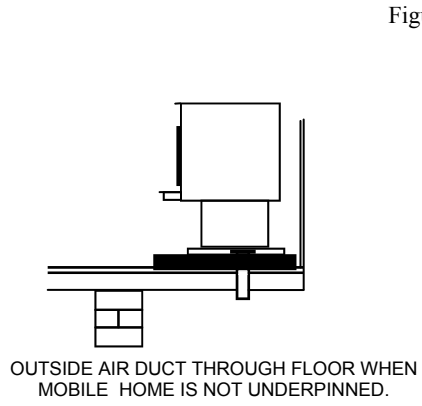
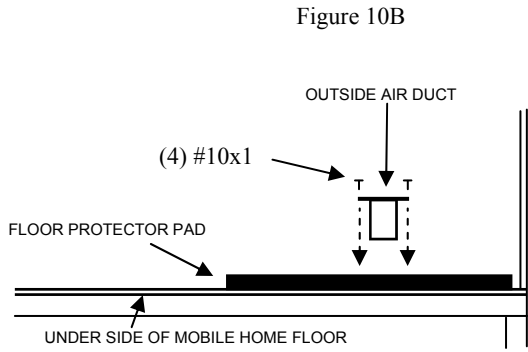


Figure 10A.







## FINAL CHECK

1. Recheck the specified clearances.
2. Remove all foreign material from the firebox area.
3. Open the primary air draft.
4. Plug the power cord into a 115V AC outlet when using with optional motor.
5. Place crumpled pieces of newspaper in the stove. Light it and close the doors. Ensure that the stove draws properly through the primary draft.
6. Check for smoke leaks around the door.

### CAUTION

**Open the doors and check for smoke escaping from the front of the stove. Smoking usually indicates a defective or poorly positioned chimney. Some chimneys with a marginal draft can be preheated by lighting newspaper and holding it near the open damper with a poker or fire tong. Once the chimney heats up, a proper draft can usually be obtained.**

If a thorough review of the Troubleshooting Guide in the rear of the manual does not reveal the problem, contact your dealer for assistance.

### CAUTION

**The unit is painted with a specially formulated high temperature paint that cures during the first two or three firings. You may notice a slight smoking effect and an odor of burning paint when you build the first fires. This is normal and is not a cause for alarm. In some cases, these fumes will activate a smoke alarm. Opening a window near the unit will allow these fumes to escape. DO NOT build a large, roaring fire until this curing is complete or the heater finish may be damaged.**

## **SECTION III ALCOVE INSTALLATION AND CLEARANCES**

**Select an installation location that will give the best airflow from the front of the heater to the remainder of the home.**

### **PREPARING THE STOVE FOR INSTALLATION**

1. Inspect the unit for any obvious physical damage.
2. Plug the power cord into a 115V AC outlet to test the motor and fan when optional motor is being used. "Do not run power cord under unit or in high traffic areas".
3. Check the primary air draft control to ensure that it slides freely.
4. Remove any items from within the firebox.

### **Chimney**

This model is designed for connection to any listed 2100° UL103 HT chimneys and parts. This room heater must be converted to (1) a chimney complying with the requirements for Type HT chimneys in the Standard for chimneys, Factory-Built, Residential, Type and Building Heating Appliance, UL 103, or (2) a code approved masonry chimney with a flue liner.

## Floor Protection:

Floor protection must be 3/8" minimum thickness non-combustible material or equivalent.

### How to use alternate materials and how to calculate equivalent thickness

An easy means of determining if a proposed alternate floor protector meets requirements listed in the appliance manual is to follow this procedure:

1. Convert specification to R-value:  
R-value is given—no conversion is needed.  
K-factor is given with a required thickness (T) in inches:  
C-factor is given:  $R=1/C$
2. Determine the R-value of the proposed alternate floor protector.  
Use the formula in step (1) to convert values not expressed as "R"  
For multiple layers, add R-values of each layer to determine the overall R-value.
3. If the overall R-value of the system is greater than the R-value of the specified floor protector, the alternate is acceptable.

#### Example:

The specified floor protector should be 3/4" thick material with a K-factor of 0.84.

The proposed alternate is 4" brick with a C-factor of 1.25 over 1/8" mineral board with a K-factor of 0.29.

Step (a): Use formula above to convert specification to R-value.  $R = 1/K \times T = 1/0.84 \times .75 = 0.893$

Step (b): Calculate R of proposed system. 4" brick of  $C=1.25$ , therefore  $R_{brick} = 1/C = 1/1.25 = 0.80$  1/8" mineral board of  $K = 0.29$ , therefore  $R_{min.bd.} = 1/0.29 \times 0.125 = 0.431$

Step (c): Compare proposed system R of 1.231 to specified R of 0.893. Since proposed system R is greater than required, the system is acceptable.

