MAHONING

SKYE SERIES

V.

OUTDOOR WOOD HYDRONIC HEATER
OWNERS MANUAL

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PART 1: Introduction to Your Skye Series Heater

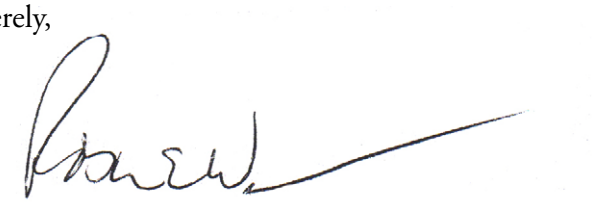
Thank You from the President:

Thank You for choosing the Skye Series heater. Your satisfaction is our top priority at Mahoning and we are proud to offer you a heater that will keep you warm for a lifetime.

Your Skye Series heater was built to last. Our stainless steel onboard water tanks are durable and fully replaceable and our unique refractory firebox is completely rebuildable. You will also find that the Skye Series heater makes your life easier with computer-controlled operation and remote household display options that allow you to monitor your heater from a distance.

Skye Series heaters are built using a new generation of technology that is vastly superior to heaters built just a couple years ago. This is partially due to an increased awareness of environmental regulations but also to our commitment to providing ever-increasing efficiency and reliable operation to our customers. The features, durability, flexibility, and convenience of the Skye Series heater represent the very best the market has to offer.

Sincerely,



Robin Weaver, President

Mahoning Outdoor Furnace, Inc.
208 Whiskey Run Road
Mahaffey, PA 15757-7415

Telephone | 800-692-5200

Fax | 814-277-6686

Specifications:

Particulate Emissions and Heating Efficiency Certified per EPA Method 28WHH

Manufacturer: MAHONING OUTDOOR FURNACE, INC.
208 WHISKEY RUN ROAD
MAHAFFEY, PA 15757

Model: Sky Series V

Particulate Emissions:	**0.18 lbs/mm Btu Output**
Particulate Emissions Rate:	2.44 grams/hr. (average)
Rated Output Capacity:	110,000 Btu/hr
Delivered Heating Efficiency:	54% (Based on Higher Heating Value)
Delivered Heating Efficiency:	58% (Based on Lower Heating Value)
8-Hour reload output:	82,600 Btu/hr.
8-Hour Average Efficiency:	67% (Based on Higher Heating Value)
8-Hour Average Efficiency:	72% (Based on Lower Heating Value)
Fuel:	Seasoned Cordwood only.

IMPORTANT:

FAILURE TO OPERATE THIS APPLIANCE AS DIRECTED MAY RESULT IN VIOLATION OF AIR QUALITY REGULATIONS AND SUBJECT THE OPERATOR TO ENFORCEMENT ACTIONS INCLUDING FINES AND/OR REMOVAL ORDERS.

Performance may vary due to heating requirements, proper sizing of boiler to home, and owner operation.

Follow the operator's manual and burn only dry seasoned wood.

Tested with EPA's Method 28 WHH (revision 8/18/2011)

Weight: 2500 lbs dry, 3700 with water

Water Capacity: 220 gallons

Venting: 6-inch chimney, 16-foot minimum

Firebox capacity: 150 lbs

Burn Time: (29.80 hrs. @ 14,340 BTU)

Max Output: (101,420 BTU/hr for up to 6.28 hours between loading)

Electrical: 120 VAC, 60hz, 8 Amp.

Pumps: Taco 009 hydronic pump
Taco 007 onboard circulating pump
Optional additional pumps can be installed on all heater models

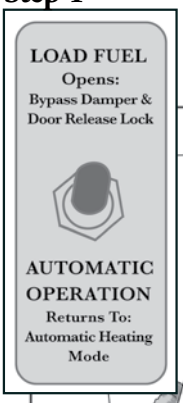
Clearance to Combustible Materials:
48 inches from side walls
48 inches from rear
48 inches from front

The floor or base that supports your heater must be constructed of completely noncombustible material such as concrete or stone.

Heat output and performance may vary based on proper operation, fuel quality, and installation. Please refer to this manual's "Installing Your Skye Series Heater" and "How to Operate Your Skye Series Heater" sections to learn more.

Quick Start

Step 1



Step 3

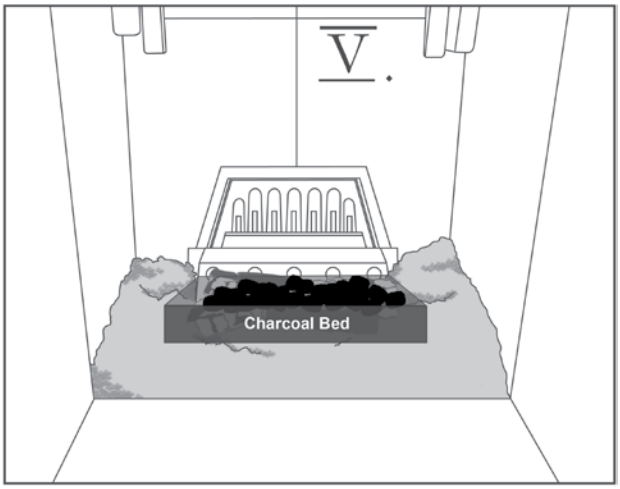
1. Move damper switch up to activate damper.
2. Open the heater door.
3. Build the fire with kindling and small pieces of wood.

WARNING: DO NOT USE CHEMICALS
or FLUIDS to START THE FIRE

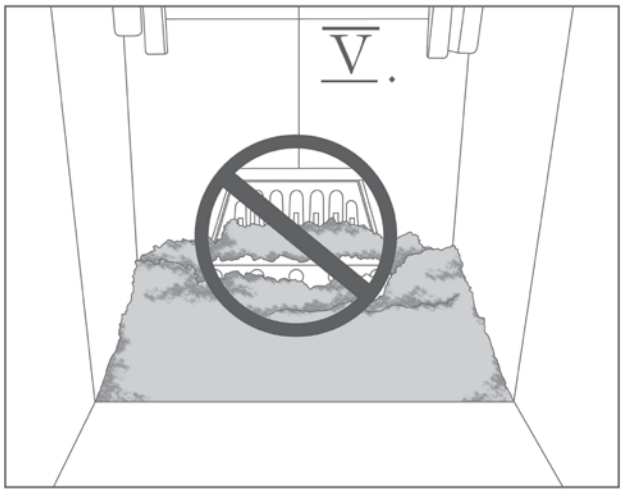
4. Wait for the stack temperature to reach 125 degrees, as shown on the side display. There is no "On" Switch. The heater starts or "wakes up" when it senses a temperature in the stack above 125 degrees. The side display shows the stack temperature. The heater control system is activated by the temperature detected in the stack.
5. Close the door and move damper switch down to set on "Automatic."
6. Add fuel as needed to increase stack temperature to 775 degrees.
7. Establish charcoal bed by continuing to add fuel as needed.

Remember: Activate damper switch when opening door and replace damper switch to "Automatic" position after closing heater door.

Step 9



KEEP AIR INLETS CLEAR OF ASH BUILDUP



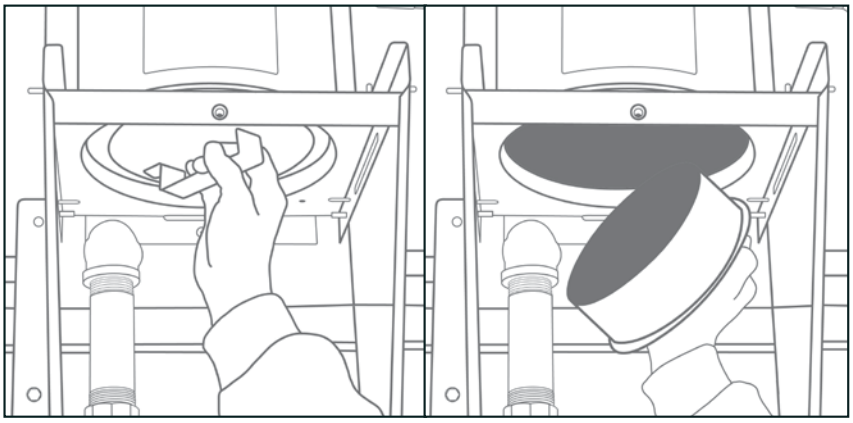
8. The damper will close automatically.
9. Add more fuel, pushing charcoal against the air inlets.

KEEP AIR INLETS CLEAR OF ASH BUILDUP

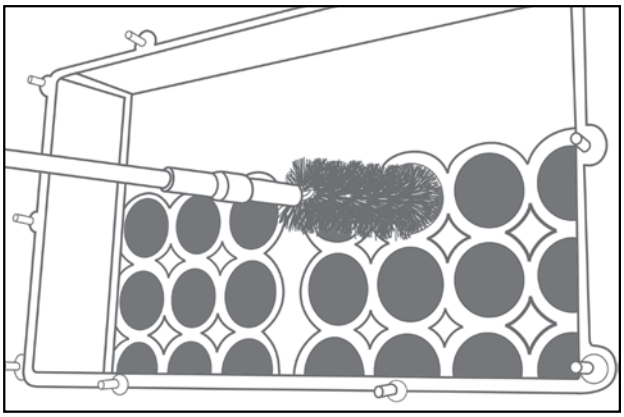
Maintenance Checklist:

Check these items monthly and refer to manual for detailed maintenance instructions.

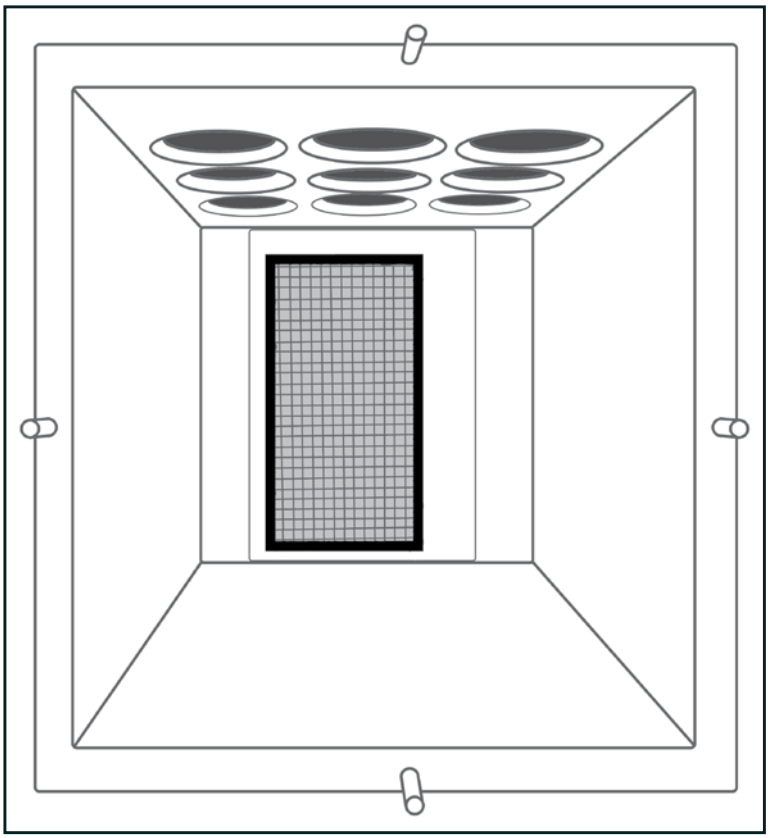
❑ 1. Inspect chimney for creosote buildup and clean as needed



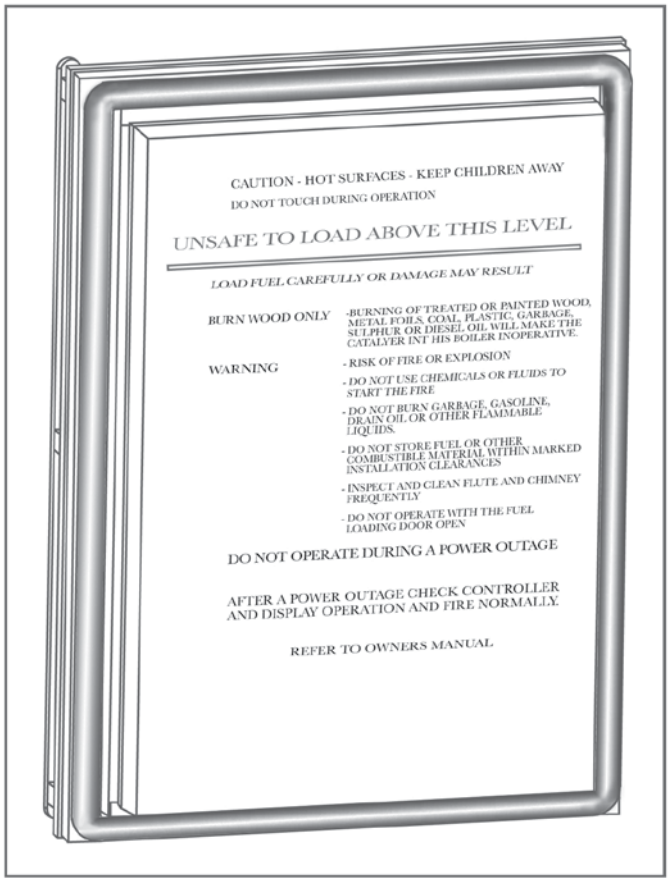
❑ 2. Check the heat exchangers



❑ 3. Inspect catalytic converters for damage and/or ash plugging



❑ 4. Check door gaskets for proper seal



PART 2: Get to Know Your Skye Series Heater

Design and General Information:

The Skye Series heater design is radically different from other outdoor wood-burning heaters. The heater is constructed with individually replaceable refractory panels separated from modularized stainless steel water storage tanks. These features, among others, make the system 100% serviceable and rebuildable. In addition, the computer-controlled operation of combustion air controls, dampers, and pumps makes optimal operation of the Skye Series heater easy and convenient while ensuring maximum efficiency.

Operate Your Heater Safely

Save these instructions

For your safety, please read and understand all warnings and operating instructions found in this manual. As with all outdoor wood heaters, water, electricity, fire, and very high temperatures are all features of the design and operation of the unit. Property damage, serious injury, and even death can result from not following safety precautions and instructions given throughout this manual.

BURN WOOD ONLY

DO NOT CONNECT THIS UNIT TO A CHIMNEY FLUE SERVING ANOTHER APPLIANCE.

DO NOT USE CHEMICALS or FLUIDS TO START FIRE.

DO NOT BURN GARBAGE, GASOLINE, NAPTHA, ENGINE OIL, OR OTHER INAPPROPIATE MATERIALS.

STORE ASHES IN CLOSED CONTAINER OUTSIDE ON A NON-COMBUSTIBLE SURFACE WELL AWAY FROM ANY COMBUSTIBLE MATERIALS.

CHECK THAT ANY AND ALL EMBERS ARE COMPLETELY EXTINGUISHED BEFORE FINAL DISPOSAL OF ASHES.

CAUTION – HOT SURFACES: KEEP CHILDREN AWAY.
DO NOT TOUCH DURING OPERATION.

WARNING –RISK OF FIRE:

- Do not operate with fuel loading door or ash removal door open.
- Do not store fuels or other combustible material within marked installation clearances.
- Inspect and clean flues and chimney regularly.

CLEANING OF THE HEAT EXCHANGER, FLUE PIPE, CHIMNEY, AND DRAFT INDUCER, IF USED, IS ESPECIALLY IMPORTANT AT THE END OF THE HEATING SEASON TO MINIMIZE CORROSION, DURING SUMMER MONTHS, CAUSED BY ACCUMULATED ASH.

