

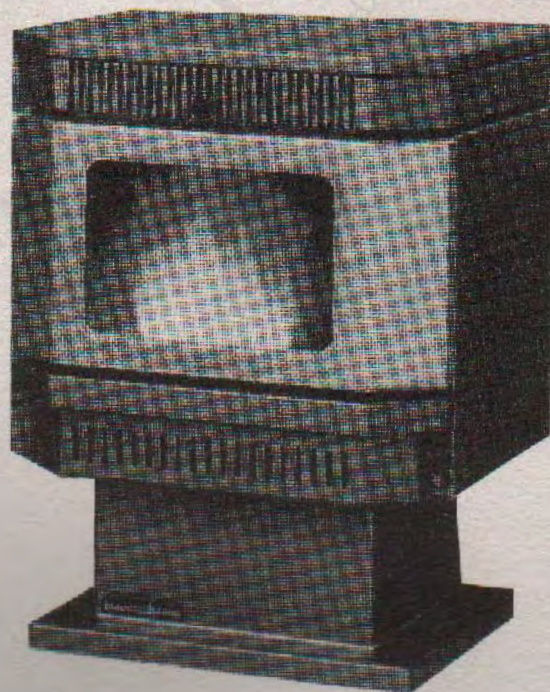


**ENVIROFIRE  
PELLET STOVE**

**EF-I**

**OWNER'S TECHNICAL MANUAL**

**MODELS FS, FPI and BIH**



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# ENVIROFIRE INSTALLATION MANUAL

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Revised June 1992

## **IMPORTANT SAFETY DATA**

To prevent the possibility of a fire, ensure that the appliance is properly installed by adhering to the installation instructions. An Envirofire dealer will be happy to assist you in obtaining information with regards to your local building codes and installation restrictions.

Since the stove's exhaust system works with negative combustion chamber pressure and a slightly positive chimney pressure, it is very important to ensure that the exhaust system be sealed and airtight. When connecting different chimney lengths, make sure that the connections are well sealed. This unit is designed to burn pelletized wood fuel only. Do not use any other type of fuel, this will void any warranties stated in this manual.

It is advisable to clean the exhaust vent annually. Minor soot or creosote might accumulate when operated under incorrect conditions. If you overfire the unit (continuously) you will shorten the life of the electrical components. With that in mind we recommend that you do not overfire the unit on a continuous basis.

A grounded electrical cord is supplied with the unit. This cord should be connected to a standard 110 volts, 60 hertz electrical outlet (power requirements are 240 watts). Be careful that the electrical cord is not trapped under the appliance and that it is clear of any hot surfaces or sharp edges.

When installing the appliance in a mobile home, it must be electrically grounded to the steel chassis of the home and bolted to the floor. Make sure that the structural integrity of the home is maintained.

Do not burn with insufficient combustion air. Be sure to maintain the structural integrity of the home when passing a vent through walls, ceilings or roofs. A periodic check is recommended to ensure proper combustion air is admitted to the combustion chamber. Proper combustion air setting is achieved by adjusting the side damper setting located on the left of the stove.

If you have any questions with regards to the data mentioned above, feel free to contact your local dealer for further clarification and comments.

Since Sherwood Industries Ltd. has no control over the installation of your stove, we grant no warranty implied or stated for the installation or maintenance of your stove, therefore Sherwood Industries Ltd. assumes no responsibility for any consequential damage.

The ashpan must be locked securely for proper and safe operation of the pellet stove.

**SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE**

**PELLET QUALITY IS IMPORTANT, PLEASE READ THE FOLLOWING PAGE**

Your pellet appliance has been designed to burn wood pellets only. Since there are many manufacturers of wood pellets it is important to select pellets that are free of dirt or any impurities. The Association of Pellet Fuel Industries (A.P.F.I.) has established standards for wood pellet manufacturers. We recommend that you use pellets that meet those standards. Ask your dealer for a recommended pellet type. Since Sherwood Industries Ltd. has no control over the quality of pellets that you use, we assume no liability caused by the quality of wood pellets used.

**FOLLOWING ARE THE A.P.F.I. STANDARDS:**

- Fines ..... 1% maximum through a 1/8" screen
- Bulk Density ..... 40 lbs per cubic foot minimum
- Size ..... 1/4" to 3/8" diameter 1 - 1.5" long maximum
- Ash Content ..... 1% maximum
- Moisture Content ..... 8% maximum
- Heat Content ..... approximately 8200 btu per lb minimum

Check the burner periodically to ensure that the holes are not blocked with clinkers, (clinkers are silica in the fuel, they form a hard mass during the burning process). If it is blocked with clinkers remove the burner and clean the clinkers out, (do this when the unit is cold). The burner should be cleaned or scrapped once every 2-3 days. Clean the holes in the liners with a small pointed object. Cleaning frequency depends on wood pellet quality.

Store the pellets at least 36" (900 mm) away from the appliance.

## DO'S, DO NOTS AND RECOMMENDATIONS

- A. Do not abuse the glass by striking it or slamming the door shut.
- B. Do not attempt to operate the unit with broken glass.
- C. Do not attempt to open the door and clean the glass while the unit is in operation. If you must clean the glass, use a soft cotton cloth and a mild window cleaner. **CLEAN GLASS ONLY WHEN UNIT IS COLD.**
- D. Do not use abrasive cleaners to clean the surface or any other part of the unit.
- E. It is recommended to secure the appliance into its position in order to avoid any displacement.
- F. Never use gasoline, gasoline-type lantern fuel, kerosene, or similar liquids to start the fire. Keep all such liquids well away from the heater while it is in use.
- G. Disposed ashes should be placed in a metal container with a tight fitting lid. The closed container of ashes should be on a non-combustible floor 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.
- H. Make sure the ash pan is closed tightly during the operation of the stove.

### 10. POST SEASON CARE

Once you are finished with the season, you should clean the stove and ash pan. The ash pan should be cleaned after each use. The stove should be cleaned after the season is over. The ash pan should be cleaned after each use. The stove should be cleaned after the season is over.



## AREAS FOR ROUTINE INSPECTION

The following should be inspected periodically to ensure that the appliance is operating at its optimum and giving you excellent heat value:

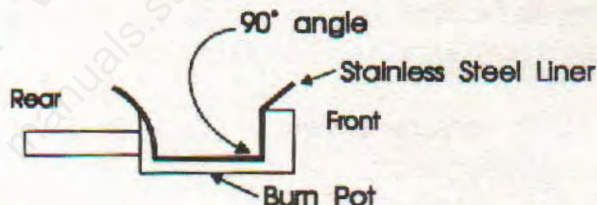
- ash pan and door gaskets,
- burner mechanism,
- ash pan,
- exhaust vent,
- fresh air intake,
- blower mechanism,
- appliance glass,
- inside firebox backing, and
- post season clean-up.

### **1. ASH PAN AND DOOR GASKETS**

The gasketing installed in both assemblies is by adhesion using high temperature glue. After excessive use the gasketing may come loose. To remedy this, glue the gasketing back using high temperature silicon glue available at your dealer. This is important to maintain an air tight assembly.

### **2. BURNER MECHANISM**

This is the 'pot' where the pellets are burned. Every two to three days remove the stainless steel liner (when the unit is cold) from the unit. Using a metal scrapper remove and dispose of all material that has accumulated or is clogging the holes. Check burn pot for ashes, empty periodically, then return burn pot and liner to unit.



### **3. ASH PAN**

This part is located under the burner and locks with a latch mechanism. Remove it and dump the ashes in a metal container stored away from the appliance. Remember that different pellet fuels have different ash contents. This is a good indication of fuel efficiency. Monitor the ash every three to four days. Disposed ashes should be placed in a metal container with a tight fitting lid. The closed container of ashes should be on a non-combustible floor 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.

### **4. HEAT EXCHANGER TUBES**

Above the door at the front of the appliance you will find a small lever. This handle is to be pulled back and forth a few times (only when unit is cold) in order to clean the tubes of any fly ash that may have been collected from the previous day's burning.

## 5. EXHAUST VENT

This vent should be checked every year and cleaned when needed.

## 6. FRESH AIR INTAKE

Inspect periodically to be sure that it is not clogged with any foreign materials.

## 7. BLOWER MECHANISMS

Disconnect the power first and then open the right/left side panels to access the blowers. Only the **Convection Blower** (on the right side) will need lubrication. The blower has two lubrication points. Use two drops of high temperature light oil to lubricate every six months. Excess oil may ruin the motor. The Exhaust Motor has pre-lubricated bearings. **DO NOT** lubricate this motor.

## 8. APPLIANCE GLASS

The appliance glass is of high temperature pyroceram 9" x 13". To replace the glass, unscrew and remove the four glass keepers (two screws on either side). Remove the glass and any broken pieces and replace it with a new piece and then screw the glass keepers back on the frame. High temperature fiberglass tape should be used around the glass perimeter. It is recommended that your dealer replace the glass.

## 9. INSIDE FIREBOX BACKING

Any ash build up may be reduced by occasionally rotating the circular covers in the firebox to allow vacuuming of ash behind the side plates.

## 10. POST SEASON CLEAN-UP

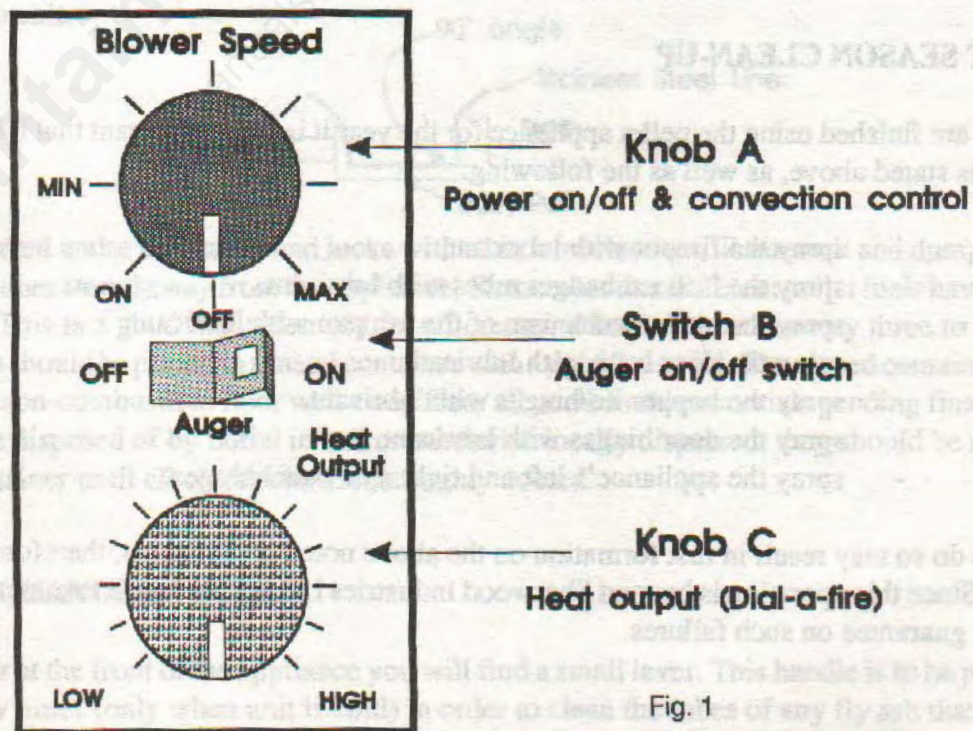
Once you are finished using the pellet appliance for the year it is very important that it be cleaned and serviced as stated above, as well as the following:

- spray the firepot with lubricant,
- spray the heat exchanger tubes with lubricant,
- spray the latch mechanism of the ash pan with lubricant,
- spray the door latch with lubricant,
- spray the hopper lid/hinges with lubricant,
- spray the door hinges with lubricant, and
- spray the appliance's left and right side panel hinges.

Failure to do so may result in rust formation on the above noted components, therefore causing them to seize. Since this operation is beyond Sherwood Industries Ltd.'s control we assume no liability nor grant any guarantee on such failures.

## HOW TO START YOUR PELLET APPLIANCE

1. Position fire starters in the middle of the burner.
2. Place approximately one cup of pellets around the fire starters (the fire starters recommended are of wood particles or similar material). Do not burn garbage or flammable fluids such as gasoline, naphtha or engine oil. The use of starter gel is permissible (ask your dealer for recommended brand name).
3. Switch on the power by turning knob "A" clockwise past the "click". Note that after the click the knob now controls the speed of the convection blower, with "high" being fully clockwise. See Figure 1.
4. Wait approximately 30 to 60 seconds to allow the motors to power up.
5. Make sure that switch "B" is off (indicator light is not flashing).
6. Light fire starters and close door.
7. Allow the fire to start building.
8. Turn switch "B" to on (push switch to right side), you should see the indicator light flashing.
9. Adjust knob "C" to the desired heat level.



## **TROUBLE STARTING**

If the fire fails to catch, wait until smoke clears, then replace fire starter, turn knob "A" fully counterclockwise, past the click and start again at step 3.