#### Definitions:

$$\text{Thermal conductance} = C = \frac{\text{Btu}}{(\text{hr})(\text{ft}^2)(\text{°F})} = \frac{W}{(\text{m}^2)(\text{°K})}$$

$$\text{Thermal conductance} = K = \frac{(\text{Btu})(\text{inch})}{(\text{hr})(\text{ft}^2)(\text{°F})} = \frac{W}{(\text{m})(\text{°K})} = \frac{(\text{Btu})}{(\text{hr})(\text{ft})(\text{°F})}$$

$$\text{Thermal conductance} = R = \frac{(\text{ft}^2)(\text{hr})(\text{°F})}{\text{Btu}} = \frac{(\text{m}^2)(\text{°K})}{W}$$

Install in accordance with 24 CFR, Part 3280 (HUD).

# HOW TO LOCATE CHIMNEY EXIT AND INSTALL

## Alcove Installation

**Vertical Exit using (6" DVL Close Clearance pipe and any Listed 2100° UL 103 HT chimney).**

**With optional close clearance shield and pipe shield. NOTE: For installation of optional close clearance shields and pipe shield (See Page 22).**

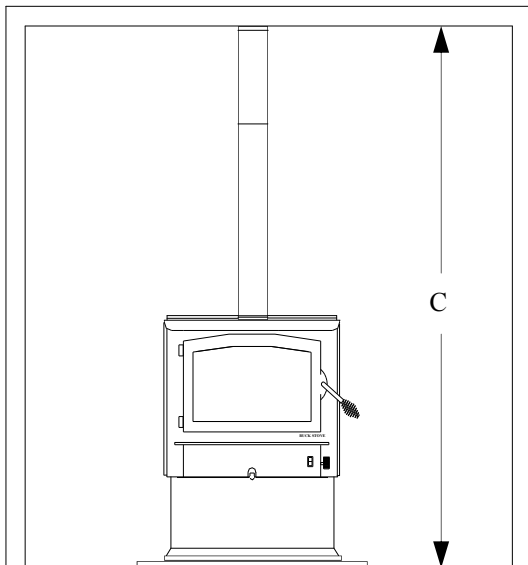
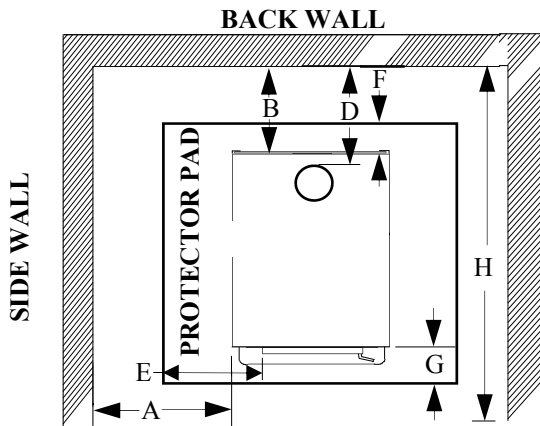
**NOTE: For minimum clearances (See Page 20, Figure 11).**

1. Suspend a plumb bob from the ceiling above the unit so that the weight is hanging in the center of the flue exit. (A small weight on a string will serve as a plumb bob). Mark the ceiling where the string is suspended to locate the center of the chimney.
2. After locating the center of the hole, install the ceiling support box, chimney or chimney connector, flashing and rain cap per the chimney manufacturer's instructions and local building codes for installation through combustible walls or ceilings.
3. Now connect the stove and ceiling support box using DVL close clearance pipe. Connect each section per manufacturer's instructions. Secure each section to each other using minimum (3) sheet metal screws or rivets. DVL close clearance is to be connected with (3) sheet metal screws or rivets to connector collar on heater.(See Page 20,Figure 12).

# ALCOVE INSTALLATION AND CLEARANCES

**Vertical exit using (6" DVL Close Clearance pipe, and any listed 2100° UL 103 HT. TYPE Chimney).  
With optional close clearance shield, and pipe shield  
Model FS 21 minimum clearance to combustibles**

