

## TABLE OF CONTENTS

| SECTION | TITLE                                     | PAGE |
|---------|-------------------------------------------|------|
| 1.      | SITE PREPARATION AND INSTALLATION         |      |
|         | Site preparation .....                    | 2    |
|         | Placement .....                           | 2    |
|         | Chimney and stove pipe connections .....  | 2    |
|         | Installation .....                        | 2    |
|         | Supply and return .....                   | 2    |
|         | Heat pump application.....                | 3    |
|         | Operating temperature .....               | 3    |
|         | Switching relay .....                     | 3    |
|         | Thermostat .....                          | 3    |
|         | Space heater application .....            | 3    |
|         | Installation illustrations .....          | 4    |
|         | Electrical .....                          | 5    |
|         | Oil burner .....                          | 5    |
|         | Domestic coil hook-up .....               | 5    |
|         | Forced draft .....                        | 5    |
|         | Inspection Opening .....                  | 6    |
|         | Coal Plates .....                         | 6    |
| 2.      | OPERATION                                 |      |
|         | Starting a wood fire .....                | 7    |
|         | Starting a coal fire .....                | 7    |
|         | Reloading & maintaining a coal fire ..... | 7    |
|         | Ash removal .....                         | 8    |
| 3.      | TROUBLE SHOOTING AND MAINTENANCE          |      |
|         | Maintenance.....                          | 8    |
|         | Troubleshooting .....                     | 9    |

## **SECTION ONE**

### **Site Preparation and Installation**

#### **SITE PREPARATION**

##### **PLACEMENT**

The Glenwood should be installed pursuant to all applicable federal, state, and local codes. The furnace should be placed on a level, non-combustible surface and be at least three feet from any walls. When using the Glenwood as an “add-on”, install as close to existing furnace as is possible.

##### **CHIMNEY AND STOVE PIPE CONNECTIONS**

The Glenwood should be connected to an eight inch diameter chimney to maintain proper draft. Be sure the chimney is clean and in good repair. Install a stainless steel chimney flue liner. Keep the furnace as near to the chimney as possible. The Glenwood will perform equally well with masonry or stainless steel chimneys providing they are insulated.

A barometric damper should be installed between the furnace and the chimney.

#### **INSTALLATION**

##### **SUPPLY AND RETURN**

When used as the only heat source, the supply duct will attach to the top of the furnace and the return trunk duct will attach to the top of the blower package. Be sure to have sufficient duct size to carry the heat load of the building. Duct work that is too small is the most common cause of unsatisfactory heating and premature equipment failure. The return trunk should be a minimum of thirty percent larger than the correctly sized supply trunk. Duct board may be used for ease of attachment to the furnace. Install the fan & limit switch in the transition box on the top of the furnace.

When used as an add-on to the existing heating system, the Glenwood uses the existing blower to circulate warm air through the house. Route the return air through the Glenwood and into the return side of the existing furnace. This will provide automatic back-up in the event the Glenwood goes out.

## RETURN AIR SIDE OF HEAT PUMP SYSTEM

Caution should be observed when hooking on the return air side of a heat pump. The heat pump manufacturers maximum air temperature setting should never be exceeded. A control should be installed that will shut the heat pump off as long as the Glenwood is producing heat and start it when the input air from the Glenwood drops below the manufacturers maximum air temperature.

## OPERATING TEMPERATURE

The operating temperature for the Glenwood should be from 130° to 160°F. The limit side of the switch should be set at 200° and the fan side at 130°. The differential should be set 30° lower than the fan setting.

## SWITCHING RELAY

The switching relay should be used to start the draft blower when the thermostat calls for heat. Do not operate the duct blower with the thermostat. Serious damage could result from a build-up of high heat.

## THERMOSTAT

The Glenwood should have its own thermostat. If the application requires using it as an add-on, two thermostats are recommended; one for the existing furnace and one for the Glenwood. The existing thermostat should be set approximately five degrees lower than the one that operates the Glenwood. When the air temperature in the building drops to the point of the lowest set thermostat the existing furnace will begin to supply the heat until the Glenwood has been restarted. Single heat source applications do not need two thermostats.

## SPACE HEATER APPLICATION

When using the Glenwood as a space heater without any attached ductwork, both sides should have convection holes cut in them near the bottom to facilitate air movement through the furnace. The holes should then be covered with grilles to keep out foreign objects. Check with your dealer for appropriate grilles to use. NEVER USE THE GLENWOOD WITHOUT THESE HOLES. EXCESSIVE HEAT BUILD-UP WILL CAUSE DAMAGE TO PROPERTY AND HAZARDS TO LIFE.

## ILLUSTRATIONS

## ELECTRICAL

The Glenwood is shipped prewired and only needs 120V, 60HZ current from a 20 amp breaker dedicated to the furnace. Be sure to follow all federal, state, and local codes and ordinances.

## OIL BURNER (if equipped)

Install oil burner in accordance with the oil burner owner's manual provided. Be sure to read the primary control manual also to familiarize yourself with its operation.

## DOMESTIC COIL HOOK-UP (if equipped)

The cold water from the pressure tank should be diverted into the Glenwood's domestic coil before entering the water heater. From the coil, the heated water should enter the existing water heater where the cold water normally enters. The thermostat on the existing water heater should be adjusted to a lower setting so the water heater serves as a back-up. A tempering valve must be installed to control tap water temperature. Coil flow capacity is 5 GPM.