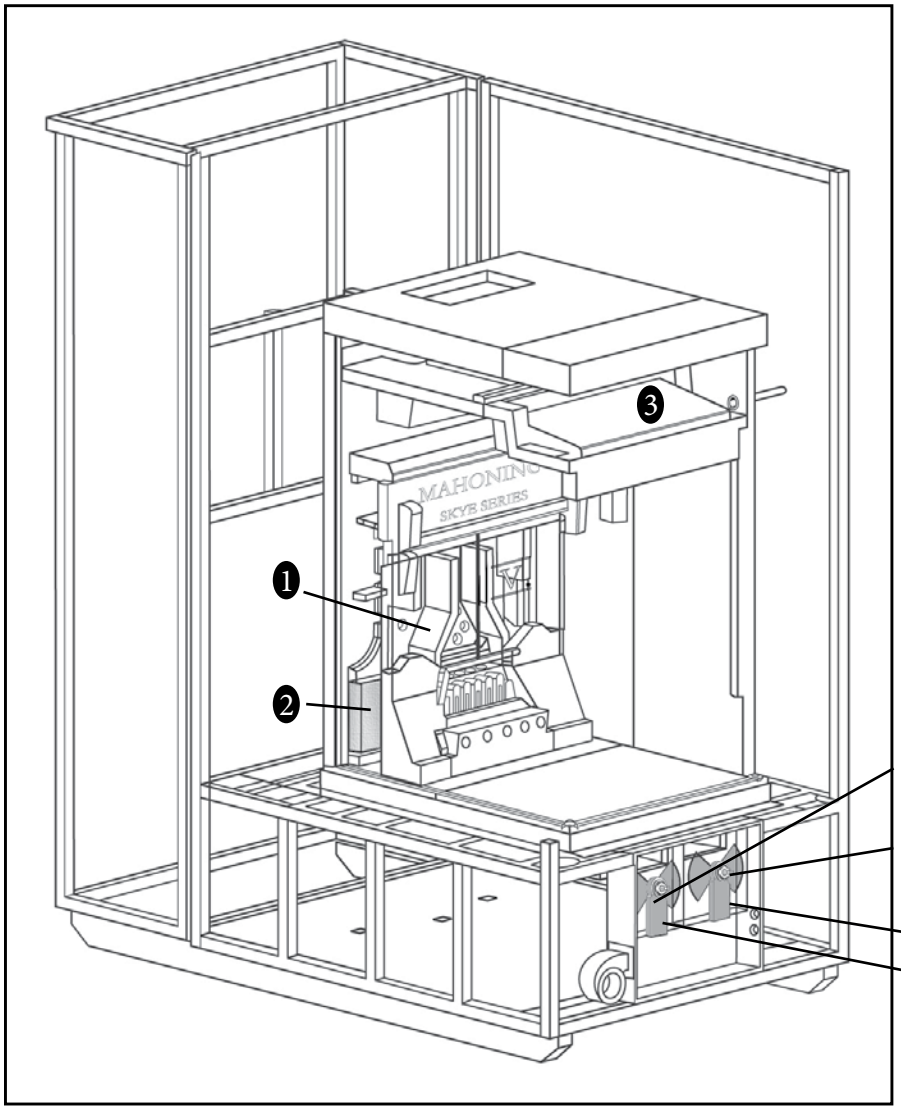
Detailed Description of Operational Features:

The Skye Series hydronic heater system is shown in Figure 1. Hydronic heating systems use water as a medium that moves heat from the heating source to the places where heat is needed. The hydronic heater's combustion system is a hybrid "gasification" system that combines a non-catalytic combustion zone (1) with a catalytic combustion system (2) that reduces emissions, improves efficiency, and minimizes the stresses that high-temperature wood combustion imposes on materials.

Open the bypass damper (3) for refueling and startup operation when the heater is cold. The bypass damper is operated by the damper control switch (4) on the side of the heater. Press the damper switch up to open the damper prior to opening the door. When you have finished fueling the heater and have closed the door, press the switch down to the "Automatic" position. Once a coal bed is established and the heater is at the proper temperature, the bypass damper closes automatically to direct combustion gasses through the rear wall and into the non-catalytic combustion chamber. Gasses pass through the catalytic system and into the heat exchanger sections to provide heat to the onboard water tanks. The heat exchanger sections vent into the chimney (see pg. 9).

The automatic bypass damper motor (10) is controlled by the onboard computer controller. This computer controller senses the non-catalytic combustion temperature and the chimney (stack) temperature and manages the combustion air controls (13 and 14).

Figure 1



(10) & (4)

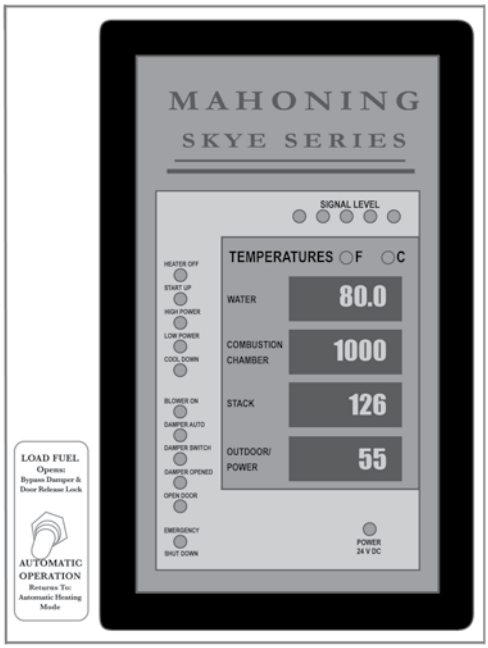


Figure 2 shows the rear compartment of the Skye Series heater. The computer controller (1) manages the operation of a circulating pump (2), the main water delivery pump (3), and optional auxiliary pumps (if installed). The controller also manages the bypass damper and all of the modes of heater operation, including startup and overheating situations and monitors the low water detector (4) to respond to low-water conditions and to indicate when water needs to be added. The main fill valve (5) and chimney cleanout (6) are also located within the rear cabinet.

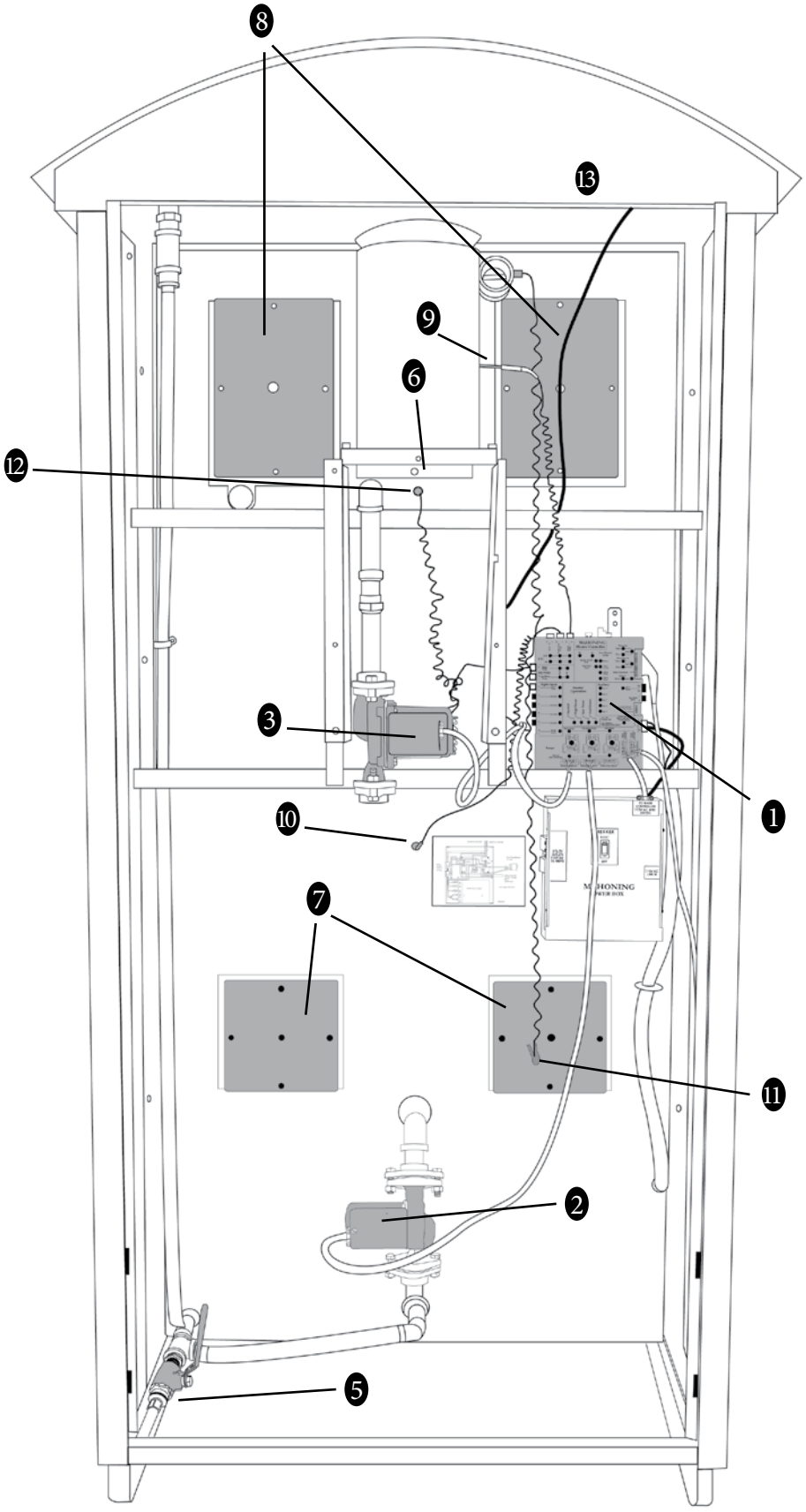
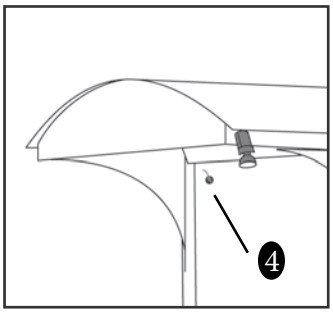


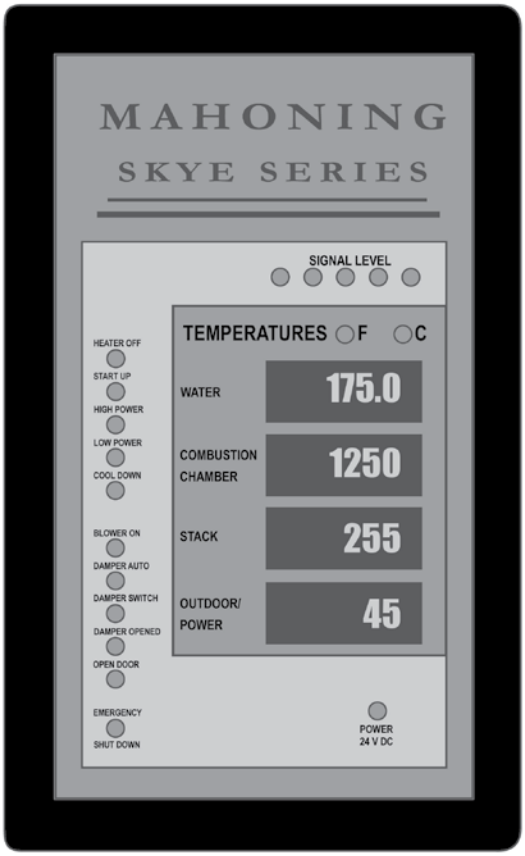
Figure 2

1. electronic controller
2. circulating pump
3. main water delivery pump
4. low water detector
5. main fill valve
6. chimney cleanout
7. lower cleanout cover
8. upper cleanout cover
9. stack thermocouple
10. combustion thermocouple
11. catalyst thermocouple
12. water temperature probe
13. return water temperature probe



The front display shows the onboard water temperature, chimney (stack) temperature, combustion chamber temperature, power output, and the outdoor temperature. The status of the combustion blower, damper position, and operational mode are indicated on the left hand side. The computer controller has six operational modes. Refer to the following chart for a description of each operational mode:
Information about the operation of the heater is displayed on the front electronic display of the computer controller as shown in **Figure 3**.

Figure 3



Mode	Action
Off	The heater is powered down. Pumps continue to deliver water while the water is hot.
Start-up	A fire is detected for rekindling or a cold start but the system is not yet heated. The bypass damper is open and will close automatically once adequate temperatures are reached. Unless the door is open for fueling, the damper switch should be set to automatic.
High Power	Combustion temperature is high and maximum heat output is possible. Refueling is not immediately necessary.
Low Power	Combustion temperature is normal, but low, and water will heat very slowly. A transition to high power is possible with sufficient fuel (wood or charcoal).
Cool Down	Combustion temperature is very low and refueling is necessary for higher power.
Emergency	Water temperature is dangerously high and the heater is in a protective mode. The pumps will continue to deliver water. The bypass damper is open to remove excess heat. The blower is off and the air control valves are in the fully closed position. Do not reload the heater.

What You Need to Know about Refractory Materials:

The firebox of the Skye Series heater is constructed completely of refractory material.

Refractory material was chosen to construct the heater's firebox for several reasons:

Durability

Refractory material is a durable material that is used in the molten metal industry because of its ability to resist the thermal and chemical breakdown induced by high-temperature environments.

Ease of repair

Unlike welded metal fireboxes, the refractory panels used to construct your heater's firebox are easy to repair and replace without the use of specialized tools or equipment.

Thermal capacity

Refractory materials are capable of storing more heat than other materials. It is also better able to withstand the continuous high-temperature conditions necessary for the most effective wood combustion.

REFRACTORY MATERIAL CAUTIONS:

DO NOT THROW WOOD AGAINST THE REAR WALL OF THE FIREBOX WHEN LOADING FUEL

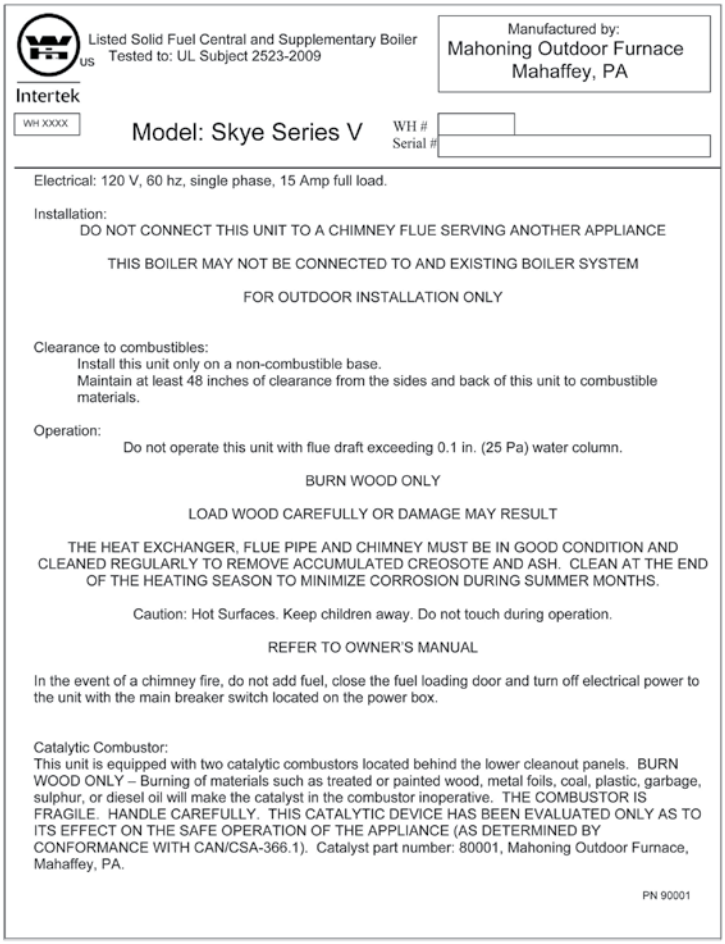
Though refractory materials are strong enough to support heavy loads, they will crack with sharp or repeated impact. Stress cracking of the refractory material will not affect the structural integrity of the heater or its performance. If a refractory part has cracked, without breaking, it can be left in place and will continue to function normally and safely. Broken refractory parts can be replaced or repaired using specialized mortars available from Mahoning Outdoor Furnace, Inc.

PROTECT YOUR HANDS WHEN REPAIRING REFRACTORY PARTS

- Refractory parts and repair mortar must be heated during the repair process: Wear insulated gloves to protect your hands from hot materials.

- The bonding agent in the repair mortar contains acids: Wear rubber gloves to protect your hands from harmful chemicals.

