

HEATMORTM

STAINLESS STEEL

Outdoor Furnaces

GENERAL CSS

SAVE THESE INSTRUCTIONS

**Manuel en Français disponible en ligne:
www.HEATMOR.com**

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When these safety symbols appear on the following pages, they will alert you to the possibility of serious injury if you do not comply with the corresponding instructions. The hazard may originate from something mechanical or electrical shock. Please read the instructions carefully.



When you see this safety symbol on the following pages, it will alert you to the possibility of damage to your HEATMOR™ Stainless Steel Outdoor Furnace if you do not comply with the corresponding instructions. Please read the instructions carefully.



The HEATMOR™ Stainless Steel Outdoor Furnace is certified to offer safe service provided it is installed, operated and maintained in accordance with the instructions contained in this manual.

Proper personal protective equipment, (PPE), **MUST BE WORN AT ALL TIMES** when servicing and maintaining any of the HEATMOR™ Stainless Steel Outdoor Furnace product line.

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HEATMOR™

Dear HEATMOR™ Owner,

On behalf of myself and the employees of HEATMOR™, I would like to take this opportunity to personally thank you for the purchase of our HEATMOR™ Stainless Steel Outdoor Furnace. You can be assured that your HEATMOR™ was constructed with great emphasis on quality and workmanship. It is our commitment to provide you with the finest outdoor furnace in the industry. We wish you many years of trouble-free use and we sincerely hope you enjoy the comforts of burning wood.

This manual contains the manufacturer's recommendations for operation and maintenance of the HEATMOR™ Stainless Steel Outdoor Furnace. Also included are some regular maintenance tips and FAQ's (frequently asked questions). Please observe and follow all safety instructions as directed in this manual. SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE.

Finally, please fill out your registration and warranty forms, if you haven't done so already. If you have any further questions on the operation or maintenance of your HEATMOR™ Outdoor Furnace, please contact your local dealer.

Sincerely,



Gerry Reed,
President



NOTICE TO THE READER

HEATMOR™ Inc. warrants and guarantees ALL HEATMOR™ Stainless Steel Outdoor Furnace Models. HEATMOR™ Inc. does not warrant or guarantee any of the supporting products described within this Operations and Maintenance Manual.

The contents, descriptions, directions, diagrams, and recommendations within this material are for the sole purpose of suggested operation and maintenance methods.

Furthermore, HEATMOR™ Inc. shall not be liable for any special, consequential, or exemplary damages, resulting, in whole or part, from the readers' neglectful use, based upon the material within this Operations and Maintenance Manual. Adhere to and follow all maintenance procedures set forth in this manual.

The methods of operation described within this Operations and Maintenance Manual have proven to be effective for HEATMOR™ Inc. for the sole purpose of the operation of a HEATMOR™ Stainless Steel Outdoor Furnace.

All formulas and figures listed within this Operations and Maintenance Manual are approximated and should be read as such.

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MODELS (100 CSS, 200 CSS, 400 DCSS)

Supplemental literature will be provided in addition to this manual for Models 200 CSS/OB, 400 DCSS/OB, 600 CSS and 800 CSS.

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Units are Safety Listed by Omni Test Laboratories

Report # 275-O-11-4 and # 275-O-12-4

Listed to UL2523-2009 and CSA B366.1-11



HEATMOR™ STAINLESS STEEL OUTDOOR FURNACE MODELS



Model 100 CSS



Model 200 CSS



Model 400 DCSS

RESIDENTIAL FURNACE SPECIFICATIONS

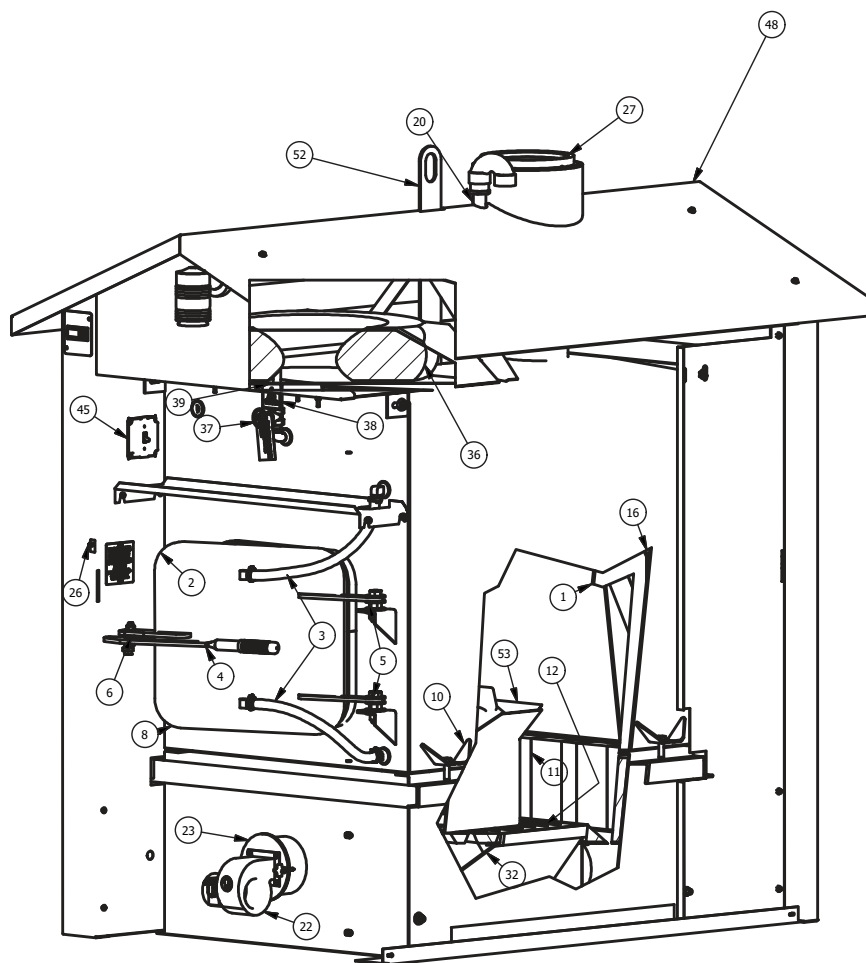
Specifications	Model 100 CSS	Model 200 CSS	Model 400 DCSS
Overall Width (Inches)	50	50	50
Base Width (Inches) (Footprint)	46.5	46.5	46.5
Overall Height (Inches) (With chimney stub)	82.5	82.5	82.5
Overall Length (Inches)	65	77	95
Base Length (Inches) (Footprint)	53.75	65.75	83.75
Total Weight (lbs., without water)	1375	1599	1968
Water Capacity (U.S. gallons)	85	114	155
Forced Draft (C.F.M.)	75	150	2 x 150 = 300
Chimney Size (Inches)	8	8	8
Wood Length (Inches)	24	36	54
Insulated Heating Area (Sq. Ft.)* 1 Loading/day 2 Loading/day	1500 3000	2500 5000	5000 10,000
Firebox Width (Inches)	28	28	28
Firebox Length (Inches)	24	36	54
Firebox Height (Inches)	36	36	36
Volume of Firebox (Cu. Ft.)	14	21	32
Firebox Door Size (Inches) (W x H)	20 x 18	20 x 18	20 x 18
Flue Transfer Area (Sq. Ft.)	6.5	10	15
BTU's (maximum)**	100,000	200,000	400,000
Water Jacket Steel Gauge	409 Stainless 10	409 Stainless 10	409 Stainless 10
Firebox Steel Gauge	409 Stainless 10	409 Stainless 10	409 Stainless 10
Base Steel Gauge	409 Stainless 14	409 Stainless 14	409 Stainless 14
Base of Unit to Bottom of Loading Door (Inches)	24	24	24
Warranty - Workmanship	Limited Lifetime	Limited Lifetime	Limited Lifetime
Warranty - Corrosion	Limited Lifetime	Limited Lifetime	Limited Lifetime
Approvals Test Standards	UL 2523-2009 CSA-B366.1-11	UL 2523-2009 CSA-B366.1-11	UL 2523-2009 CSA-B366.1-11
Hook-ups	Back	Back	Back
Total Heat Extraction Area (Sq. Ft.)	30.89	40.89	55.89
Type of Fuel	Wood and Coal Only	Wood and Coal Only	Wood and Coal Only
Electrical Supply	115 V, 60HZ, 1 Phase	115 V, 60HZ, 1 Phase	115 V, 60HZ, 1 Phase

* This is an estimate only. Actual loadings per day may vary depending on structures heated and type of wood used.

** This value should only be used as an indication of the furnace's heat recovery ability. Sustained outputs at this rate will increase the loadings per day. Some types of wood may prevent the furnace from reaching this maximum output.

FRONT CUT-AWAY VIEW OF HEATMOR™ OUTDOOR FURNACE

(For parts not shown on the cut-away view, please refer to the appropriate chapter for further details.)



FURNACE PARTS LIST

Firebox

- 1) Firebox
- 2) Firebox door
- 3) Firebox door hoses and elbows
- 4) Firebox door handle
- 5) Firebox door hinge
- 6) Firebox door latch
- 7) Firebox door handle holder(not shown)
- 8) Firebox door gasket
- 9) Firebox door frame
- 10) Firebox / base connector clamps
- 11) Firebrick
- 12) Standard grates
- 13) Optional shaker grates(not shown)
- 14) Sand(not shown)
- 15) Flash curtain / heat shield(next page)

Water jacket

- 16) Water jacket (surrounds firebox)
- 18) Supply line threaded connector(next page)
- 19) Return line threaded connector(next page)
- 20) Relief vent pipe

Air supply

- 22) Combustion air blower (400 DCSS - 2 Fans)
- 23) Flipper assembly
- 24) Air box(s)(next page)
- 25) Combustion air percentage tube(next page)
- 26) Automatic Fan Switch (A.F.S.)

Chimney and top flue

- 27) Chimney Stub
- 28) Chimney extension(s)(not shown)
- 29) Top rectangular flue(next page)
- 30) Top flue cover plate(next page)
- 31) Top flue scraper(not shown)

Ashes

- 32) Ash pan
- 33) Ash auger(not shown)
- 34) Ash auger tube(next page)
- 35) Ash auger tube cover plate(next page)

Bladder assembly

- 36) Bladder
- 37) Bladder gate valve and hose
- 38) Water level gauge
- 39) Bladder inspection cover plate

Thermometer

- 40) Thermometer

Electrical

- 41) Electrical supply junction box(next page)
- 42) Electrical plug outlets(next page)
- 43) Water temperature controller (aquastat) (next page)
- 44) Water temperature high-limit controller (aquastat) (next page)
- 45) Front light and combustion air blower control switch

Housing

- 46) Outer front door(not shown)
- 47) Outer rear door(not shown)
- 48) Roof
- 49) Sides(not shown)
- 50) Insulation(not shown)

Optional hot water internal coil

- 51) Internal coil(not shown)

Lift hook

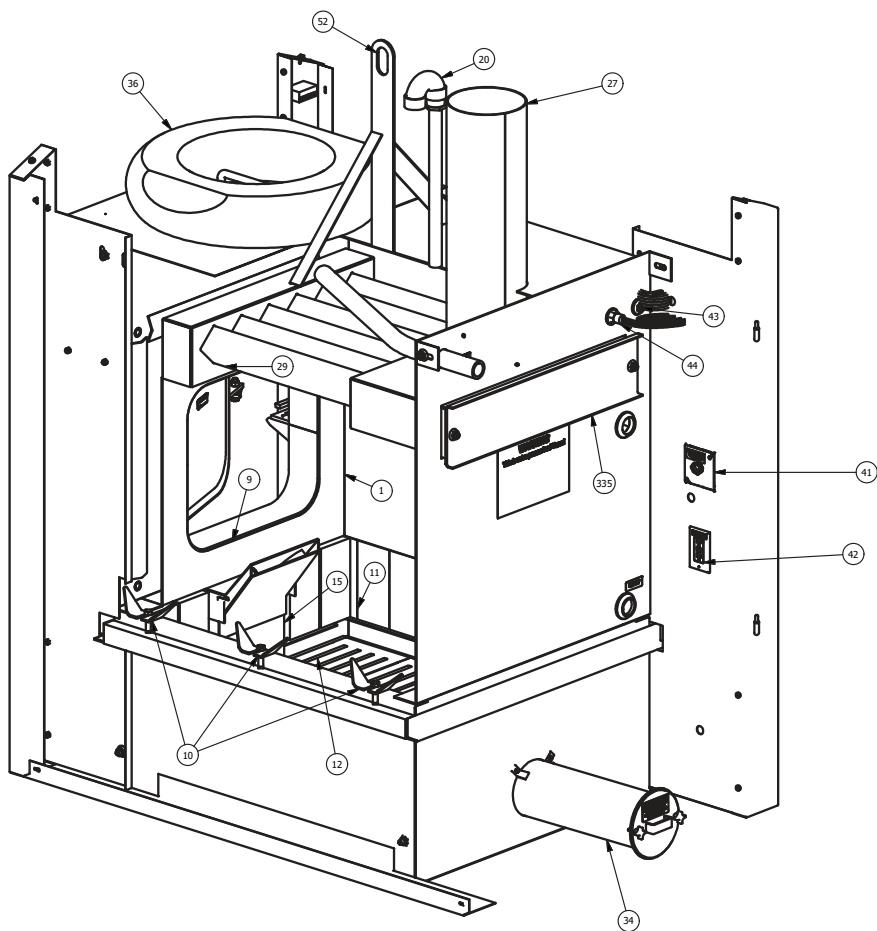
- 52) Lift ring
- 53) Box of Chemical, Keys, Manual

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CHAPTER 4

REAR CUT-AWAY VIEW OF HEATMOR™ OUTDOOR FURNACE

(For parts not shown on the cut-away view, please refer to the appropriate chapter for further details.)



FURNACE PARTS LIST

Firebox

- 1) Firebox
- 2) Firebox door
- 3) Firebox door hoses and elbows
- 4) Firebox door handle
- 5) Firebox door hinge
- 6) Firebox door latch
- 7) Firebox door handle holder(not shown)
- 8) Firebox door gasket
- 9) Firebox door frame
- 10) Firebox / base connector clamps
- 11) Firebrick
- 12) Standard grates
- 13) Optional shaker grates(not shown)
- 14) Sand(not shown)
- 15) Flash curtain / heat shield

Water jacket

- 16) Water jacket (surrounds firebox)
- 18) Supply line threaded connector
- 19) Return line threaded connector
- 20) Relief vent pipe

Air supply

- 22) Combustion air blower (400 DCSS - 2 Fans)
- 23) Flipper assembly
- 24) Air box(s)
- 25) Combustion air percentage tube
- 26) Automatic Fan Switch (A.F.S.)