## **TURNING YOUR PELLET APPLIANCE OFF**

Push switch "B" to the left (the light indicator will stop flashing). This will turn off the pellet feed. The blowers will keep on running for the next 30 to 35 minutes to cool the stove body down and will automatically shut off. (Remember to restart the unit you must turn switch "A" counterclockwise (off) and then clockwise (on). See Figure 1.

## **YOUR PELLET APPLIANCE HAS THE FOLLOWING AUTOMATIC SAFETY FEATURES**

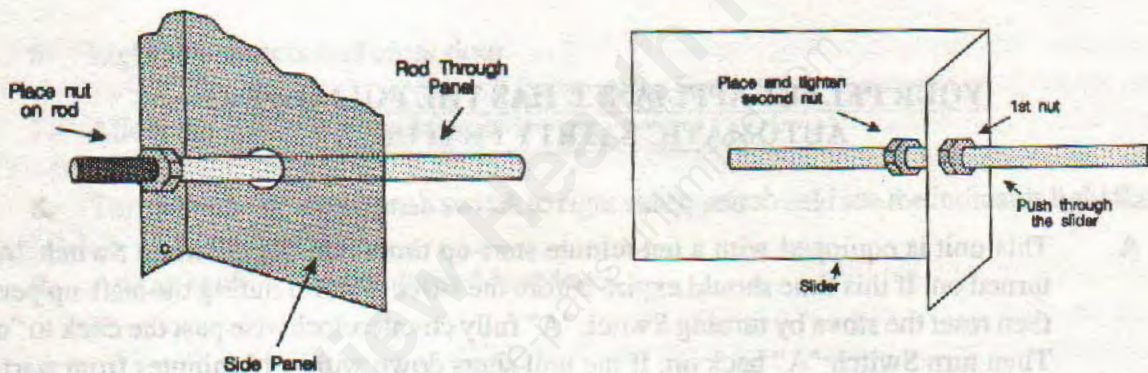
- A. This unit is equipped with a ten minute start-up timer that begins when Switch "A" is turned on. If this time should expire before the stove is warm during the start-up period, then reset the stove by turning Switch "A" fully counterclockwise past the click to "off". Then turn Switch "A" back on. If the unit shuts down within 15 minutes from start-up, this means that the unit did not reach 140° F within that time frame. Restart.
- B. The unit has a high heat safety sensor. If the firebox temperature reaches 200° F or higher the appliance will automatically shut down. If this happens call your local dealer.
- C. If the power goes out, the unit will shut down. When the power comes back on the unit will automatically restart, however, if there is no fire in the burner the unit will run for approximately 15 minutes and then shut down.
- D. The unit has a convection fan over-ride. This will cause the blower to reach a high output if the temperature of the firebox goes above 160° F. This is a normal function. To compensate for the fan cycling action that may occur, turn up the blower control proportionately to the heat output.

## SLIDER/DAMPER

This is used to regulate the air flow through the pellet stove.

### INSTALLATION

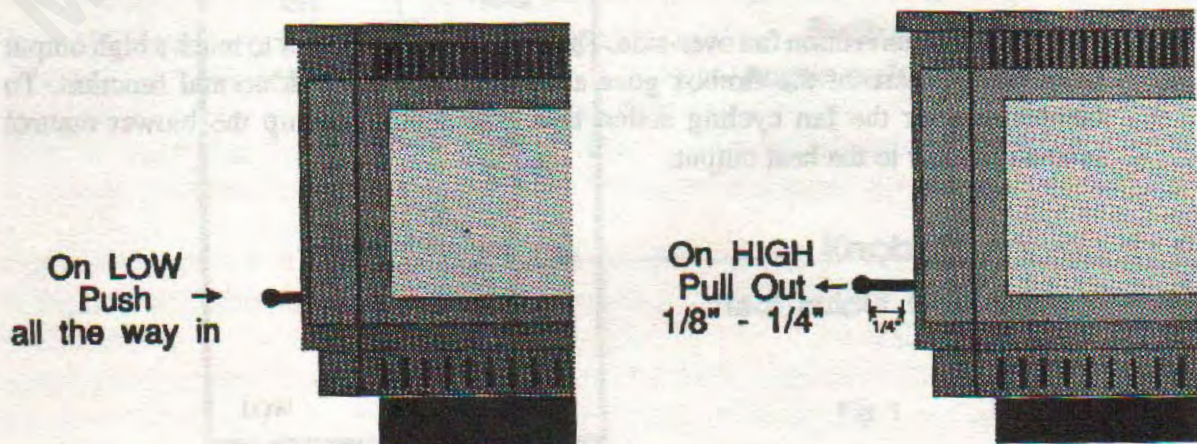
1. Remove the slider rod (with knob) and the two nuts from their package and open the left side panel.
2. Place one of the nuts on the rod and tighten. Push the rod through the hole in the slider. Place the other nut on the rod and tighten.
3. Make sure the slider moves freely. Close the side panel, pushing the rod through the hole in the side panel. Then tighten the panel screws. Screw the knob on to the slider rod.



### OPERATION

-On the low heat output settings, push the slider all the way in.

-On the high heat output pull the slider out 1/8" - 1/4" (0.32mm-0.64mm) or until a good fire is achieved. A good fire is between a fire with lazy flames (and blacked tipped flames) and a forced fire (very quick, shorter flames). A good fire is the most efficient.



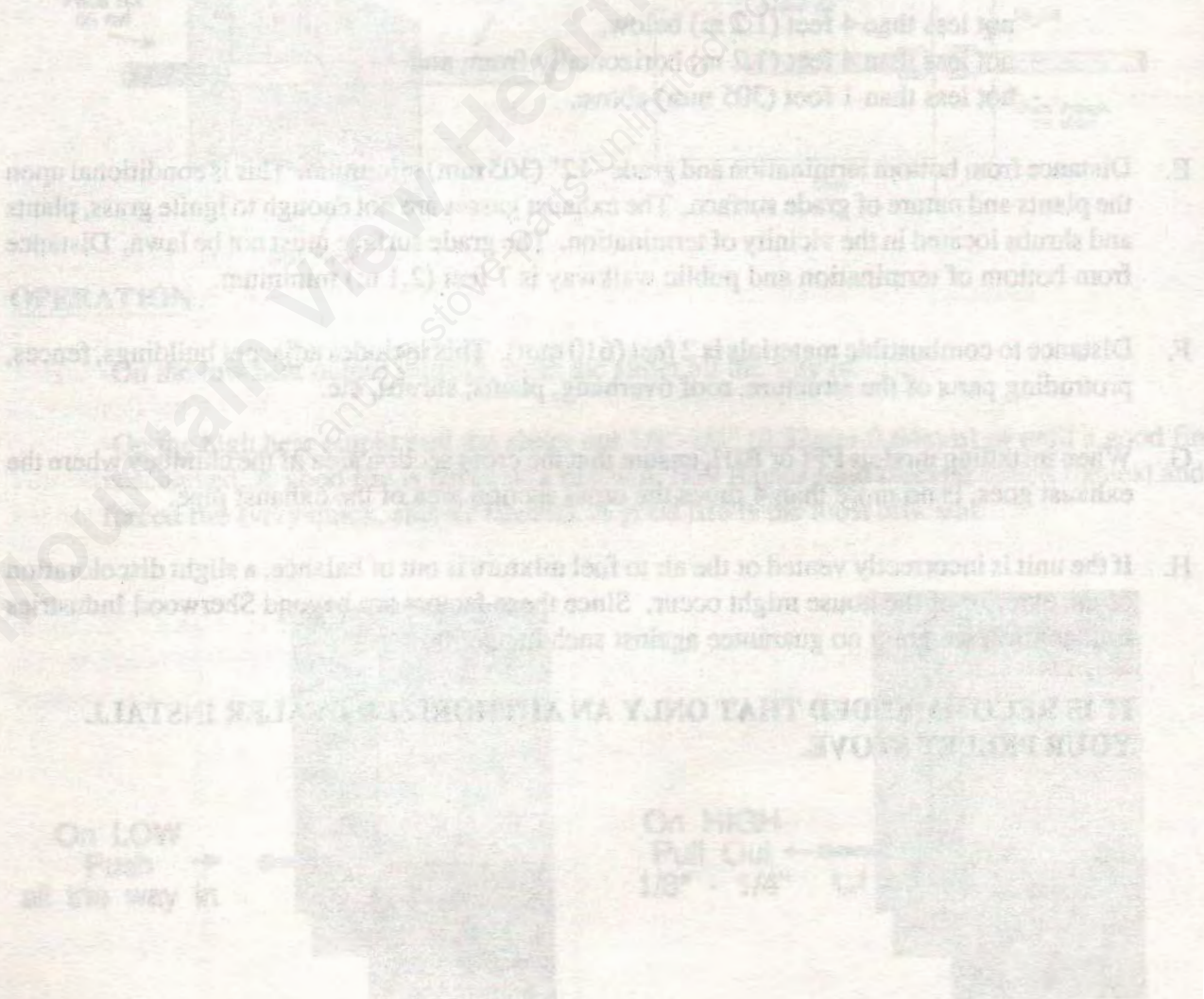
## **VENT TERMINATION REQUIREMENTS FOR FORCED DRAFT PELLET BURNING APPLIANCE**

- A. Do not terminate the vent in any enclosed or semi-enclosed areas such as a carport, garage, attic, crawl space, narrow walkway, closely fenced area, under a sundeck or porch, or any location that can build up a concentration of fumes such as stairwells, covered breezeway, etc.
- B. Vent surfaces can become hot enough to cause burns if touched by children. Non-combustible shielding or guards may be required.
- C. Termination must exhaust above inlet elevation. It is recommended that at least five feet of vertical pipe be installed when the appliance is vented directly through a wall to create some natural draft to prevent the possibility of smoke or odor during appliance shut down and to keep exhaust from causing a nuisance or hazard from exposing people or shrubs to high temperatures. **In any case, the safest and preferred venting method is to extend the vent through the roof.**
- D. Distance from doors, window openings, or gravity/ ventilation air inlet into building:
  - not less than 4 feet (1.2 m) below,
  - not less than 4 feet (1.2 m) horizontally from, and
  - not less than 1 foot (305 mm) above.
- E. Distance from bottom termination and grade - 12" (305 mm) minimum. This is conditional upon the plants and nature of grade surface. The exhaust gasses are hot enough to ignite grass, plants and shrubs located in the vicinity of termination. The grade surface must not be lawn. Distance from bottom of termination and public walkway is 7 feet (2.1 m) minimum.
- F. Distance to combustible materials is 2 feet (610 mm). This includes adjacent buildings, fences, protruding parts of the structure, roof overhang, plants, shrubs, etc.
- G. When installing models FPI or BIH, ensure that the cross section area of the chimney where the exhaust goes, is no more than 4 times the cross section area of the exhaust pipe.
- H. If the unit is incorrectly vented or the air to fuel mixture is out of balance, a slight discoloration of the exterior of the house might occur. Since these factors are beyond Sherwood Industries Ltd. control, we grant no guarantee against such incidents.

**IT IS RECOMMENDED THAT ONLY AN AUTHORIZED DEALER INSTALL YOUR PELLET STOVE.**

## DECIDING WHERE TO LOCATE YOUR PELLET APPLIANCE

1. Check clearances to combustibles.
2. Do not obtain combustion air from an attic, garage or any unventilated space. Combustion air may be obtained from a ventilated crawl space.
3. Do not install the stove in a bedroom.
4. Vent the stove directly through an exterior wall behind the unit or connect it to an existing masonry or metal chimney. An interior vent can be used with approved pipe passing through the ceiling and roof.
5. Locate the stove in a large and open room that is centrally located in the house. This will optimize heat circulation.
6. Before you install the unit, ensure that an electrical outlet is within 6 feet (1800 mm) for the stove plug.



## MODEL FS (FREESTANDING) INSTALLATION AND CLEARANCES

### **ASSEMBLY:**

Model FS comes with a pedestal that has to be assembled prior to installation:

- remove the pedestal from the box,
- remove the Envirofire unit from the box,
- place the Envirofire unit on top of the pedestal,
- secure the two pieces by screwing them together using the three screws provided in the pedestal box, and
- note the location of the screws, one screw is located at the center front, and the other two screws are located towards the back left and right sides.

### **CLEARANCES AND ALCOVE CLEARANCES**

Following are the clearances to combustible materials (conventional and mobile homes): (See figure 2).