Listing Agency Label:



PART 3: How to Operate Your Skye Series Heater

We encourage the safe and responsible installation and operation of our outdoor heaters. Following these guidelines will result in higher efficiency, responsible use, and a better overall experience.

Visit the United States Environmental Protection Agency website for more information about best burning practices: **http://www.epa.gov/burnwise/bestburn.html**

Practical Tips for Building a Fire:

Once your wood-burning appliance is properly installed, building an effective fire requires good firewood (using the right wood in the right amount) and good fire-building practices.

1. Season wood outdoors through the summer for at least six months to a year before burning it. Properly seasoned wood is darker, has cracks in the end grain, and sounds sharp when smacked against another piece of wood.

2. Wood burns most efficiently when the moisture content is less than 20 percent. (You can purchase a wood moisture meter to test the moisture content of your wood before you burn it.) For more information about how to use a moisture meter, visit: **http://www.youtube.com/watch?v=jM2WGgRcnm0**

3. Store wood outdoors, stacked neatly off the ground with the top covered.

4. Burn only dry, well-seasoned wood that has been split. For more information about drying your firewood, visit: **http://www.epa.gov/burnwise/pdfs/wetwoodwastebrochure.pdf**

5. Start fires with newspaper and dry kindling.

6. Burn hot fires.

7. To maintain proper air flow regularly remove ashes from your wood-burning appliance into a metal container with a cover and store outdoors.

Seasoning Saves Money
Using unseasoned firewood is a waste of your money. Your heater expends a large portion of your wood's energy when it boils off the excess moisture in unseasoned fuel, leaving you with less energy to heat your structure.

Protect Your Firewood
Plywood or corrugated steel panels placed on top of the wood pile provide adequate protection for firewood but a wood shed with a roof is ideal. Air circulation is important for drying wood. Direct sunlight on the wood pile will accelerate the drying process. Visit the EPA's Burn Wise website for wood shed plans at: **http://www.epa.gov/burnwise/pdfs/WoodShedDiagram.pdf**

Items You Should Never Burn in Your Appliance:

- Never burn household garbage or cardboard. Plastics, foam and the colored ink on magazines, boxes, and wrappers produce harmful chemicals when burned. They may also damage your wood-burning appliance.

- Never burn coated, painted, or pressure-treated wood because it releases toxic chemicals when burned.

- Never burn ocean driftwood, plywood, particle board, or any wood with glue on or in it. They all release toxic chemicals when burned.

- Never burn wet, rotted, diseased, or moldy wood.

DO NOT BURN GARBAGE, GASOLINE, NAPTHA, ENGINE OIL OR OTHER INAPPROPIATE MATERIALS.

Proper Fueling of Your Skye Series Heater:

USING DRY WOOD REDUCES SMOKY SMOLDERING FIRES

SEASONING YOUR WOOD GREATLY IMPROVES HEATING EFFICIENCY

Fueling from a cold start

Note: Starting up a cold heater can create a lot of unnecessary smoke before the bypass damper closes and the combustion system is engaged. By using effective fire-starting practices, slowly building the first fire in a cold heater by gradually adding small pieces of wood to establish an adequate charcoal bed, you will avoid smoky fires.

Using the following procedures for starting the Skye Series heater from a cold start will help minimize smoking at start up and raise the heater's water temperature more rapidly.

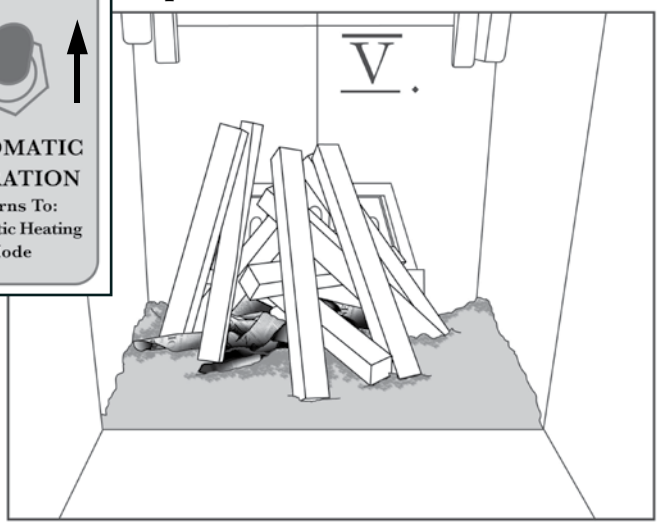
When the front display shows the heater in "Off" mode, or when the heater is very cool and out of fuel, a cold start is necessary. A cold start is different than reloading or refueling a hot firebox. This is because a charcoal bed has not been established or has diminished and the firebox is too cool to sustain efficient combustion.

Step 1: Press up on the damper switch.

When starting or refueling the heater, ALWAYS activate the damper switch by pushing it up to open the bypass damper. This also releases the door lock and turns off the combustion blower. **Pressing the damper switch up will turn on the overhead light, turn off the blower, deactivate the door lock and open the damper. See Step 1.**

Step 1

Step 2



Step 2: Build the fire

1. Place twisted newspaper and a large amount of dry kindling against the back wall of the firebox.

2. Layer kindling pieces loosely, much like you would to build a campfire, to allow plenty of circulating air for a quick start.

3. Light the paper and kindling wood with a match.

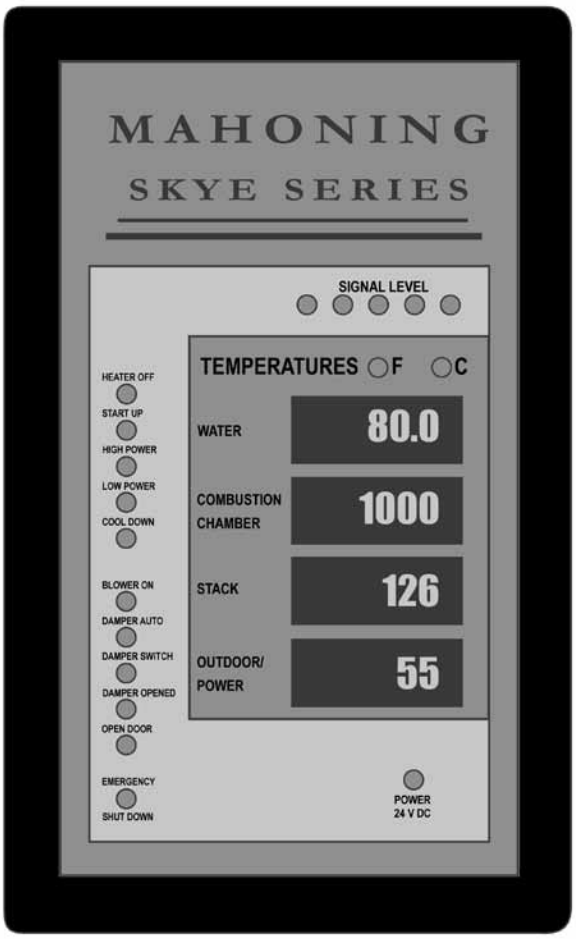
4. Close the door loosely, leaving it cracked until the fire is well established.

WARNING: DO NOT USE CHEMICALS or FLUIDS to START THE FIRE

Step 3: Wait for the heater to "wake up."

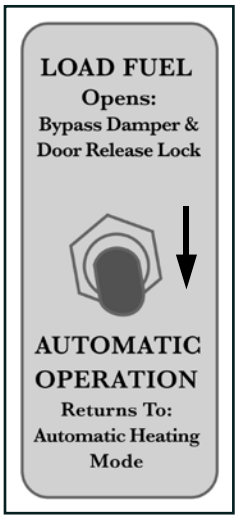
The heater starts or "wakes up" when it senses a temperature in the stack above 125 degrees. The side display shows the stack temperature. The heater control system is activated by the temperature detected in the stack. There is no "On" Switch.

Step 3



Step 4: Close the door and press the damper switch down.

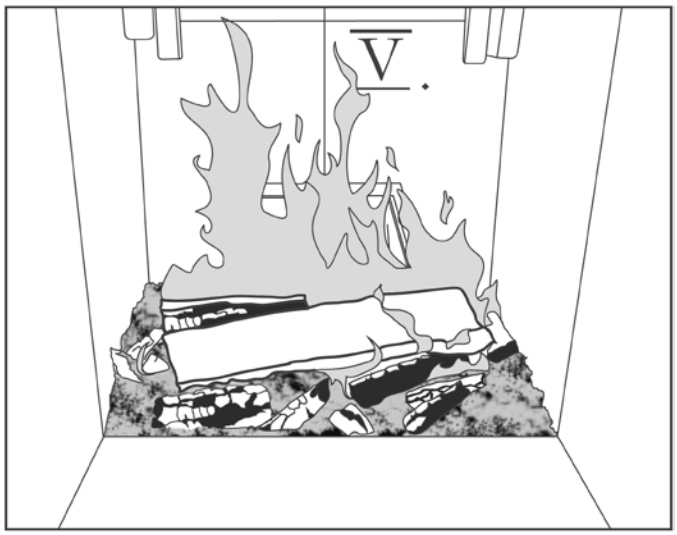
Step 4



Once the kindling fire is well established and the stack temperature is above 125 degrees, close the door and move the damper control switch down to the "Automatic" position as indicated by the front display. The display should show "Start Up" status. The combustion blower will run, increasing the intensity of the fire.

Step 5: Add fuel.

Step 5



As the kindling fire grows, the stack temperature will increase to greater than 300 degrees and you will need to add progressively larger pieces of wood to the fire.

When loading wood into your Skye Series heater, press the damper control switch up, and wait for the lock to release before opening the door slowly. After adding fuel, close the loading door and press the damper switch down to return it to the "Automatic" position.

Note: When the heater is cold, there is no delay before the door lock is released. When a fire is burning, there will be about a 25-second delay to release the door lock. This delay is for your safety.

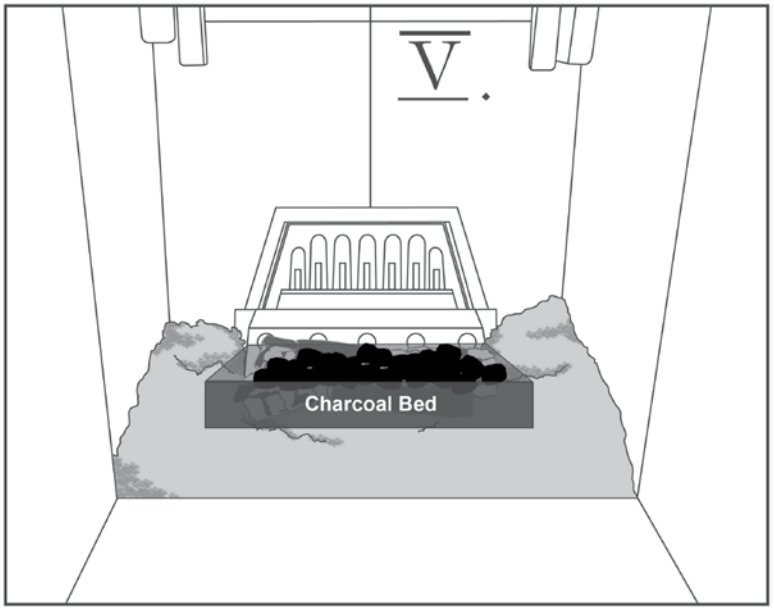
Step 6: Establish the charcoal bed.

The objective in starting the first fire is to establish the charcoal bed and to raise the heater temperature so that the combustion system is activated. When sufficient heat and coals are established and the stack has reached 775 degrees, the bypass damper will close automatically. This may take up to 30 minutes.

Always open the door slowly to prevent billowing of smoke and hot air.

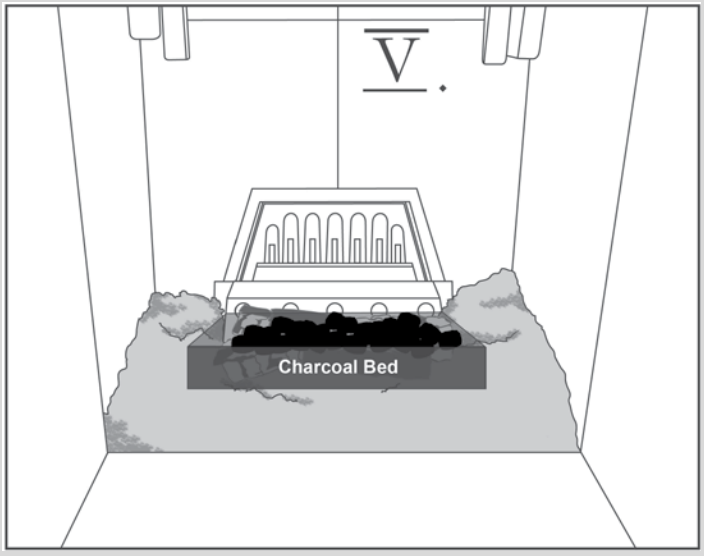
Note: Adding a full charge of wood to a firebox that is still warming up will inhibit the fire and will cause the firebox to cool.

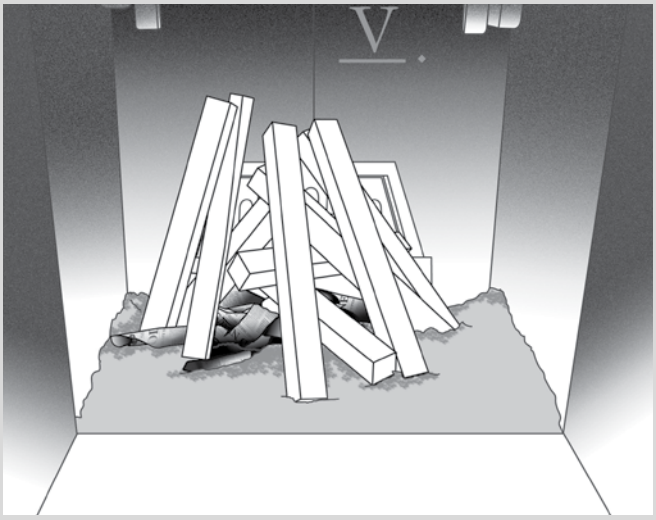
Step 6



Guideline: Charcoal Bed

As a general guideline, a good charcoal bed will be pushed against the air distributor discharge holes to the rear of the firebox. The coals should spread across the area directly in front of the air distributor holes and should measure approximately 6 inches in depth and 8 to 12 inches in diameter.





Heater Health Tip

Note: The firebox walls will normally appear white and mostly free of soot but there are times when they will turn black (particularly if your fire has been smoldering for a long time). The black color is created by carbon deposits. If the deposits do not burn off with time, this may indicate a problem with your heater.

Step 7: Establish the fire.

Once the bypass damper automatically closes, the combustion temperature should exceed 1,000 degrees Fahrenheit and hold for at least 10 minutes. A drop in the combustion temperature below 1000 degrees Fahrenheit is an indication that the charcoal bed is inadequate. In this case, the damper will automatically reopen to accelerate the fire. Automatic closing and opening will occur until the fire is established and either the "High Power" or "Low Power" mode is maintained. **See Figure A.**

If the heater will not maintain adequate combustion temperature after several repeated automatic attempts, open the door and stir the coals with a shovel, pushing the coals to the rear of the chamber. Add more kindling or dry wood as necessary.

Always press the damper switch down when you have closed the heater door. If you forget to press the damper switch down, the light on your Skye Series Heater will begin flashing after 10 minutes. (See Figure B.) When you see the flashing, be sure to press the damper switch down into its "Automatic" position so that the blower will engage and your fire will flourish.

Always remember to replace the damper switch to its "Automatic" (downward) position after closing the door.

Once the automatic damper closes, and the heater enters a "High Power" or "Low Power" mode, the electronic controller will take over and heat the water to its set point (typically 180 degrees). Note that from a cold start, the onboard water may be cold. The hydronic and circulating pumps will not activate until the water in rear tank reaches a set point (typically 120 degrees).

Refueling from a warm start

Refueling the heater from a hot or warm start when the heater is in "High Power", "Low Power," or "Cool Down" is much simpler and faster than fueling from a cold start. If the coal bed is sufficient and the temperatures in the combustion system are adequate, it is possible to add fuel and immediately continue in "High Power" or "Low Power" modes without going through the startup phase.

Figure A.