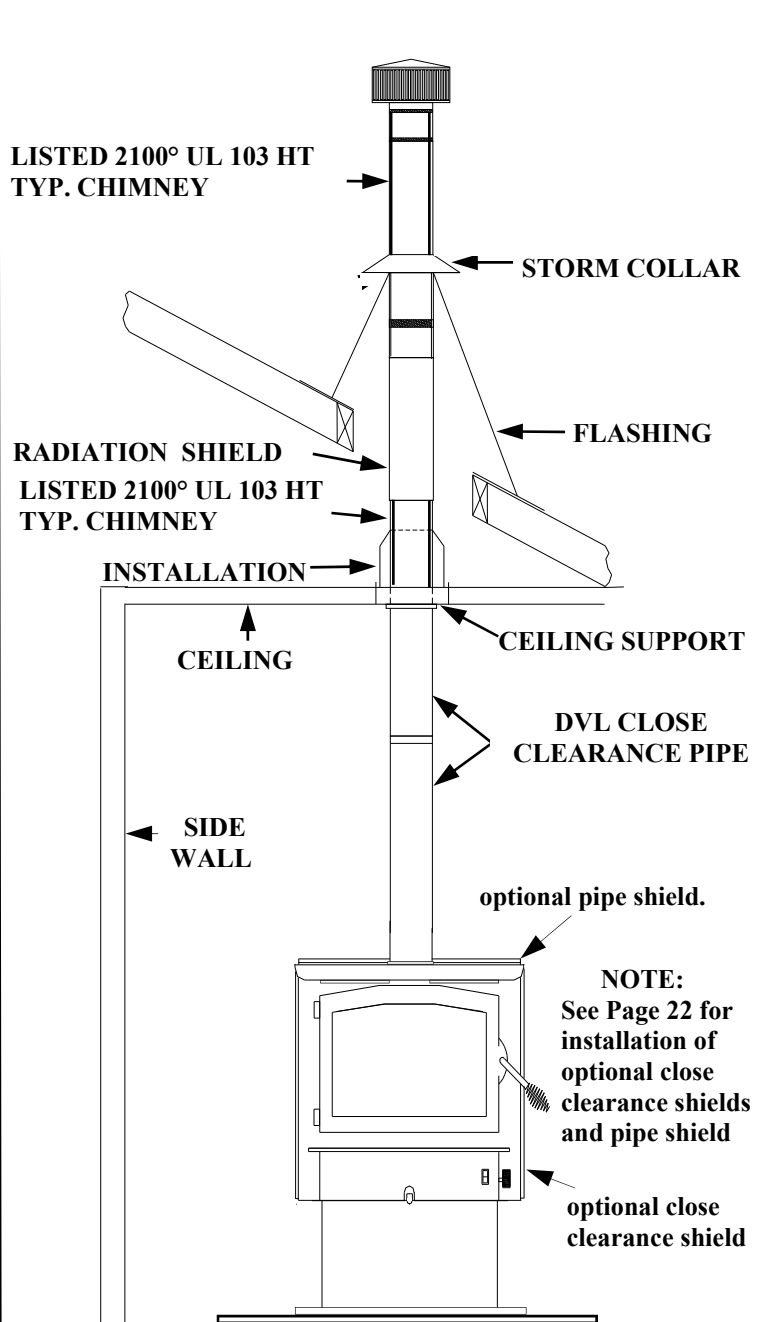
Figure 11.



A B C D E F G H

MODEL 21 19" 7" 84" 8.5" 8" 6" 16" 48"

Figure 12.



**NOTE:**  
See Page 22 for  
installation of  
optional close  
clearance shields  
and pipe shield

**NOTE:** All clearances are to combustibles with optional close clearance shields and pipe shield, using DVL Close Clearance pipe and minimum floor protector.

## FINAL CHECK

1. Recheck the specified clearances.
2. Remove all foreign material from the firebox area.
3. Open the primary air draft.
4. Plug the power cord into a 115V AC outlet when using with optional motor.
5. Place crumpled pieces of newspaper in the stove. Light it and close the doors. Ensure that the stove draws properly through the primary draft.
6. Check for smoke leaks around the door.

### CAUTION

**Open the doors and check for smoke escaping from the front of the stove. Smoking usually indicates a defective or poorly positioned chimney. Some chimneys with a marginal draft can be preheated by lighting newspaper and holding it near the open damper with a poker or fire tong. Once the chimney heats up, a proper draft can usually be obtained.**