- side wall to unit            A    6 in (150 mm)
- backwall to unit            B    1 in (25 mm)
- corner to unit              C    1 in (25 mm)

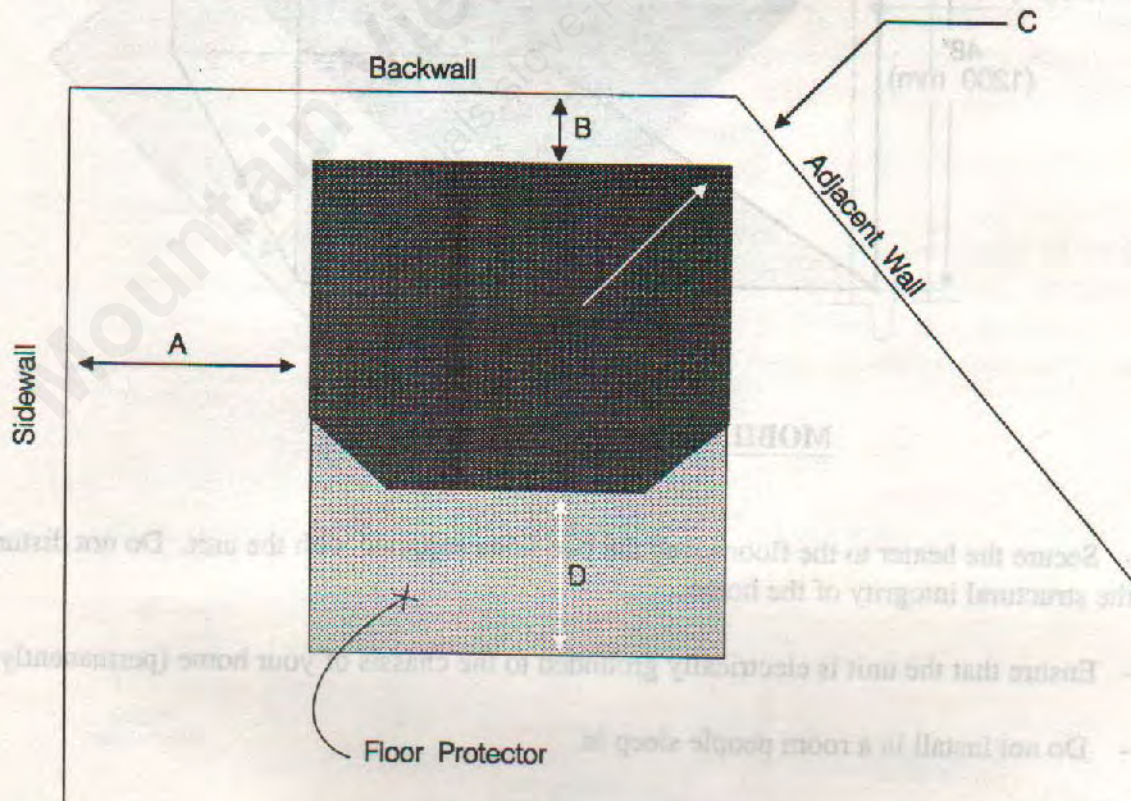


Fig. 2

### ALCOVE INSTALLATION (See Fig. 3)

- Alcove width (min) - 36 in (900 mm)
- Alcove height (min) - 48 in (1200 mm)
- Alcove depth (max) - 30 in (750 mm)

Combustible floor must be protected by a non-combustible material extending to the front (D) 6 in (150 mm) as shown above.

**Pellet vent requires 3" (75 mm) clearance to combustible materials.**

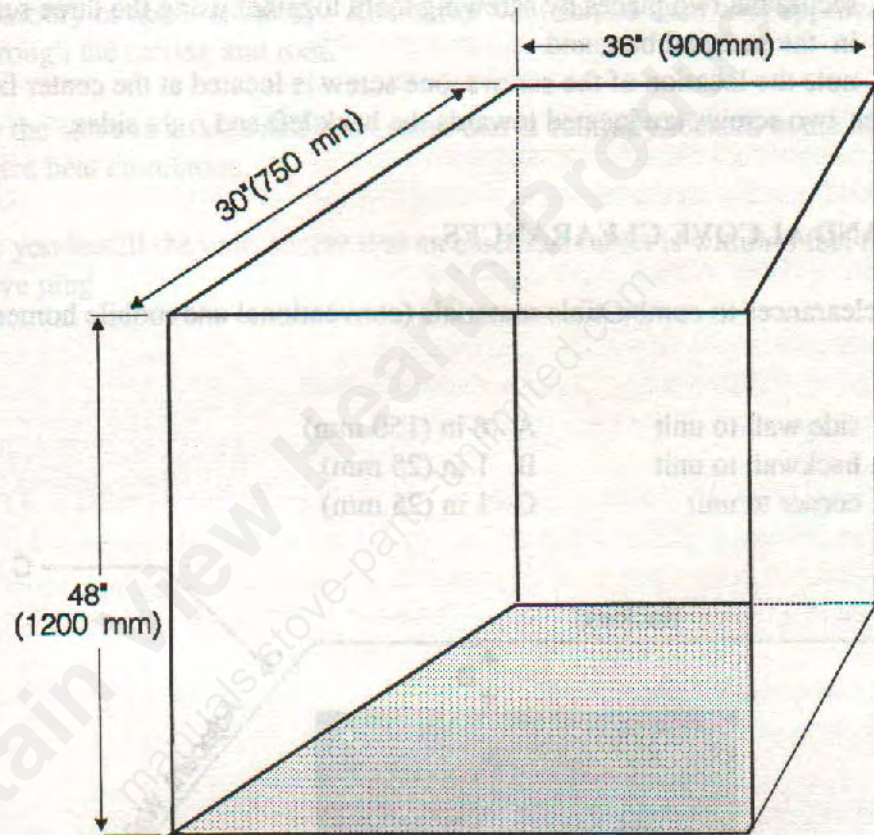


Fig. 3

### MOBILE HOME INSTALLATION

- Secure the heater to the floor using the two bolts supplied with the unit. Do not disturb the structural integrity of the home.
- Ensure that the unit is electrically grounded to the chassis of your home (permanently).
- Do not install in a room people sleep in.
- Outside fresh air is mandatory.

## CORNER INSTALLATION

The pellet vent shown in the installation below can penetrate either side walls or use inside vertical installation. See figure 4.

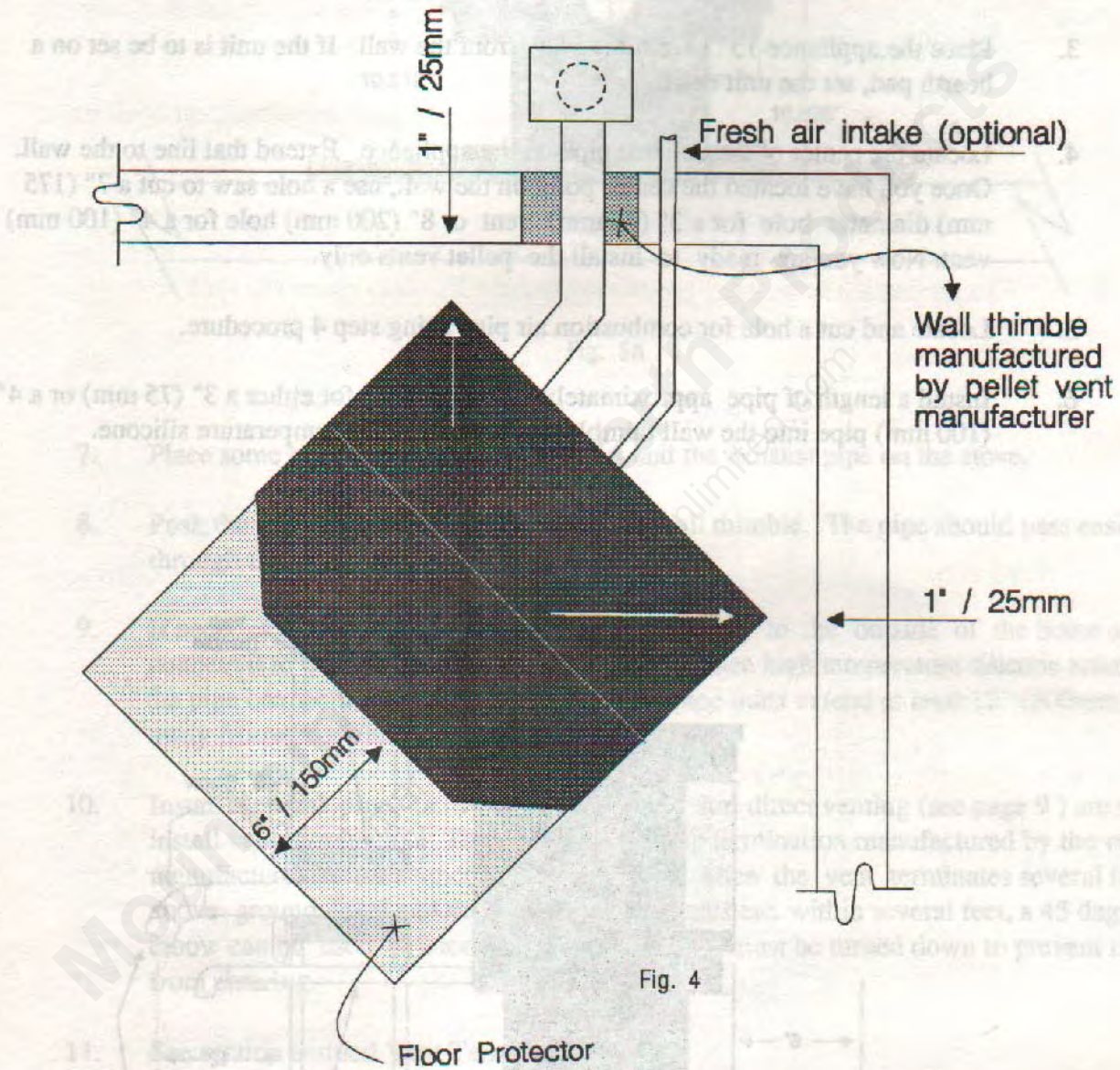


Fig. 4

## HORIZONTAL EXHAUST THROUGH THE WALL

1. Choose a location for your heater that meets the requirements stated in this manual and allow the installation of the stove with the least amount of interference with the house framing, plumbing, wiring, etc. See figure 5 and 5A.
2. Install a non-combustible hearth pad (where necessary).
3. Place the appliance 15" (375 mm) away from the wall. If the unit is to be set on a hearth pad, set the unit on it.
4. Locate the center of the exhaust pipe on the appliance. Extend that line to the wall. Once you have located the center point on the wall, use a hole saw to cut a 7" (175 mm) diameter hole for a 3" (75 mm) vent or 8" (200 mm) hole for a 4" (100 mm) vent. Now you are ready to install the pellet vents only.
5. Locate and cut a hole for combustion air pipe using step 4 procedure.
6. Install a length of pipe approximately 12" (300 mm) for either a 3" (75 mm) or a 4" (100 mm) pipe into the wall thimble and seal with high temperature silicone.