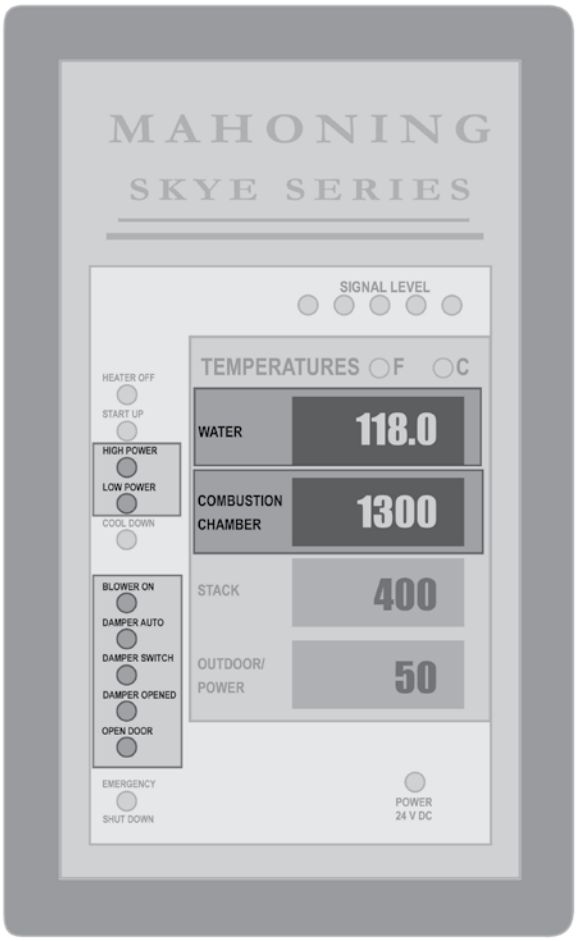
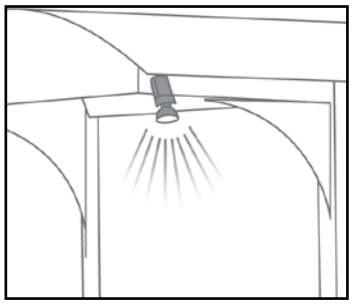


Figure B.



Step 1: Activate the damper switch.

Activate the damper switch to stop the combustion blower and open the bypass damper. Once the door lock releases (about 25 seconds), slowly open the loading door.

Step 2: Add fuel

Before adding new fuel, clear the ash that has collected in front of the air distributor holes, pulling the ash toward the front door.

If the heater is in "High Power" mode: Add seasoned wood as desired, stacking wood directly against the rear wall. Close the door and press down on the damper switch.

A sticky residue may develop around the door edges. This is creosote buildup and is a normal byproduct of the wood-burning process.

If the heater is in “Low Power” or “Cool Down” mode: Stir the coals and clear ash accumulation away from the air inlets that line the back wall of the firebox. Push hot coals (not ash) against the air inlets. Add smaller pieces of seasoned wood first, piling larger pieces as the fire grows. Close the loading door and press down on the damper switch.

If the heater does not enter the “High Power” or “Low Power” mode, follow the cold start procedure as outlined above.

While the Mahoning Skye Series heater operates automatically, optimum performance requires proper fueling practices.

For optimum performance, be sure to:

- Use dry well-seasoned wood as fuel.
- Remove ash properly with every reloading.
- Perform regular maintenance on your heater.

Safe removal of creosote and ash:

Ash Removal

Disposing of ashes regularly will help your heater run more efficiently. Some ash at the bottom of your heater is good and will help to insulate the coals, but too much ash can obstruct air flow. Your Skye Series heater is designed with five air inlets that should be cleared of ash regularly (push only live coals against the inlets for best results).

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 are otherwise locally dispersed, they should be retained in the closed container until all cinders have thoroughly cooled.

Creosote Removal

Establish a routine for the storage of fuel, care of the appliance, and firing techniques.

Check daily for creosote buildup until experience shows how often cleaning is necessary.

Inspection, maintenance, and cleaning of the chimney and chimney connector are important.

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 OF A SLOW-BURNING FIRE. WHEN IGNITED THIS CREOSOTE MAKES AN EXTREMELY HOT FIRE. WHEN BURNING WOOD, THE CHIMNEY CONNECTOR AND CHIMNEY SHOULD BE INSPECTED AT LEAST ONCE EVERY TWO MONTHS DURING THE HEATING SEASON TO DETERMINE IF A CREOSOTE BUILDUP HAS OCCURRED.

IF CREOSOTE HAS ACCUMULATED, IT SHOULD BE REMOVED TO REDUCE THE RISK OF A CHIMNEY FIRE.

PART 4: Installing Your Skye Series Heater

Installation of the Skye Series heater should be done by a qualified installer, plumber, and electrician.

DO NOT CONNECT THIS APPLIANCE TO A CHIMNEY FLUE SERVING ANOTHER APPLIANCE.

Careful planning and proper installation will ensure that your Skye Series heater will function properly. This section outlines much of the information needed to install the heater, select waterlines, install circulation pumps, and connect to your existing heating system. Be sure to read all of the information carefully. If any installation questions arise that cannot be answered by the information in this manual, be sure to contact your dealer.

If the Skye Series heater is to be installed as an add-on heater to an existing boiler it shall:

- Be installed without interfering with the normal delivery of heated water from the original boiler.
- Be installed without affecting the operation of the electrical and mechanical safety controls of the original boiler.
- Provide for a changeover from one fuel to the other without requiring manual adjustment of any controls or other components aside from thermostats.
- Provide for adequate water capacity within the boiler to prevent damage caused by a loss of circulation in the case of an electrical power failure.
- Be installed without changing the function of the controls or rewiring the original boiler. A wiring connection is allowed. The electrical system of both boilers shall be powered from a single branch circuit without exception.

When installing the heater in conjunction with a conventionally fueled boiler do not plumb the heater into the original boiler. Instead, install an appropriately-sized flat plate heat exchanger between the Skye Series heater's plumbing and the plumbing system used with the existing boiler. This preserves the integrity of the original boiler's pressurized system.

When plumbing the heater to the home's domestic hot water system, connect to the hot water heater plumbing system using a flat plate heat exchanger.

Your Skye Series heater must be installed by a qualified installer in accordance with all applicable codes and regulations. Your qualified installer will determine how to install the heater so that it is compatible with existing heat sources.

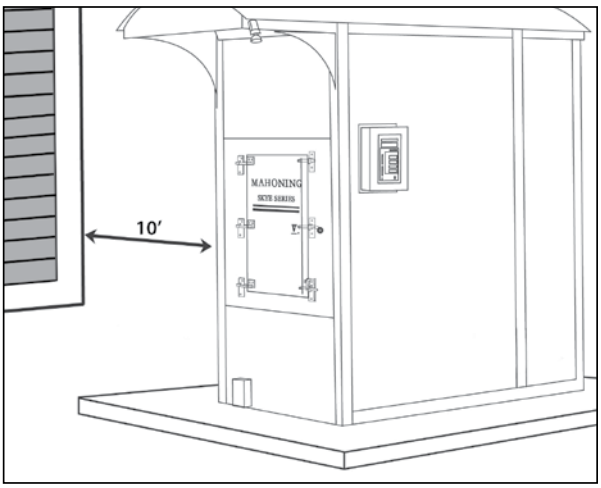
Location:

Do not locate your Skye Series heater inside or under any structure, shed, or garage. Be sure to check all local regulations regarding siting of heater before installing.

Your Skye Series heater should be located at least 10 feet from the structure it will be used to heat. Your heater will function properly from as far as 100 feet from the structure it is heating, but keep in mind that the water will lose some heat to the ground during its passage underground so shorter travel distances are recommended.

You must allow 48 inches of clearance to the sides and rear of the heater and 48 inches of clearance in front of the heater for safe use. **See Figure D.**

Figure C.



Heater Location Tips

You will want to locate your heater within close range of your wood storage.

Your heater's water and power lines will be installed underground, so consider the path these lines will take. Consider also the prevailing winds around the heater and the direction the smoke will travel.

Foundation:

Your Skye Series heater should be installed on a level concrete pad. The pad should support the entire footprint of the heater and will ideally provide extra surface at the front and rear for performing maintenance and loading the heater.

The minimum dimensions of the pad are 80 inches x 120 inches as shown in **Figure D**.

Heater Location Tip

You can prepare the path for water and electrical lines by casting or cutting a hole into the pad for the conduit that will house the lines.

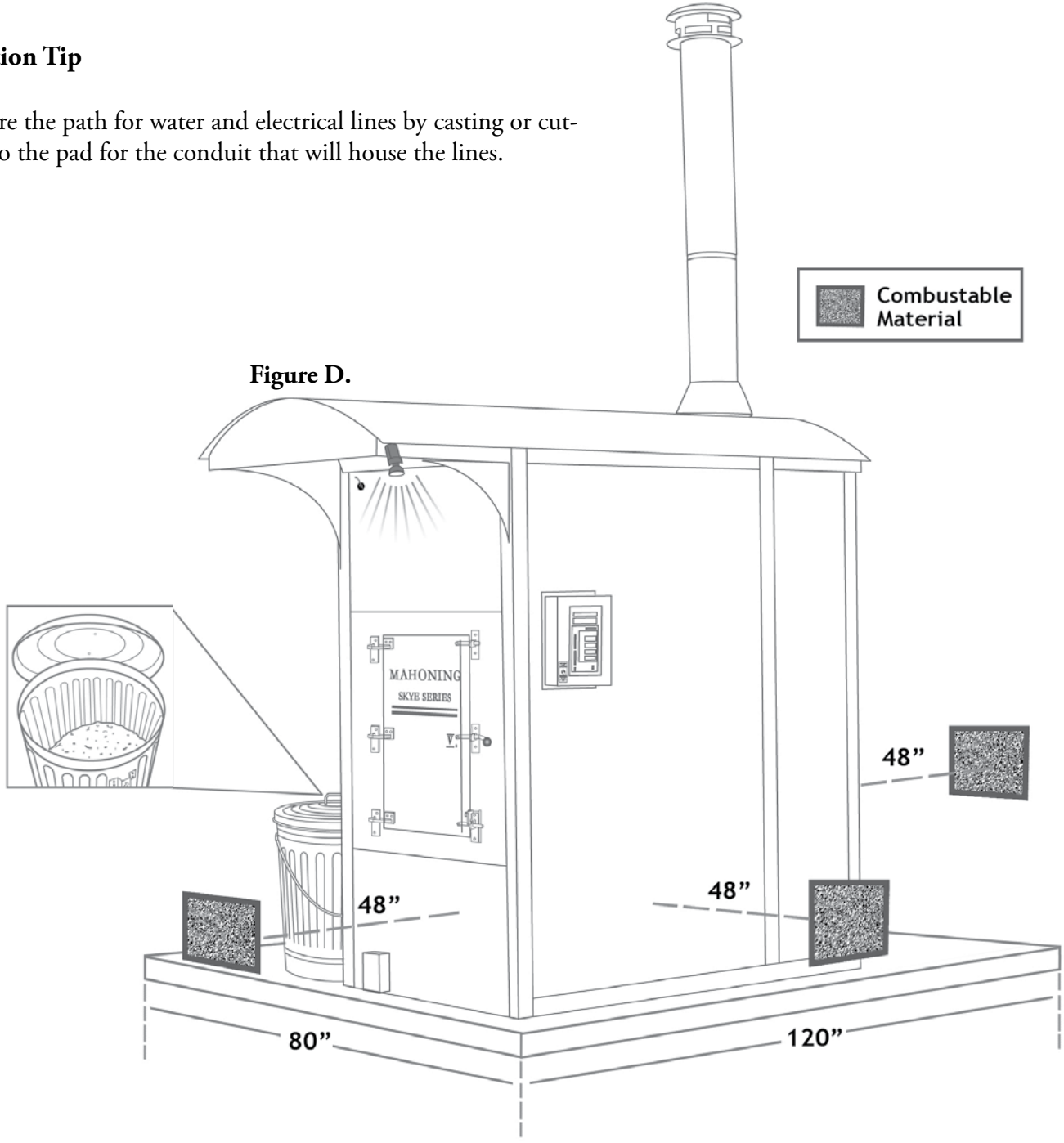


Figure D.

Chimney:

Chimney sections are included with your heater. Installed properly, the sections will fit together to provide the minimum height of 16 feet required for all installations. Some localities may require taller chimneys, particularly when the heater is installed in close proximity to a residence.

If additional chimney sections are needed, they should be installed in accordance with manufacturer recommendations for stabilization and anchoring. Extra chimney sections are available from your Mahoning dealer or Mahoning directly.

Plumbing and Electrical lines:

The plumbing and electrical lines from the heater to the heated structure must be installed underground, at or below your local frost line, to prevent freezing and minimize movement. Check your regional frost line depth before installing the underground lines.

Note: Use of insulated water lines is essential. Inadequate insulation, particularly over long distances underground, will result in heat loss from the water lines. Check with your dealer or ask your installer to recommend the best piping system for your circumstances.

All plumbing lines should run inside a four-inch insulated watertight conduit. Depending on the type of insulated piping system used, you may be able to run the electrical lines inside the same conduit that houses your plumbing lines. (Some piping systems do not accommodate electric wires.)

The conduit that houses the plumbing and electrical lines runs underground from the floor in the rear cabinet of the heater to the structure you are heating. You will need a minimum of two, one-inch water lines—a hot water supply line to direct water to the structure and a return line to return cooled water to the heater. You can add more lines if you will be heating more than one zone (or structure).

You will need one AWG 12/2 with ground UF underground Romex 120 Volt power supply wire. If a home thermostat will be used, you will need a two-conductor thermostat wire. The power supply wire should extend four feet from ground level for connection to the heater power box.

Your Skye Series heater may be equipped with a second supply pump. If this pump will be used to heat a separate structure, you may need to install a second set of underground water lines and thermostat. An additional 120 V electrical wire is not necessary in this case.

Power:

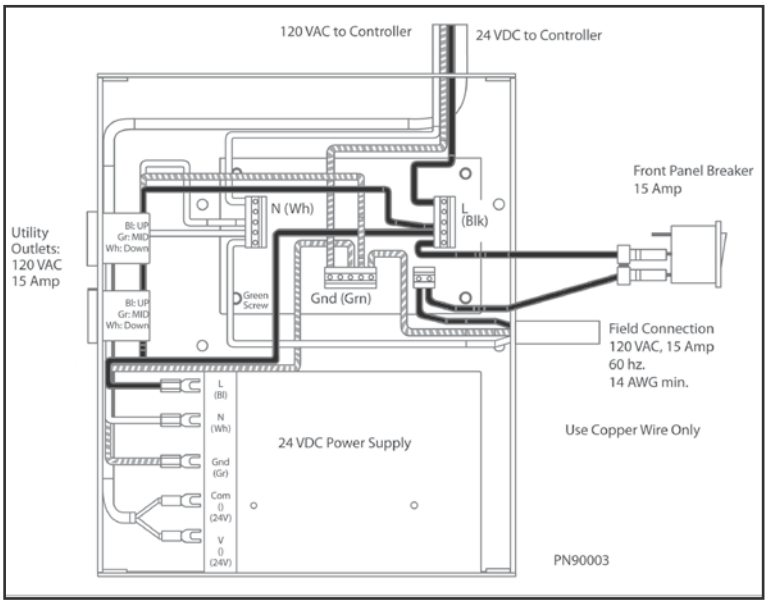
Your Skye Series heater must be wired by a qualified electrician in accordance with the National Electrical Code.

Disconnect all electrical power at the source before connecting the power line to the heater.

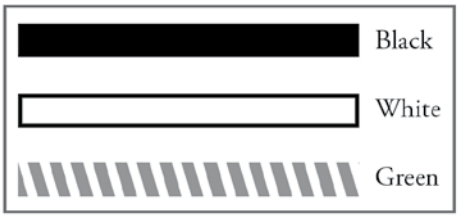
To connect power inside the heated structure: Connect the AWG 12/2 power wire with a 15 amp circuit at the breaker panel.