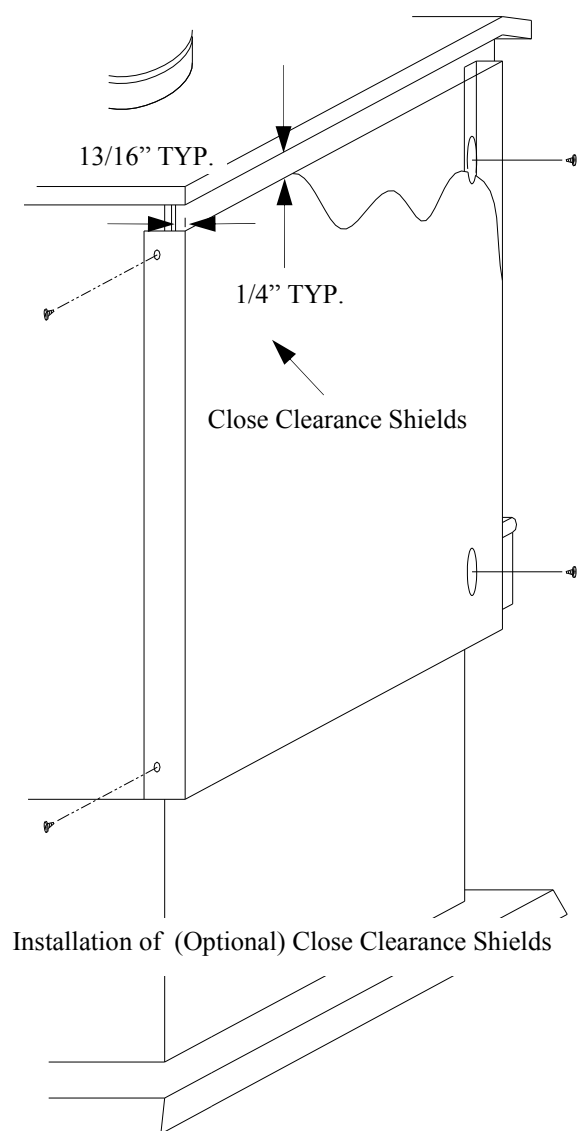
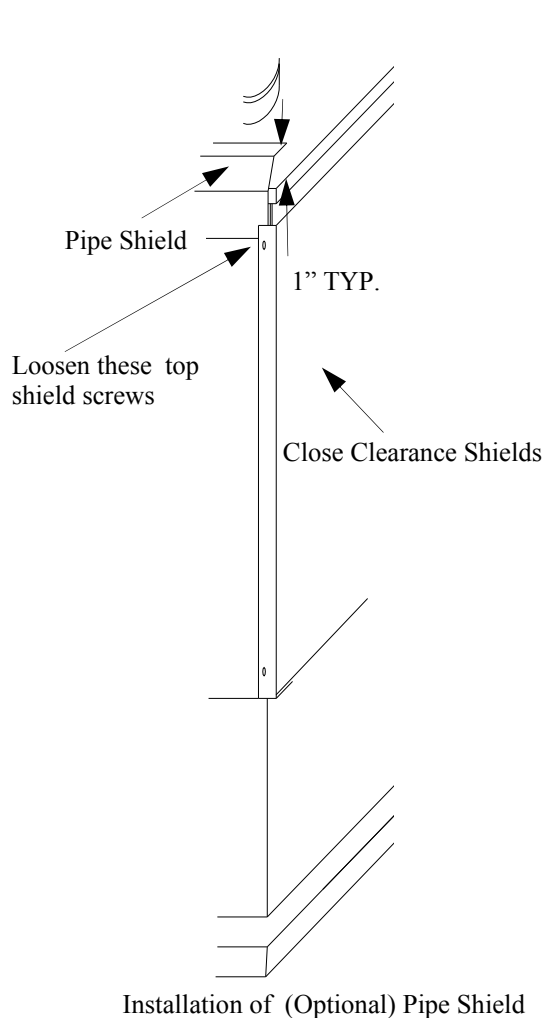
If a thorough review of the Troubleshooting Guide in the rear of the manual does not reveal the problem, contact your dealer for assistance.

### CAUTION

**The unit is painted with a specially formulated high temperature paint that cures during the first two or three firings. You may notice a slight smoking effect and an odor of burning paint when you build the first fires. This is normal and is not a cause for alarm. In some cases, these fumes will activate a smoke alarm. Opening a window near the unit will allow these fumes to escape. DO NOT build a large, roaring fire until this curing is complete or the heater finish may be damaged.**

## Installation of (Optional) Close Clearance Shields and Pipe Shield

1. Taking close clearance side shields, hold up to side of stove leaving 1/4" gap between shield and top of stove.
2. Make reference mark in center of pre-punched hole in top & bottom of shield. Drill two (2) 3/32" holes in back of unit on each side. Insert self tapping screws in through shield into stove.(SEE PICTURE BELOW)
3. Drill two (2) 3/16" holes in the sides of the stove where the shield meets the front side. Insert two (2) 3/8" self-tapping screws. (SEE PICTURE BELOW)
4. Next loosen two (2) top screws holding side shield at rear top. Insert pipe shield where back shield and top rear side shield meets. Leave a 1" gap from the top of stove to the pipe shield, tighten screws.(SEE PICTURE BELOW)





## SECTION IV OPERATION

This section of the manual is to help you get the maximum efficiency and maximum smoke (particulate) reduction from your heater. If you should experience any difficulty or have any questions concerning your heater, contact your dealer for assistance. The manufacturer recommends that for maximum performance burn dried natural seasoned hard wood.

**Build a fire for maximum efficiency.** These models burn wood and extract heat so efficiently, a large fire is not necessary. A large fire not only wastes energy, it usually results in the home being too warm for comfort.

The following steps will serve as a guide for operating your stove.