## **FORCED DRAFT SYSTEM**

The forced draft system consists of a draft blower mounted on the firebox door with a draft box mounted to the side. The draft blower is controlled by the thermostat and automatically shuts down when the room temperature setting is reached. The blower box serves as a control for the air going into the blower. A flapper in the box opens when the fan runs and shuts when the fan quits. An adjustable draft control plate on the underside of the box meters the amount of air allowed into the fan when it is running. Normally, this plate should be open about ½". If not enough heat is being generated by the fire to meet the demand, this plate can be opened further. Keep in mind that the further open it is the faster the wood will be consumed.

When adjusting the draft control plate, make sure a positive draft is still maintained inside the firebox. A simple way to check this is to hold a lighted match to the inspection hole located in the firebox door just above the draft blower. If the draft control is set correctly, the flame will always pull into the firebox. Check the draft intensity when the fire is at a relatively low stage.

## **INSPECTION OPENING**

Just above the draft blower on the firebox door, there is a hole with a plug in it. This inspection opening serves a dual purpose. It allows the operator to safely monitor the fire without opening the door. Also, it allows a small amount of air to flow into the combustion chamber and out the chimney thereby keeping dangerously explosive sulfur gases from building up in the combustion chamber when burning coal. For this reason, the plug must be removed when burning coal and reinstalled when burning wood.

## **COAL PLATES (with optional grate)**

Upon opening the firebox door, you will notice one horizontal plate near the bottom of the door frame and one vertical plate behind it. These are air diverter plates to divert air from the draft blower down under the grates for burning coal. When burning wood these plates should be removed. With the boiler cold and the firebox empty of fuel and ashes, remove the horizontal plate first. Afterwards, slide the vertical plate slightly to the left, push left side in and remove plate. When reinstalling, repeat the steps backward. Make sure the vertical plate rests on the grate frame and leans against the inside of the door frame.

## **SECTION TWO**

### **OPERATION OF STOVE**

#### **STARTING A WOOD FIRE**

Open the door and pull the bypass damper forward. This will increase the draft and keep smoke out of the building. Place several pieces of crumpled newspaper on the floor of the stove (on the grates if equipped) right inside the door. On top of this place several pieces of dry kindling. Light the newspaper and close the door. Make sure the draft blower is running. **DANGER!! DO NOT use lighter fluid, gasoline or any other flammable liquid in starting the fire! Serious injury or death could result.**

After the kindling has caught fire, add a few larger pieces of wood. When the fire is burning nicely, fill the firebox and close the door. Remember to close the bypass damper.

#### **STARTING A COAL FIRE**

Before starting the coal fire, the grate must be covered with a two inch layer of ashes. Failure to do this can result in warped grates. Make sure the coal plates are properly installed. The inspection opening and the secondary air holes must be open. (Remove the two knockout plugs located under the smoke box.) Follow the same procedures as starting a wood fire. Use newspaper and kindling followed by medium sized chunks of wood. Allow them to burn for approximately one hour or until the wood has changed to red hot charcoal. Apply a thin layer of coal over the entire firebox. After the flames have been coming through the coal bed nicely, apply another layer. Repeat this process until there is about a six inch deep coal bed. After the fire is well established, more coal can be thrown in.

#### **RELOADING AND MAINTAINING THE COAL FIRE**

Before reloading, shake the grates until you see hot coals falling into the ash pan. At this point, **stop shaking**. Griddling the coal bed too hard can destroy the grates. Even out the coal bed with the coal rake. Push the dead spots toward the bottom of the bed and chop up the crust. Do not just sprinkle more coal on top but put in a thick layer. Be careful not to smother the fire by covering all the red coals. A good practice is bank the new coal up against one side of the firebox leaving a place along the other edge for the flames to come through. If the coal fire is smothered, dangerous amounts of sulfur gas and carbon dioxide can build in the firebox. Then when the flame does burst through, there can be an explosion.

## ASH REMOVAL

Allow the fire to burn fairly low before removing the ashes. Shovel out the fine ash in the front of the firebox taking care not to remove the hot coals situated nearer the back. Once this is accomplished, rake the hot coals front and resupply with wood.

On models with shaking grates, do not shake the grates too frequently. When burning wood, once every other week is probably sufficient. Once hot coals start falling into the ash pan, stop shaking. When the ash pan gets full, open the ash pit door and slide the ash pan out. It can then be easily carried to the ash disposal site. After the ash pan is back in, make sure the door is shut and latched securely.

## MAINTENANCE

### SUMMER SHUTDOWN

1. Clean the fire-tube type secondary heat exchanger using the cleaning tool provided with the furnace.
2. Using a wire brush, clean the creosote deposits from the sides of the firebox. Make sure secondary air holes are clean.
3. Remove the stove pipe on the back of the smoke box and clean out all ash and dirt.
4. Brush your chimney with a proper chimney brush.
5. Be sure to remove all the ashes. Damp ashes are corrosive.

### ANNUAL MAINTENANCE (prior to heating season)

1. Clean your chimney.
2. Have the furnace and all controls checked by your service man.

## **TROUBLE SHOOTING**

| <u>PROBLEM</u>                          | <u>POSSIBLE SOLUTION</u>                                                                                                                                                                          |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Stove smokes when door opens         | a. Open smoke bypass before opening door<br>b. Check for clogged chimney or stove pipe<br>c. Install a draft inducer                                                                              |
| 2. Can't hold fire overnight            | a. Reduce draft intake<br>b. Load stove harder<br>c. Reduce heat demand                                                                                                                           |
| 3. Very poor combustion                 | a. Burn dryer wood<br>b. Add less wood and allow more draft<br>c. Pull hot coals forward before loading                                                                                           |
| 4. Stove puffs smoke through normal use | a. Check for down draft<br>b. Check for clogged pipe or chimney<br>c. Be sure chimney is high enough<br>d. Check draft with meter<br>e. Install draft inducer<br><br>Consult your Glenwood dealer |