To connect power at the heater: Route the AWG 12/2 power wire toward the right rear corner of the rear cabinet as shown in **Figure E**. Remove the cover to the power box by removing the four screws (two on each side), route the AWG 12/2 wire through the side strain relief in the power box, and tighten. Make ground connection, 120V, and neutral connections on the screw terminal panel inside the power box as shown in **Figure E**. Be sure to reconnect the leads to the power switch located on the front cover of the power box before replacing the cover.

Figure E.



Wire Reference Guide



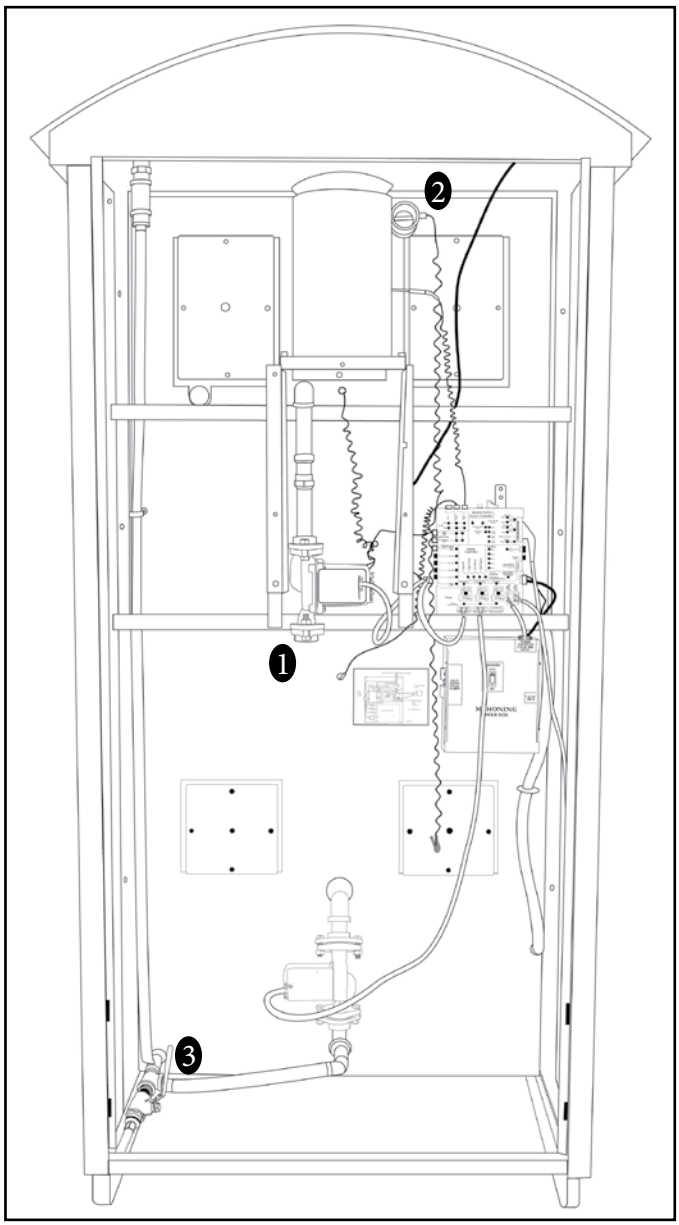
Plumbing:

Figure F shows the hot water supply, cold return, and fill/drain connections inside the rear cabinet of the Skye Series heater. Connect the hot water supply line to the bottom side of the main hydronic pump **(1)**. The flanges to each pump have shutoff flanges so no additional valves are needed. Connection to the pump flange is a one-inch NPT female thread. Connect the cold return line to the return fitting **(2)**. Field connection is made to a 1.5-inch NPT male, threaded stub.

The water fill/drain connection **(3)** is located on the lower left. Open the ball valve to fill or drain the heater.

A water fill connection may also be made within the house using fill kit (See page 27, #9). This is recommended to simplify the filling and refilling process which may be necessary occasionally as water evaporates.

Figure F.



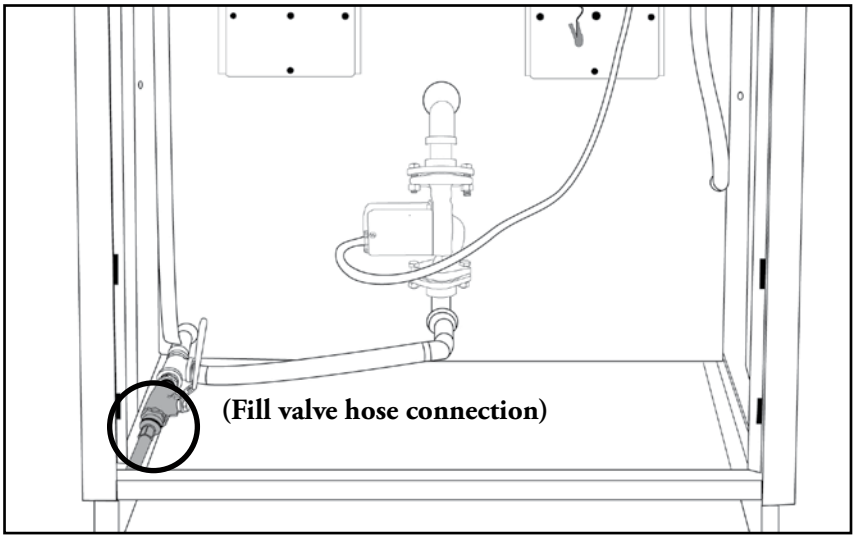
Water:

The Skye Series heater will not operate without adequate water. The float switch in the upper tank must be activated to allow the heater to turn itself on and operate. The LED light on the lower left of the control box in the rear panel labeled "Water Level" will light green when the float switch detects adequate water.

Connect a hose to the fill valve and open the ball valve to fill the heater. **Figure G**. The Skye Series heater holds approximately 230 gallons of water. You may continue filling until the LED on the control panel indicates proper water level has been reached or until water spills from the overflow piping. If the heater is filled until it overflows, additional spilling will occur with the first firing of the heater as the water expands. Once the heater is adequately filled, you may fire the heater safely.

After you have filled the heater, the water lines may still be empty. Additional water should be added once the pumps have displaced air in the system piping.

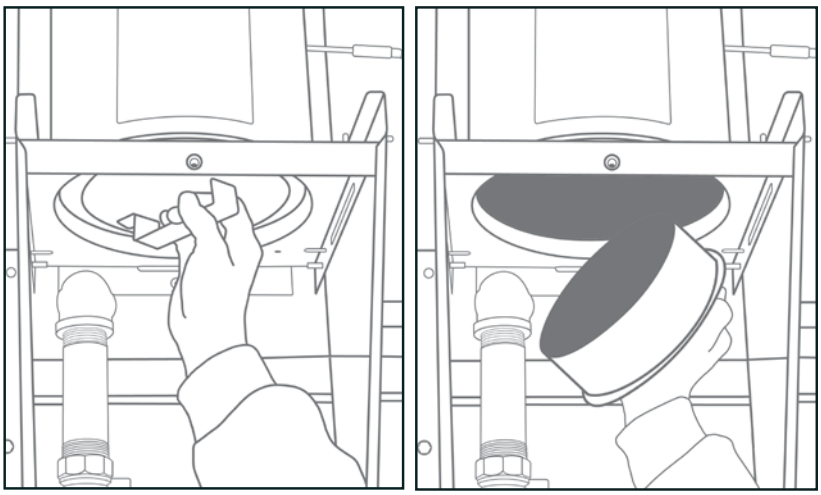
Figure G.



PART 5: Service and Maintenance of the Heater

Routine maintenance and inspection:

Figure H.



1. Check the chimney: Remove the bottom cap from the cleanout tee **(Figure H)** and visually inspect the chimney for creosote buildup. Clean as necessary (see instructions in yearly maintenance).

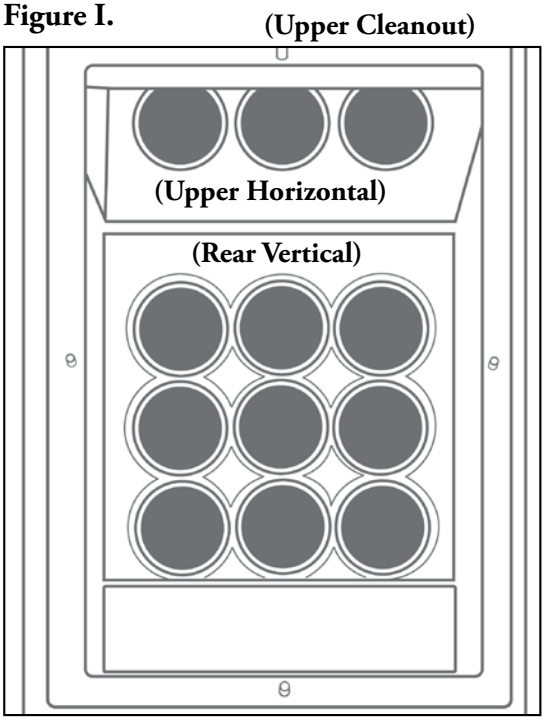
2. Check the heat exchanger: Remove the upper cleanout covers (to the left and right of the chimney)**(Figure I)** and use a mirror to visually inspect (refer to Figure 2, pg. 9 for location) the rear tank heat exchange tubes and the upper tank heat exchange tubes. If excessive buildup is found, clean using the procedure outlined in the "Yearly Maintenance" section below.

3. Check the door gaskets for proper seal: Slide a strip of paper between the door gasket and the refractory sealing surface and close the door. The paper should be held snugly by the door gasket. Perform this test on all four sides of the door. If the paper slips free, it is time to replace the gasket.

4. Inspect the catalytic converters for damage and/or ash plugging: Remove the lower access panels (as described in the "Yearly Maintenance" section below). You will find two catalytic converters, one behind each lower cleanout panel. To clean the catalyst, gently brush with soft brush or lightly blow out any ash that has accumulated in the cells of the catalyst. Some cracking of the catalyst is normal and will not affect heater performance. However, if a large section of cells (about the size of a quarter or larger) is broken, collapsed, or missing, you should replace the catalyst (part #80001) as soon as possible.

Excessive smoke or lower-than-normal catalyst temperatures often indicate a damaged or dirty catalyst. Monthly inspection and cleaning are necessary to maintain proper functioning.

Figure I.



Yearly Maintenance:

1. Clean upper and rear tank heat exchanger tubes:
   a. For cleaning upper tank heat exchangers: Remove the front access trim panel **(Figure J)** and the front heat exchanger access plate. Using a two-inch flexible shaft brush, connected to a hand drill or other suitable tool, scrub the inside of each of the 20 heat exchange tubes. Vacuum or sweep out any soot from the front access chamber.

   b. For cleaning rear tank heat exchangers: Remove the heat exchange access panels located inside the rear cabinet **(Figure K)**. You will find two upper access panels to the left and right of the chimney **(Figure I)**. You will find two lower access panels four feet below the upper access panels. Each of the left and right chambers houses nine heat exchange tubes. Scrub each tube, starting from the top or the bottom, whichever is more accessible in your installation. Vacuum or sweep any debris from behind each access panel before replacing the access panels.

Figure J.

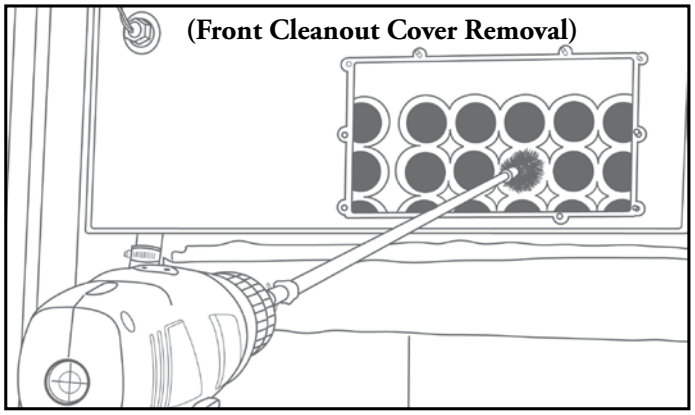
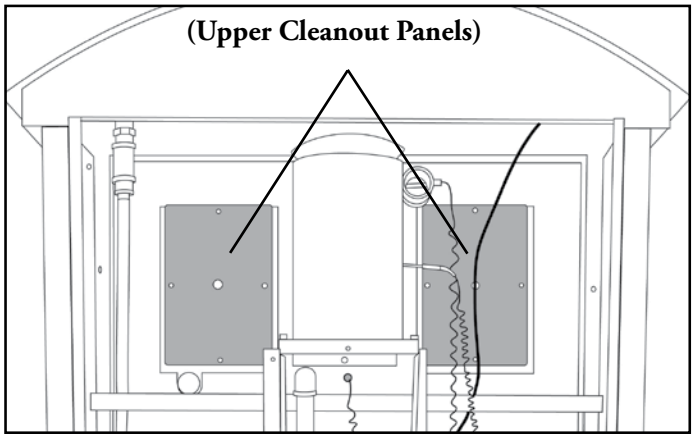


Figure K.



2. Clean the chimney: Remove the chimney sections above the cleanout tee in the rear cabinet **(Figure L)** . Use a six-inch wire chimney brush to clean the entire length of chimney. Remove the cleanout tee from the boiler by pulling straight out from the heater **(Figure M)** . Clean the interior of the cleanout tee with the wire brush. Using a flash-light, visually inspect the flue connection opening. Sweep or vacuum any loose material from the cavity behind the opening.

Figure L.

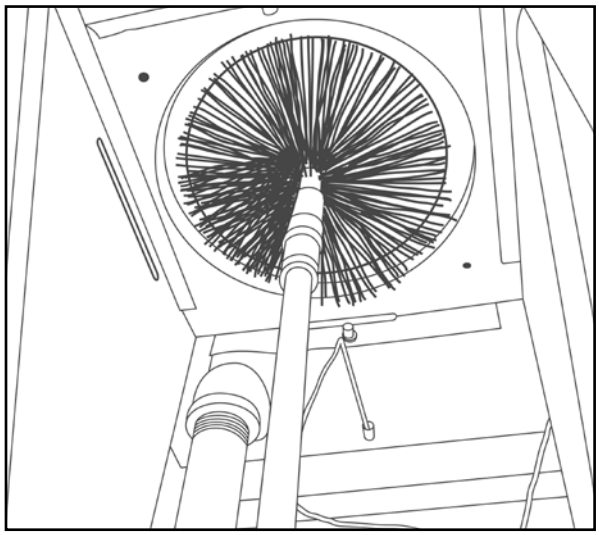
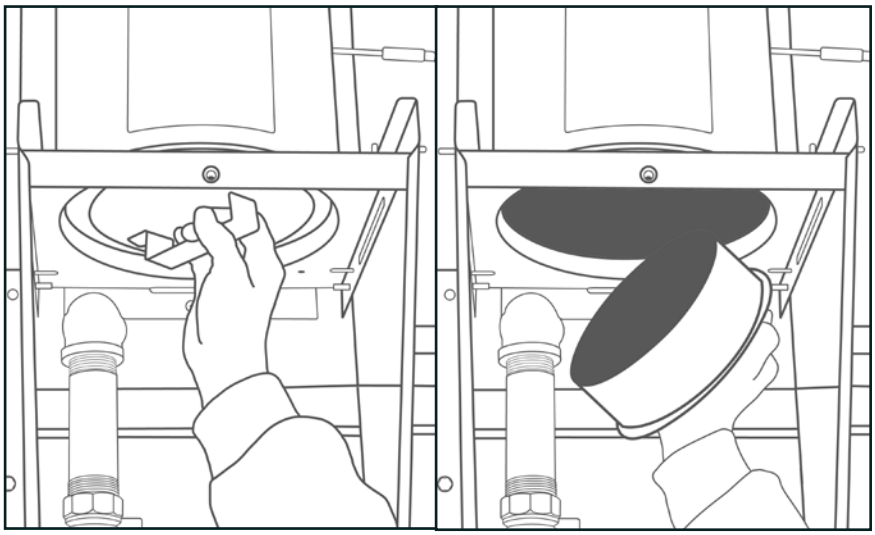


Figure M.



3. Check the door hinges and latches for proper operation: Ensure that the hinge and latch plates are tight and that the door swings freely. Use a socket wrench to tighten loose hinges and latch plates.