Chimney and top flue

- 27) Chimney Stub
- 28) Chimney extension(s)(not shown)
- 29) Top rectangular flue
- 30) Top flue cover plate
- 31) Top flue scraper(not shown)

Ashes

- 32) Ash pan
- 33) Ash auger(not shown)
- 34) Ash auger tube
- 35) Ash auger tube cover plate

Bladder assembly

- 36) Bladder
- 37) Bladder gate valve and hose
- 38) Water level gauge
- 39) Bladder inspection cover plate

Thermometer

- 40) Thermometer

Electrical

- 41) Electrical supply junction box
- 42) Electrical plug outlets
- 43) Water temperature controller (aquastat)
- 44) Water temperature high-limit controller (aquastat)
- 45) Front light and combustion air blower control switch

Housing

- 46) Outer front door(not shown)
- 47) Outer rear door(not shown)
- 48) Roof
- 49) Sides(not shown)
- 50) Insulation(not shown)

Optional hot water internal coil

- 51) Internal coil(not shown)

Lift hook

- 52) Lift ring
- 53) Box of Chemical, Keys, Manual

MINIMUM CLEARANCE SEPARATION SPECIFICATIONS

The HEATMOR™ furnace, is certified to be installed outside, away from other buildings. Please observe the following "Clearance to Combustibles" guidelines. If you have any further questions, which are not addressed in this Operators Manual, please contact your local dealer for further information.

- ◆ To HEATMOR™ Stainless Steel Outdoor Furnace **Back.** **96 Inches**
- ◆ To HEATMOR™ Stainless Steel Outdoor Furnace **Top.** **18 Inches**
- ◆ To HEATMOR™ Stainless Steel Outdoor Furnace **Front.** **48 Inches**
- ◆ To HEATMOR™ Stainless Steel Outdoor Furnace **Chimney.** **96 Inches**
- ◆ To HEATMOR™ Stainless Steel Outdoor Furnace **Sides.** **6 Inches**
- ◆ **Do not** store combustible liquids or materials near the furnace.
- ◆ It is not recommended to install the furnace in any form of building.

Before installing your HEATMOR™ Stainless Steel Outdoor Furnace, if in the **United States**, always check any and all applicable state and local regulations and inform your insurance agent.

Before installing your HEATMOR™ Stainless Steel Outdoor Furnace, if in **Canada**, always check any and all applicable Provincial and Municipal regulations and inform your insurance agent.

HEATMOR™ Inc. strongly recommends not installing a HEATMOR™ Stainless Steel Outdoor Furnace within 50 feet of any flammable structure.

A HEATMOR™ Stainless Steel Outdoor Furnace should be located with consideration to your neighbor's property and in accordance with local ordinances. Refer to the "Best Burn Practices" for further operating considerations.

HEATMOR™ Outdoor Furnaces, Model 100 CSS, 200 CSS and 400 DCSS are not designed or certified to be located in densely populated areas.

WARNINGS AND PRECAUTIONS

Please read the following list of cautions, warnings and dangers before installing and operating your HEATMOR™ STAINLESS STEEL OUTDOOR FURNACE. If you have any questions or concerns regarding any of the following cautions, warnings, dangers or instructions in this Operations and Maintenance manual, please contact your local dealer.

Familiarize yourself with the “Best Burn Practices” located on the inside front cover.

Installation

Installation should be performed by a qualified installer and will comply with all the requirements of the authority having jurisdiction over the installation.

- 1) The HEATMOR™ furnace is designed for outside installations, away from other buildings.
- 2) Please observe the following “Clearance to Combustibles” guidelines.

To unit back = 96 inches To unit sides = 6 inches
To unit front = 48 inches To chimney = 96 inches
To unit top = 18 inches

- 3) Before installing the furnace, always check any and all applicable state, provincial, and local regulations.
- 4) HEATMOR™ Inc. strongly recommends not installing a HEATMOR™ Stainless Steel Outdoor Furnace within 50 feet of any flammable structure.
- 5) A HEATMOR™ Stainless Steel Outdoor Furnace should be located with consideration to your neighbor's property and in accordance with local ordinances. HEATMOR™ Outdoor Furnaces, Model 100 CSS, 200 CSS and Model 400 DCSS, are not designed to be located in densely populated areas.
- 6) HEATMOR™ suggests the use of brass fittings when installing the unit.
- 7) Before installing the HEATMOR™ furnace, contact and inform your insurance agent.



- 8) The HEATMOR™ Outdoor Furnace is to be installed on a concrete base only. Any attempt to place the furnace on any other surface may void the warranty.
- 9) Do not connect the HEATMOR™ furnace to the chimney of any existing heating system.
- 10) This unit was not designed, nor is it recommended, for use as a stand-alone heating system. A back up source of heat must be in place to prevent the outdoor furnace from freezing and to provide supplementary heat for the heated buildings.
- 11) Do not pressurize the HEATMOR™ Outdoor Furnace. This unit is designed to operate under atmospheric pressure only.
- 12) Place the in-line fill/drain assembly in a location where the drained contents of the HEATMOR™ will not cause damage to the surrounding areas or it's contents.

Electrical



- 1) Do not connect the electrical components of the HEATMOR™ Outdoor Furnace to any other electrical appliance.
- 2) This HEATMOR™ Outdoor Furnace operates on 115-volt power only. Do not connect the furnace to a 220-volt electrical supply.
- 3) **HEATMOR™ INC. recommends a licensed professional electrician make all the necessary electrical connections involved with the installation of the furnace.**
- 4) Always disconnect the HEATMOR™ Outdoor Furnace from the main electrical supply before servicing any of the electrical components of the HEATMOR™ Outdoor Furnace.
- 5) Always disconnect any existing electrical connections to any in-house heating system, before installing the outdoor furnace to any existing indoor heating system or appliances.
- 6) The red wire from the high-limit aquastat on the back of the HEATMOR™ should be wired to the indoor temperature control to override the thermostat. This will dissipate excess heat in the event of a possible malfunction with the HEATMOR™. **(The red wire is capped off in the electrical junction box when the HEATMOR™ is new.)**

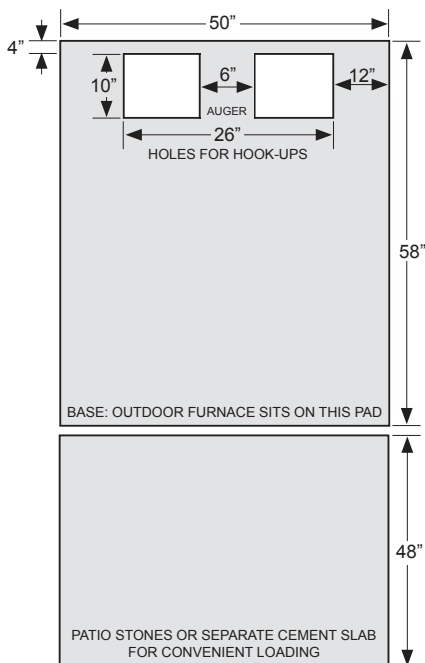
Other

- 1) The unit may be connected to an existing indoor boiler system by installing a water-to-water heat exchanger.



- 1) **HEATMOR™ INC. recommends that you contact a licensed professional plumber to make all necessary plumbing installations between the HEATMOR™ furnace and the existing heating system of your building(s).**
- 2) **Do not operate the HEATMOR™ furnace until all electrical and water line connections have been properly installed and tested.**
- 3) **Do not allow any fire in the firebox until the HEATMOR™ has the correct amount of water and sand installed.**

MODEL 100 PAD SPECIFICATIONS



The actual pad size is 50" x 58." This gives approximately 2" extra on all sides of furnace. CAUTION: Do not exceed this length measurement. Width can be wider if desired.

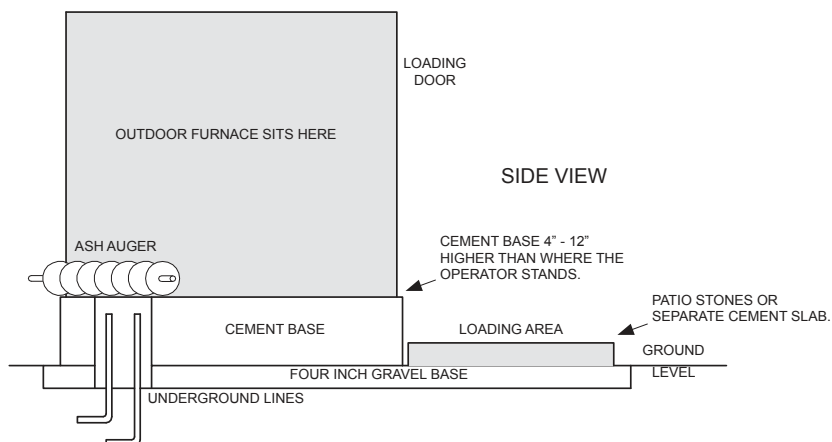
The bottom of the loading door is 24" above ground or base of furnace. If you desire to have the leading door higher, you can do so by making the pad depth thicker. Example: 12" instead of 4" or any figure in between.

Patio stones or separate cement pad in front of the loading door should **NOT** be attached to main base of furnace.

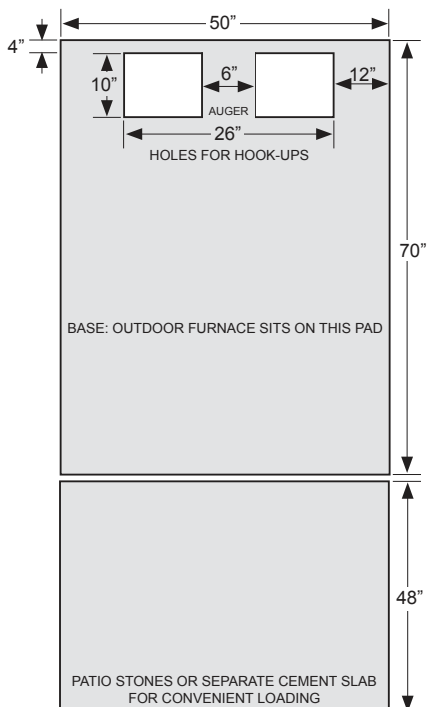
It is recommended to use steel mesh or R-bar in pad for strength.

Benefits to raising the pad:

1. Gives space below the ash auger to place a pail for convenient ash removal.
2. Allows better visibility of the firebox.
3. Less bending when adding wood.
4. Keeps smoke above the operator.
5. Protects the base of the HEATMOR™.



MODEL 200 PAD SPECIFICATIONS



The actual pad size is 50" x 70". This gives approximately 2" extra on all sides of furnace. CAUTION: Do not exceed this length measurement. Width can be wider if desired.

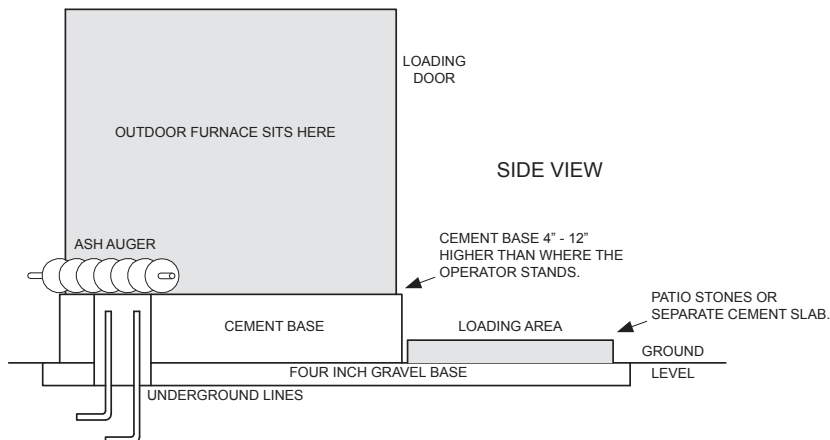
The bottom of the loading door is 24" above ground or base of furnace. If you desire to have the loading door higher, you can do so by making the pad depth thicker. Example: 12" instead of 4" or any figure in between.

Patio stones or separate cement pad in front of the loading door should **NOT** be attached to main base of furnace.

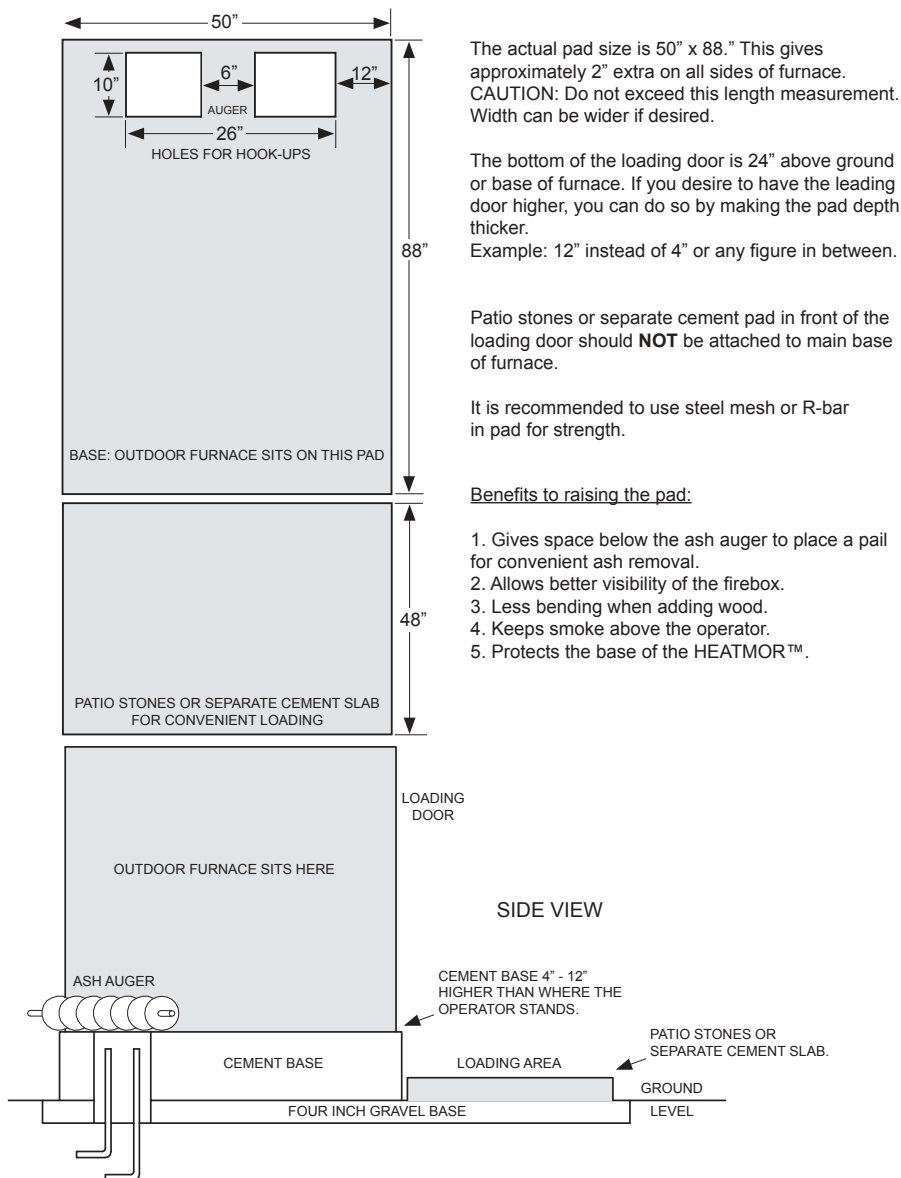
It is recommended to use steel mesh or R-bar in pad for strength.