### **BUILDING A FIRE**

1. Open the door.
2. Open the primary air control under hearth, push in. To close pull all the way out.
3. Twist two pieces of non-colored newspaper into a roll and place them on the floor of the firebox.
4. These models are not designed for the use of grates, andirons or other methods of supporting the fuel.

**NOTE: “Do not use grate or elevate fire. Build wood fire directly on inner bottom of fire box.”**

5. Lay several pieces of dry kindling on top of the newspaper.
6. Place three or four small pieces of firewood, 2-3" in diameter, on top of the kindling.
7. Light the newspaper in the front. Close and latch the door. Don't leave the fire unattended at this point. The draft system of the heater should start quickly. It may be necessary to preheat the chimney to get the draft started. To do this, open the door and add newspaper to the top rear of the wood. Light or let this paper ignite and allow to burn while holding the door slightly cracked. Once the draft has started, close and lock the door. You are over heating the unit if the chimney and or connector glows red.
8. **After embers and a coal bed have been established, load the heater with dried natural seasoned hard wood.**

**NOTE: THE FUELING DOOR MUST REMAIN CLOSED DURING OPERATION.**

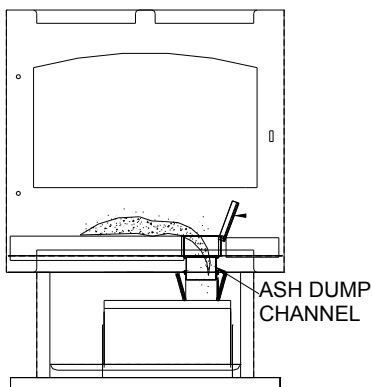
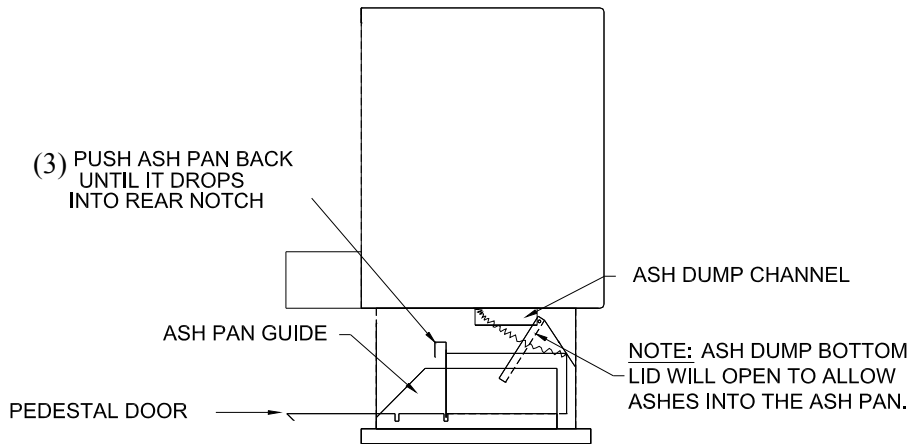
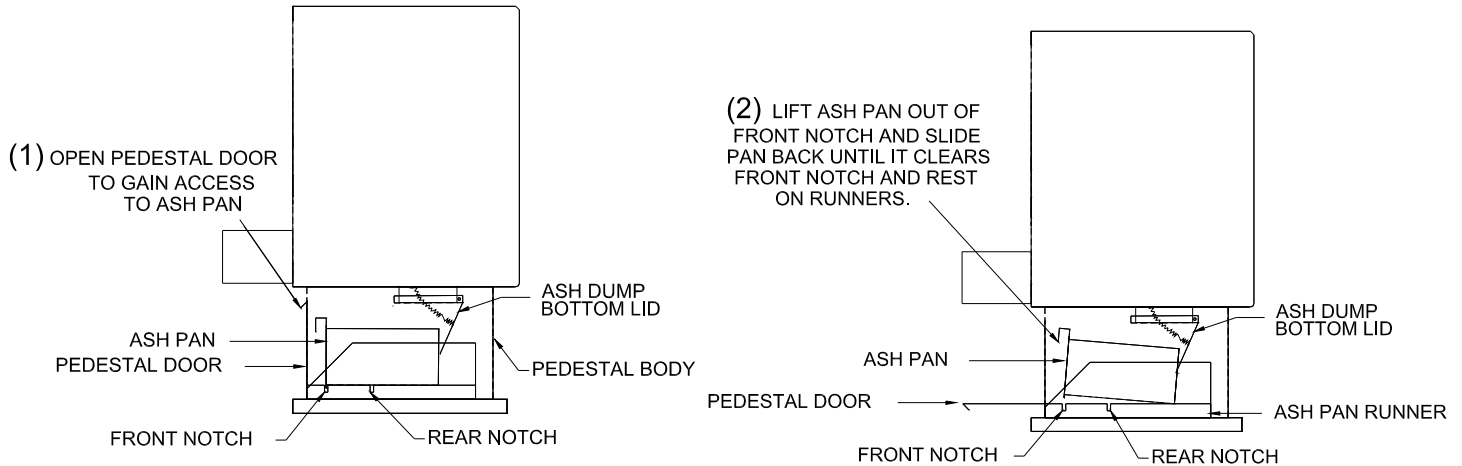
**NOTE: If the optional blower is being used on the Model FS21. Your stove is equipped with a automatic thermostat. When the stove gets hot enough, the thermostat will activate the room air blower. Set fan speed according to desired heat output.**