4. Check the blower for obstructions (ex: lint, dust, leaves, etc.): Open the front access cover **(Figure O)** and visually inspect the blower for obstructions. Clean as needed.

5. Check the damper gasket: Feel that the gasket is in place, intact, and continuous. Replace as needed. **Figure N.**

Figure N.

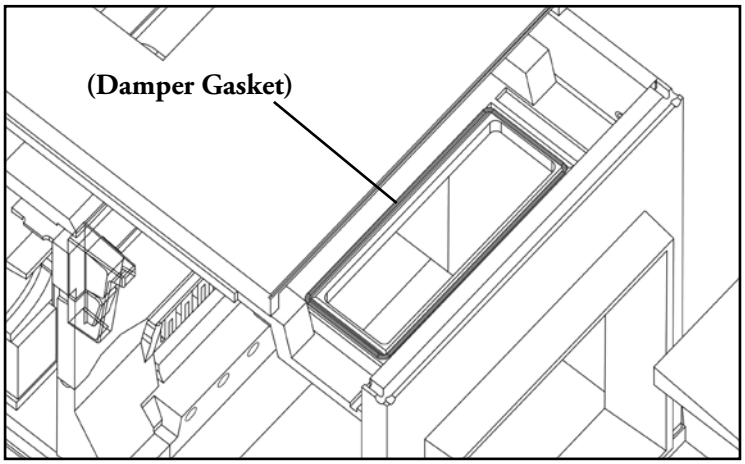
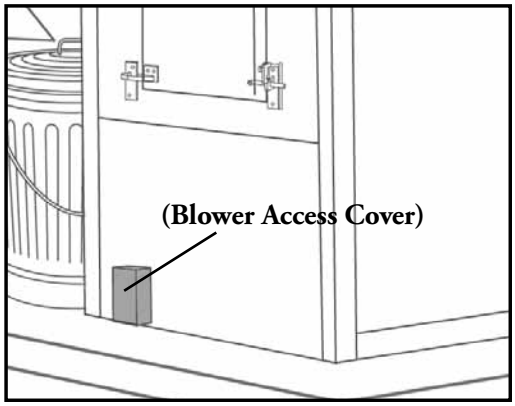


Figure O.



6. Check the valves and fittings for leaks.

7. Check the solenoid for proper operation by flipping the damper switch.

8. Check all cords and wires to make sure they are secure and are not frayed.

9. Add yearly rust inhibitor.

Troubleshooting Guide:

This troubleshooting guide is intended to help you resolve common problems with a properly installed Skye Series heater. If the solutions offered in this troubleshooting guide do not help you resolve a problem with your heater, contact your dealer or request help from a qualified technician.

The main objective of this guide is to help solve two primary problems:

Low heat delivery

- Low water temperature—Section III, Problem 2
- Damper staying open—Section II, Problem 3; Section III, Problems 1 and 3
- Combustion blower malfunction—Section I, Problem 3; Section II, Problem 1
- Air control valve motor malfunction—Section II, Problem 2

No heat delivery

- Hydronic pump malfunction—Section I, Problem 3; Section II, Problem 5
- Thermostat malfunction—Section II, Problem 5

This guide is divided into four main sections:

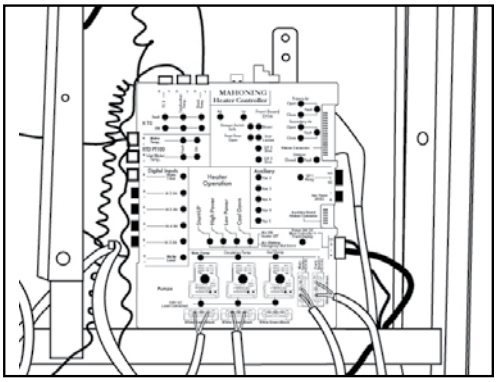
I Power and Connections
II The Control System
III General Performance
IV Error Codes

How to use this chart:

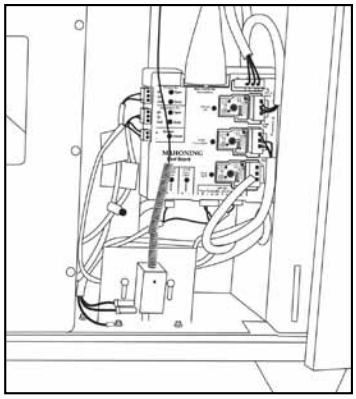
1. Locate the **problem** in the left column that most closely resembles the problem you are trying to solve with your Skye Series heater.
2. In the middle column, begin with the first **possible cause** in the boxes that correspond to your problem.
3. Try the **solution** posed in the right column.
4. If one solution does not work, proceed to the next possible solution until you have either resolved the problem or reached the end of the list.
5. If none of the solutions work, contact your dealer or request help from a qualified technician.

Prior to consulting this guide: Make note of the LED indicators on the heater's controller displays, which can be found in three places on your Skye Series heater:

- **The main controller** (in the rear cabinet: controls the circulating pump, main water delivery pump, auxiliary pumps, bypass damper; monitors and controls heater operations and water levels.



• **The front controller** (behind the front access panel): controls the door locks, light, blower, air controls, damper controls and communicates with the side digital display.

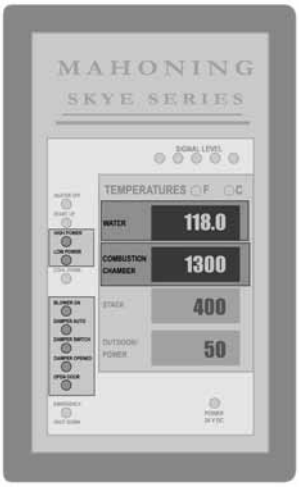


• **The side digital display** (external display located on the ride side of your heater: displays heater mode and temperature information.

Red and green LED indicators:

• In general, a red light indicates a disconnected temperature sensor or a fault in the connection of the damper motor or a primary or secondary air motor.
• Green lights indicate:

  • Proper connection of pumps and blower motors (load on) and proper connection of temperature sensors.
  • "Closed" status of switches (thermostat and water level).
  • The heater's operational mode.



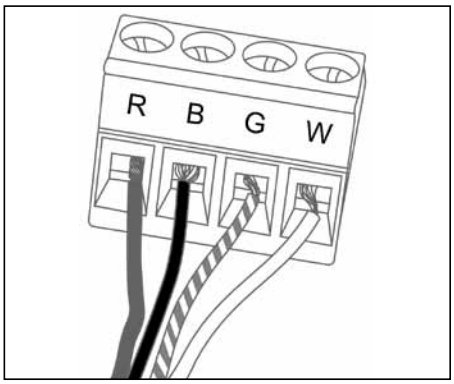
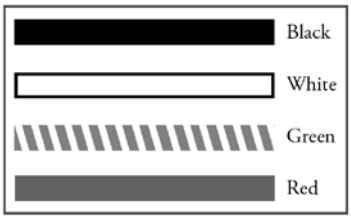
I. Power and Connections

The solutions in this section are designed to help you troubleshoot the most common problems encountered while powering up the heater.

Problem	Possible Cause	Solution
1. Heater is not powering up	✔ The circuit breaker located in your home, which delivers power to the heater, has been tripped.	Cycle the breaker by flipping the switch off for five seconds and turning it back on.
	✔ The heater's reset switch (circuit breaker) found on the front of the power box located in the rear cabinet of your heater) has been tripped.	Reset the heater by switching the reset off for five seconds and turning it back on.
	✔ Power is not available in the power box in the rear cabinet.	Plug a drill, lamp, or other 120V device into the auxiliary outlet on the side of the power box. If the device works, the power box is not the problem. If the device does not work, the problem could exist elsewhere. Either way, contact your dealer or request help from a qualified technician. The information you have collected through the troubleshooting process will help your technician solve the problem more quickly.

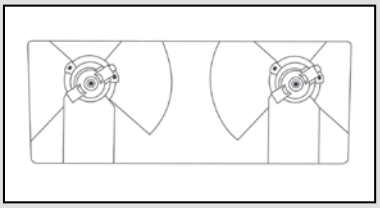
Problem	Possible Cause	Solution
2. LED indicator lights for thermocouple or water temperature sensors on the main controller (in the rear cabinet) are lit red. **Note:** **In this case, the heater is not functioning properly (may eventually stop heating the structure).** **This problem generally occurs just after the heater was installed or when someone has been working in the rear panel.**	✔ The green connector is not plugged snugly into the socket of the main controller.	Press green connector into place.
	✔ Wires are loose or disconnected from the green connector that is plugged into the main controller.	Check the wire, where it attaches to the green connector and re-insert/ tighten as necessary.
	✔ Wires leading to the main controller are broken, frayed, or damaged.	Check the full length of the wire for damage. Replace damaged wires as needed.
	✔ The probe is bad. **Note: Thermocouples are identified by brown wires. Water sensors are identified by white wires. The thermocouple and water sensor wires connect to the main controller through green connectors.**	Step 1: Remove the connector that attaches the problem probe to the main controller. Step 2: Remove a working probe connector of the same type (brown-wired probes can be used to test other brown-wired probes and white-wired probes can be used to test other white-wired probes.) Step 3: Connect the working probe to the socket of the problem probe. Result 1: If the LED indicator light changes to green with the working probe attached, the problem probe is not working and must be replaced. Result 2: If the LED indicator light does not turn green, the main controller board probably has to be replaced. Contact your dealer or a request help from a qualified technician. Contact dealer. **Remember to plug each wire back into its proper socket when you are finished.**
3. A pump or the combustion blower is not working and the LED indicators on the main controller (in rear cabinet), next to the connectors for your pumps and blower are not lit. **NOTE: LED indicators should be lit green. No light indicates a problem.**	✔ Connections to the pump or blower are loose or damaged.	**IMPORTANT: Switch power off at the power box (in rear cabinet) before applying this solution.** Check pump and blower connectors and wires. Reconnect or replace damaged connectors/wires as necessary.

Problem	Possible Cause	
	✔ The pump or blower is disconnected or is not functioning.	**IMPORTANT: Switch power off at the power box (in rear cabinet) before applying this solution.** Check the function of the pump or blower using a working socket. **To check pumps:** Step 1: Disconnect the water temperature sensor from the main controller (to force the heater into emergency mode and energize all of the pumps). Step 2: Unplug the connector associated with the problem pump. Step 3: Unplug a connector associated with a functioning pump Step 4: Place the functioning pump connector into the problem pump socket. Step 5: Turn the power back on. Result 1: If the light turns green, the problem pump has failed and may need to be replaced. Result 2: If the light does not turn green, the problem is in the main controller. Contact your dealer or request help from a qualified technician. **To check the combustion blower:** Step 1: Remove the front panel (below the loader door) Step 2: Plug the connector associated with the problem blower into either the front light or door lock socket (as marked on the front controller). Step 3: Turn on the power and wait one minute for the heater to power up. Step 4: Flip the automatic damper switch up and down. Result 1: If the heater is in OFF mode, the blower should turn on and off with the switch. This means that the blower is working normally. Result 2: If the blower does not work, it may need to be replaced.

Problem	Possible Cause	Solution
4. The lights on the side digital display are not working OR the side digital display shows only dashed lines instead of numbers.	✔ The side digital display has not woken up yet.	Wait at least 90 seconds after powering up for display numbers to appear. (If you have recently worked on the boiler or in the back panel, the display may need some time to wake up.)
	✔ Green connectors to the main controller and front controller are not properly connected. **Note: Your Skye Series heater has three four-terminal green connectors that power and communicate with the side digital display. One connector is plugged into the main controller (in rear cabinet) and two are plugged into the front controller (behind the panel below the loader door).**	Step 1: Tighten any loose wires and make sure the wires are correctly installed: from left to right on the front controller and from bottom to top on the rear controller, they should appear in the color order: RED–BLACK-GREEN-WHITE   Step 2: Cycle the power (turn off, wait five seconds, and turn back on). If the side digital display still continues to malfunction, contact your dealer for service on the side digital display. **Note: The heater will operate properly even if the display is not working.**

II. The Control System

The following guide covers perceived problems related to the control system and normal operation. Since the heater is computer controlled, many heater functions may seem to be a malfunction when they are not. Follow these guidelines to determine if the function of your heater is normal or not.

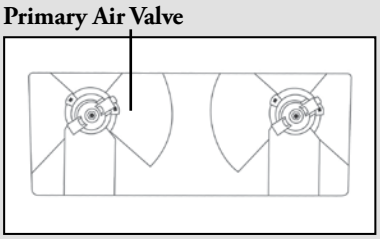
Perceived Problem	Possible Cause	Solution
1. The combustion blower will not turn on.	✔ The damper switch has not been placed in the automatic position (down).	If the switch is up, make sure the door is closed and press the switch down (to automatic).
	✔ Water temperature is too high and the emergency mode has been triggered to shut down all processes to protect the heater.	Allow the water temperature to cool before adding more wood.
	✔ The water level is low. **Note: If the water level is low, the side digital display will indicate "LO."**	Add water until either water spills from the overflow or the water level LED indicator on the main controller (in the rear cabinet) is lit green.
	✔ The stack temperature is below 125 degrees. (The stack temperature can be found on the side digital display) **Note: The stack temperature acts as the on/off switch for the heater. Below 125 degrees, the heater considers itself to be off.**	Re-kindle the fire using more kindling. Wait until the stack temperature rises above 125 degrees before closing the door and setting the damper switch to automatic (down).
2. The primary and secondary air motors (located behind the front panel) are not moving. **Reference 1**  **(Air Control Valves Closed Completely)**	✔ The heater set at a high set point, is in cool down mode, or is in emergency mode. **Note: Your heater may be functioning normally. The solution will help you determine if the primary and secondary air motors are functioning correctly.**	Step 1: Power down the heater by pressing the reset switch in the rear cabinet to off. (Both air control valves should close completely). **Reference 1.** Step 2: Force the heater into startup mode by kindling a fire or opening the automatic damper until the stack temperature is higher than the combustion temperature (use the side digital display to determine stack and combustion temperatures). Step 3: Both primary and secondary dampers should open completely. Step 4: Return the damper switch to automatic (down). Result 1: The primary and secondary air motors will begin to move and the heater will send heat to the structure. Result 2: If this solution does not work, the motors are jammed or broken, or the front controller is not functioning properly. Contact your dealer or request help from a qualified technician.

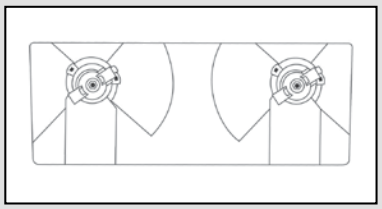
Problem	Possible Cause	Solution
3. The damper will not close (the side digital display will indicate that the damper is still opened).	✔ The damper switch is not set to automatic.	Note the position of the damper switch. If the switch is up, make sure the door is closed and press the switch down (to automatic).
	✔ The heater is in emergency mode.	Step 1: Stop fueling the heater and allow the water temperature to cool. Step 2: Leave the damper switch in automatic position (down). Step 3: When the heater has recovered from emergency mode, you can continue to add fuel as necessary.
	✔ The stack temperature is lower than 775 degrees during "Start Up" mode.	Step 1: Continue adding smaller pieces of wood, then larger pieces until the stack temperature reaches 775 degrees. Step 2: Close the door and press the damper switch down (to automatic).
4. The outside light is blinking.	✔ The automatic damper switch has been in the up ("Load Fuel") position for more than 10 minutes.	Press the damper switch down ("Automatic Operation") OR press the switch down and up again if you need more time for startup or refueling. This should stop the light from blinking.
5. The main or auxiliary hydronic pumps are not working.	✔ The water temperature is not above the set point. (typically 120 degrees) ✔ The hydronic pump is not activated. **Note: The LED thermostat indicator on the main controller will be lit green when the hydronic pump has been activated.** **Continuous pump system thermostats have a jumper installed on the controller.** **A green light may indicate that the thermostat is not calling for heat and therefore has not activated the pump (a normal condition).** **If the LED indicator is green but the hydronic pump is not activated, there may be a problem.**	Continue fueling the heater until the water temperature has reached the set point. **For both thermostat-controlled and continuous pump system:** Step 1: Unplug the connector associated with the problem pump. Step 2: Unplug the connector of a working pump (the circulating pump, for example). Step 3: Plug the working connector into the problem pump socket. Result 1: If the working pump continues to work in the socket of the problem pump, the problem pump is broken and must be replaced. Result 2: If "Result 1" is not achieved, there may be a problem with the main controller. Contact your dealer or request help from a qualified technician.