Benefits to raising the pad:

1. Gives space below the ash auger to place a pail for convenient ash removal.
2. Allows better visibility of the firebox.
3. Less bending when adding wood.
4. Keeps smoke above the operator.
5. Protects the base of the HEATMOR™.



MODEL 400 PAD SPECIFICATIONS



INSTALLATION OF THE HEATMOR™ FURNACE

Installation should be performed by a qualified installer and will comply with all the requirements of the authority having jurisdiction over the installation.

Principles

- 1) Need to have an airtight seal between the concrete base and the perimeter of the firebox base.
- 2) Need to seal the perimeter of the entire HEATMOR™ so rodents are not able to find a home inside the HEATMOR™.
- 3) Need to lift the HEATMOR™ without damaging it.

Equipment Required

- 1) It is **not** possible to lift a HEATMOR™ with the forks of a forklift under the HEATMOR™. It **must be lifted from the top**, by the lifting hook. A crane or heavy backhoe works best, although a heavy duty farm tractor is acceptable.
 - a) With a farm tractor, extreme care must be taken to prevent the HEATMOR™ from swinging and causing damage to the HEATMOR™.

Placing the HEATMOR™ on the Concrete Base

- 2) Before setting the HEATMOR™ onto the concrete base, it is a good idea to place a solid sheet of the proper "reflective air foil" (also called bubble foil) between the concrete and the HEATMOR™. This will absorb ridges in the concrete and make it easier to apply caulking around the inside perimeter of the base of the HEATMOR™. This reflective foil will also reflect escaping heat up into the sand, and help prevent air leaks into the firebox if cement cracks.
- 3) Make sure the total area of the base (where the sand is going) is on solid concrete. Do not let the base extend past the hole in the concrete where the lines come in.
- 4) After the HEATMOR™ is in place perform the following;

Caulking around the Firebox Base

- a) One person should get into the HEATMOR™.
- b) Apply a substantial bead of caulking around the entire inside perimeter of the base. This will give an airtight seal so no air will seep through the sand. This should require about three tubes of High Temperature Silicone.

Caulking around the Outside Perimeter of HEATMOR™

- c) With a sharp knife, trim any excess bubble foil that extends past the base of the HEATMOR™.
- d) Apply a bead of caulking around the entire outside.



Lift Hook

HEATMOR™

Filling the HEATMOR™ Outdoor Furnace Initially with Water

Before filling your HEATMOR™ furnace with water, all plumbing connections at the back of the HEATMOR™ furnace, all electrical hookups, and all heating appliances should be installed and tested for possible leaks. **HEATMOR™ suggests the use of brass fittings when installing the unit.**

If you have any questions regarding installation of the furnace or any aspect of installation, contact your local dealer.



Note: Never start a fire inside the firebox until the water jacket is full of water, and sand has been added to the base to the correct level.

- 1) Close the bladder gate valve located at the front of the HEATMOR™ furnace. This valve will ensure no water can enter the bladder.
- 2) Close the bottom supply line valve at the back of the HEATMOR™.
- 3) Open the top return line valve at the back of the HEATMOR™.
- 4) Remove the weighted ball on the roof of the stove from the relief vent pipe. (If so equipped)
- 5) Connect the water source to the return line leading to the HEATMOR™. Use a garden hose to add the water to the return line.
- 6) Turn on the source of water.
- 7) The pressured water will now flow through and remove the air out of the return line as the water flows into the HEATMOR™.
- 8) Continue adding water until water flows out the relief vent pipe, onto the roof of the HEATMOR™.
- 9) Turn off the source of water.



Rear of Furnace

The HEATMOR™ is now full of water and the return line is also full of water and air free, **BUT** the supply line leading from the HEATMOR™ to the building to be heated is still full of air.

- 10) Close the top return line valve at the back of the HEATMOR™.
- 11) Remove the garden hose that was used to deliver the source of water from the top return line, BUT leave the garden hose valve open.
- 12) Open the bottom supply line at the back of the HEATMOR™ (bottom). The pressure of the water in the HEATMOR™ will now force water from the HEATMOR™ through the supply line back into the building to be heated. This water will soon discharge from where the garden hose was connected. When there is a steady stream of water flowing, the air will be removed from that supply line. Usually it requires the removal of approximately five gallons of water to ensure the line is air-free.

NOTE: The circulator pumps cannot "push" much air through a system. They are designed to move water not air.

- 13) Start the circulating pump. Remember to properly bleed air from the pump.

HEATMOR™

**ABSOLUTELY NO FIRE IN THE FIREBOX WHEN PERFORMING THIS REPAIR.
DO NOT PERFORM THIS REPAIR WHEN UNIT WATER TEMPERATURE
IS UNSAFE. ALWAYS WEAR PROPER PERSONAL PROTECTIVE
EQUIPMENT WHEN WORKING WITH WATER AND CHEMICALS.**

Maintaining the Correct Amount of Water in the Bladder and in the HEATMOR™

1) Keep your bladder valve closed when filling your stove with water, but open at all other times. Your bladder should have a small amount of water in it.

Low Water Condition

If the water level is below the bladder port when the water heats up, air will enter the bladder instead of water. To remove the air from the bladder, follow step 1 above and make sure there is a good seal.

Next:

- 1) Open the bladder gate valve.
- 2) CAREFULLY remove the bladder hose, allowing the bladder to empty its contents.
- 3) After bladder is empty of air/water, re-attach the bladder hose to the bladder gate valve and tighten the hose clamp.

Next, follow step 1 above.



NOTE: NEVER LIGHT A FIRE INSIDE THE FIREBOX UNTIL THE WATER JACKET IS FULL OF WATER, AND SAND HAS BEEN ADDED TO THE BASE TO THE CORRECT LEVEL.

INSTALLATION SHOULD BE PERFORMED BY A QUALIFIED INSTALLER AND WILL COMPLY WITH ALL THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION OVER THE INSTALLATION.

READ THROUGH THE ENTIRE OPERATIONS AND MAINTENANCE MANUAL BEFORE OPERATING YOUR HEATMOR STAINLESS STEEL OUTDOOR FURNACE.

HEATMOR™

Initial Installation of Sand

Types of sand to use

- 1) Sand that does not contain clay, rocks or organic matter is appropriate. **Use a sand that when packed will not allow air to pass through.** Mortar sand, or sand that is used in the redi-mix concrete business is good. Never use gravel.
- 2) Model 100 CSS furnaces require approximately 0.18 cubic yards, Model 200 – 0.25 cubic yards, and Model 400 – 0.38 cubic yards of sand.

Installation

- 1) Cover the grates with a piece of cardboard.
- 2) One person enters the firebox.
- 3) Another person shovels the sand into the firebox while the person inside packs the sand completely, using a piece of wood like a 2 x 4 x 10 inches long.
- 4) Fill the base with sand, level to the top of the grates.



Stove without Sand



Stove with Sand



NOTE: NEVER LIGHT A FIRE INSIDE THE FIREBOX UNTIL THE WATER JACKET IS FULL OF WATER AND SAND HAS BEEN ADDED TO THE CORRECT LEVEL IN THE BASE.

HEATMOR™

CHAPTER 9

SAFE FURNACE OPERATION GUIDELINES

Operation

HEATMOR™ OUTDOOR FURNACES, MODEL 100 CSS, 200 CSS, AND 400 DCSS ARE CERTIFIED TO BURN WOOD AND APPROVED COAL ONLY. CONTACT HEATMOR FOR APPROVED COAL TYPES.

Coal should only be burned in a HEATMOR™ Furnace equipped with a Shaker Grate System.



Burning of other materials may result in serious burns, health consequences, or damage to this furnace and other components of the heating system and may void warranty.

*****IMPORTANT NOTICE*****

PLEASE REFER TO “FILLING YOUR HEATMOR™ FURNACE WITH WOOD,” FOR ADDITIONAL SAFE LOADING PROCEDURES.



- 1) Never open the firebox door if the combustion air blower is operating or if you suspect a roaring hot fire inside the firebox.
- 2) Never open firebox door immediately after the combustion air blowers have shut off. If the water temperature is very close to the high setting, you should assume the air combustion fans have just shut off.
- 3) If there is more than a “whiff” of smoke coming from the chimney and the draft fan is off, do not open the firebox door for at least two minutes. The burn cycle would have just ended and the firebox will be full of unburned gases (smoke) that may ignite when fresh air is introduced.
- 4) Load the unit with wood carefully, but quickly. After loading wood make sure all debris is cleaned from the firebox doorframe and gasket. Then close firebox door securely.
- 5) Keep the firebox door, ash auger tube cover cap, top flue cover plate, and the outer door of the HEATMOR™ furnace closed at all times except for servicing and refueling.
- 6) Keep the locking handle on the outer door locked at all times when not servicing or refueling to reduce the risk of tampering and possible injury.
- 7) Never add water to the HEATMOR™ furnace if the internal water temperature is over 212 degrees Fahrenheit. Failure to adhere to this warning may cause a steam flash and result in an explosion.

HEATMOR™



- 8) Do not store combustible liquids or materials near the outdoor furnace. Adhere to the "Clearance to Combustibles" guidelines.
- 9) Never use gasoline, kerosene, charcoal, lighter fluid or similar liquids to start, re-start or freshen up a fire. Using such liquids may result in severe burns and injury.
- 10) When adding water, water treatment or maintaining the HEATMOR™ furnace, protective clothing must be worn at all times.
- 11) **Never** leave the HEATMOR™ furnace unattended while the firebox door is open or unlatched.
- 12) **Stay clear of any smoke emitting from the firebox.**
- 13) **Do not** burn garbage, tires, solvents, engine oil, gasoline, or other inappropriate materials.
- 14) Store ashes outside, in a metal container with a metal tight fitting lid, away from the outdoor furnace and other buildings. No other waste should be placed in this container.
- 15) Wear a particle mask when removing ashes.
- 16) Ash auger may be hot after removing ashes.
- 17) In case of power failure, do not open any doors on the HEATMOR™. Monitor the water temperature very closely. Refer to "freeze protection" in this manual.
- 18) In below freezing weather, if the water temperature in the HEATMOR™ drops below 40 degrees Fahrenheit, drain all water from the HEATMOR™ immediately (if there is no anti-freeze in your system).
- 19) Water additives supplied with a HEATMOR™ **do not** give any freeze protection.
- 20) Always remove the weighted pop off ball before removing more than 5 gallons of water from the HEATMOR™.
- 21) Check daily for creosote buildup until experience shows how often cleaning is necessary.
- 22) Be aware that the hotter the fire, the less creosote is deposited, and that weekly cleanings can be necessary in mild weather, even though monthly cleanings can be enough in the coldest months.

HEATMOR™

Lighting the HEATMOR™ for the First Time

When lighting the HEATMOR™ furnace for the first time, all installations must be complete and the furnace must be full of water. It is recommended to open bladder valve, and then build fire to bring the water up to temperature.

The lighting process is fairly simple. Please use the following steps simply as a guideline or contact your local dealer for further instruction. **Read the entire manual before lighting, so you have a complete working knowledge of the furnace. Ask for a demonstration from your local dealer.** It is very important to fully educate all persons who will be lighting and fueling the HEATMOR™ furnace.

PLEASE READ THROUGH ALL "LIGHTING YOUR HEATMOR™" STEPS BEFORE LIGHTING YOUR FURNACE.

- 1) Close the green valve, supplying the bladder, located at the front of the stove.
- 2) **Ensure that the furnace is full of water** by running five gallons of water onto the roof of the HEATMOR™.
- 3) Ensure that there is 115-volt electrical power supplying the HEATMOR™ furnace.
- 4) Place some small pieces of wood (five pounds) with paper into the firebox.
- 5) Place a few larger pieces of wood (20 pounds) on top of the smaller pieces.
- 6) Light the fire.
- 7) Leave the fire box door partially open to allow the fire to start burning. The firebox door should only need to be open about two inches. At this point the smoke should go up the chimney and not out the firebox door.
- 8) Once the fire is burning rather briskly, close the fire box door and turn off the light switch which in turn will make the combustion air blower(s) operate.
- 9) Operate the blowers for approximately 10 minutes.
- 10) Turn off the blowers. Wait a few seconds to allow the combustion to decrease.
- 11) Open the firebox door and add a substantial amount of wood to the firebox.
- 12) Turn on the blowers.
- 13) Securely close the firebox door and outer door.

NOTE: Before the furnace is fired up, the furnace is filled with water. While the furnace is filling with water, the bladder is shut off to prevent excess water into the bladder, preventing over fill. When the furnace is freshly filled the water temperature is approximately 50 degrees Fahrenheit. When the furnace is full of water you will notice water coming out onto the roof from the relief vent pipe. At this point the water should be turned off and the bladder valve opened. After the furnace is fired up, the water temperature will start to increase. While the water temperature rises, the water will expand as it heats up, causing the excess water to go into the bladder. It will go into the bladder because it is the place of least restriction. This is another reason why we do not fill the bladder initially, too much water in the bladder at cooler temperatures could cause the bladder to overflow at higher temperatures caused by the expansion of the water during temperature rise.

HEATMOR™

Dew Point

NOTE: As the temperature inside of the firebox is increasing, there will be some sweating inside the firebox. There may be streams of water running down the inside firebox walls and down the inside of the firebox door. Water may run out onto the fan cover, below the firebox door, and even out the auger tube. **THE HEATMOR™ IS NOT LEAKING!**

Just as moisture collects on the inside of a **warm** house window on a **cold** outside day, the same thing is occurring inside the HEATMOR firebox. The **warm** moisture in the smoke is condensing on the **cold** firebox walls of the HEATMOR. In most typical situations, once the water temperature is above approximately 130 degrees Fahrenheit, the sweating will stop because you are above the **dew point**.

HEATMOR™

Loading Wood into the HEATMOR™

Please read through the entire HEATMOR™ Operation and Maintenance Manual and talk to your local dealer for instruction. **Ask for a demonstration from your local dealer. It is very important to fully educate all those who will be loading the furnace with wood.**

Loading a large amount of wood into the HEATMOR™ furnace once a day **is not always best**. We have found that you have a more efficient fire and produce less smoke when you add fuel twice a day. **Example:** Half of the days' demand in the morning and half in the evening. The number of loadings and the amount of wood needed will vary depending on the amount of heat being removed.

Here are some suggested points to assist you in loading your furnace.

- 1) Make sure you have your fuel readily available to fill your furnace. (i.e. a wheelbarrow full of wood **near** the furnace)
- 2) Maintain a clear, clean area in front of the furnace.
- 3) Open the outer front door. This allows you access to the inner firebox door as well as opens the anti-rollout device. This allows air into the firebox to decrease the possibility of the exhaust igniting and creating a "flash back" before you open the main firebox door.
- 4) Turn on the light switch. The light should turn on and the combustion air blowers should turn off if they were operating correctly.
- 5) Standing to the right, next to the exterior door, **with your left hand and your left arm outstretched**, move the fire box door handle out of the safety latch.
- 6) Crack the firebox door open about two inches and allow any pressure left over in the firebox to escape.
- 7) Open the firebox door as you step backwards towards the exterior door. This allows you to be out of the way if there is a "flash back" or exhaust exiting the door opening.
- 8) Set the firebox door handle into the holder provided on the outer door.
- 9) After all exhaust has been eliminated, give the ashes over the grates a light stirring with a long rake.
- 10) Add the necessary fuel to the firebox, being careful not to push ashes into the air boxes.
- 11) Close the firebox door and latch securely.
- 12) Turn off the light switch. This will return power to the blowers and turn off the light.
- 13) Close and lock the exterior door.