**NOTE: When refueling or removing ashes turn “OFF” room air blower. Be sure to turn room air blower back on when finished.**

**NOTE: Do not run power cord underneath heater, or in walk way or heavy traffic areas.**

# ASH REMOVAL INSTRUCTIONS

NOTE: IF HEATER IS EQUIPPED WITH OPTIONAL ROOM BLOWER BE SURE TO TURN BLOWER OFF BEFORE REMOVING ASHES



- (4) OPEN MAIN DOOR TO FIRE BOX. LOCATE ASH DUMP TOP LID IN RIGHT REAR OF HEATER. OPEN ASH DUMP TOP LID AND SWEEP ASHES INTO ASH DUMP CHANNEL.

WHEN FINISHED, CLOSE TOP LID AND LIFT ASH PAN OUT OF REAR NOTCH. REMOVE PAN FROM PEDESTAL AND DISPOSE OF ASHES PROPERLY.

- (5) REPLACE ASH PAN IN PEDESTAL.  
(6) TURN BLOWER ON.

**NOTE:**

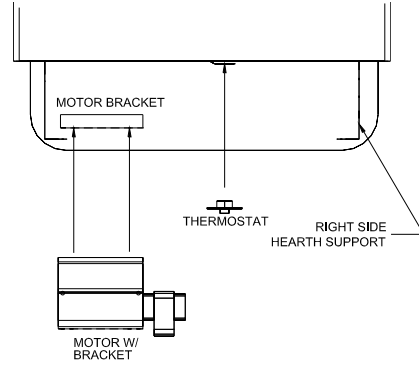
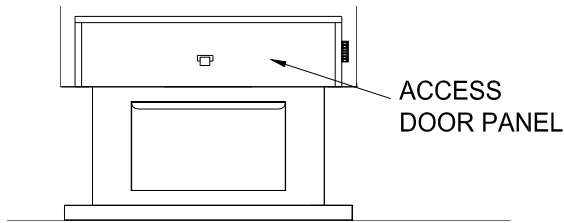
DISPOSAL OF ASHES: ASHES SHOULD BE PLACED IN A METAL CONTAINER WITH A TIGHT FITTING LID. THE CLOSED CONTAINER OF ASHES SHOULD BE PLACED ON A NON COMBUSTIBLE FLOOR OR ON THE GROUND, WELL AWAY FROM ALL COMBUSTIBLE MATERIALS, PENDING FINAL DISPOSAL. IF THE ASHES ARE DISPOSED OF BY BURIAL IN SOIL OR OTHERWISE LOCALLY DISPERSED, THEY SHOULD BE RETAINED IN THE CLOSED CONTAINER UNTIL ASH CINDERS HAVE THOROUGHLY COOLED. ASHES CAN IGNITE UP TO 72 HOURS AFTER REMOVAL.

## SECTION V

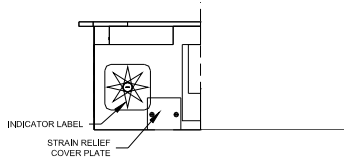
# OPTIONAL MOTOR ASSEMBLY KIT INSTALLATION INSTRUCTIONS

- STEP 1. REMOVE ACCESS DOOR PANEL LOCATED AT BOTTOM OF UNIT. YOUR MOTOR ASSEMBLY COMES WITH A BRACKET ALREADY ATTACHED TO THE MOTOR. ALIGN THE HOLES IN MOTOR BRACKET WITH THE HOLES IN MOTOR MOUNT. SECURE BRACKET WITH TWO 1/2" HEX HEAD SCREWS PROVIDED.**
- STEP 2. REMOVE THE PROTECTIVE BACKING OFF THE RHEOSTAT INDICATING LABEL AND PLACE THE HOLE IN CENTER OF LABEL TO LINE UP WITH HOLE IN THE RIGHT SIDE HEARTH SUPPORT AS YOU FACE THE UNIT. PLACE LABEL SO "OFF" POSITION IS AT THE 8 O'CLOCK POSITION AND LOW IS AT THE 4 O'CLOCK POSITION. MOUNT RHEOSTAT BY PLACING IT BEHIND HEARTH SUPPORT WITH WIRES ON BOTTOM SIDE. PLACE PLASTIC STUD THROUGH HOLE IN BRACKET AND SECURE WITH RHEOSTAT MOUNTING NUT. PLACE INDICATOR KNOB ON PLASTIC STUD.**
- STEP 3. REMOVE STRAIN RELIEF COVER FROM HEARTH SUPPORT AND DISCARD. MOUNT POWER CORD STRAIN RELIEF HOLDER IN COVER MOUNTING HOLES. PLACE THERMOSTAT BEHIND "C" CLIP LOCATED UNDER HEARTH TO THE RIGHT OF MOTOR. USE CABLE TIE TO SECURE LOOSE WIRES.**
- STEP 4. REINSTALL ACCESS DOOR PANEL.**
- STEP 5. PLUG POWER CORD INTO SUPPLY OUTLET. PLACE RHEOSTAT INDICATING KNOB IN DESIRED POSITION. WHEN HEATER REACHES TEMPERATURE, FAN WILL OPERATE AT DESIRED SPEED.**