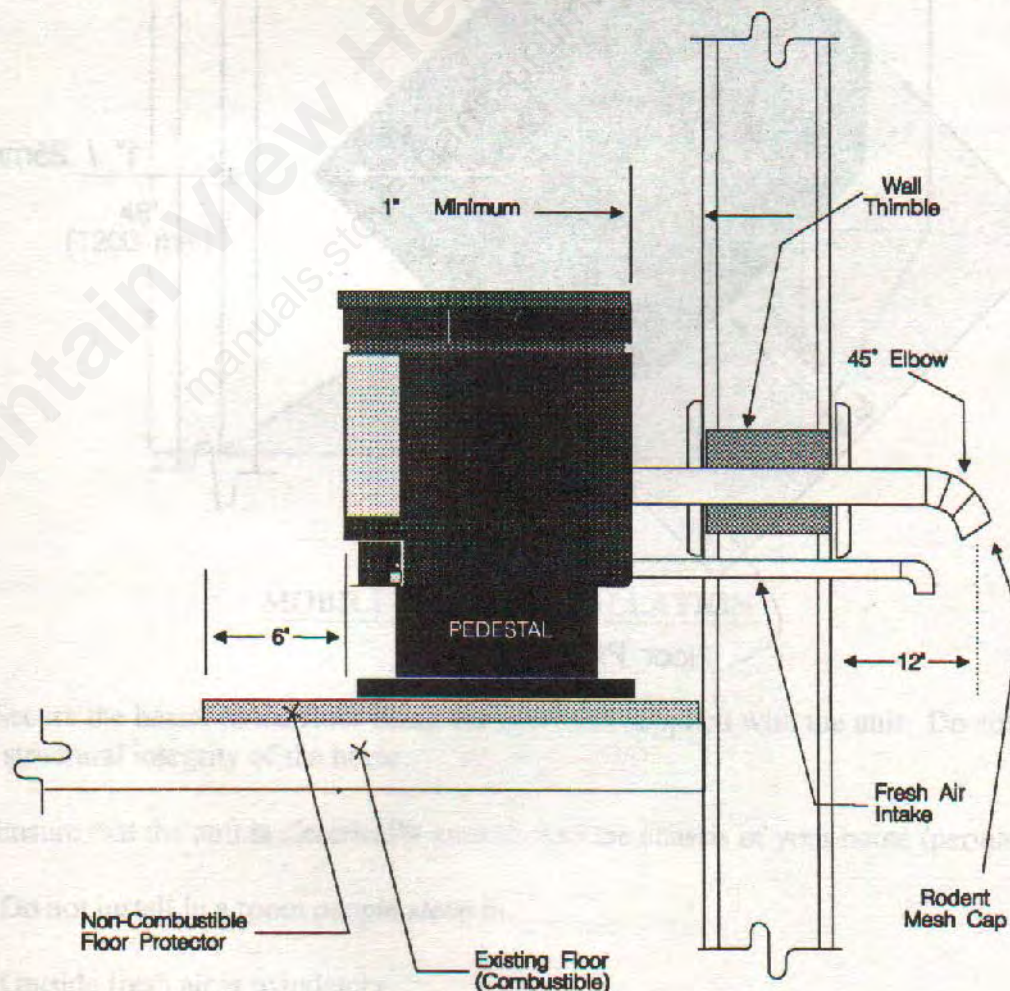


Fig. 5

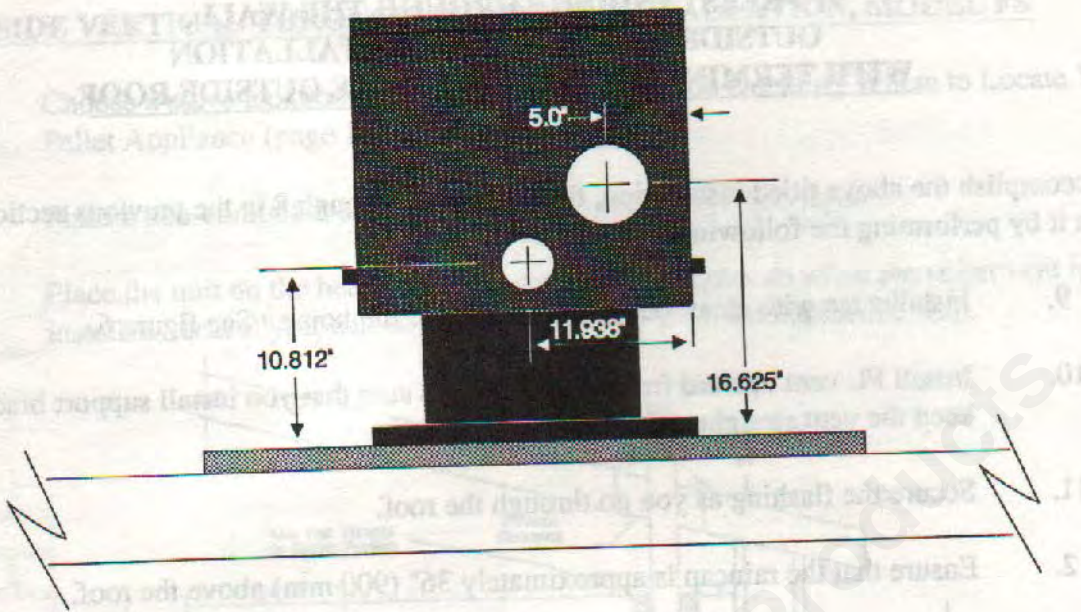


Fig. 5A

7. Place some high temperature silicone around the exhaust pipe on the stove.
8. Push the unit until the pipe connects to the wall thimble. The pipe should pass easily through the wall thimble.
9. If necessary, bring another pipe length (PL type) to the outside of the home and connect it to the first section. Do not forget to place high temperature silicone around the pipe connecting to the wall thimble. The pipe must extend at least 12" (300mm) away from the building.
10. Install vertical pipe, or if all requirements for direct venting (see page 9) are met, install vent termination. The stainless steel cap termination manufactured by the vent manufacturer is recommended. However, when the vent terminates several feet above ground level and there are no trees, plants etc. within several feet, a 45 degree elbow can be used as a termination. The elbow must be turned down to prevent rain from entering.
11. See section entitled Vent Termination.

## **FREESTANDING THROUGH THE WALL, OUTSIDE VERTICAL PIPE INSTALLATION WITH TERMINATION THROUGH THE OUTSIDE ROOF**

To accomplish the above titled installation, follow steps 1 through 8 in the previous section and then finish it by performing the following:

9. Install a tee with clean-out on the outside of the house. See figure 6.
10. Install PL vent upward from the tee. Make sure that you install support brackets to keep the vent straight and secure.
11. Secure the flashing as you go through the roof.
12. Ensure that the raincap is approximately 36" (900 mm) above the roof.

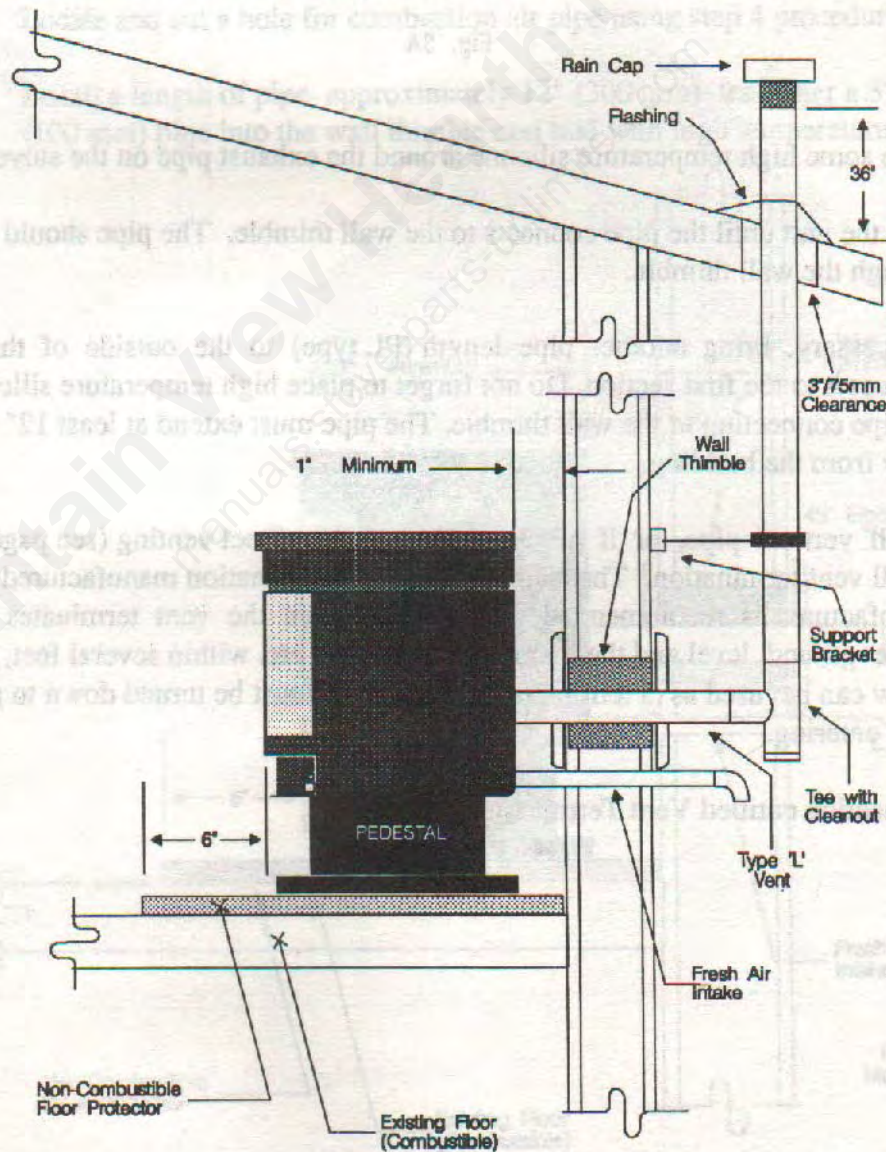
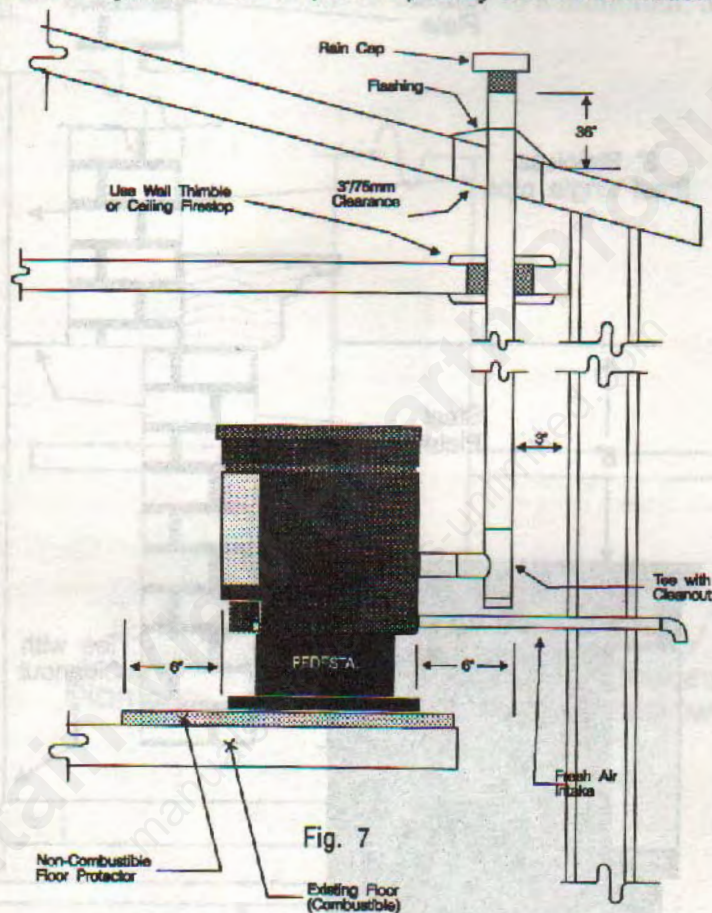


Fig. 6

## INSIDE VERTICAL THROUGH THE ROOF INSTALLATION, MODEL FS

1. Choose a stove location that is ideal. See the section Deciding Where to Locate Your Pellet Appliance (page 10).
2. Place a non-combustible hearth pad where necessary. See figure 7.
3. Place the unit on the hearth pad and space it in a matter so when the pellet vent is installed vertically, it will be 3" (75 mm) away from a combustible wall.



4. Locate the center of the fresh air intake pipe on the unit. Match that center with the same point on the wall and cut a hole about 1 5/8" (41 mm) in diameter.
5. Install the fresh air intake pipe.
6. Install the tee with clean out.
7. Install pellet vent upward from there. When you reach the ceiling make sure that the vent goes through the ceiling firestop. Maintain a 3" distance to combustibles and keep attic insulation away from the pipe.
8. Finally, extend the pellet vent to go through the roof flashing.
9. Ensure that the rain cap is approximately 36" (900 mm) above the roof.