HEATMOR™

What Should I Burn?

This furnace is designed to burn well-seasoned cordwood ONLY(unless you have a coal option with shaker grates).

Well seasoned wood is wood that has been properly prepared for combustion. Proper seasoning is generally accepted to be wood that has been harvested, split if necessary, and stored for a reasonable amount of time.

The most efficient preparation will result in a wood moisture content of 20 percent to 30 percent. If the moisture content is more than 30 percent a significant amount of recoverable heat will be utilized in "boiling" off the water in the wood which escapes as steam. This loss will accelerate as the moisture content increases. Wood that is too dry will combust too rapidly, thereby increasing heat and fuel loss out of the stack.

Our experience indicates that piece diameters of 6 to 8 inches are preferable. Larger pieces (up to 10 inch diameter) will perform well as long as they are properly seasoned. Fortunately, the combustion process will "see" a mix so that larger/smaller and damper/drier wood combinations can still provide a good result.

Learn to load the furnace to most appropriately match the heat demand. Warmer outdoor temperatures indicate a need for smaller loads, thereby matching demand to supply and resulting in higher efficiencies. Being aware that your individual "Types of Wood" will aid in your decisions.

How does a fire burn out?

When the temperature of the water has reached its high limit (185 degrees Fahrenheit), the combustion air blower(s) shut off. At this point, the fire "banks." When the air combustion blower(s) turn back on, there may not be enough coals to restart the fire. You will then need to restart the fire. If this situation occurs, you may want to transfer to your standard system for better efficiency.

A new unit will require the establishment of "bed of coals" which will aid in re-establishing proper combustion. This may take a few burn cycles.

**Please refer to the "Outdoor Wood Furnace Best Burn Practices"
located on the inside front cover of this manual.**

HEATMOR™

Types of Wood

There are different types of wood, classified by species, hard or soft, old or new, dry or damp, even larger or smaller. All will burn satisfactorily as long as the proper moisture content and heat load combinations are observed. Therefore, knowing your heat load demands and our fuel supply characteristics is very important.

Wood as a Fuel

Wood as a fuel contains more moisture than most heating fuels. Therefore, proper management of the process is more important. Heat is required to evaporate the moisture from the fuel. Once moisture is evaporated, proper control of the remainder of the combustion process is also required. At about 600 degrees Fahrenheit the wood will gasify. At this point the fuel/air mixture is fuel rich. With proper "secondary air" introduction the fuel/air mixture will approach ideal and result in proper combustion. Your Heatmor furnace is designed to create this situation. Wood too high in moisture content results in lower temperatures and unreliable performance.

Stages of Combustion

During the four stages of combustion, wood breaks down into water, smoke and charcoal. The **first stage** occurs when wood is placed in the furnace. It must be heated to drive off the moisture. The higher the moisture content, the greater the amount of heat needed and subsequently lost for heating purposes. The drier the wood, the more rapidly it can be heated and passed through this first stage of heating the water. When moisture is being driven from the wood, white smoke may be emitted from the chimney. This is what we call "steam smoke." It is mostly water vapor.

In the **second stage**, at 500 degrees Fahrenheit, wood begins to break down chemically. If this smoke is released but not burned, two-thirds of the energy in the wood will be lost. A hot fire is needed to burn the smoke.

The **third stage** takes place at temperatures above 1100 degrees Fahrenheit. At this point, the smoke is burning at 100 percent efficiency, as long as the proper amounts of oxygen, temperature and draft are present. If one of these elements is missing, the combustion will be incomplete. The third stage is the most important stage of wood combustion since smoke represents two-thirds of the wood heat.

The **fourth stage** takes place after 1100 degrees Fahrenheit to 2000 degrees Fahrenheit temperatures have been reached. The smoke and gases are completely burned and the charcoal remains, which represents approximately one-third of the wood heat, and allows the fire to re-start when required.

When a new charge of wood is loaded, the first stage of combustion begins again. The charcoal heats the fresh wood until it gets hot enough to react and ignite, and the process continues. All four stages can take place concurrently but complete combustion requires proper placement of secondary air and adequate temperatures. This is incorporated in the design of the Heatmor furnace.

HEATMOR™

Efficiency Measurements and Types of Fires

There are different ways of expressing efficiency and to correctly compare values.

Combustion Efficiency - Input Based

The amount of fuel that is completely burned compared to the total amount available for combustion expressed as a percentage.

For example:

An open bonfire; 100 pounds of wood burns and produces three pounds of ash, which equals 97 percent combustion efficiency. Good combustion efficiency but poor heating efficiency. No heat got into the house.

Heating Efficiency - Output Based

The percentage of the heat produced that was actually absorbed into the water and transferred into the house from the Heatmor™.

Net Efficiency

This is the product of the combustion and heating efficiencies. Ninety percent combustion efficiency times 60 percent heating efficiency results in a 54 percent net efficiency.

Loading Of The Furnace

Loading the furnace relative to the heat load will result in more efficient performance. More nearly matching your fuel load to the current temperature conditions for an 8 to 12 hour burn will result in longer burn cycles, higher overall burn temperatures and more efficient performance. Your furnace has been rated for an 8 hour burn cycle. Burning wood with less than 30% moisture content will also result in better efficiency.

Handling and Storage of Wood

Common questions concerning wood storage.

1) ***Q. Do I have to keep my wood covered?***

A. It can be more convenient. It is an extra task if snow has to be knocked off the wood before it is loaded into the firebox. Rain and snow landing on the exposed wood will tend to add a certain amount of moisture to the wood. Refer to "first stage of the burning process." Uncovered wood will still burn.

2) ***Q. Why is it important to have my loading of wood directly at the furnace when I go to load my furnace? Why must I load my furnace quickly?***

A. Because of the large firebox and large firebox door, it often only takes a few minutes after opening the door, until the unburned wood in the firebox will ignite and cause smoke to come out the loading door.

3) ***Q. Is it a good idea to put the front of my HEATMOR™ into my wood storage building so I can load the HEATMOR™ from inside?***

A. This is never a good idea. The HEATMOR™, is designed to be placed **outside away from all buildings** to maintain optimum safety. Refer to the "Clearance to Combustibles" section. (See page 11)

4) ***Q. What is the best method of handling wood?***

A. Handle wood as little as possible. Keep the wood covered. Keep the wood storage area neat and tidy. If you have a tractor that can lift pallets or crates, you are well on your way to solving all three concerns. Have available approximately 20 crates (5 feet square x 5 feet high). Take the crates to where you are cutting the wood with the tractor. As you cut, pile the wood in the crates. Use the tractor to move and store the full crates not too far from the HEATMOR™. Cover them if you wish. Use the tractor to bring the crates to the front of the HEATMOR™, as you need them. Throw the wood into the firebox.

5) ***Q. What is seasoned wood and how long should I season my wood?***

A. Seasoned wood is wood that is cut and then stored for a certain amount of time prior to use. We recommend seasoning hardwoods for one to two years and softwoods six months to one and a half years. Ideal moisture content of seasoned wood is 15 - 25 percent.

HEATMOR™

Types of Coal

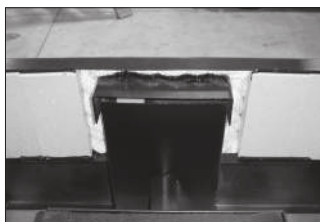
There are three main types of coal approved for use in a HEATMOR™ furnace. They are Pennsylvania anthracite, Eastern Canadian bituminous and Western Canadian sub-bituminous.

Coal can vary in size by grade. Use “stove” coal or a similar size. Smaller sizes may restrict airflow and larger sizes may not burn efficiently, if at all.

Please follow all local laws concerning the storage and burning of coal. Contact your local dealer for further information on the types of coal available in your local area.

Coal as a Fuel

Coal, as a fuel, requires more “under grate air” for burning coal. Each type of coal, whether hard or soft will burn differently, which produces different quantities of ash. For burning coal in the HEATMOR™ furnaces, the air restrictor should be removed from the combustion air restrictor tube that goes between the airbox and the ash pan. Remove the blower flipper assembly and pry the air restrictor out with a pry bar. This will allow adequate under grate airflow for burning coal. (Refer to airboxes or contact your local dealers for further information on burning coal.) Depending on coal type and airflow needs, an optional “Air Block Off” can be installed into the airbox to force all air through the ashpan.



Air restrictor tube holds the air restrictor.

Handling and Storage of Coal

Some types will absorb water and expand; therefore it is recommended that coal must be kept dry.

Loading Coal into the HEATMOR™

Coal may be easily fed into the HEATMOR™ Furnace with a small metal scoop shovel. With some experimentation you will determine the proper filling technique, amounts and frequency of loading for your HEATMOR™ furnace while burning coal. Load coal to the bottom of the firebox door frame fill line.



Air Block Off

Coal should only be burned in a HEATMOR™ Furnace equipped with a Shaker Grate System.

WATER

Qualities of Water to Use

Water quality will vary from one location to another. Different qualities of water can have a damaging effect on your HEATMOR™ furnace, pumps, and plumbing components. Please observe the following guidelines for best results.

- Do not add water from ponds or off roofs.
- Do not add water exceeding 50 parts per million (ppm) in chlorides.
- Do not add water over 27 grains hardness - mix this water 50/50 with softened water.
- Do not add water exceeding 50 ppm silica content.
- Do not add water from shallow wells.
- Do not add water from a well that has recently been “shocked” with chlorine.

Water Level Maintenance

You can verify the water level of your HEATMOR™ by checking the fullness of the bladder. The water level gauge (“add water” weight) inside the front door of the HEATMOR™ should be up near the bladder, not down near the shelf. An even better method of gauging the fullness of the bladder is to reach up through the bladder cover plate and feel the bladder. The bladder should still have wrinkles in it when the water temperature is 180 degrees Fahrenheit. If the filling procedures were done correctly, the bladder would have been the last thing topped up after the water jacket of your HEATMOR™. Refer to “Filling your Furnace Initially” for further details or contact your local dealer.

Removal/Replacement of System Water

If a sediment faucet was installed at the back of furnace, it may be used for draining purposes. If you have a sediment faucet installed on the main manifold in the house, that also can be used to drain the HEATMOR™. **The drained contents of the HEATMOR™ must be discharged to an area or place where they will not damage property or create an environmental hazard. If you are draining the system because of total system shutdown in cold weather, remember to also drain the supply and return lines to prevent freeze-up.**

To refill your HEATMOR™, refer to “Filling your Furnace Initially.” It is important to add water treatment to the HEATMOR™ once you have refilled your HEATMOR™. For further information on replacing the water in your furnace, contact your local dealer.

HEATMOR™

Water Additives

**ABSOLUTELY NO FIRE IN THE FIREBOX WHEN PERFORMING THIS REPAIR.
DO NOT PERFORM THIS REPAIR WHEN UNIT WATER TEMPERATURE
IS UNSAFE. ALWAYS WEAR PROPER PERSONAL PROTECTIVE
EQUIPMENT WHEN WORKING WITH WATER AND CHEMICALS.**

Principles of Water Treatment

- 1) Minimize the corrosion potential of system metallurgy.
- 2) Keep water in the 8 to 10 pH range.
- 3) Acts as an oxygen scavenger.
- 4) **Water treatment supplied with the HEATMOR™ does not give any freeze protection.**
- 5) With proper chemical control, longer equipment life can be achieved.

Addition of Water Treatment

When installing a completely new system, we recommend that the system first be filled with water only. After two or three days of operation, check that all air is out of the system, and all connections are leak free. Once the entire system is confirmed to be leak free, add the water treatment.

To add water treatment to the HEATMOR™ furnace, follow these steps.

- 1) Before adding the treatment, drain out a corresponding amount of water.
- 2) Take a funnel and place it into the relief vent pipe.
- 3) Pour the entire contents of the water treatment chemical, as supplied, into the HEATMOR™ furnace.
- 4) Top up your HEATMOR™ furnace with water and fill the bladder. Refer to "[Filling the Bladder Initially](#)" for details or contact your local dealer.

Water Treatment Maintenance / Result

The water in the HEATMOR™ should be chemically analyzed once per year to ensure the proper levels of treatment are being maintained. Contact your local dealer as to where to have your water tested. Provide the testing person with an amount of water from your HEATMOR™, equal to approximately 20 ounces, in a clean container. The amount of water treatment that has to be added yearly is dependent on how much fresh water you have added to your system since the last test. Be certain to add a water treatment that is approved by your dealer and HEATMOR™ Inc.



Water Treatment Additives and Safety Specifications

Water Treatment Safety Specifications

DANGER: CORROSIVE MATERIAL - CAUSES BURNS

CAUTION: KEEP OUT OF THE REACH OF CHILDREN

Product Identification: Control Water Stove Treatment and Rust Inhibitor

Product Manufacturer: Image Supply Inc.

Contents: Sodium Nitrate
Potassium Hydroxide
Hidacid Azure Blue Dye
Water

Danger: Harmful or fatal if swallowed. Avoid skin, clothing and eye contact
Avoid breathing mist or vapors
Keep container closed and away from children

First Aid: Skin Contact: Immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Call a physician if irritation develops and persists.
Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes.
Inhalation: Move to fresh air.
Ingestion: Harmful or fatal if swallowed. Give several glasses of water followed by citrus juice then olive oil. Get medical attention.

NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON

Handling instructions: Wear eye/face protection. Wear goggles and Alkali resistant gloves. Wear suitable protective clothing.

Clean up: Contain and/or absorb spill with inert material(e.g. sand, vermiculite), then place in a suitable container. Do not flush to sewer or allow to enter waterways. Use appropriate Personal Protective Equipment. Neutralize area with vinegar. Wash contaminated clothing before reuse.

Other precautions: Do not leave unattended when open.
Do not reuse container.
This product does not provide any freeze protection.

FOR MEDICAL EMERGENCIES CALL:

United States: INFOTRAC 1-800-535-5053
Canada: 1-800-268-9017

Freeze Protection

Principles of Freeze Protection

When the total system is operating as designed, there is no need to add anti-freeze. However if the water in the outdoor furnace is not going to be kept above 50 degrees Fahrenheit in cold weather, freeze protection must be considered. In a properly designed system, the indoor appliances will automatically come on, generate heat, and keep the supply line, return line, and outdoor furnace from freezing by transferring some of the heat generated, back to the outdoor furnace. This will only happen if the circulating pumps are running. **It is recommended to always have a backup system in place.**

- Freeze protection products have lower heat transfer capabilities than water.
- Freeze protection products will not necessarily inhibit corrosion.
- Some insurance companies will not insure an outdoor furnace with glycol in the system.
- Ensure the correct freeze protection product is used. **Non-toxic**, propylene glycol based, boiler antifreeze is recommended. One such product is DOWFROST HD™ from Dow Chemicals.

Before draining the water, please refer to “Removal/Replacement of System Water.”

When installing a completely new system, we recommend that the system first be filled with water only. After two or three days of operation, check that all air is out of the system, and all connections are leak free. Once the entire system is confirmed to be leak free, add the water treatment and/or freeze protection. Before adding the treatment, drain out a corresponding amount of water.