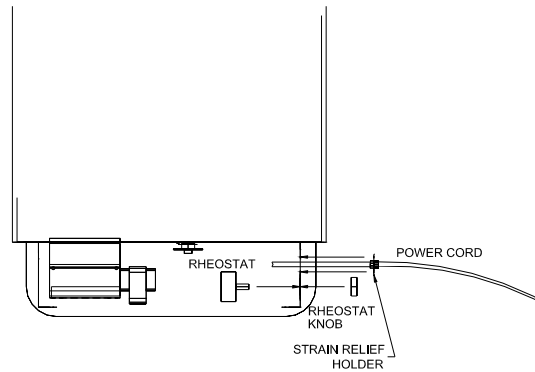
# STEP 1



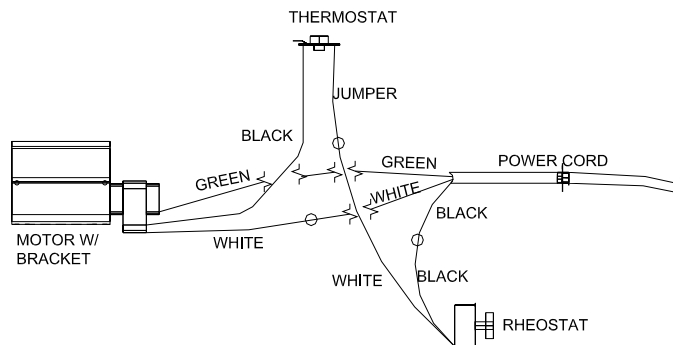
# STEP 2



# STEP 3



# WIRE DIAGRAM



## OPTIONAL MOTOR KIT ASSEMBLY PARTS

- 1 - MOTOR (NON-CAT)
- 1 - MOTOR BRACKET
- 6 - #10 - 16 X 1/2" HEX HEAD
- 1 - #6 - 32 X 1/2" SLOT HEAD SCREW
- 5 - 1/8" X 1" BLACK FLAT GASKET WITH ADHESIVE
- 1 - JUMPER WIRE 4" MALE & FEMALE TERMINAL
- 1 - 110 THERMOSTAT
- 1 - RHEOSTAT
- 1 - RHEOSTAT NUT
- 1 - RHEOSTAT INDICATOR KNOB
- 1 - RHEOSTAT LABEL
- 1 - POWER CORD
- 1 - STRAIN RELIEF
- 1 - 6" WIRE TIE
- 1 - STRAIN RELIEF HOLDER (METAL)
- 1 - WIRE TIE FOR POWER CORD
- 1 - INSTRUCTIONS

## SECTION VI

# WOOD HEATER SAFETY

Certain safety hazards are inherent in any wood heater installation. You should be aware of these so that a safe and proper installation can be made.

1. **FAULTY CHIMNEY:** An older masonry chimney should be thoroughly checked to be sure there are no holes or weak spots which could allow sparks or hot gases to escape.
2. **HEAT CONDUCTION:** Placing combustible materials too close to a heater or chimney can be a fire hazard.

By keeping these particular hazards in mind as you install and use your room heater you can ensure a safe, reliable installation.

The chimney and chimney connector should be inspected once every two months. Any build-up of soot should be removed to prevent the risk of a chimney fire. To remove chimney or chimney connector: Remove screws or fasteners. Remove pipe and clean with steel brush. Replace chimney or chimney connector, and replace screws and/or fasteners.

### CAUTION

**NEVER USE GASOLINE, GASOLINE TYPE LANTERN FUEL, KEROSENE, CHARCOAL LIGHTER FLUID OR SIMILAR LIQUIDS TO START OR "FRESHEN UP" A FIRE IN THE HEATER. KEEP ALL SUCH LIQUIDS WELL AWAY FROM THE STOVE WHEN IT IS IN USE. ALL FLUIDS OF THIS TYPE GIVE OFF VOLATILE FUMES AND CAN AND WILL EXPLODE!! DON'T TAKE A CHANCE WITH THE SAFETY OF YOUR HOME AND FAMILY.**

**CAUTION:** Never remove ashes from heater with blower running.

**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 noncombustible floor or on the ground, well away from all combustible materials pending final disposal. If the ashes are disposed of by burial in soil or otherwise locally dispersed, they should be retained in the closed container until all cinders have thoroughly cooled.