# HEARTH STOVE INSTALLATION

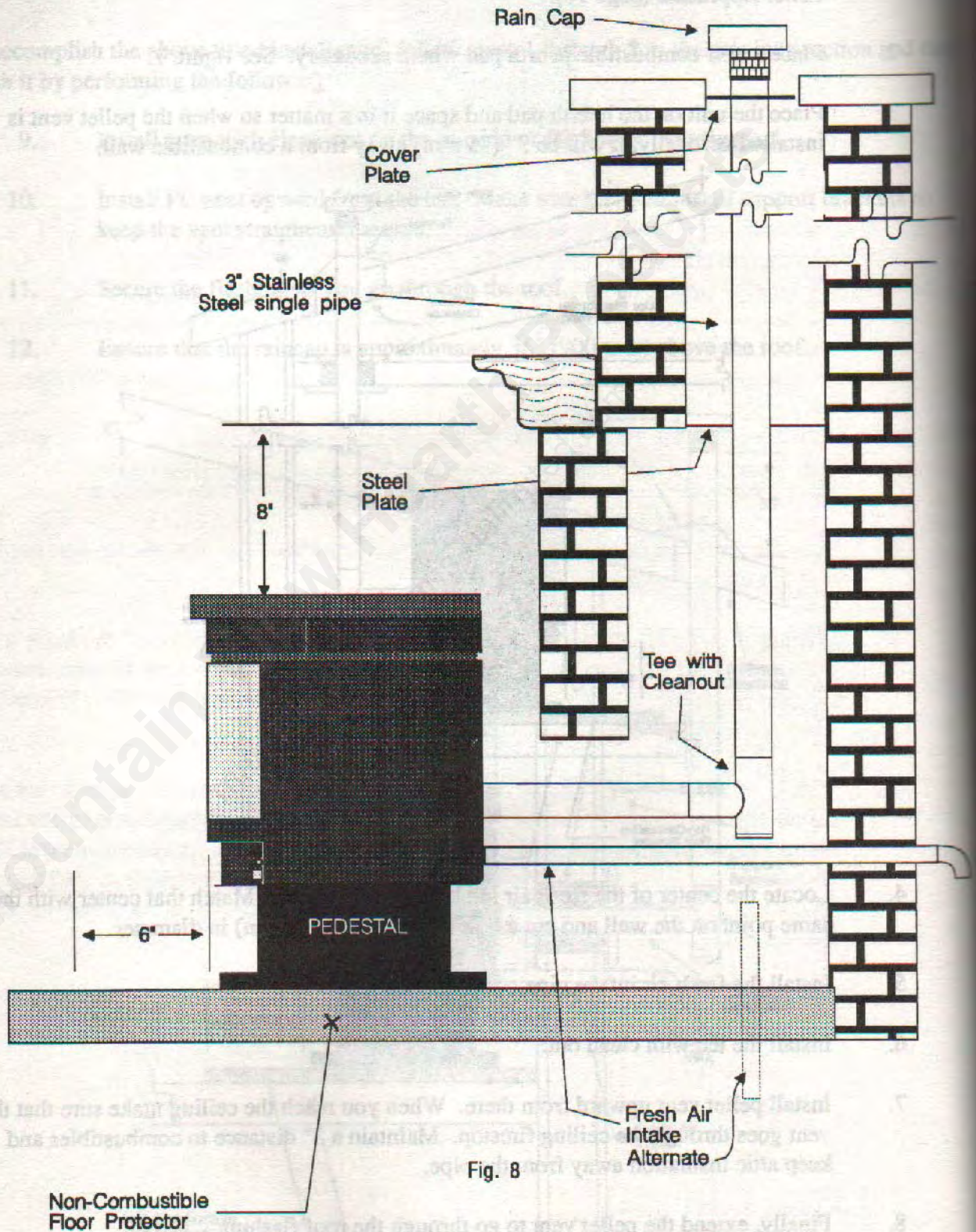


Fig. 8

## OUTSIDE FRESH AIR CONNECTIONS

**Outside fresh air is ONLY mandatory when installing a unit in a mobile home.**

Outside fresh air is not mandatory when installing the appliance in a conventional home. When connecting to an outside fresh air source, ensure that the material is not PVC or plastic. Only 1 5/8" diameter steel, aluminum or copper pipe should be used. It is recommended, when you are installing a fresh air system, to keep the number of bends in the pipe to a minimum. See Figure 9.

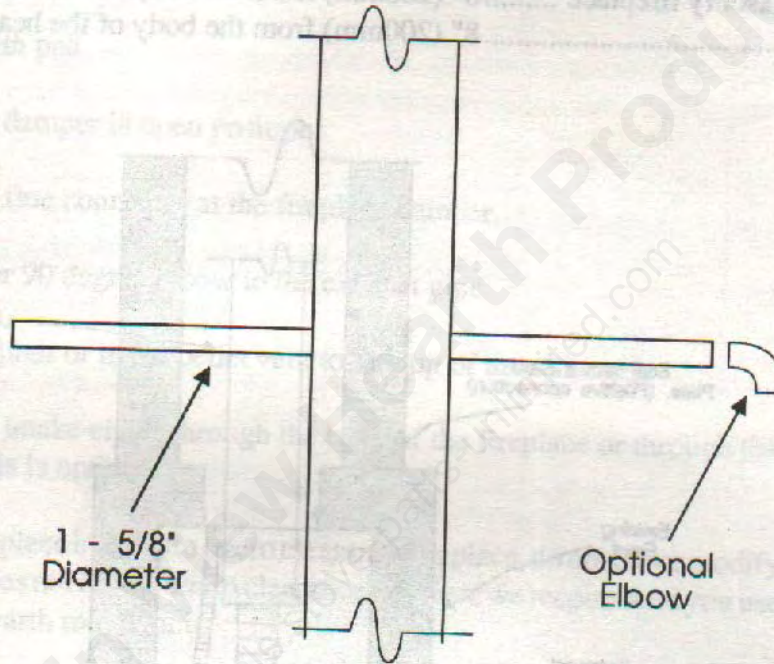


Fig. 9

## MASONRY FIREPLACE INSERT INSTALLATION, MODEL FPI

The Fireplace Insert model includes surround face plates and a pedestal. When installing this unit, ensure that the pedestal is removed from its box and installed on the bottom of the unit. (Surround assembly instructions are in this manual) See figure 10.

### **CLEARANCE TO COMBUSTIBLES:**

Side wall ..... 8" (200mm) from the body of the heater  
Facing on masonry fireplace ..... 8" (200mm) from the body of the heater  
Mantle ..... 8" (200mm) from the body of the heater

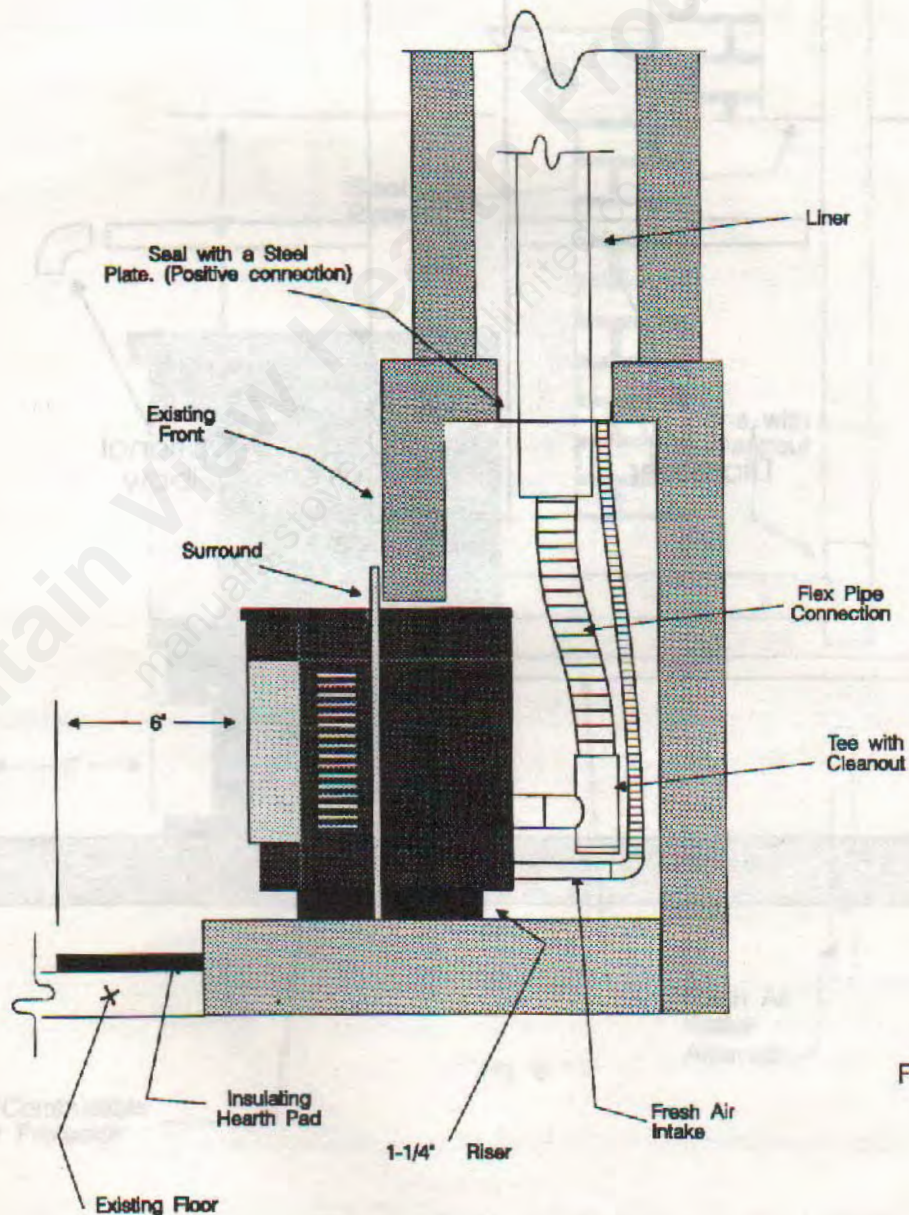


Fig. 10

## FIREPLACE INSERT SIZE:

Width.....	22"	(550mm)
Height.....	22 3/4"	(570mm)
Depth.....	24"	(600mm)

## HEARTH PAD (MUST COVER COMBUSTIBLES):

- 6" (150mm) in front of the heater,
  - 6" (150mm) to the side of the heater, and
  - the non-combustible hearth and hearth extension do not require a hearth pad.
1. Install the hearth pad.
  2. Lock fireplace damper in open position.
  3. Install positive flue connector at the fireplace damper.
  4. Connect a tee or 90 degree elbow to the exhaust pipe.
  5. Install flexible liner or listed pellet vent to the top of the chimney.
  6. Install fresh air intake either through the back of the fireplace or through the positive flue connector. (This is optional).

When installing the fireplace insert into a zero clearance fireplace, do not cut or modify any firebox parts. If the fireplace insert does not fit into a zero clearance fireplace we recommend you use Envirofire model FS and install it as a hearth mount unit.

Do not remove the damper from the fireplace. Install a 3" flex pipe from the stove to the top of the chimney.



## MINIMUM CLEARANCES TO COMBUSTIBLE MATERIALS

See figure 11.

- (E) Side wall to unit ..... 8" (200 mm)
- (F) Mantle to unit ..... 8" (200 mm)
- (G) Top facing to unit ..... 8" (200 mm)
- (H) Side facing to unit ..... 6" (150 mm)
- (D) Floor protector ..... 6" (150 mm)