HEATMOR™

Adding Freeze Protection Products

**ABSOLUTELY NO FIRE IN THE FIREBOX WHEN PERFORMING THIS REPAIR.
DO NOT PERFORM THIS REPAIR WHEN UNIT WATER TEMPERATURE IS UNSAFE.
ALWAYS WEAR PROPER PERSONAL PROTECTIVE EQUIPMENT
WHEN WORKING WITH WATER AND CHEMICALS.**

- 1) Drain the correct amount of water from the system for the products being added.
- 2) Take a funnel and place it into the relief vent pipe.
- 3) Pour the contents of the freeze protection products, into the HEATMOR™ furnace. **Do not pressurize the HEATMOR™**; do not attempt to thread fittings onto the relief vent pipe and “pump” additives into the HEATMOR™ under pressure.
- 4) Top off your furnace with water and fill your bladder. Refer to “Filling the Bladder Initially” for details or contact your local dealer.

BLADDER ASSEMBLY

Principles

It is best not to have the system water, that is in the water jacket, exposed to the atmosphere. This is because of system water loss through evaporation. When system water is lost, it must be replenished or soon the water jacket would be empty. Not only is replenishing lost system water a nuisance, it is also accelerating the corrosion process throughout the total system, because adding fresh system water is also adding more corrosion causing minerals.

The challenge is to maintain an airtight system, while at the same time, allowing for the expansion and contraction of system water as it warms and cools. This is accomplished in a HEATMOR™ design through the rubber bladder.

Bladder

Principle of the Bladder

The HEATMOR™ is designed to be a semi-closed system.

The bladder is a reservoir that accepts the increased volume of water that results when the water within the water jacket expands as it is heated. Similarly, when the water within the water jacket cools down, water is drawn out of the bladder.



Bladder

Operation of the Bladder

The bladder has a capacity of approximately 8 gallons.

Normally, the bladder should have a small amount of water in it at all times. As the furnace cycles, the amount of water in the bladder will increase and decrease. If at any time the furnace is requiring additional water it will use the reserve water in the bladder before having to be topped up.

Filling the Bladder with Water

- 1) Keep your bladder valve closed when filling your stove with water, but open at all other times. Your bladder should have a small amount of water in it.

Maintenance / Result

To maintain your furnace bladder simply keep the bladder so that it has a small amount of water in it, so the bladder continues to supply the water jacket with water. If the water level does run low, the possibilities of water boiling and firebox warping are increased.

HEATMOR™

Removal and Replacement of the Bladder

**ABSOLUTELY NO FIRE IN THE FIREBOX WHEN PERFORMING THIS REPAIR.
DO NOT PERFORM THIS REPAIR WHEN UNIT WATER TEMPERATURE IS UNSAFE.
ALWAYS WEAR PROPER PERSONAL PROTECTIVE
EQUIPMENT WHEN WORKING WITH WATER AND CHEMICALS.**

- 1) Turn off the (green) bladder gate valve located at the front of the HEATMOR™ furnace to the left of the thermometer.
- 2) Remove the bladder cover plate held in place by two wing nuts.
- 3) Remove the water level gauge and pull the rope through the eyelet.
- 4) Remove the hose clamp from the bladder gate valve.
- 5) Pull the bladder hose away from the bladder gate valve and let the water drain from the bladder. **Be careful, it could be warm.**
- 6) Remove the old bladder and install the new bladder.
- 7) Install the new bladder with the valve stem in the rear of the bladder compartment with the hose coming down through the center of the tube. Connect the tube to the bladder valve's 1/2 inch barbed fitting and tighten hose clamp.
- 8) Thread the rope over the bladder and through the eyelet. Attach the "add water" plate onto the rope.
- 9) Open the bladder gate valve and follow the "[Filling the Bladder with Water](#)" instructions.



Bladder Gate Valve

Bladder Gate Valve and Bladder Hose

Principle of the Bladder Gate Valve and Bladder Hose

The bladder gate valve provides water flow control in maintaining the bladder and filling the furnace with water. The bladder hose provides a means for the water to freely flow from the water jacket to the bladder allowing expansion and contraction.

**WHEN THE HEATMOR™ FURNACE IS OPERATING,
THE BLADDER GATE VALVE MUST BE OPEN.**

Maintenance / Result

To maintain the bladder gate valve, open and close the valve periodically to prevent it from seizing. Ensure that the hose clamp is tightly fastened, securing the bladder hose to the bladder and to the bladder gate valve.

Removal and Replacement

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WHEN WORKING WITH WATER AND CHEMICALS.**

- 1) Turn off the power to the furnace.
- 2) Drain some of the water from the furnace to prevent water from draining while you are replacing the valve.
- 3) Loosen the hose clamp holding the bladder hose to the bladder gate valve.
- 4) Remove the bladder hose from the bladder gate valve and let the water drain from the bladder.

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Bladder Gate Valve and Bladder Hose (cont.)

- 5) Remove the old bladder gate valve and install the new bladder gate valve.
- 6) Attach the bladder hose to the bladder gate valve and tighten the hose clamp.
- 7) Keeping the bladder gate valve closed, add water until furnace is full.
- 8) Open the bladder gate valve and follow the "[Filling the Bladder with Water](#)" instructions.
- 9) Turn on the power to the furnace.

Water Level Gauge

Principle of the Water Level Gauge

The water level gauge simply gives you an accurate reading of when the bladder is full or empty of water.

Maintenance / Result

To maintain your water level gauge, ensure that it can move freely through the eyelet. If it does not move freely, the risk of the rope wearing and breaking or inaccurate readings are possible.

Removal and Replacement

- 1) Drain some of the water from the furnace to allow you to maneuver around the bladder.
- 2) Remove the water level gauge from the rope.
- 3) Remove the rope and replace it with a new water level gauge rope.
- 4) Thread the rope over the bladder and through the eyelet.
- 5) Attach the water level gauge.
- 6) Refill the bladder referring to the instructions "[Filling the Bladder with Water](#)" instructions.



Add Water Sign

Bladder Cover Plate

Principle of the Bladder Cover Plate

The bladder cover plate simply gives protection to the bladder from possible back flashes and excess heat. It helps hold up the bladder in position, and when it is removed allows a large space to service the bladder.



Bladder Cover Plate

Removal and Replacement

To remove and replace the bladder cover plate, loosen the wing nuts and install the new cover plate. Tighten the wing nuts.

WATER JACKET

Principles of the Water Jacket

Water within the water jacket absorbs heat produced in the firebox. The heated water is used to transfer heat from the HEATMOR™ into the building needing heat. The water jacket and the firebox are one welded component and can be replaced.

Maintenance

Keep the proper concentration of water treatment in the water.

Supply Line and Return Line Threaded Connectors

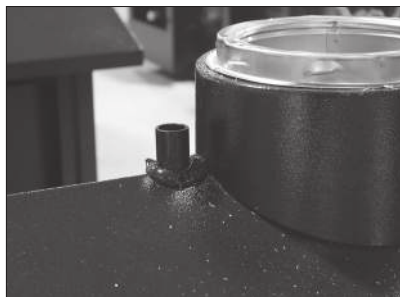
Principles

The HEATMOR™ furnace is designed to draw the supply (hot) water from the bottom of the water jacket. This may seem irregular (people know hot water rises), but this method mixes the water in the water jacket better and often extends pump life. The return (cooler) water connects to the, upper, rear spud of the HEATMOR™. A circulator (pump) moves the water at approximately three to 10 gallons per minute, through both lines under very little pressure (3 psi). **Always attach a BRASS fitting into the STAINLESS STEEL spud to prevent galvanic corrosion.**

Relief Vent Pipe and Weighted Pop off Ball

Principles

The relief vent pipe is connected to the top of the water jacket. When the water within the water jacket is heated it expands, the water will expand into the bladder, instead of out onto the roof.



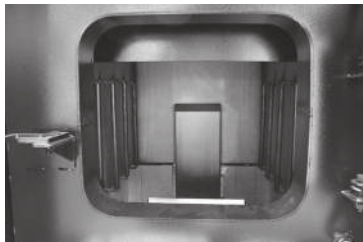
Relief Vent Pipe

FIREBOX AND OTHER COMPONENTS

Firebox

Principles of the Firebox

Wood is burned inside the firebox to generate heat. This heat is absorbed into the water in the water jacket. The firebox and water jacket are one welded component and can be replaced. When the water is up to temperature and the combustion air blowers are off, the firebox must be airtight.



Firebox

Operation of the Firebox

Temperatures within the firebox can reach 2000 degrees Fahrenheit. Smoke exits from the firebox into the flue. During normal operation, there will be a slight buildup of black creosote on the firebox walls. This buildup will sometimes appear flaky.

Maintenance / Result

Wood should not be thrown into the firebox in a rough manner. Creosote should never have to be scraped off the firebox walls.

Removal and Replacement

- 1) Remove all wood and let the unit cool down.
- 2) Drain all water and disconnect main power.
- 3) Remove the total roof of the HEATMOR™.
- 4) Remove sides of the HEATMOR™.
- 5) Remove the doors and corners of the HEATMOR™.
- 6) Remove the insulation.
- 7) Disconnect plumbing, aquastat and high limit and all electrical from the water jacket.
- 8) Loosen the firebox / base connector clamps.
- 9) Lift the old firebox / water jacket component off the base.
- 10) Lift the new firebox / water jacket component onto the base.
- 11) Apply new silicone.
- 12) Reverse the above.

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Firebox Door

Principles of the Firebox Door

The firebox door is water cooled to prevent warping of the door. It also acts like a water jacket, absorbing heat from the fire, and placing that energy into the water. Being water cooled, the front of the firebox door will never be hotter than the water. The cold outside atmospheric air is drawn over the warm surface of the firebox door, by the combustion blowers, which is then warmed and forced into the firebox as warmed combustion air. This lessens the time needed for the interior of the firebox to reach that high smoke burning temperature. It is important that the firebox door seal maintains an airtight seal.

Operation of the Firebox Door

Water from the main waterjacket flows in a loop between the firebox door and the waterjacket by natural thermal siphoning. Since there is no pump involved, there is very little pressure. During this process, the water cools the door and the water in the door is heated.



Firebox Door Handle



Firebox Door Handle

Refer to Safe Operating Guidelines for further instructions on how to safely open and close the firebox door or contact your local dealer.

Maintenance / Result

A properly adjusted firebox door will not allow smoke to enter or escape the firebox. Maintain a tight seal all around the perimeter of the firebox door at all times. There may be times when the perimeter of the firebox door will build up with “creosote strings,” especially along the bottom.

To keep the perimeter clean, occasionally scrape down to the steel. **Do not cut**, scrape or disturb the actual soft, pliable seal. Keep the door correctly adjusted on the hinges so that the pliable seal is being forced against the firebox ledge. Keep all nuts and bolts on the handle, latch and hinges properly adjusted.

The seal itself consists of a rope in the groove of the firebox door, covered with high temperature silicone.

Failure to manage and maintain the firebox door could result in premature replacement of parts and a buildup of creosote.

(When replacing the Firebox Door, it is recommended to replace the Door Hoses at this time.)

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WHEN WORKING WITH WATER AND CHEMICALS.**

Removal and Replacement

To remove the firebox door, follow these steps:

- 1) Turn off power to the combustion air blowers.
- 2) Ensure that the fire in the firebox is extinguished.
- 3) Stop the flow of water from the water jacket through the door hoses by pinching the two door hoses shut.

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Make a collar of cardboard between the jaws of two pairs of vice-grips and clamp the door hoses tight at the center point of their length.

- 4) Loosen the hose clamps and remove the door hoses from the firebox door.
- 5) Loosen and remove the nuts and bolts holding the firebox door on to the hinge.
- 6) Remove the firebox door from the hinges and remove the handle from the firebox door.

To replace the firebox door, follow these steps:

- 1) Replace the bolts and nuts onto the new door just as they were removed.
- 2) Hang the firebox door on the hinges loosely, with the nuts just slightly more than finger tight, and attach the handle on to the firebox door allowing the handle to just barely float freely.

Note: Ensure there is a tight seal around the firebox door frame while it is closed and latched shut. The firebox door must remain parallel with the door frame.

- 3) Close the firebox door and allow the handle to rest freely in the latch.
- 4) Get the firebox door parallel with the door frame ledge and tighten the nuts and bolts a little more firmly onto the hinges. You may want to block up the firebox door until the hinge is re-tightened.
- 5) Re-attach the door hoses, tighten the hose clamps, and unclamp the vice-grips.
- 6) Light a fire in the firebox; then ensure that there are no air leaks. You will be able to detect them by noticing smoke escaping through any air leaks, while the blowers are running.

Note: If there is smoke leakage around the firebox door or one corner of the door, it is adjustable.

- 7) Lift the door handle off the latch and allow it to rest loosely.
- 8) With two 1 1/8 inch wrenches, loosen the appropriate hinge (top or bottom) so it is slightly more than finger tight. (Use only the bottom nut to adjust.)
- 9) While the bolt is slightly tight, rap the nut between the hinge halves, with a punch and hammer.
- 10) With hinge bolt reset, tighten the lower nut.
- 11) The top and bottom firebox door should remain parallel with the door frame. If it tends to sag, block it up with appropriate blocking until the hinge is re-tightened.

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Firebox Door Hoses and Elbows

Principle of the Door Hoses

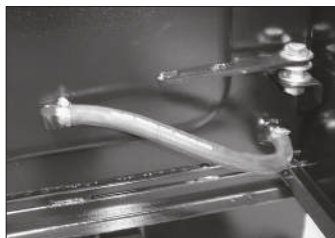
The door hoses allow water to circulate between the firebox door and the water jacket.

Operation of the Door Hoses

The door hoses allow water from the water jacket to pass through the firebox door, through thermal siphoning. Refer to [“Firebox Door”](#) for further details.

Maintenance / Result

Maintaining the door hoses and elbows ensures that water is able to flow through the door. Build-up (calcium) in the elbows is possible over time, which slowly reduces the water flow through the door. If water does not flow freely through the hoses to the firebox door, you may hear popping sounds in the door. Once the hoses are around five years old or if they show signs of wear, they should be replaced. Replacement of hoses or cleaning of the elbows is always easier if the water is cool rather than hot. To clean the elbows, remove the hoses and use a pipe cleaning brush to clear out the build-up.



Door Hose



Elbow



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Removal and Replacement

To remove and replace the door hoses, use the following steps:

- 1) Turn off power to the air combustion blowers.
- 2) Ensure that the fire in the firebox is extinguished, which will allow the water to cool.
- 3) With hose clamps or vice-grips, pinch the door hoses in the middle of the hose.
- 4) Before removing the old door hose, cut the new pieces of door hose, one at 19 inches and the other at 21 inches. **These measurements are critical.**
- 5) Pinch the new door hose in the middle of the hose, creating a tight seal.
- 6) Loosen the hose clamps on each end of the door hose.
- 7) Remove the first end of the door hose needing replacement.
- 8) Push on the end of the new door hose and repeat the steps for the opposite end of the hose.
- 9) Tighten the hose clamps, securely fastening the door hose to the nipple on the furnace or firebox door.
- 10) Remove the vice-grips pinching the door hoses. This will allow water to flow through.