III. General Performance

The following section covers general performance issues that are not related to malfunction of the heater, electronics or system components. These problems are often associated with improper operation or fueling.

Problem	Cause/Checklist	Action
1. Heater stays in "Start Up" mode or the damper opens and closes constantly.	✔ The damper switch is not in the automatic position (down).	If the switch is up, make sure the door is closed and press the switch down (to automatic).
	✔ The stack temperature is not above775 degrees and the damper has not closed. (If the damper is opening and closing, you may hear a growling motor noise and the side display will indicate that the damper has not closed.)	Step 1: Clear ash from the combustion air inlets at the rear of the firebox. Step 2: Add more kindling and dry wood to build up the fire. Step 3: Close the door and return the damper switch to automatic (down). Step 4: When stack temperature exceeds 775 degrees, the damper will close automatically.
	✔ The combustion temperature has not remained above 1000 degrees for 10 minutes.	Step 1: Clear ash from the combustion air inlets at the rear of the firebox. Step 2: Add more kindling and dry wood to build up the fire. Step 3: Close the door and return the damper switch to automatic (down). Step 4: The damper will open and close until the heater is hot enough to sustain proper combustion. **Note: Make sure you have waited the full ten minutes before determining that this solution has failed.** .

Problem	Possible Cause	Solution
2. Water will not heat to the high set point (generally 180 degrees)	✔ Normal operation (possibly)	If the water is within a few degrees of the set point, there is no need to apply a solution. Depending on the heat required by the structure and the amount of fuel in the firebox, the water temperature may remain a little below the set point. Note: If the water never reaches the set point or is more than 10 degrees cooler even though there is plenty of fuel in the firebox, continue the checklist.
	✔ The combustion blower is not operating normally	See Solutions to Problem 1 in the "Power and Connections" section above.
	✔ The primary air valve is not open (you will find the primary air valve behind the front lower access panel found below the loader door).  **(Air Control Valves Closed Completely)**	If water is within a few degrees of the set point (the industry norm is between 120 and 180 degrees) it is possible that the primary air valve will be closed. Primary air valve is located on the left side, secondary air valve on the right side. Wait until the water cools and observe whether the primary air valve opens. If it does not, refer to the Solutions for Problem 2 in the "Control Systems" section above.
	✔ The boiler does not have adequate fuel or the air inlets are blocked.	Add more fuel and/or drier fuel. If the heater has not entered the "High Power" mode (as indicated on side digital display), clear ash from the combustion air inlets in the firebox and add more kindling/dry wood. Shut the door and return the damper switch it to the automatic position (down).
	✔ There is a continuous heat demand on the heater from the structure.	Add more fuel, drier fuel or fuel more often.

Problem	Possible Cause	Solution
3. Excessive smoke is issuing from the chimney.	✔ The bypass damper is open (the side digital display "Damper Opened" status LED indicator will be lit green).	Check the side digital display. If the heater is in "Start Up" mode, the damper is behaving normally. If the heater is not in "Start Up" mode, make sure the damper switch is pressed down (to automatic).
	✔ The weather is very damp/ rainy and cold?	Water vapor (steam) from the combustion may be mistaken as smoke in these conditions.
	✔ The heater has remained at set point (180 degrees) for a long period after reloading.	Don't reload immediately. Allow the water temperature to drop at least 20 degrees below the set point (180 degrees) before reloading.
	✔ The combustion and catalyst temperatures have risen above 800 degrees. The combustion system may temporarily be overloaded with "rich smoke," due to the use of very small, dry pieces of wood.	Use larger pieces of wood. Avoid using lots of small, thin pieces of wood.
Reference 2  **(Air Control Valves Closed Completely)**	✔ The primary and secondary air motors are not working.	Step 1: Power down the heater by pressing the reset switch in the rear cabinet to off. (Both air control valves should close completely. **Reference 2.** Step 2: Force the heater into startup mode by kindling a fire or opening the automatic bypass damper until the stack temperature is higher than the combustion temperature (use the side digital display to determine stack and combustion temperatures). Step 3: Both primary and secondary air control valves should open completely. Step 4: Return the damper switch to automatic (down). Result 1: The primary and secondary air motors will begin to move and the heater will send heat to the structure. Result 2: If this solution does not work, the motors are jammed or broken, or there is something wrong with the front controller. Contact your dealer or request help from a qualified technician.

IV. Error Codes

Error codes relate to the status of four temperature sensors, three thermocouples (stack, combustion, catalyst) and the water temperature probe. Error codes are displayed on the side display in the number block related to each specific sensor.

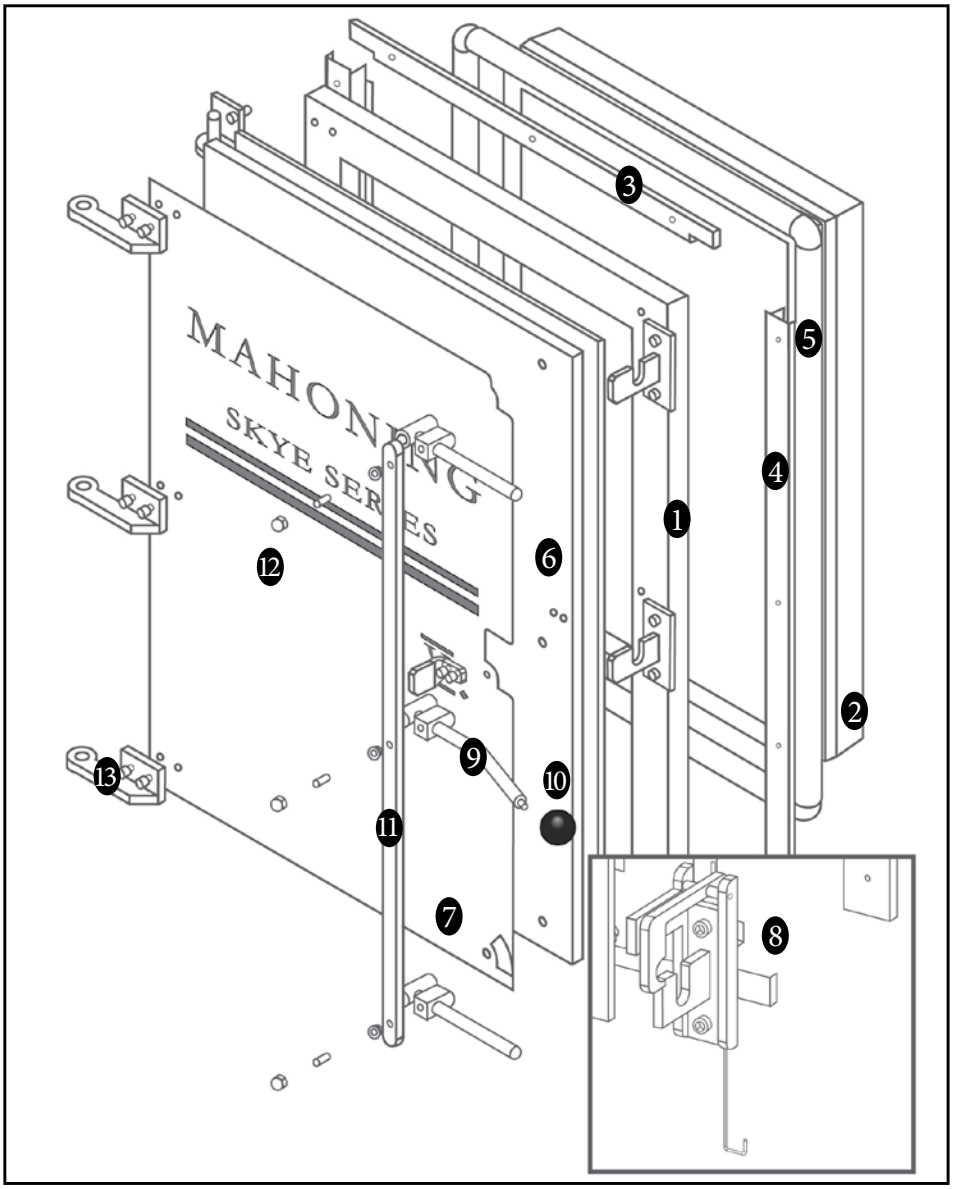
Code	Possible Cause	Solution
E1, E2, E3, E5	✔ The probe is not positioned properly (is placed in the wrong location or is not installed in any heater location).	Consult page 19 figure 2 in the owner's manual for probe locations to determine if the probe is installed in the proper location on the heater.
E4 – Open connection	✔ The probe or wires are faulty or the sensor is disconnected from the main controller.	Refer to Problem 2 in the "Power and Connections" section of this troubleshooting guide.
Emergency Mode – Mode LEDs flashing on the rear controller and indicated on the front controller.	✔ The water temperature is too hot (typically above 195 degrees).	Increase heat demand in the structure by turning the thermostat on (or up) to pull heat off your Skye Series heater OR do nothing. When the heater cools down it will move out of emergency mode. Air control valves will close and the bypass damper will open to protect the heater. Water will flow out of the overflow. If the problem persists, add smaller amounts of wood when you fuel the heater.

Replacement Parts and Accessories:

The following parts may be ordered from your Mahoning dealer or directly from the factory at 800-692-5123. Use only Mahoning replacement parts.

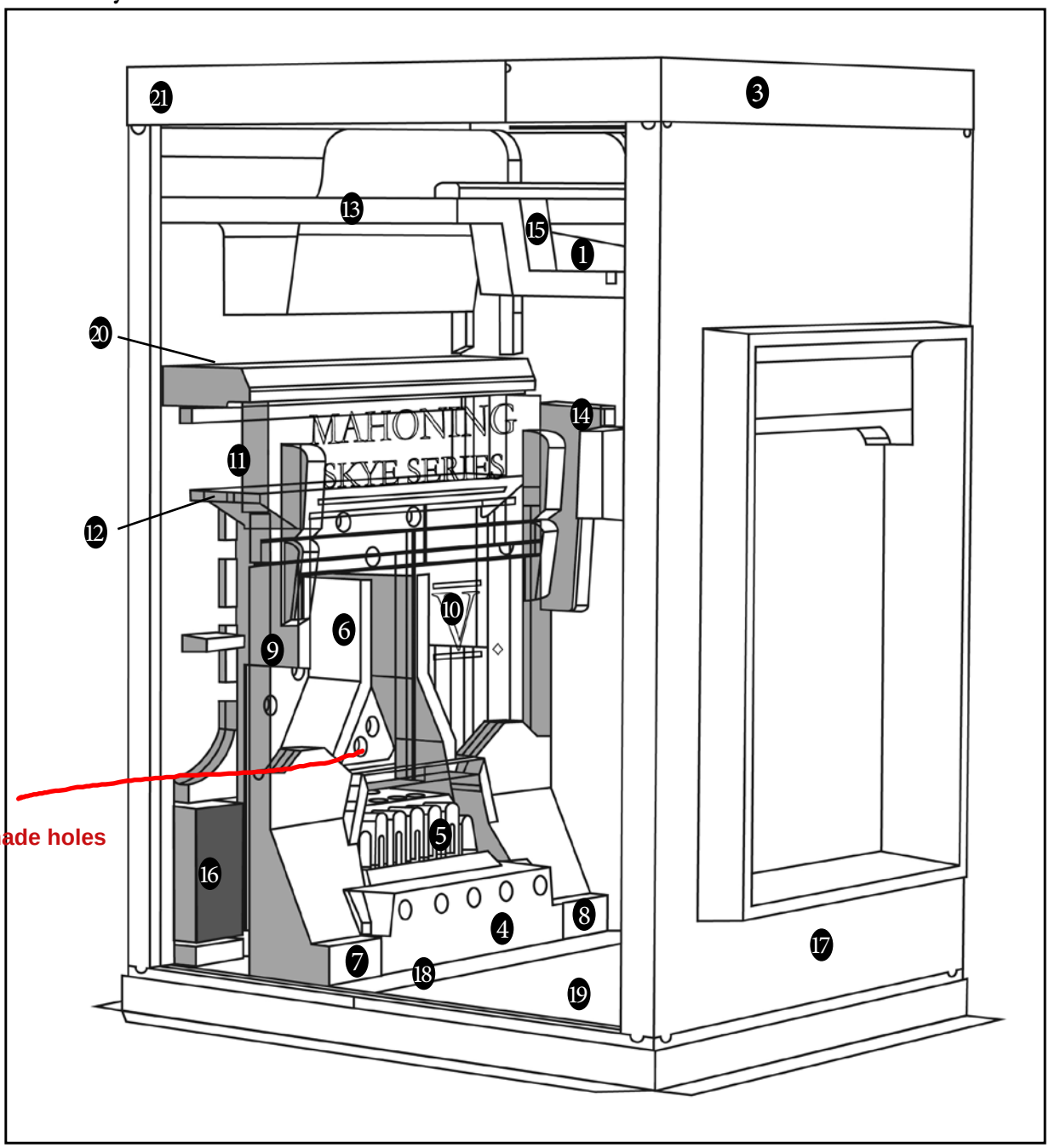
Please provide the serial number of your heater when ordering parts to help ensure the proper parts are delivered.

Door Assembly



Item	Part Name	Item	Part Number
1	Frame	8	Latch
2	Refractory Panel	9	Handle
3	Top Bracket	10	Knob
4	Side Bracket	11	Tie Bar
5	Gasket	12	Pivot Bolts
6	Front Cover	13	Hinge Plate
7	Outer Cover		

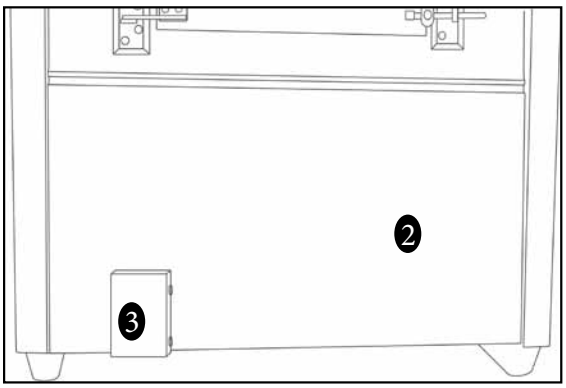
Refractory Parts

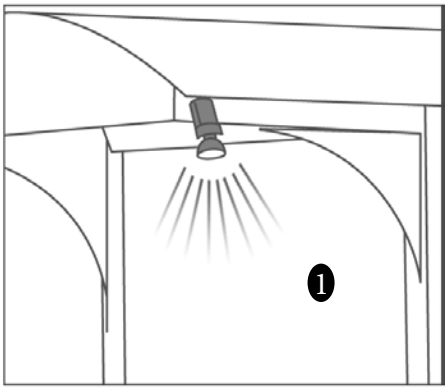


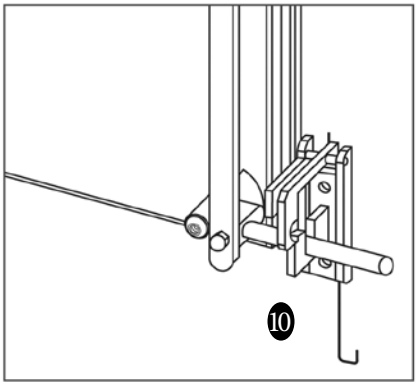
(Refer to pg. 24)