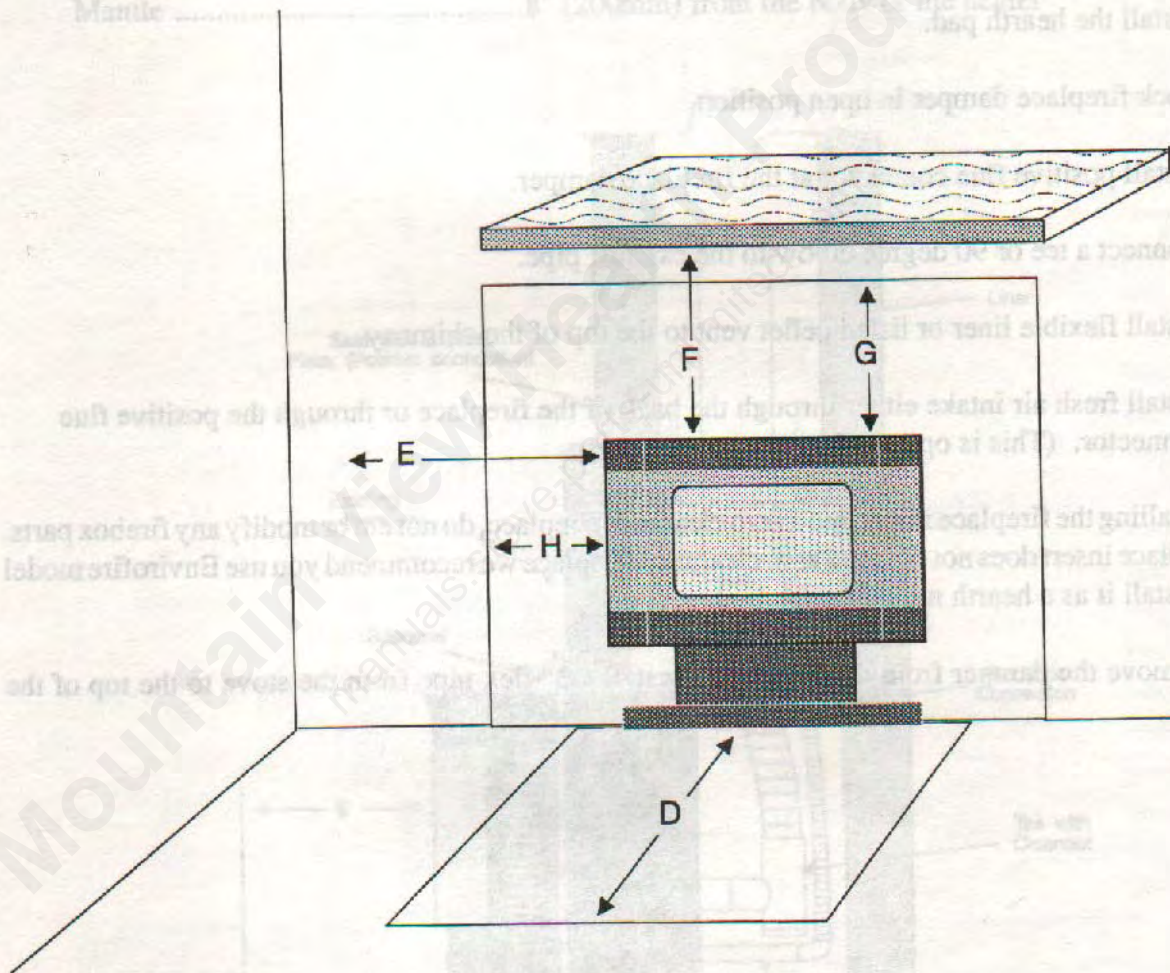
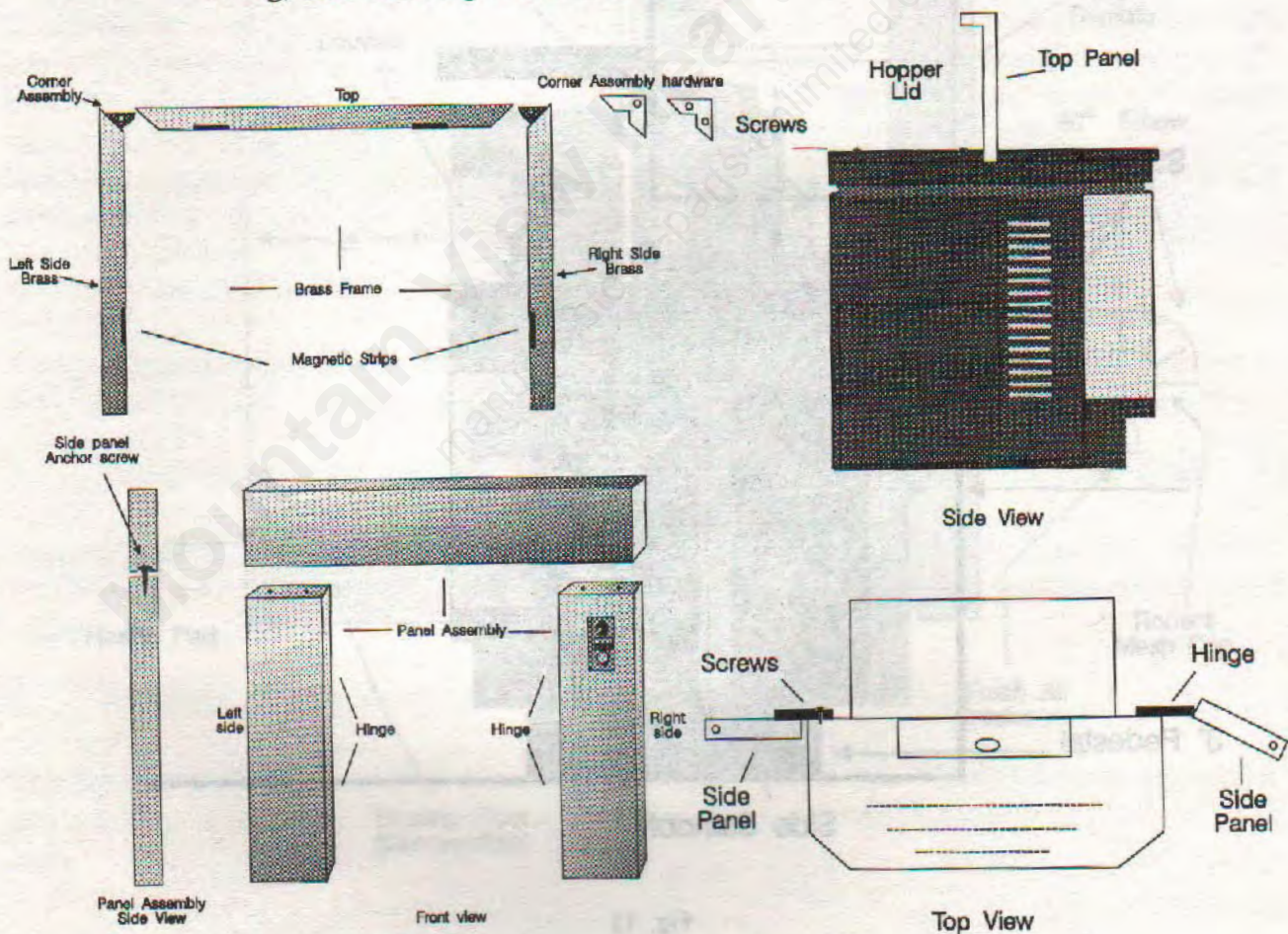


Fig. 11

## ASSEMBLING THE FACE PLATE FOR THE FPI AND BIH MODELS

1. Assemble the brass frame using the corner hardware and screws supplied in the face plate packaging. Install corner hardware into the side brass, then push into the top frame. Do not over-tighten or the side brass cannot be removed during servicing.
2. Assemble the three face plates to the stove by screwing the hinged panels to the stove side panels. Loosen the front hopper lid screws and centre the top panel under the hopper lid, tighten screws. Insert each side panel anchor screw through the top panel into the corresponding side panel holes and tighten.
3. Place the brass frame you assembled (step 1) over the panel assembly (step 2).
4. To access the rear of the stove after the panels are assembled remove side brass and remove the anchor screws from the corresponding side. Swing panel open. Installation is the reverse.
5. To attach the pedestal, place the unit on its back, making sure not to damage the wiring, then bolt the pedestal onto the unit.



## **BUILT-IN HEATER INSTALLATION , MODEL BIH**

This unit includes a 3" (75 mm) pedestal and surrounding face plates. The part of the unit behind the face plate can be enclosed with combustible material. Model BIH has 1" (25 mm) standoffs to establish clearances to the back, top and sides. The minimum clearances and the size of the enclosures are as follows:

**MINIMUM CLEARANCES TO COMBUSTIBLE MATERIAL:** See figure 13.

- (I) Sides and rear .....0" to standoffs
- (J) Depth .....11" (275 mm)
- Sidewall to unit .....8" (200 mm)
- (L) Mantle to unit .....8" (200 mm)

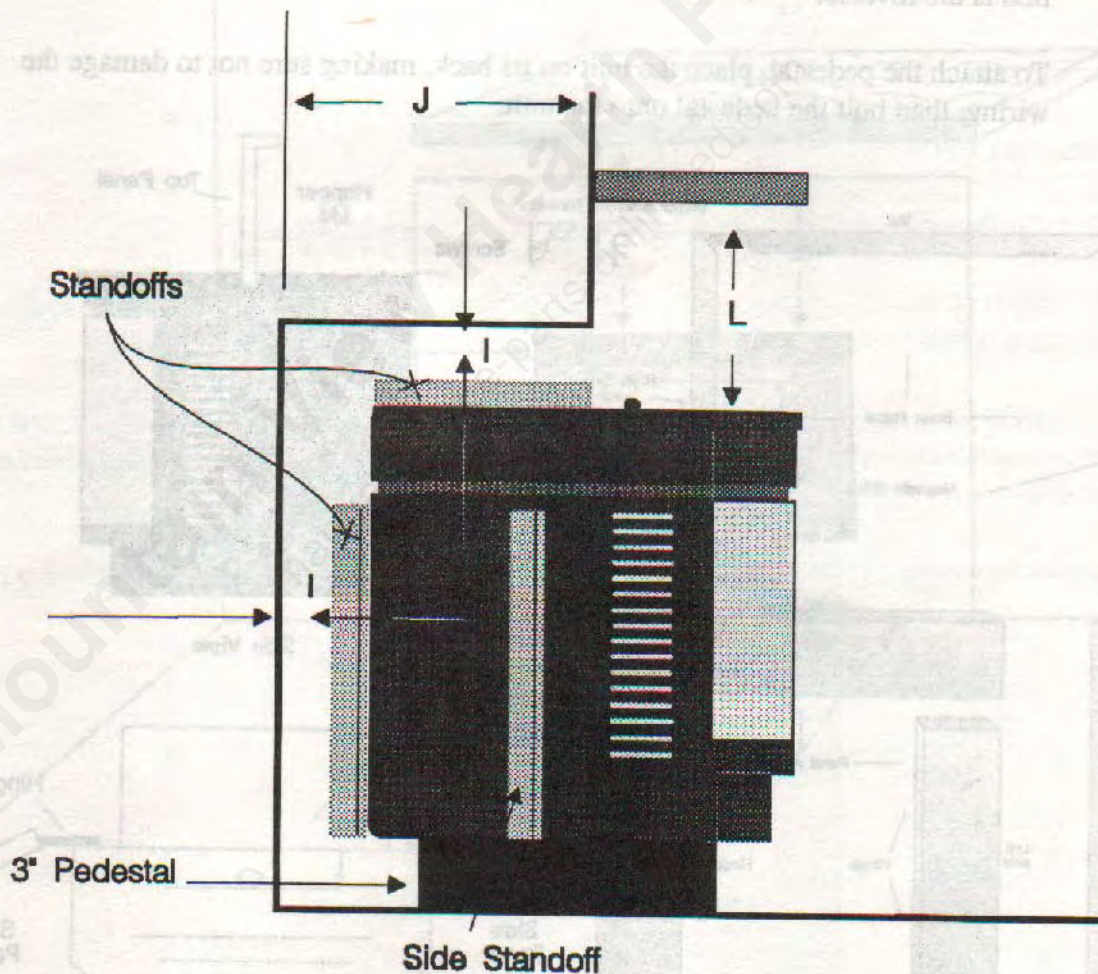


Fig. 13

1. Install the hearth pad as required. See figure 14.
2. Install the unit the same way you install model FS with through the wall vent.
3. Insert the surround as described in "Assembling a face plate for models BIH and FPI".

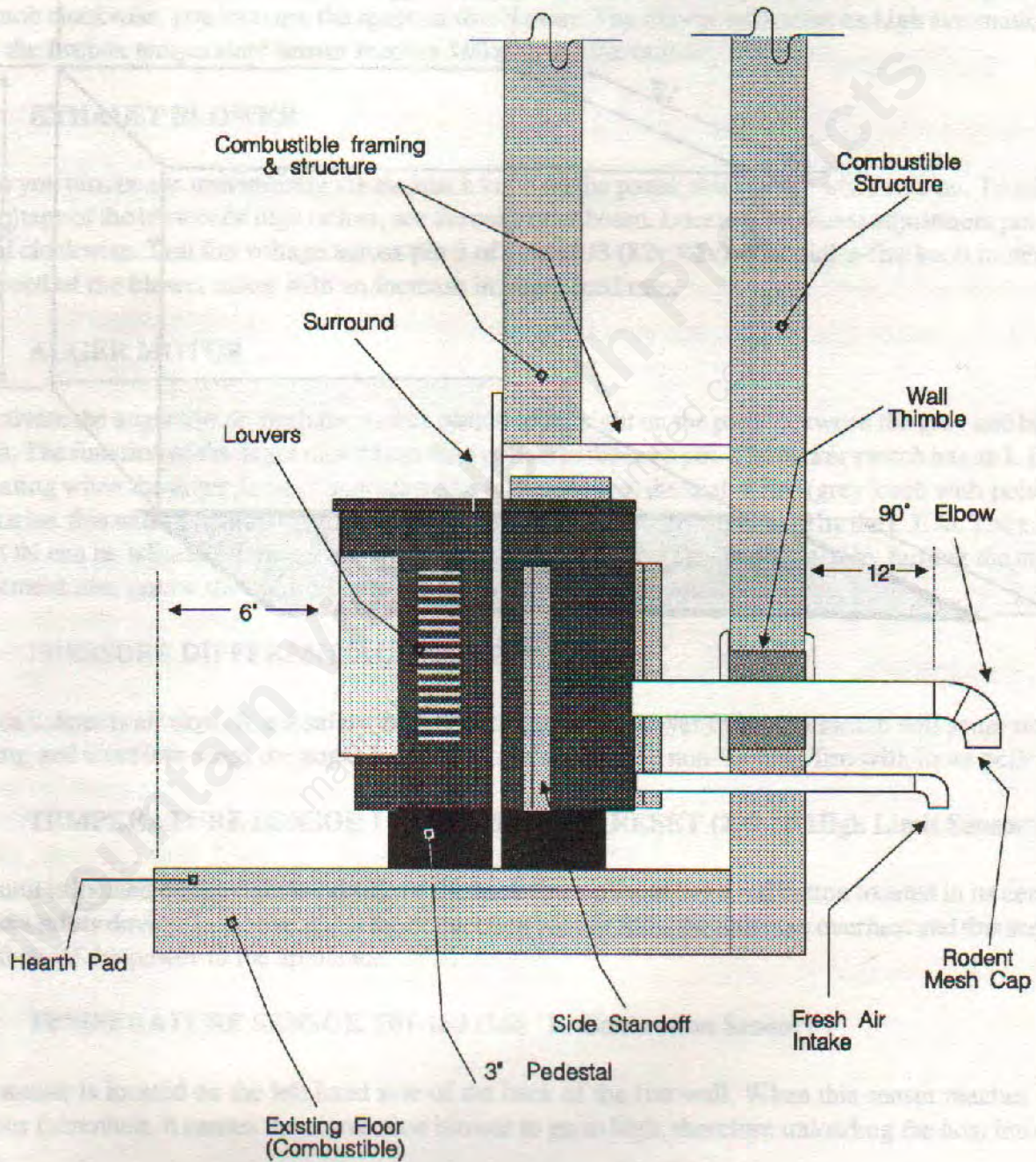


Fig. 14

## MODEL BIH RECOMMENDED FRAMING

When installing model BIH it is recommended that you use the dimensions shown in the diagram below. These type of clearances will make it easy and readily accessible to service. See figure 15.