Clamping hose

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- 11) Check for leaks.
- 12) Repeat the steps to change additional door hoses.

Removal and Replacement

To remove and replace the elbows, use the following steps:

- 1) Turn off power to the air combustion blowers.
- 2) Ensure that the fire in the firebox is extinguished, which will allow the water to cool.
- 3) With hose clamps or vice-grips, pinch each door hose in the middle of the hose, creating a tight seal.
- 4) Loosen the hose clamps on each elbow.
- 5) Remove each of the door hoses from the elbows.
- 6) Using a wrench, unscrew each of the door elbows, note how the elbows are angled.
- 7) Replace the door elbows using pipe compound and a wrench. Ensure the elbows are secure and angled correctly so the hoses will slide on easily.
- 8) Push the door hoses onto the new elbows.
- 9) Tighten the hose clamps on each top and bottom hose, securely fastening the door hose to the elbow.
- 10) Remove the vice-grips pinching the door hoses. This will allow water to flow through hoses.
- 11) Check for leaks.

Firebox Door Handle

Principles of the Firebox Door Handle

Fastened to the firebox door, the handle provides a secure method of controlling the opening and closing of the firebox door. By opening the firebox door, (only until the door handle hits the second stage of the safety latch), gives a space for fresh air to enter the firebox without the risk of a "flash back." The firebox door handle is also designed to "stick" to the **firebox door handle holder** on the outer door. This procedure prevents either of the doors closing while the Heatmor™ is being loaded with wood.



Firebox Door Handle

Maintenance / Result

To maintain the door handle, ensure the handle closes and opens fairly easily. If the handle closes too hard, it will be hard to open and close the door. If the closure is too loose, it will be harder to obtain a perfect seal around the door. If you do not have a firm seal, you could potentially create an air leak resulting in further complications. Refer to "[Air Leaks](#)" for further details or contact your local dealer. You can adjust the two bolts on the latch for correct closure.



Firebox Door Handle

Removal and Replacement

To remove the handle, use the following steps.

- 1) Turn off power to the blowers.
- 2) Ensure the fire in the firebox is extinguished.
- 3) Loosen and remove the nut on the bearing and the nut on the mounting plate.
- 4) Replace the handle.
- 5) Replace and tighten the nut on the bearing and the nut on the mounting plate.

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Firebox Door Hinge

Principle of the Firebox Door Hinge

Supports the firebox doors and allows for adjustment.

Maintenance / Result

The adjustable hinge works in conjunction with the door handle and the firebox door. The hinge has slotted holes so the firebox door can be adjusted to provide a solid fit against the firedoor frame. Secure and stable, the hinge allows the firebox door to swing free and smooth.



Firebox Door Hinge

Firebox Door Latch

Principles of the Firebox Door Latch

The safety latch is designed to provide additional safety by preventing the firebox door from opening too quickly, potentially allowing a “flashback.” The latch is adjustable and replaceable.

Maintenance/result

The latch is adjustable with the two bolts. The two bolts must be tightened firmly. When properly adjusted, the firebox door handle will close and open with ease and create a perfect seal around the door.



Firebox Door Magnet

Firebox Door Magnet

Principles of the Firebox Door Magnet

The firebox door magnet provides a means of holding **both** the outer front door and the firebox door completely open while the operator is loading wood into the HEATMOR™.

Operation

- 1) Open the firebox door as you step backwards towards the exterior door. This allows you to be out of the way if there is a “flash back” or smoke exiting the door opening.
- 2) Stick the firebox door handle onto the firebox door handle magnet provided on the outer door.
- 3) To remove the firebox door from the magnet, turn the handle to the left and pull the inner door away by the handle.

Firebox Door Gasket

Principles of the Firebox Door Gasket

The firebox door gasket creates an airtight seal between the firebox door frame and the firebox door. It is a pliable seal that can be removed and replaced if damaged or worn.

Maintenance/Result

Occasionally, scrape the perimeter of the firebox door to keep it clean. **Do not cut**, scrape or disturb the pliable seal.

Keep the door correctly adjusted on the hinges to ensure the pliable seal is being forced against the firebox door frame.



Firebox Door Gasket

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Keep all nuts and bolts on the handle, and latch and hinges properly adjusted.

The seal itself consists of a fiberglass rope in the groove of the firebox door, covered with high temperature silicone.

Failure to manage and maintain the firebox door gasket could result in air entering into the firebox when the combustion air fans are off or smoke escaping around the seal when the combustion air blowers are running.

Air entering the firebox when the **fans are off** results in the wood continuing to smolder, resulting in the furnace overheating and more than a “whiff” of smoke emitting from the chimney. Often, this type of smoke has an unpleasant odor. Creosote will also be formed.

When the fans are running and the door seal is not sealing tightly, smoke will be forced through the leaking door seal. This causes the front of the furnace to be smoke filled and soon the front of the firebox will be covered with soot. Premature replacement of parts and a buildup of creosote will result.

Removal and Replacement



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- 1) Using a sharp knife, carefully cut away the silicone seal around the firebox door seal channel.
- 2) Remove the old gasket from underneath the old silicone.
- 3) Remove all old silicone with a wire wheel or steel brush.
- 4) Replace with a single length of new gasket material. Do not pack or over stretch the new gasket. Once in place allow, the material to “relax” before cutting to length.
- 5) Cover the door rope with silicone and tool to a smooth, flat, finish.
- 6) Leave the firebox door open for 24 hours to allow silicone to dry completely.

NOTE: You will need 78 inches of 1 inch door rope material plus two tubes of caulking. The door rope kit is available from your HEATMOR™ dealer.

Firebox Door Frame

Principles of the Firebox Door Frame

To provide a small edge that will seal into the firedoor gasket to provide an airtight seal.

Maintenance / result

Keep the door frame cleaned down to the steel at all times. Failure to do so results in a build up of creosote, resulting in a barrier to an airtight seal, air leaks and premature gasket replacement.



Firebox Door Frame

HEATMOR™

Firebox / Base Connector Clamps

Principles of the Firebox / Base Connector Clamps

To allow easy separation of the firebox / water jacket assembly and the base, if repairs are needed to either assembly.

Firebrick

Principles of the Firebrick

Once heated, the firebricks hold heat for a long period of time. This creates a warm firebox between cycles. Because of this heat, when the combustion air blowers start, the fire inside the firebox can re-ignite and reach the smoke burning temperature of 1100 degrees Fahrenheit much faster.



Firebrick

Maintenance/Result

Allow the ashes to bank up against the firebrick to act as a cushion against hard knocks of wood. If bricks are broken, they should be replaced as soon as possible.

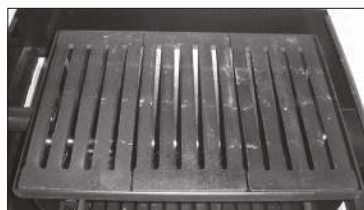
Removal and Replacement

- 1) Let the fire go out and allow the ashes to cool completely. Remove the ashes from the firebox.
- 2) Crawl into the firebox.
- 3) Remove the black, high temperature silicone bead at the bottom of the firebrick.
- 4) Using a pry-bar, remove the broken brick.
- 5) Replace the broken brick.
- 6) Apply a new bead of high temperature silicone along the base of the brick.

Standard Grates

Principles of the Standard Grates

Grates allow combustion air from the combustion air blowers to pass from below the grates, up through the grates, through a shallow depth of ashes and then to the bottom of the burning fire. This way the ashes will burn completely into a fine powder that will flow through the grates into the ash pit. Because air is being forced through the ashes, the glowing embers will be more apt to ignite and set the wood ablaze.



Standard Grates

Maintenance/Result

- 1) Never make the slots in the grates wider than factory dimensions. If hot coals can pass through the grates, warping of the grates may result.
- 2) Make sure the grates are always resting in the grooves of the ash pit. If the grates move out of place, it may result in hot coals slipping under the grates causing warpage of the grates.
- 3) Make sure the narrow side of the slot is next to the fire.
- 4) Replace broken grates immediately or a chain reaction of broken grates may result.
- 5) The grates will not break under reasonable knocks of heavy wood.

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Removal and Replacement

- 1) Allow the ashes to burn completely and extinguish.
- 2) Push the ashes to the back of the firebox or remove all the ashes from the firebox.
- 3) Run a small prybar around the perimeter of the grate and the edge of the ash pit to loosen the grate.
- 4) Lift out the broken grate.
- 5) Clean the edge of the ash pit in which the new grate will sit.
- 6) Install the new grate. Make sure to install the new grate with the narrow width of the slot towards the fire.

Optional Shaker Grates

Using Your Shaker Grate System

There are two main modes of operation for the Shaker Grate System. These are Shake mode and Dump mode.

Shake mode is used mainly for daily use and consists of handle movement with the stop **in place**. Moving the handle back and forth with the stop in place allows for the breaking up and release of small pieces of klinker and ash into the ashpan. This should be done daily or whenever coal is added to the furnace. See figure 1.

The second mode is Dump mode and consists of handle movement with the stop moved **out of the way**. Moving the handle back and forth, with the stop out of the way, allows for full movement of the shaker grates as well as the breaking up and release of large pieces of klinker into the ashpan. Dump mode is needed when the klinker buildup on the shaker grates is such that it causes restriction of airflow to the fire. See Figure 2.

During normal operation the shaker grates must be in a neutral position as shown in Figure 3.

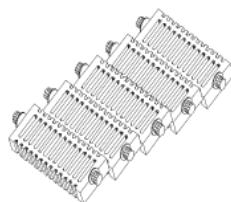


Figure 1

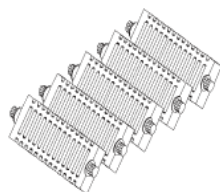


Figure 2

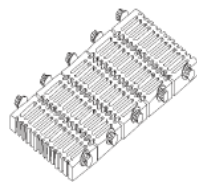


Figure 3



It is important that after using the shaker system in dump mode, all klinker and ash is cleared out from the ashpan leaving NOTHING behind. Anything left under the shaker grates can re-ignite causing damage to the shaker grates.

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Sand

Principles of Sand in the Base of the Firebox

The HEATMOR™ furnace, in boiler terms, is a "dry base boiler." This is to say there is no water around the base of the firebox. The firebrick and sand hold and release heat to the firebox during the off cycle. This shortens the time when smoke will be emitted.

A sand base provides complete corrosion protection to the most corrosion prone area of a furnace.



Sand

Maintenance/Result

The sand should never need to be removed. When stirring the ashes, rake only the area over the grates. There is no need to stir the areas where the sand is located. Maintain the sand level to the top of the grates. Check the level on a yearly basis and add sand if necessary. Refer to page 20 for types of sand to use.

Removal and Replacement

- 1) Allow the ashes to extinguish and then remove all the ashes from the firebox.
- 2) Allow the water to cool down.
- 3) One person should get into the firebox and with a small scoop, remove the sand from around the ash pit.
- 4) Replace as above.

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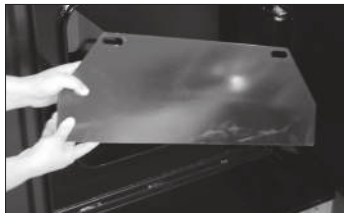
Flash Curtain / Heat Shield



ABSOLUTELY NO FIRE IN THE FIREBOX WHEN PERFORMING THIS REPAIR. ALWAYS WEAR PROPER PERSONAL PROTECTIVE EQUIPMENT.

Principles of the Flash Curtain / Heat Shield

The purpose of the flash curtain is to decrease the amount of smoke emitted from the door when loading wood into the firebox. The flash curtain decreases the size of the firebox opening, making that size more in proportion to the area the natural draft of the chimney will draw from. As a heat shield, the flash curtain restricts the amount of direct heat that contacts the firebox door directly.



Flash Curtain

Maintenance/Result

Leaving the flash curtain in place is effective for the principles outlined above.

Removal and Replacement

- 1) The plate is slotted at the top and fits loosely onto two hooks, installed above the firebox door opening.
- 2) With the ashes cooled down, lift up on the plate until it releases itself from the hooks.



Proper placement of Flash Curtain

AIR SUPPLY

Maximum draft should not exceed 0.20 inches water column, if exceeded could cause solid fuel fire to burn out of control.

Combustion Air Blower(s) and Flipper Assembly(s)

THE FLIPPER MUST OPERATE PERFECTLY OR PROBLEMS QUICKLY ARISE.

Principles

The combustion air blowers and flipper assemblies supply air for combustion inside the firebox. The flipper assemblies keep air out of the firebox when combustion is not needed. These components are removable and serviceable.

Operation of the Combustion Air Blower(s) and Flipper Assembly(s)

- When the water temperature reaches the **high water temperature** setting, the aquastat turns the blower(s) **off**. At this point, the hinged flipper falls shut, preventing air from getting into the firebox.
- When the water temperature reaches the **low water temperature** setting, the aquastat turns the blower(s) **on**. At this point, the hinged flipper opens from the force of the blower(s) and allows air into the firebox.
- The hinged flipper **must** completely open and close all of the time. When it is closed, it must seal completely. If more than a "whiff" of smoke is coming from the chimney when the blower(s) has been off for approximately 10 minutes, this is a strong indication the hinged flipper is not shutting properly.



Flipper Assembly

Maintenance / Result

- Clean the fin blades of the squirrel cage fan.
- Ensure the flipper assembly is clean and seals completely when closed.

Steps to Maintain your Blower / Flipper Assembly.

- 1) Turn off the main power supply to the furnace.
- 2) Loosen and remove the two thumb nuts securing the blower / flipper assembly to the large air tube, and remove the blower / flipper assembly.
- 3) With a small brush, scrape any dust or residue that has accumulated on the fins of the blower.
- 4) With a small brush or scraper, scrape any dust or residue built up on the flipper assembly.
- 5) Ensure the flipper is resting completely on its seat. If it is not resting completely, perhaps there is dust or soot built up on the flipper, or some other obstruction not allowing it to close tightly.
- 6) Securely fasten the blower/flipper assembly back to the large air tube ensuring there are no air leaks.

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Removal and Replacement

- 1) Turn off the main power supply to the furnace.
- 2) Loosen and remove the thumbnuts securing the blower / flipper assembly to the air tube.
- 3) Disconnect the electrical wire from the blower.
- 4) Remove the flipper assembly from the blower by removing the four bolts. This will require a 7/16 inch wrench.
- 5) Attach the existing flipper assembly to the new blower.
- 6) Rewire the electrical wire to the blower. **Contact a licensed electrician if you have any questions.**
- 7) Securely fasten the blower back to the air tube ensuring that there are no air leaks.

THE FLIPPER MUST OPERATE PERFECTLY OR PROBLEMS QUICKLY ARISE.



If the flipper is unable to open and close freely, or remains partially open or partially closed, the furnace will starve for air resulting in a smoldering fire instead of an intense fire. More smoke and creosote is the result. If the flipper is not operating correctly, it causes a snowball effect of problems. **MAINTAIN THE FLIPPER!**

Air Box(s)

Principle

The air box is designed to distribute the appropriate percentage of air from the blower(s), into different areas of the firebox so the fire will burn efficiently and clean.