**CREOSOTE—FORMATION AND NEED FOR REMOVAL:** When wood is burned slowly, it produces tar and other organic vapors, which combine with expelled moisture to form creosote. The creosote vapors condense in the relatively cool chimney flue of a slow-burning fire. As a result, creosote residue accumulates on the flue lining. When ignited this creosote makes an extremely hot fire.

## SECTION VII TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Sluggish Heater	Obstruction in chimney	Check for and remove obstruction
	Wet or unseasoned wood being burned.	Burn dried natural seasoned hard wood.
	Poor chimney draft	Improper chimney height or wrong size flue is being used. Cooler temperatures caused by external chimney.
High Fuel Consumption	Improper regulation of draft or inlet air	(a) Close inlet air control as much as possible to maintain desired heat output. (b) Check gaskets, reinstall fiberglass gasket around doors and glass as necessary
	Improper door fitting	Check door gasket, check adjustment of door latch.
Backpuffing	Gusts of Wind	Chimney may need wind diverts. Raise chimney for better draft.
Smoke rolls out when heater door is opened.	Wind gusts blowing down the chimney	Chimney may need wind diverts. Raise chimney for better draft.
	Opening heater door too fast	Crack door for 15 seconds before fully opening door.

**NEW BUCK CORPORATION (NBC)**  
**"LIMITED WARRANTY" FOR THE BUCK STOVE**  
**PLEASE READ THIS WARRANTY CAREFULLY**

**PRODUCTS COVERED**

This warranty covers the new Buck Stove heating unit, so long as it is owned by the original purchaser, including optional and standard accessories purchased at the same time, subject to terms, limitations, and conditions herein set out.

**PRODUCTS NOT COVERED**

This warranty does not cover the following:  
Glass, Refractory material or firebrick, Gaskets.

This Warranty will not cover any damage and/or failure caused by abuse or improper installation of the products covered.

**WARRANTY TIME PERIODS**

**(A) Period I**

For one year from the date of purchase, NBC will replace or repair, at its option, any part defective in materials or workmanship. The costs of parts only are included. The customer pays any labor or transportation charges required.

Thereafter,

**(B) Period II**

For the period after the first year from the date of purchase and extending for five years as long as the Buck Stove is owned by the original purchaser, NBC will repair or replace, at its option, any part defective in materials or workmanship, with the exception of: electrical motors, wiring, switches, and components: optional and standard accessories; and all parts not permanently attached to the heating unit. Parts not permanently attached to the heating unit are defined as those items designed to be removed from the stove, including those removable with common hand tools. The costs of parts only are included. The customer pays any labor or transportation charges required.

**PROCEDURE**

Should you feel that your BUCK STOVE is defective, you should contact any Buck Stove dealer for the name of your nearest authorized Buck Stove service representative, who will instruct you on the proper procedure, depending on which Warranty Time Period (Period I or Period II) applies.



If for any reason you are dissatisfied with the suggested procedures, you may contact us in writing at:

New Buck Corporation  
Customer Service Department  
P. O. Box 69  
Spruce Pine, NC 28777

## **CONDITIONS AND EXCLUSIONS**

- (A) Replacement of parts may be in the form of new or fully reconditioned parts, at NBC's option.
- (B) There is no other express warranty. All implied warranties of merchantability and fitness for use are limited to the duration of the Express Warranty.
- (C) New Buck Corporation is not liable for indirect, incidental, or consequential damages in connection with the use of the product including any cost or expense of providing substitute equipment or service during periods of malfunction or non-use. Some states do not allow the exclusion of incidental or consequential damages, so the above exclusion may not apply to you.
- (D) All warranty repairs under this warranty must be performed by an authorized Buck Stove service representative. Repairs or attempted repairs by anyone other than an authorized service representative are not covered under this warranty. In addition, these unauthorized repairs may result in additional malfunctions, the correction of which is not covered by warranty.

## **OTHER RIGHTS**

This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.

## **OWNER REGISTRATION CARD**

The attached Owner Registration Card must be completed in its entirety and mailed within 30 days from the date of purchase or from the date of installation, if installed by a factory certified installer, to New Buck Corporation in order for warranty coverage to begin.

**PLEASE NOTE:** The Owner Registration Card must contain the Authorized Buck Stove Dealer Code Number and the Certified Installer's number (if applicable) for warranty coverage to begin.

To be completed by selling distributor or dealer for customer:

*Warranty Card Not Available On Web & Replacement Versions*

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