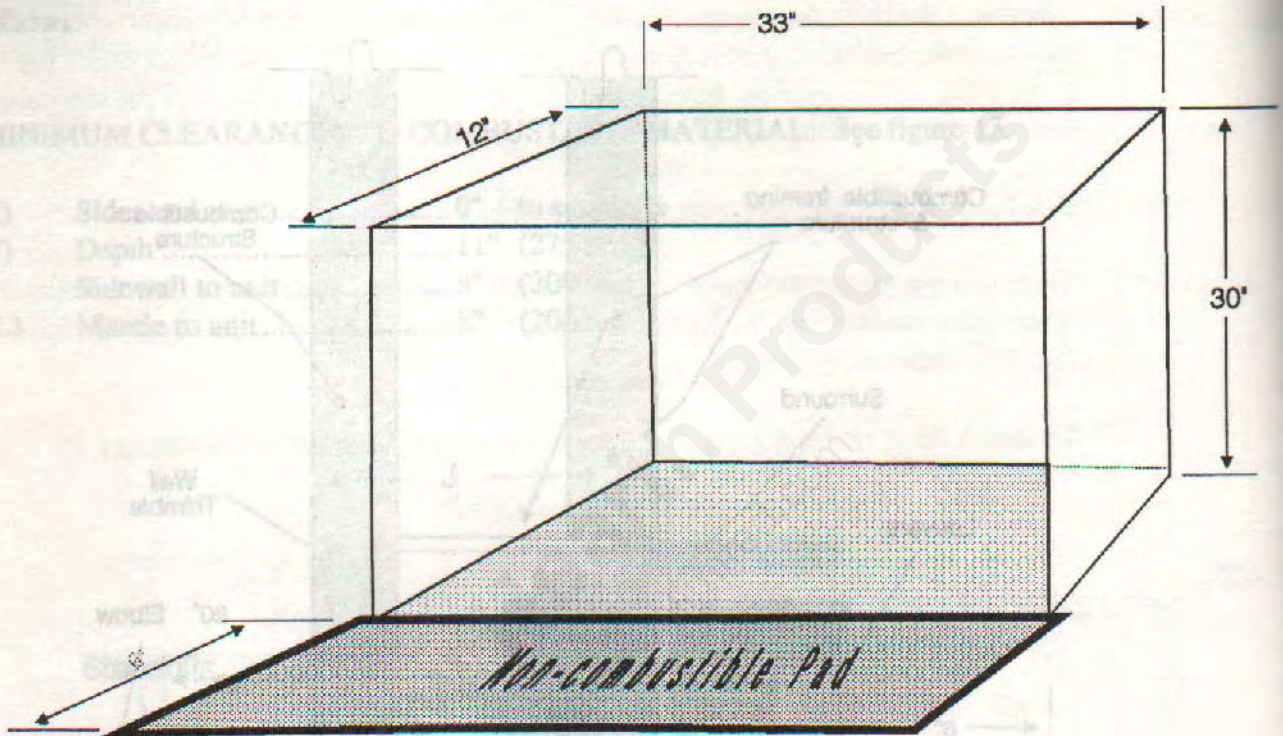


Fig. 15

## COMPONENT LIST

The following are the functions of the components on the Envirofire pellet appliance:

### **1. CONVECTION BLOWER**

When you turn on the unit initially via the black knob on the panel, this blower will come on. By turning the knob clockwise, you increase the speed of that blower. The blower will come on high automatically once the firebox temperature sensor reaches 160 degrees fahrenheit.

### **2. EXHAUST BLOWER**

When you turn on the unit initially via the black knob on the panel, this blower will come on. To adjust the voltage of the blower on high or low, see the controller board. Locate the exhaust adjustment pot and turn it clockwise. Test the voltage across pin 3 of J2 and J3 ( $82v \pm 2v$ ). The dial-a-fire knob increases the speed of the blower along with an increase in auger feed rate.

### **3. AUGER MOTOR**

To activate the auger motor, push the rocker switch to the right on the panel between the grey and black knobs. The function of the auger motor is to feed pellets to the burn pot. The rocker switch has an L.E.D. indicating when the auger is on. To increase the feed rate, turn the dial-a-fire (grey knob with pointer) clockwise. this will cause the auger to come on more frequently and is indicated by the L.E.D. The auger time ON can be adjusted to range from 1 second to 2.5 seconds. This is obtained by turning the auger adjustment trim pot on the controller board either clockwise or anticlockwise.

### **4. PRESSURE DIFFERENTIAL SWITCH**

This unit detects air flow. It is a safety device. If the exhaust blower fails, this switch will sense no air flowing and therefore stops the auger from feeding the virtually non-burning fire with more pellets.

### **5. TEMPERATURE SENSOR L03-200 MANUAL RESET (200 °F High Limit Sensor)**

This unit is located on the right hand side of the back fire wall and has a red button located in its centre. This is a safety device. In the event that the convection blower fails, the unit may overheat and this sensor will shut off the power to the appliance.

### **6. TEMPERATURE SENSOR F01-160 (160 °F Convection Sensor)**

This sensor is located on the left hand side of the back of the fire wall. When this sensor reaches 160 degrees fahrenheit, it causes the convection blower to go to high, therefore unloading the heat into the room.

## **7. TEMPERATURE SENSOR F01-140 (140° F Shutdown Sensor)**

This sensor is located on the Exhaust system and is a safety device. The 140° F sensor is activated in the event that the stove fails to ignite or if it goes out unintentionally. During start-up a timer on the circuit board allows ten minutes for the stove to ignite and the exhaust temperature to reach 140°F. If the fire should go out and the exhaust drops below 140° F the sensor and timer will allow the stove to run for up to ten minutes to evacuate the firebox of smoke and cool the cabinetry down.

## **8. DIAL-A-FIRE**

This knob controls both the exhaust blower speed and the auger motor's feed rate. When turned clockwise, it causes the time-off on the auger motor to get shortened and at the same time increases the voltage to the exhaust blower. If you need less heat, just turn it counter-clockwise and the reverse will happen.

## **9. AUGER L.E.D.**

This rocker switch must be switched on in order to cause the pellets to feed. Every time the indicator comes on, it means that the auger is rotating. If you push that switch off, it will cause the pellets to stop feeding and the appliance will cool down and shut itself off automatically.

## **10. POWER ON**

This knob (black with white pointer) allows you to switch the power on and off by rotating it clockwise (on) and counter-clockwise all the way (off). If the knob is turned clockwise, it will also cause the convection blower to speed up and deliver more hot air out of the unit.

## **11. CONTROL CIRCUIT BOARD**

The circuit board is responsible for controlling the auger timing and fan speeds via the panel mounted controls.

## INITIAL SET-UP

### a) Initial wire insertion

- Place wires from the stove into their sockets as instructed by the "Wiring Harness Diagram" and "Wiring Harness Colour Code" sheets. Make sure all screws are tight and no bare leads are exposed.

- If a thermostat is being used, the leads must be long enough to place the thermostat out of the immediate area surrounding the pellet stove. This is necessary for an accurate temperature reading.

- If a thermostat is not being installed, then a jumper wire must be placed between pins 5 and 6 of J4.

### b) Adjustment of the Controller

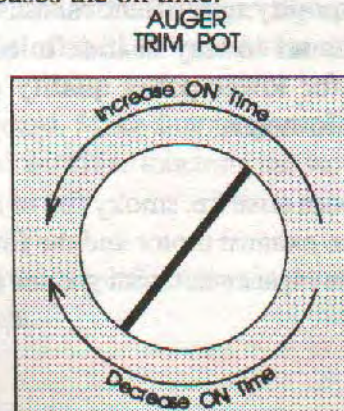
- Plug in stove and verify all connections were made properly. The Dial-A-Flame and Convection/Power potentiometers should respond (Changing from one state to another within 15 seconds). If problems arise, go to the **Troubleshooting and Maintenance** section.

i) Turn the thermostat on (if installed) and turn the dial-a-flame to its lowest setting. With an AC Voltmeter, measure the voltage across pin 3 of J2 and pin 1,2 or 3 of J3. The VOM should read 82 vac +/- 2v. Depending on the altitude and intake/exhaust pipe formats, this value may need to be increased. With a screwdriver, turn the exhaust adjustment trimpot clockwise to increase voltage to the exhaust motor until air requirements are satisfied.

**\*NOTE: The absolute lowest value of the exhaust motor (with thermostat off) is 77 vac. Do not allow the exhaust voltage to fall beneath this value, or the exhaust motor may not function normally.**

ii) With adjustments to the exhaust motor, the fuel-to-air ratio may become unbalanced. To compensate for this, turn the auger adjustment trimpot to modify the on time of the auger motor. Follow this process also if the thermostat-low "idle fire" burns out. Check the L.E.D. on the auger switch to verify your changes. The on-time of the L.E.D. must never exceed 2 seconds as this may cause an overheat shutdown; ideally, the auger time should be approximately 1.5 seconds.

c) When adjusting the auger trimpot, note that turning the trimpot clockwise decreases the auger on time, and turning it counter-clockwise increases the on time.



- To set the air/fuel ratio properly, the following operation must be performed (can be performed on a hot stove): Insert magnahelic tube in the hole located in the right side of the ash pan.
- Turn the Dial-A-Fire to its highest setting (grey knob, all the way clockwise). Adjust the slider by pushing it in or out to reach a reading of 0.12 on high and 0.08 on low.
- If you don't have a magnahelic gauge, push the slider in all the way. This will give a magnahelic reading of approximately 0.08 - 0.10 on low. On high you can pull the slider out 1/8" - 1/4". This will increase the magnahelic reading by approximately 0.020 - 0.050 at sea level.

### SET-UP SUMMARY

- Adjust the auger trim on the controller board to achieve a 1.5 second on time (this is indicated by the L.E.D. on the auger switch.
- Adjust the exhaust motor voltage to between 80-82 VAC.
- Check for correct air pressure in the firebox, with the Dial-A-Fire on high setting, to 0.12 on high and 0.08 on low.

### CONTROL PANEL

a) Knob "A" is an on/off switch and also a potentiometer to speed up the convection, however, the knob is used to turn the stove **ON BUT NOT OFF.**

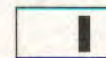
A



**Black Knob**

b) Switch "B" has an L.E.D. that indicates that the auger is on. It is activated when it is pushed to the right. This switch is used to shut off the stove. Simply push it to the left.

B



**L.E.D. Switch**

c) Knob "C" controls heat output. Heat output increases when it is turned Clockwise. Heat output decreases when it is turned Counterclockwise.

C



**Grey Switch**

**\*NOTE: Wood pellets of differing quality may affect various operating parameters of the stove. It is recommended that the stove be set to stay lit indefinitely on "idle-fire" setting with good quality pellets. Thus adjustments for lower pellet quality can be made by the stove user by increasing the Dial-A-Flame potentiometer.**

- If difficulties achieving a balanced burn arise (ie. smoky fire or a fire which blows out), you may have to adjust the slider located between the exhaust motor and the firewall of the stove. Opening the slider increases the airflow, making the burn cleaner but with greater chance of flame-out on low fires.

## **TROUBLESHOOTING AND MAINTENANCE**

### **DO NOT:**

- Switch the power switch or thermostat on and off rapidly. This may cause spikes in supply current which, in turn, may cause unstable operation.
- Service the stove with wet hands. The stove is an electrical appliance, which may constitute a shock hazard if improperly handled. Only qualified electronics personnel should deal with possible internal electrical failures

## **TROUBLESHOOTING**

### ***What to do if:***

- 1.) The stove will not operate
- 2.) The auger motor will not function normally
- 3.) The exhaust motor will not function normally
- 4.) The convection motor will not function normally
- 5.) The Dial-A-Flame has no effect on the stove
- 6.) The stove will not shut off after flame-out

**\*\*NOTE: All troubleshooting procedures should only be carried out by qualified electronics personnel**

### **1.) The stove will not operate**

- Make sure the power/convection switch is on, the stove is plugged in and the 115VAC socket is supplying power. Attempt to start the stove.
- If motors do not come on, unplug the stove and remove back and side plates.
- Examine the 200° F high limit sensor in the upper right corner of the firewall of the stove. If the red button has popped out, push it back in and attempt to start the stove.
- Examine all the leads to the board. Make sure they are all inserted firmly and that no exposed leads (except the chassis ground wire) are touching the stove. Check the front panel controls for loose or crossing wires.
- Perform continuity tests on all wires relative to main power (power switch, 115 VAC High, 115 VAC Low) Replace faulty wires.