Maintenance / Result

Check for ashes in the air box. If ashes are in the air box, they may interfere with the opening and closing of the flipper. If ashes cover the air outlets, less air will get into the firebox. When raking ashes, be careful not to pull the ashes over or into the air box(s). **Be certain the ashes are cold and extinguished before attempting to remove ashes from the air box.**



Air Box

To maintain the air box, remove the blower / flipper assembly and clean the ashes out of the air box with a mini-vacuum that is made for ashes, metal brush or metal scraper. You may need to loosen up hard packed ashes. Securely fasten the blower / flipper assembly back onto the large air tube ensuring there are no air leaks.

HEATMOR™

Combustion Air Restrictor Tube

Principle

The combustion air restrictor tube allows air flow from the airbox to the ashpan. It helps to provide combustion air into the ashpan, through the grates and to the bottom of the charge of wood.

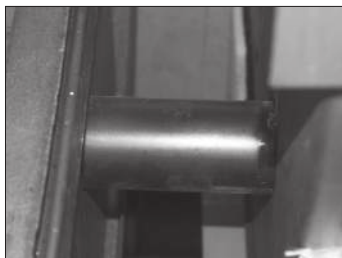
Operation

The combustion air restrictor tube is designed with a restrictor inside of the tube. This feature is installed on all standard wood burning HEATMOR™ furnaces. This restrictor helps to divert combustion air above the grates as well as allow proper airflow to the underside of the grates.

This standard setup is for wood burning. If coal is going to be burned, the restrictor must be removed to allow more under grate airflow and less over grate airflow. This is done by removing the combustion blower/flipper assembly and using a small prybar to remove the restrictor.

Maintenance

Maintenance should be completed regularly to ensure no ash has accumulated inside the combustion air restrictor tube, limiting airflow. If the furnace does not have proper airflow, the combustion efficiency is reduced, resulting in increased smoke and creosote.



Combustion Air Restrictor Tube



Automatic Fan Switch

Automatic Fan Switch (A.F.S.)

The Automatic Fan Switch must operate correctly for safe operation of the Heatmor.

Principle

The fan switch turns the fan on while the outer door is opened to clear the possible excess fuel build up in the firebox. Along with normal recommended, safe firebox door opening practices, the risk of a flash back is greatly reduced.

Operation

The Automatic Fan Switch automatically turns on the fan when the front outer door is open. The Automatic Fan Switch can be over ridden by the Front light and Combustion Air Blower Control Switch and the high limit will also override the Automatic Fan Switch.

Maintenance/Result

Ensure that the outer door closes properly to activate the Automatic Fan Switch. If the outer door does not close properly the switch could stay in the "fan on" position or if the Automatic Fan Switch fails in the "fan on" position, the Heatmor combustion fan will continue to run until the high limit is tripped. Ensure that the Automatic Fan Switch is working properly: if the Heatmor is off when you approach the Heatmor, the fan should come on when you open the outer door, if it does not, then your Automatic Fan Switch has failed in the "fan off" position.

CHIMNEY AND TOP FLUE

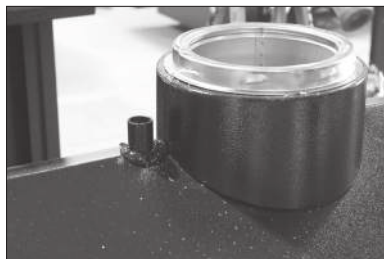
Chimney

Principles

The principle of the chimney is to discharge smoke from the flue into the atmosphere.

Maintenance

Make sure chimney and chimney extensions are clean and in good condition.



Chimney

The chimney may be cleaned from the top with a chimney-cleaning device. Inspect the chimney once a month during the heating season to ensure there is not an excessive amount of creosote. If an excessive creosote buildup has occurred, it must be removed promptly to reduce the risk of a chimney fire.

When the unit is shut down for the summer, inspect and clean the chimney for the next heating season. When the furnace is not in use, cover chimney so nothing can enter.

Chimney Extension(s)

Principle

Chimney extensions discharge smoke higher into the atmosphere. They also discharge sparks higher into the atmosphere, so they have more chance of being burned out before they reach the ground. Approved chimney extensions may be added to the chimney to discharge smoke to higher levels. Discharging smoke at a higher level helps keep smoke above property level, especially on low pressure or cloudy, hazy or wet days. When installing chimney extension you must have no less than three tech-12 screws (self-tapping). Any chimney extension exceeding 10ft must be supported with guide wires.

Please refer to the “Best Burn Practices” located on the inside front cover of this Operations and Maintenance Manual.

Maintenance / Result

- 1) See chimney maintenance above.
- 2) Purchase approved chimney extensions that fit together correctly. If the extensions don't fit properly, creosote will run down the outside of the chimney extensions and cause corrosion to the roof.
- 3) Annually remove chimney extensions for cleaning and safety purposes.

In case of chimney fire shut off combustion fan switch and consult your dealer.

8 inch by 32.5 inch steel chimney connector extensions are available from your local dealer.

Rain Caps and Spark Arrestor:

Consult your local dealer for optional components.

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Creosote

Creosote - Formation and Need for Removal -

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

The chimney connector and chimney should be inspected at least twice monthly during the heating season to determine if a creosote buildup has occurred.

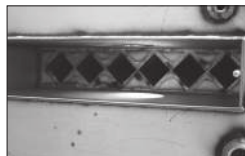
If creosote has accumulate it should be removed to reduce the risk of a chimney fire.

DO NOT connect to a chimney flue serving another appliance.

Flue

Principles of the Flue

The flue allows the passage of heat, smoke, and gases from the firebox to the chimney. Because the flue is surrounded with water, heat is transferred to the water surrounding the flue. This captures heat that would otherwise be lost out the chimney, assisting in the process of a more efficient burn.



Flue

Maintenance

Only dust should accumulate in the flue. If creosote develops, the cause should be determined and eliminated.

- 1) Inspect and clean the flue once a month during the heating season.
- 2) Remove the one-half inch nuts holding the flue cover and remove the cover.
- 3) Using the flue scraper provided with the HEATMOR™ furnace, push the dust to the front of the flue and let it fall down into the firebox. Remove this dust as you would ashes. If a lot of dust is dropped down, be certain that the air slot of the front air box is not covered.
- 4) Re-attach the flue cover plate, making sure to tighten the nuts to make an airtight seal.
- 5) If the HEATMOR™ Furnace unit is shut down for the summer, inspect and clean the flue for the next heating season.

Flue Cover

Principles

The flue cover is airtight and provides access to the flue for cleanout.



Removing Flue Cover

Flue Scraper

Principles

The flue scraper is provided for cleaning the flue only and is not designed to be used for other purposes.



Flue Scraper

ASHES

Ash Management and Ash Removal

1) If ash management is deficient, the HEATMOR™ will not perform to its optimum. It is time well spent to ensure proper ash management. In the long run, the operator will be paid back many times over in higher efficiency and better performance. Improper ash management results in one unfavorable condition starting a chain reaction of additional problems.

2) Allow **all** wood in the firebox to fully burn out every day or two, and use this opportunity to rake the ashes in the firebox, down into the grates. By timing the loading of wood so the water temperature drops approximately 10 degrees below the low water temperature set-point, means all fuel in the firebox is used up, and the only thing burning are the ashes. An hour or two of this condition will ensure an easy, smoke free opportunity to rake the ashes.

When all fuel has been burned out of the ashes, they will be a pale brown color. With a light raking assistance, they will fall through the grates into the ash pan below. It is best to rake the area over the grate, every day, such that the grates are at least 25 percent clear of ash. This allows upward movement of combustion air.

YOU CAN OBTAIN ASH RAKES FROM YOUR LOCAL DEALER
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3) If the ashes don't flow into the ash pan while being raked, the ash pan is possibly full. Removing the ashes from the ash pan before it is completely full ensures the proper airflow from below the grates is maintained and also ensures the ashes can drop through the grates into the ash pan.

Ashes should be removed before the ash pan is completely full.

4) Be careful not to pull the ashes too close to the front (or the rear) of the firebox, blocking off the combustion airflow from the air boxes.

5) Do not allow ashes to build up on top of the grates. Air needs to flow through the grates to fuel the fire. A blocked grate can cause inefficient or non-existent combustion conditions.

6) It is not necessary to rake or move the ashes that accumulate around the sides of the firebox. Usually they will naturally flow onto the grate area, courtesy of being disturbed as wood is added.

7) **A rule of thumb is to remove ashes every two weeks.** Choose a certain day of the week and faithfully do the ash removal chore on that same day, every week.

8) Completely burned ashes will appear like flour. They may be dusty when being removed with the auger. **A particle mask should be worn when removing ashes with the auger.**

9) Removed ashes should be stored in a **steel** container, sealed with a **steel** tight fitting lid, and placed in an area free of combustible materials for a few days, to allow the ashes to completely cool before being disposed.

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Ash Management and Ash Removal (cont.)

10) If wood with nails is burned, the nails will find their way through the grates and can be removed with the ashes. Normal nails should pose no problem. If the nails are "U" shaped, they may loop over the grate and restrict the auger. Remove these nails from the grate with a magnet.

With proper handling, it is not necessary to let the fire go out or the ashes to cool before removing ashes.

Ash Pan

Principles

The ash pan is a storage reservoir for completely burned ashes and provides support for the grates. It is also a distribution area for the combustion air that flows upwards through the grates. A reasonable amount of ashes (two to four gallons) should be removed during each ash removal. The ash pan is replaceable.



Ash Pan (below grates)

Removal and Replacement

- 1) Remove all sand from base area.
- 2) Remove small air pipe leading from ash pan to front air box.
- 3) Slide ash pan approximately three inches towards the front of the HEATMOR™ base, to free the ash pan from the ash auger tube at the back of the ash pan.
- 4) Lift the ash pan straight up and remove through the firebox door opening.
- 5) Replace with a new or repaired unit.
- 6) Replace sand.



Disconnect power before removing ashes.

Ash Auger

Principles

The auger provides a convenient and cleaner method of removing ashes from ash pan.

Operation

- 1) **The ash auger should never be left in the ash pan between clean-outs of ashes.**

Doing so will interfere with the required combustion airflow beneath the grates, and required combustion airflow up through the grates.

- 2) Twist the auger into the ashes and either screw or pull the ashes out.

- 3) A proper method of storing the ash auger is to attach a six inch PVC pipe, three feet long, to the side of the HEATMOR™. Storing the auger in the tube will keep it from being frozen into or under snow.



Ash Auger

HEATMOR™

Ash Auger Tube

Principles

The ash auger tube is a six inch diameter tube that extends from the rear of the ash pan, to approximately four inches past the cladding of the HEATMOR™. This extension allows placing a container under the tube to catch the ashes.

Ash Auger Tube Cover Plate

Principles

The auger tube cover plate is a round plate that is secured onto the end of the ash auger tube, creating an airtight seal.

Operation

- 1) **When removing ashes, always turn off combustion air blowers.**
- 2) Remove the two thumb nuts.
- 3) Insert the ash auger and remove the ashes.
- 4) Replace the ash auger tube cover plate and securely tighten the two thumb nuts.



Ash Auger Tube Cover Plate



Removal of Ash Auger Tube Cover Plate

TEMPERATURE GAUGE

Temperature Gauge (for models made before 2015)

Principles

The temperature gauge displays the temperature of the water in the water jacket. The temperature gauge body fits into a “well.” The “well” is completely watertight and is threaded into the water jacket. This allows the temperature gauge to be removed with no loss of water. The temperature gauge is for reference only, not to be used for exact temperature readings. More accurate equipment is needed to determine actual water temperature.



Temperature Gauge

Maintenance

Keep the face of the dial clean by cleaning periodically with glass cleaner.

Removal and Replacement

- 1) To remove the temperature gauge from the “well,” pull straight out on the face of the dial. **Do not pull on the face of the dial in a twisting motion.** A twisting motion may result in de-calibrating the temperature gauge.
- 2) To install, push the temperature gauge straight into the well. (Ensure contact paste has been applied to well.)

NOTE: Different makes and models of temperature gauges have different sized wells. Often they are not interchangeable. Replace with the correct unit from your local dealer.

NOTE: The temperature reading on the temperature gauge may not coincide exactly with the temperature of the water leaving the back of the HEATMOR™ or the temperature of the water arriving into the building being heated. There may also be small variances between the temperature reading on the temperature gauge at the front of the HEATMOR™ and the aquastats on the back of the HEATMOR™.

These variances result from:

- 1) The temperature gauge is reading the temperature of the water at the **top** of the water jacket, at the **front** of the HEATMOR™. The hot supply water is taken from the **bottom** of the water jacket at the **rear** of the HEATMOR™.
- 2) The same reason for the variance between the temperature gauge and the aquastats.
- 3) Until the water is thoroughly mixed, whether or not the unit is firing, there will be variances between the different instruments.

IN A NORMAL OPERATING MODE, SMALL VARIANCES IN READINGS AND CALIBRATIONS WILL NOT AFFECT THE END RESULTS OF THE TOTAL SYSTEM.

ELECTRONIC AQUASTAT CONTROLLER

Principles

The Electronic Controller displays the temperature of the water in the water jacket and shuts down the fan(s) when excessive low water is detected.

- 1) At its low setting it will turn the combustion air blower(s) on, re-igniting the fire.
- 2) At its high setting it will turn the combustion air blower(s) off, extinguishing the fire.
- 3) The difference between the highest temperature of the water and the lowest temperature of the water is factory set at 15° Fahrenheit.

Operation

The factory settings on this aquastat should not be changed; changing the factory settings will void the warranty and certifications.

Maintenance

Keep the face of the dial clean by cleaning periodically with glass cleaner.

Removal and Replacement

- 1) Turn off the main power supply to the HEATMOR™.
- 2) Remove the screws from the panel that holds the Electronic Aquastat Controller.
- 3) Pull the controller and panel away from the housing to obtain clearance to work on the Electronic Aquastat Controller on the back.
- 4) Disconnect and label or draw a diagram of each wire connection on the Electronic Aquastat Controller. Refer to the Wiring diagram at the back of this manual.
- 5) Replace the controller and reverse the steps above for re-installation.

NOTE: Different makes and models of furnaces may have different controllers. These controllers will NOT be interchangeable. Replace with the correct unit from your dealer.

NOTE: The temperature reading on the temperature gauge may not coincide exactly with the temperature of the water leaving the back of the HEATMOR™ or the temperature of the water arriving into the building being heated. There may also be small variances between the temperature reading on the front of the HEATMOR™ and the high limit aquastats on the back of the HEATMOR™.

These variances result from:

- 1) The Electronic Aquastat Controller is reading the temperature of the water at the top of the water jacket, at the rear of the HEATMOR™. The hot supply water is taken from the bottom of the water jacket at the rear of the HEATMOR™.
- 2) The high limit aquastat is reading the temperature from the top of the water jacket, at the rear of the HEATMOR™.
- 3) Until the water is thoroughly mixed, whether or not the unit is firing, there will be variances between the different instruments.



Electronic Aquastat Controller



Temperature Probe

IN A NORMAL OPERATING MODE, SMALL VARIANCES IN READINGS AND CALIBRATIONS WILL NOT AFFECT THE END RESULTS OF THE TOTAL SYSTEM.