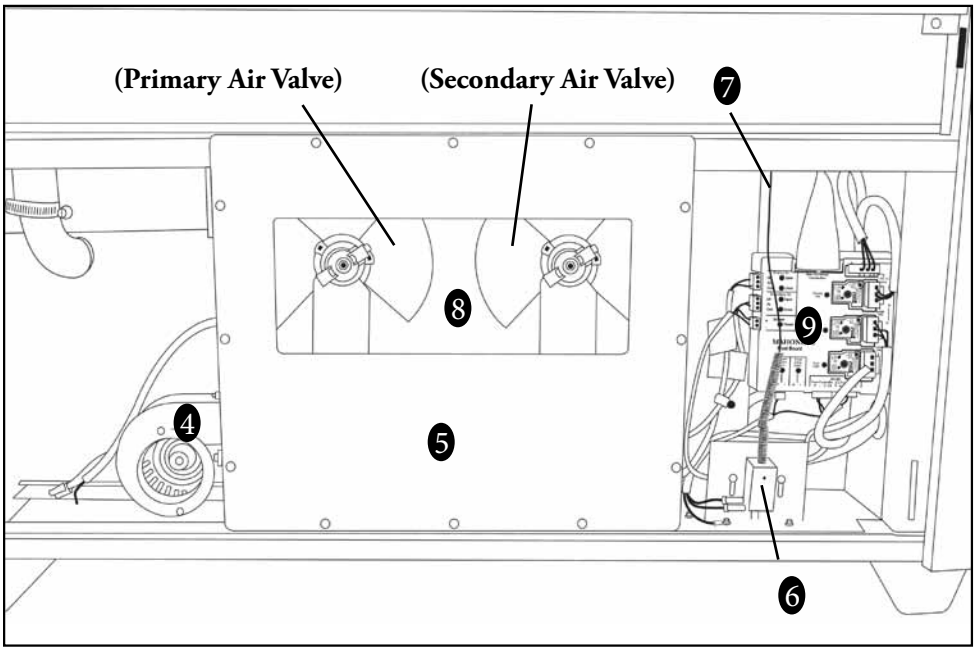
Item	Part Name	Item	Part Number
1	Damper	12	Fountain Cap
2	Damper Gasket	13	Inner Top Rear
3	Damper Access	14	Wedge
4	Front Air Distributor	15	Damper Housing
5	Rear Air Distributor	16	Catalyst
6	Combustion Chamber	17	Front
7	Left Lower Fire Back Base	18	Bottom Rear
8	Right Lower Fire Back Base	19	Bottom Front
9	Middle Fireback Left	20	Fire Back Top
10	Middle Fireback Right	21	Outer Top Rear
11	Upper Fireback		

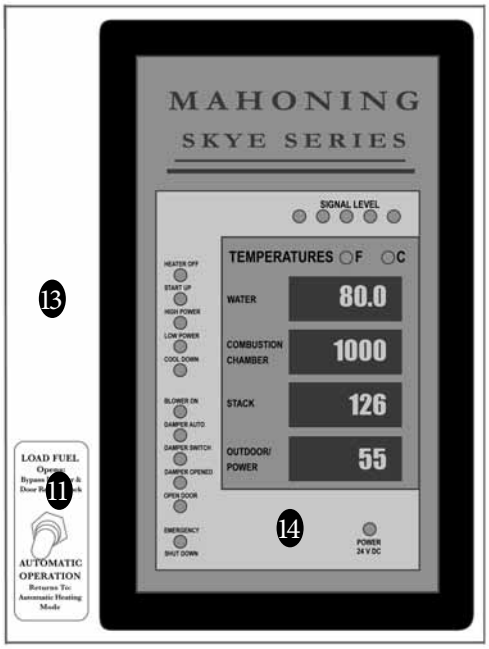
Front Components

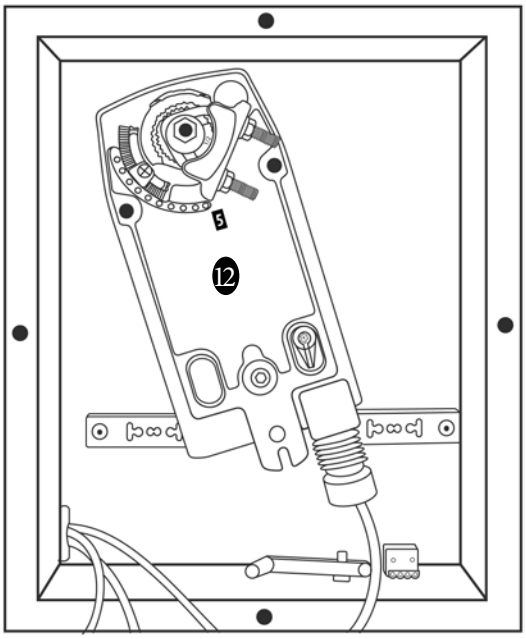






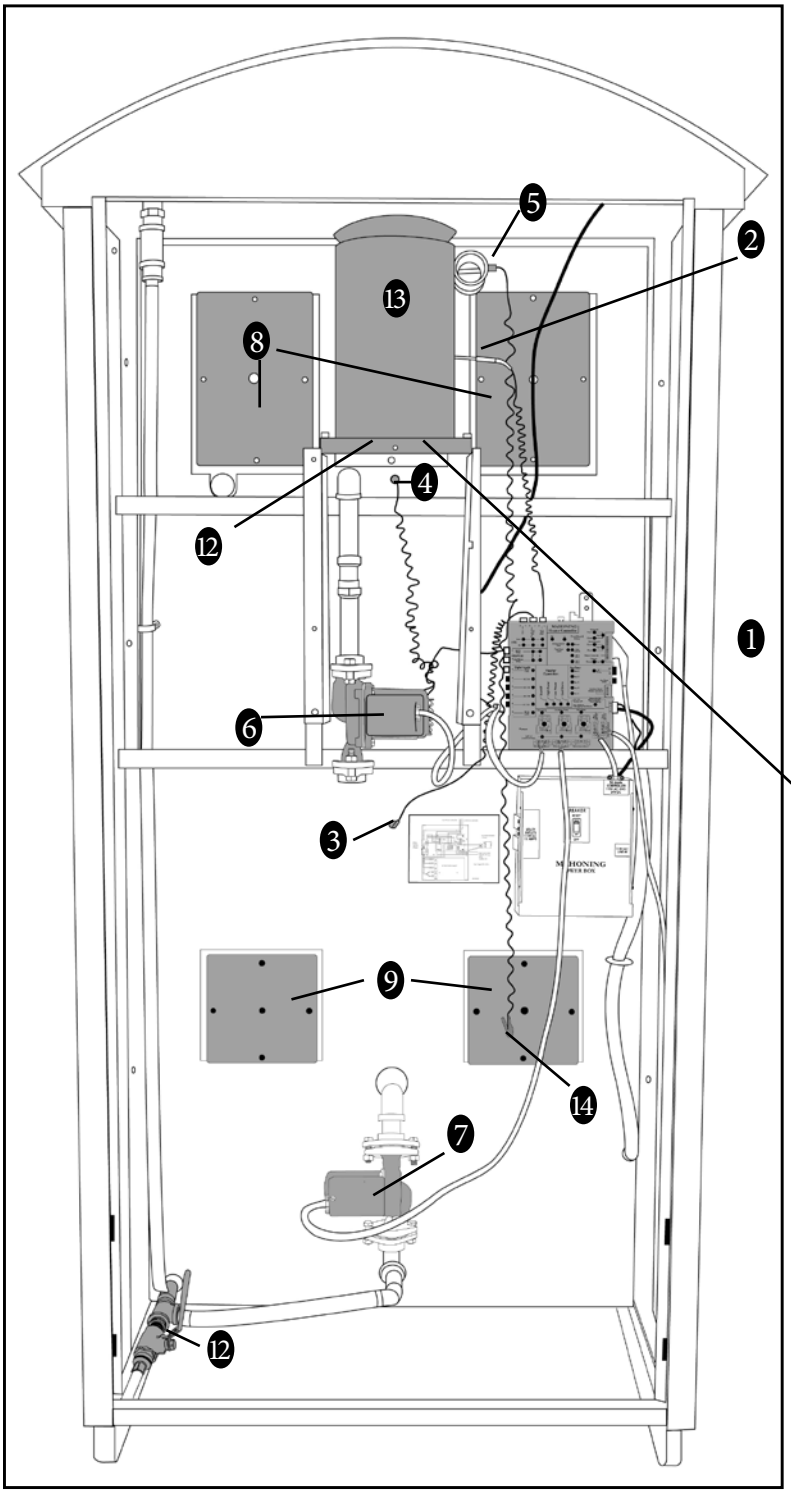






Item	Part Name	Item	Part Number
1	Front Access Upper Panel	8	Air Control Motor
2	Front Access Lower Panel	9	Front Control Board
3	Blower Access Cover	10	Locking Latch Assy
4	Blower	11	Damper Switch
5	Air Box Cover	12	Damper Motor
6	Solenoid	13	Damper Cover Box
7	Door Lock Linkage	14	Display

Rear Cabinet Parts

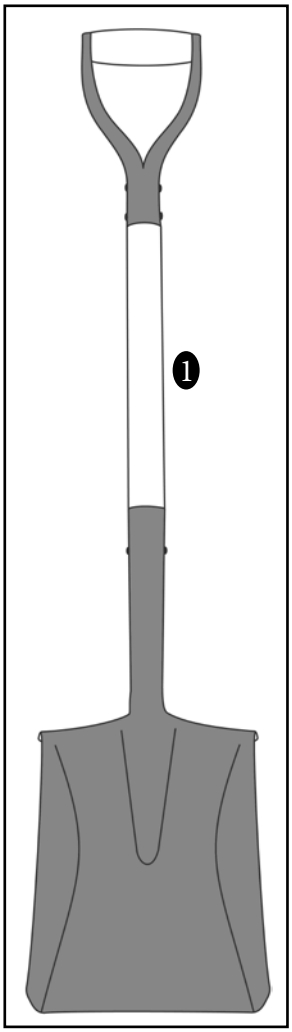


Item	Part Name
1	Main Controller
2	Stack Thermocouple
3	Combustion Thermocouple
4	Supply RTD
5	Return RTD
6	Hydronic Pump
7	Circulating Pump
8	Upper Cleanout Assy
9	Lower Cleanout Assy
10	Rear Cabinet Door(s) - removed
11	Chimney Cleanout Cover
12	Ball Valve
13	Chimney
14	Catalyst Thermocouple

11 **(Not Visible, See Page 6, item 1)**

Accessories

Item	Part Name
1	Shovel
2	Rust Inhibitor



NOTES

MAHONING OUTDOOR FURNACE, INC.

Statement of Warranty

3-Year Warranty
1 Year on Electrical Components
We do not warranty grates or door gaskets.
We are not liable for any installation or shipping charges on warranty parts.

PLEASE complete the bottom portion of this page and return it, along with the "VOIDING YOUR WARRANTY" page, within 30 days of purchase to activate your warranty to:

Mahoning Outdoor Furnace, Inc.
208 Whiskey Run Road
Mahaffey, PA 15757

Mahoning Outdoor Furnace, Inc., warrants to the original purchaser of new equipment that it will be free of defects in workmanship and materials. Mahoning Outdoor Furnace, Inc.'s liability under this warranty shall not exceed the cost of correcting the defect on its product only. This warranty is void if Mahoning Outdoor Furnace, Inc. finds that the equipment has been subjected to improper care, abnormal operation or abuse.

WARRANTY CARD

Name of dealer purchased from: _____

Name of purchaser: _____

Phone Number (include area code): _____

Address (include zip code): _____

Date purchased: _____

Date first fired: _____

Model: _____

Serial Number: _____

Signature of owner: _____

MAHONING
SKYE SERIES

VOIDING YOUR WARRANTY

Mahoning Outdoor Furnace, Inc. provides information to purchasers of Mahoning Outdoor Furnaces concerning recommended installation standards. Mahoning Outdoor Furnace, Inc. WILL NOT WARRANTY any furnace in which any modifications are made to it that are not performed by Mahoning Outdoor Furnace, Inc.

I/We the undersigned realize and understand that any variation from installation recommendations could result in increased fire and safety hazards.

I/We the undersigned realize and understand that any modifications to a Mahoning Outdoor Furnace unit makes null and void any written, implied, or expressed warrantee on the part of Mahoning Outdoor Furnace, Inc.

I/We the undersigned realize and understand that any consumer or contractor modification of a Mahoning Outdoor Furnace could result in increased fire and safety hazards and Mahoning Outdoor Furnace, Inc. WILL NOT be held responsible for any damages resulting from any type of modifications.

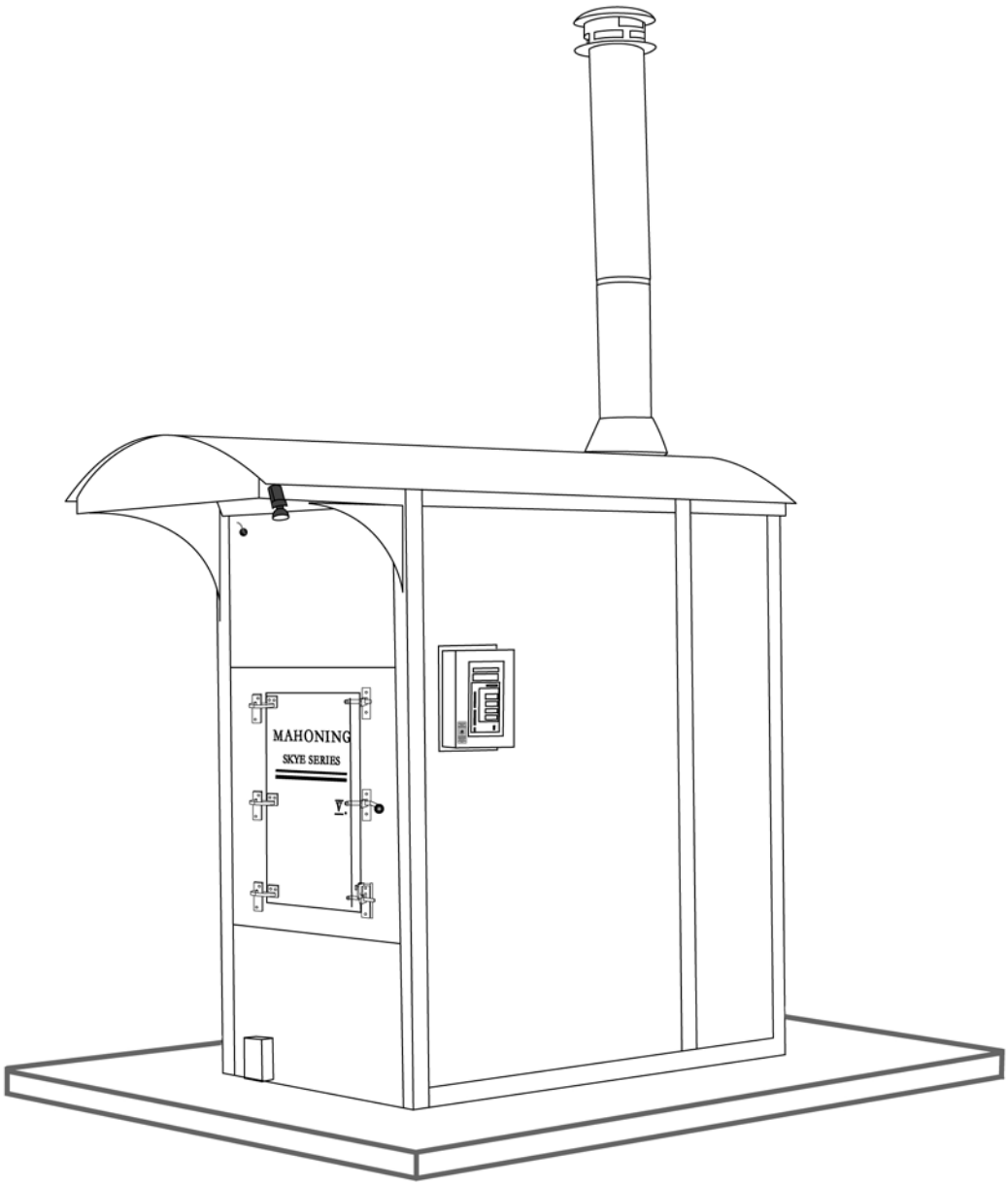
I/We the undersigned realize the warranty can be voided by operating a residential hydronic heater in a manner inconsistent with the owners' manual.

Purchaser _____ Witness Date _____

Purchaser _____ Witness Date _____

PLEASE return this form with the warranty form that you will find on the previous page to:

Mahoning Outdoor Furnace, Inc.
208 Whiskey Run Road
Mahaffey, PA 15757
800-692-5200



Mahoning Outdoor Furnaces, Inc.
Skye Series V.

208 Whiskey Run Rd | Mahaffey, PA 15757
(800) 692-5200