- Attempt to bypass the 200° F high limit sensor by inserting a jumper between two leads to the sensor. Attempt to start the stove. If the stove operates, order a replacement sensor. (part#3L02-200)
- Attempt to bypass the main power switch in the convection potentiometer by inserting a jumper between pins 4 and 5 of J1. Attempt to start the stove. If the stove operates, order a replacement convection/power pot.
- Replace the controller

## 2.) The auger motor will not function normally

**\*NOTE: The Dial-A-Flame has no effect on auger timing when the thermostat is low. (open contacts)**

- Make sure the auger switch is turned on and the thermostat is set high. Look for auger motor fuel feed, as the auger LED may have failed.
- Unplug the stove and remove the back and side plates.
- Check all the connections to the auger motor, auger switch, auger Dial-A-Flame, and vacuum sensor.
- Check to see if the auger motor has failed by watching the motor. If the motor is turning but the collar is not then the gears have stripped.
- Check to see if the auger motor is jammed. Remove the back cover. Locate the auger motor gear box. Hold it with both hands and rock it back and forth in order to release the auger. If this does not free the auger then, with the power off, insert a sharp object up the auger drop tube to dislodge any jammed pellets.
- Attempt to bypass the auger switch by inserting a jumper between the two grey leads to the switch. Start the stove and monitor the auger motor. If the auger works correctly, order a replacement switch (part # 35-682-BU)
- Attempt to bypass the auger Dial-A-Flame by inserting a jumper between pins 1 and 2 of J4. Start the stove and monitor the auger motor. The timing of the motor should be about 2 seconds off and 1-2 seconds on. If the auger motor works correctly order a replacement Dial-A-Flame pot.
- The vacuum sensor (the silver disc in the lower left corner of the stove) requires a certain amount of air pressure to prevent it from breaking contact. In some situations, the exhaust motor speed may not be sufficient to keep the vacuum sensor active. Turn the Dial-A-Flame pot up. When the auger motor turns on, record the AC voltage difference between pins 3 of J3 and J2. Turn the Dial-A-Flame pot down. With a screwdriver, turn the exhaust motor adjustment trim pot clockwise until the voltage across pins 3 of J3 and J2 is the same as recorded earlier (approximately  $82V \pm 2 V AC$ ).
- Replace the controller

### 3.) The exhaust motor will not function normally

**\*NOTE: The Dial-A-Flame has no effect on exhaust motor speed when the thermostat is low.**

- Make sure the thermostat is set high. Check the connections from the exhaust motor and the thermostat to the controller board.
- If all connections are verified and the exhaust motor does not function at all, apply 115 VAC directly to the exhaust motor. If the motor runs, replace the board. If the motor still will not function, the exhaust motor has failed. Order a replacement motor.
- If the exhaust motor functions normally, then drops off, the exhaust voltage is too low. Turn the exhaust adjustment trim clockwise until the motor will not drop off on low setting.
- If the exhaust motor will not vary with the Dial-A-Flame, attempt to bypass the dial with a jumper in pins 4 and 5 of J2. If the exhaust motor then runs at high speed, order a replacement Dial-A-Flame pot
- Replace the controller board.

### 4.) The convection motor will not function normally

- Check the connection between the controller and the convection motor.
- If the convection motor will not run at all, apply 115VAC to the motor directly. If the motor runs replace the controller. If the motor still will not run, the convection motor has failed. Order a replacement motor. (Fasco U21)
- If the convection motor runs on high at all times, check the connections from the convection sensor (on the upper left of the firewall of the stove) and the convection potentiometer to the controller. Disconnect the convection sensor. If the motor goes low, order a replacement sensor. (part # 3F01-160)
- If the motor is still high, reconnect the sensor and disconnect the convection pot. If the motor goes low, order a replacement convection/power pot.
- Replace the controller.

### 5.) The Dial-A-Flame has no effect on the stove

- Make sure the thermostat is on high (or thermostat jumper is installed). The Dial-A-Flame does not operate unless the thermostat is high.
- Make sure all connections to the controller and Dial-A-Flame are secure. Perform continuity tests on all wires leading to the Dial-A-Flame pot. Replace faulty wires.

- If the Dial-A-Flame still has no effect on the stove, attempt to bridge the dial by inserting jumpers between pins 4 and 5 of J2 and pins 1 and 2 of J4. If stove now operates as if the Dial-A-Flame is turned on fully, order a Dial-A-Flame pot.

- Test the Dial-A-Flame by removing the wire from pins 1 and 2 of J4. Test the resistance across the potentiometer. It should vary between  $30\Omega$  and  $560K\Omega$ . If the resistance does not vary when the dial is turned, replace the Dial-A-Flame.

- Replace the controller.

### 6.) The stove will not shut down after flame-out.

**\* The stove will require up to 20 minutes to shut down after flame-out.**

- Check the connection to the exhaust sensor (located ON the exhaust motor). Perform continuity tests on the wires leading to the sensor. Replace faulty wires.

- Disconnect the  $140^{\circ}$  F shutdown sensor, start the stove and wait about 10 minutes. If the stove shuts down, order a replacement sensor (Part # 3F01-140).

- If the stove will not shut down, replace the controller.

## ENVIROFIRE WIRING HARNESS - COLOUR CODES AND LENGTHS

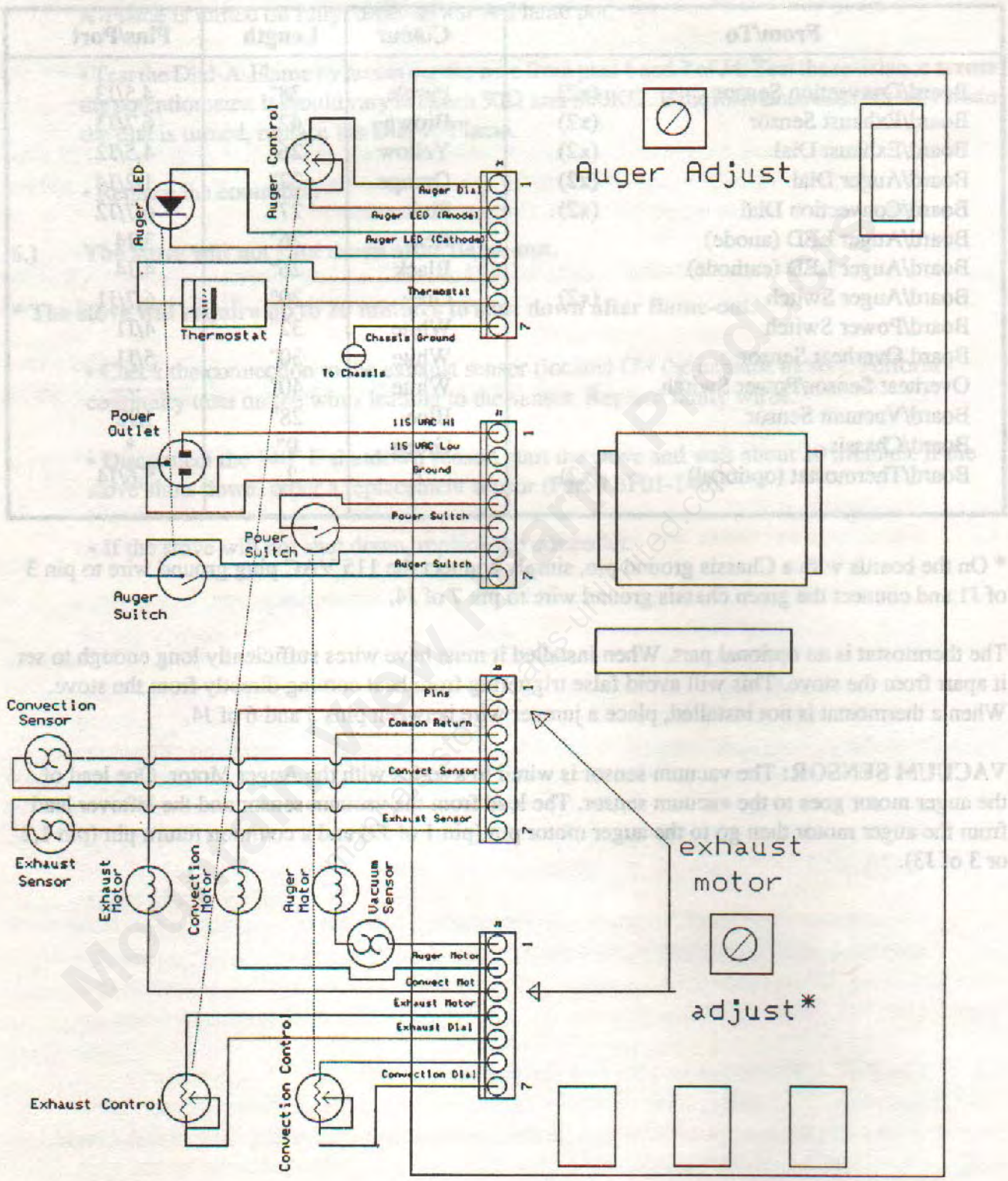
From/To	Colour	Length	Pins/Port
Board/Convection Sensor (x2)	Purple	38"	4,5/J3
Board/Exhaust Sensor (x2)	Brown	42"	6,7/J3
Board/Exhaust Dial (x2)	Yellow	26"	4,5/J2
Board/Auger Dial (x2)	Orange	32"	1,2/J4
Board/Convection Dial (x2)	Pink	27"	6,7/J2
Board/Auger LED (anode)	Red	26"	3/J4
Board/Auger LED (cathode)	Black	26"	4/J4
Board/Auger Switch (x2)	Grey	30"	6,7/J1
Board/Power Switch	White	32"	4/J1
Board Overheat Sensor	White	30"	5/J1
Overheat Sensor/Power Switch	White	40"	---
Board/Vacuum Sensor	Blue	28"	1/J2
Board/Chassis	Green	9"	*
Board/Thermostat (optional) (x2)	?	?	5,6/J4

\* On the boards with a Chassis ground pin, simply connect the 115 VAC plug ground wire to pin 3 of J1 and connect the green chassis ground wire to pin 7 of J4.

The thermostat is an optional part. When installed it must have wires sufficiently long enough to set it apart from the stove. This will avoid false triggering from heat coming directly from the stove. When a thermostat is not installed, place a jumper wire between pins 5 and 6 of J4.

**VACUUM SENSOR:** The vacuum sensor is wired in a series with the Auger Motor. One lead of the auger motor goes to the vacuum sensor. The lead from the vacuum sensor and the leftover lead from the auger motor then go to the auger motor pin (pin 1 of J2) and a common return pin (pin 1,2 or 3 of J3).

# WIRING HARNESS DIAGRAM



\* Measure from points shown by arrows

## WARRANTY

Sherwood Industries Ltd. gives a five year limited warranty on all steel manufactured parts. A one year warranty is provided on all electrical components. The above limited warranties are extended only to the original purchaser.

There is no warranty on the following parts:

- glass window,
- fibreglass rope gaskets,
- refractory material,
- grate
- paint, and
- enamel finish or gold plating where it applies.

All claims forwarded under this warranty shall be made in writing to:

Sherwood Industries Ltd.  
6820 Kirkpatrick Crescent,  
Victoria, British Columbia  
V8X 3X1

When filing a warranty claim please quote the following:

- name and address of dealer,
- date of purchase,
- name, address and telephone number of purchaser,
- name, address and telephone number of installer,
- date of installation, and
- serial number of the appliance

Ensure that you specify the nature of the complaint, defect, periodical malfunction, etc.

The limited warranty covers defects in materials and workmanship as long as the product has been installed according to the manual's instruction. If the product is damaged or broken as a result of mishandling or misuse, the warranty does not apply. Removal and re-installation costs are not covered under this warranty.

It is the manufacturer's option whether to repair or replace the appliance. The shipping cost to and from the factory is paid by the consumer. All warranties by the manufacturer are set forth herein and no claim shall be made against the manufacturer on any oral warranty or representation.

The Limited Warranty does not cover damage to the unit caused by Power Surges, Brown Outs or other Household Electrical Problems.

### Under Warranty

#### For the Do-It -Yourself Individual

The consumer should be aware that the pellet appliance needs setting using tools that he/she may not have. Consult an Envirofire dealer. It is recommended that only an authorized Envirofire dealer install an Envirofire unit. There will be no warranty coverage on parts destroyed or burnt out as a result of a consumer installation error or defect.

Sherwood Industries Ltd. reserves the right to make changes without any notice.

## INSTALLATION DATA SHEET

The following information must be recorded by the dealer in the spaces provided. Should you have any difficulties with the appliance this information will be very helpful in determining whether the installation was performed correctly or if a part is malfunctioning.

**Name of Owner:** \_\_\_\_\_

**Address:** \_\_\_\_\_

\_\_\_\_\_

**Name of Dealer:** \_\_\_\_\_

**Address:** \_\_\_\_\_

\_\_\_\_\_

**Phone:** \_\_\_\_\_

**Name of Installer:** \_\_\_\_\_

**Address:** \_\_\_\_\_

\_\_\_\_\_

**Phone:** \_\_\_\_\_

**Circle the corresponding Envirofire Model:**

**FS**

**FPI**

**BIH**

**Serial #:** \_\_\_\_\_

**Magnahelic setting:** \_\_\_\_\_ **inches of water**

**Auger time-on:** \_\_\_\_\_ **seconds**

**Exhaust voltage @ low setting:** \_\_\_\_\_ **volts**

**Installer's Signature:** \_\_\_\_\_