ELECTRICAL

Principles

The HEATMOR™ furnace comes with all internal components pre-wired. Provision is made for easy attachment of the main electrical power supply to the HEATMOR™ controls. Electrical outlets at the rear of the HEATMOR™ accommodate plugging in circulating pumps.

Electrical Supply



Have a licensed electrician make all electrical connections.

Required electrical power supply to the HEATMOR™ is 115 volts, 60HZ, 1 phase.

- 1) Use only 14/3 electrical wire.
- 2) The 14/3 wire will actually contain 4 wires; a) black, b) white, c) red, d) ground
- 3) If the electrical wire is being buried in the trench, be certain to use electrical wire approved for direct burial.
- 4) Do not place electrical wire in close contact with the supply and return lines.
- 5) The electrical supply wire should be connected to it's own circuit.
- 6) The red wire is used as a 120v signal back to the house that the Heatmor is in an Over-Temp situation.

Electrical Supply Junction Box

Principles

The electrical components of the HEATMOR™ furnace are pre-wired at the factory. All the wiring becomes centralized in the junction box.

Connecting the main power supply to the HEATMOR™:

- 1) Remove the plate on the Electrical Supply Junction Box.
- 2) Insert the electrical supply wire through the hole in the housing corner and route up the back into the supply junction box.
- 3) Basically, the black wires are connected, the white wires are connected, the ground wires are connected, and the red wires are connected.
- 4) Tighten the screw clamp in the electrical connector to hold the supply wire firm.
- 5) Replace the plate on the Electrical Supply Junction Box.



Electrical Supply Junction Box

Maintenance

- Keep the junction box clean and dry.
- Keep the cover plate firmly attached at all times.
- Make certain the MARR connectors (wire nuts) are properly installed and holding tight.

HEATMOR™

Double Electrical Outlets at Rear

Principles

To provide a live source of 115V power to power pumps, trouble lights, etc.

Maintenance

- Do not overload the circuit
- Keep the outlets clean

Water Temperature Range Control (Aquastat on the left)

Only for models manufactured before July 2015.

Principles

The proper name is an "aquastat." It is referred to as an aquastat because it measures the temperature of water (aqua means water). It is sometimes referred to as a thermostat but thermo means air. It **does not** measure the temperature of air.

- 1) At its **low** setting it will turn the combustion air blower(s) **on**, re-igniting the fire.
- 2) At its **high** setting it will turn the combustion air blower(s) **off**, extinguishing the fire.
- 3) The difference between the highest temperature of the water and the lowest temperature of the water can be adjusted from 5 degrees Fahrenheit to 30 degrees Fahrenheit. From the factory, this control is set at approximately 180 degrees Fahrenheit for the high and 165 degrees Fahrenheit for the low.

Operation

- 1) This aquastat can not be set any higher than 180 degrees Fahrenheit.
- 2) Do not have a low water temperature below 155 degrees Fahrenheit.
- 3) Adjusting the white dial to a lower number is recommended if there is a small removal of heat, as in warm weather. This smaller variance allows for shorter time duration between burns. However, it is not recommended to run your furnace during warm weather as your efficiency is greatly reduced.

Adjustments

- 1) Turning the main dial to a given setting determines the high temperature of the water.
- 2) Adjusting the white dial determines the spread, in degrees Fahrenheit, between the high and low water temperatures.



Electrical Supply
Junction Box



Water Temperature
Range Control



Water Temperature
Control Settings



Dial

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Removal and Replacement

- 1) Turn off the main power supply to the HEATMOR™.
- 2) Remove the aquastat cover.
- 3) Disconnect and label or draw a diagram of each wire connection on the aquastat.
- 4) Loosen the two screws at the back of the aquastat, which clamp the aquastat to the well in the water jacket.
- 5) Pull the aquastat body straight out of the well, making sure the copper wire and probe is being pulled out of the well along with the body.
- 6) Insert the new unit probe first, into the well. (Ensure contact paste has been applied to well.)
- 7) The clamp must fit around the groove of the well. Tighten the clamp with the two screws at the back of the aquastat body.
- 8) Connect the electrical wires to the appropriate connections, following the label or diagram.
- 9) Replace the cover.
- 10) Turn on the power.
- 11) Adjust the dial and white wheel to the preferred settings.



Removal of
Aquastat Cover



Wire Probe

High Water Temperature Safety Shutoff Control (Aquastat on the right)

Principles

The correct name is an "aquastat." It is referred to as an aquastat because it measures the temperature of water (aqua means water). It is sometimes referred to as a thermostat, but thermo means air. It **does not** measure the temperature of air. The High Water Temperature Safety Shutoff Control turns off all electrical power to the combustion air blowers and the front light if an excessive water temperature is reached. To provide added safety and notification, when a high water temperature is reached, this aquastat will send electrical power to the "red wire." The red wire leading from the HEATMOR™ back to the power source can be installed so the electrical power will sound an alarm or will override the comfortable heat settings within the heated building. By starting heating appliances in the building, heat will be drawn off the HEATMOR™, dumped into the building, creating an elevated temperature environment in the building, and hence a notification of an unusually high water temperature within the HEATMOR™. By removing this excess heat from the HEATMOR™, a "boil" will normally be avoided.



High Temp
Safety Shutoff

Operation

- From the factory, this control is set at 200 degrees Fahrenheit. When the water temperature within the water jacket lowers to 195 degrees Fahrenheit; the electrical circuit to the main combustion air blower(s) would be re-activated. The combustion air blowers will not come back on until the low water temperature is reached.
- There is no need to make any adjustment. **Leave it set at 200 degrees Fahrenheit.**

HEATMOR™

Removal and Replacement

- 1) Turn off the main power supply to the HEATMOR™.
- 2) Remove the back right side tray panel - 5/16th nut driver.
- 3) Make sure stove temperature is not hot.
- 4) Drain stove below aquastat bungs.
- 5) Remove electrical box cover.
- 6) Disconnect - Black - Brown - Red.
- 7) Pull wires - Black - Brown - Red.
- 8) Remove faulty High Limit with 1" wrench.
- 9) Insert new High Limit aquastat. Tighten - use Teflow tape on threads.
- 10) Pull wires - Black - Brown - Red through corner & electrical box.
- 11) Reconnect wires at junction box - Black - Brown - Red.
- 12) Replace junction cover.
- 13) Replace side tin.
- 14) Refill with water.
- 15) Turn power back on.



Front Light and Fan Power Switch



Front Light

Front Light and Fan Power Switch

Principles

- 1) To provide light while fueling.
- 2) To provide a means of turning off the combustion air blowers on demand.
- 3) To provide a visual warning that electrical power to the combustion air blowers has been terminated.

Operation of the Front Light and Fan Power Switch

- By adjusting the fan power switch to the down position, the electrical power to the combustion air blower(s) is manually terminated, and the front light turns on.
- This light will then illuminate the area in front of the HEATMOR™.
- The light must be turned off for electrical power to be running to the combustion air blowers.

IF THE WATER TEMPERATURE IS HIGH ENOUGH TO TRIGGER THE HIGH WATER TEMPERATURE SAFETY SHUTOFF, THE FRONT LIGHT WILL NOT TURN ON WHEN THE FAN POWER SWITCH IS IN THE DOWN POSITION.

Removal and Replacement of the Front Light Bulb

- 1) Remove the glass globe by first loosening the setscrew and then unscrew the globe.
- 2) Replace the light bulb.
- 3) Replace the globe and tighten the setscrew.

Removal and Replacement of the Fan Power/Light Switch

- 1) Turn off the main electrical power supply to the HEATMOR™.
- 2) Remove the switch cover plate.
- 3) Make a sketch of the location of the wires on the switch.
- 4) Remove the wires, and replace the switch. This is a special 3-way switch.
- 5) Replace the wires as in the diagram.

- 6) Secure the cover plate.
- 7) Turn the main electrical power supply back on to the HEATMOR™.



Note: It is recommended to contact a licensed electrician to perform the above operation.

In the Event of a Power Failure

If a power failure occurs during the use of a HEATMOR™, do not open the firebox door to provide draft for the fire to burn. Allow the fire to go out. In case of a prolonged power failure, a generator should be used as a back-up power source.

EXTERIOR CLADDING AND INSULATION

Outer Front Door of the HEATMOR™

Principles of the Outer Front Door

The outer door of the furnace is an exterior door, which is insulated to retain the heat that radiates from the firebox door and water jacket surface. The door provides a lockable, protective surface to prevent any hot surface from being exposed.



Outer Front & Back Door

Operation of the Outer Front Door

The outer door is hinged and opens to the right of the furnace. As the door opens, it releases the Automatic Fan Switch, which allows air to enter the air box reducing the risk of a flashback. A keyed lock is installed on the left side of the door providing an easy way to ensure the door cannot be opened causing untrained users to be injured.

Maintenance / Result

Keep the door free from any obstruction and ensure that the inner seal of the door seals against the doorframe. This will keep cold air from entering the heated air cavity, which provides the air box and firebox with air.



Lockable Door

Removal and Replacement

To remove the outer door, the lock handle must be unlocked and opened. Pick up the old door from the hinges and place and secure the new door into position. Test the door to ensure a tight seal to the doorframe of the furnace.

Roof of the HEATMOR™

Principle of the Roof

The roof of the furnace is one solid piece of roofing steel creased in the center. This provides a dry covering to protect the insulation of the furnace.

Maintenance / Result

Inspect the roof of the furnace once a year to verify that none of the roof screws have broken. A large number of broken roof screws can allow damage to the furnace roof. Ensure the lift hook and chimney are sealed so no water can enter into the roof insulation.



Roof

ABSOLUTELY NO FIRE IN THE FIREBOX WHEN PERFORMING THIS REPAIR. DO NOT PERFORM THIS REPAIR WHEN UNIT WATER TEMPERATURE IS UNSAFE. ALWAYS WEAR PROPER PERSONAL PROTECTIVE EQUIPMENT.

Removal and Replacement

If the roof has been damaged it can be replaced. Follow these steps or contact your local dealer.

- 1) Remove the silicone from around the lift hook and vent pipe.
- 2) Remove all roof screws holding the damaged roof secure.

HEATMOR™

- 3) Lift the old roof steel off the furnace.
- 4) Install the new roof steel.
- 5) Secure the new roof to the frame of the furnace.
- 6) Re-seal the lift point and relief vent pipe with high temperature silicone.

Sides of the HEATMOR™

Principle of the Sides

The sides of the furnace are clad with your choice of steel siding. The steel siding provides a dry covering to protect the insulation of the furnace.



Outer Side

Maintenance / Result

Inspect the sides of the furnace once a year to verify that none of the screws have broken. A large number of broken screws can allow damage to the furnace siding. Ensure there is a good seal so no water can enter into the insulation covering the sides of the water jacket.

Removal and Replacement

If the sides have been damaged or if you would like to change the color of your unit, they can be replaced with different steel siding. Follow the following steps or contact your local dealer.

- 1) Remove all the screws holding the damaged steel siding secure.
- 2) Lift the old steel off the furnace.
- 3) Install the new steel siding.
- 4) Secure the new steel to the frame of the furnace.

Insulation

Principle of the Insulation

The insulation helps retain the heat in the water, which has been heated by the fire. It also provides a heat barrier to ensure that the outer steel siding does not release any heat.

Maintenance / Result

It is important to keep the insulation dry. Wet insulation loses its R-Value. Keep the base of the furnace sealed to prevent small rodents from making nests or wrecking the insulation.

Removal and Replacement

To remove and replace the insulation, refer to the preceding removal and replacement steps involving the roof and siding. If you have any further questions, please contact your local dealer.



Insulation

AIR LEAKS

Checking For Air Leaks

Once your HEATMOR™ system is up and running, we recommend that you conduct an initial check for air leaks from the furnace. To detect an air leak, put some green grass (or something which will create heavy smoke) into the furnace. When the furnace is smoking, cover the chimney and turn off the blower and watch for smoke leaks.

Air leaks cause the fire to not burn as hot or efficiently. In result you will use more wood to achieve the desired water temperature. The HEATMOR™ Outdoor Furnace is designed with over / under forced drafts and if air leaks occur, it would change the output of the furnace.

<p>AIR LEAKS INTO THE FIREBOX WILL CAUSE THE FORMATION OF EXCESS CREOSOTE.</p>

WATER LEAKS

If you suspect that your HEATMOR™ Stainless Steel Outdoor Furnace has developed a water leak, please contact your local dealer for verification and further details.

DOMESTIC COIL (OPTIONAL)

Principle of the Domestic Coil

The domestic coil provides a method of heating water indirectly through water-to-water convection. This method of heating needs to be planned from the initial stages of purchasing your HEATMOR™. A HEATMOR™ Outdoor Furnace must be special ordered and manufactured with a special hole at the back of the furnace to accommodate the domestic coil.

Operation of the Domestic Coil

The coil is inserted at the rear of the furnace through a hole in the water jacket and fastened by nuts and bolts. The domestic coil plate is sealed to the outer face of the water jacket by a sealing gasket. As water passes through the domestic coil, the water in the water jacket heats it.

Maintenance / Result

- Make sure a tight seal is maintained between the coil plate and the outer face of the water jacket.
- Firmly fastened connections are essential to ensure there are no leaks.
- The pH level of the water treatment is important to assist in corrosion control. Low water treatment levels could lead to domestic coil pinhole leaks. This would allow the water to mix together causing contamination of domestic water and pressurization in the water jacket resulting in water spillage.

Removal and Replacement

If you suspect you have a leak or faulty internal coil requiring replacement, contact your local dealer.

SEASON START-UP MAINTENANCE CHECKLIST

To begin season start-up of your Heatmor™ Outdoor Furnace, assuming you followed the procedures outlined in the “End of Season Maintenance Checklist,” follow the instructions below:

1. Remove cap from chimney.
2. Build fire in firebox and bring your furnace up to temperature. (Refer to the “Lighting the Heatmor™ for the first time” section of the Heatmor™ Operations and Maintenance Manual.)
3. Once your furnace is up to temperature, you can start all pumps.



CAUTION: It is recommended to start your pumps AFTER you bring your furnace up to temperature. This helps ensure your system isn't air locked and ensure your water is circulating correctly.

4. Your start-up is complete.

END OF SEASON MAINTENANCE CHECKLIST

To begin End of Season Shutdown of your Heatmor™ Outdoor Furnace, follow the instructions below:

1. Turn off pump(s).
2. Clean Flue (Refer to the "Flue" section of the Heatmor™ Operations and Maintenance Manual.)
 - a) Remove the one-half inch nuts holding the flue cover and remove the cover.
 - b) Using the flue scraper provided with the HEATMOR™ furnace, push the dust to the front of the flue and let it fall down into the firebox. Remove this dust as you would ashes. If a lot of dust is dropped down, be certain that the air slot of the front air box is not covered.
 - c) Re-attach the flue cover plate, making sure to tighten the nuts to make an airtight seal.
3. Clean ashes out of Firebox. (Refer to the "Ashes" section of the Heatmor™ Operations and Maintenance Manual.)
 - a) Thoroughly pull ashes from sides and corners of Firebox. Rake ashes in Firebox down into the grates.
4. Auger ashes out of Ash Pan. (Refer to the "Ashes" section of the Heatmor™ Operations and Maintenance Manual.)
5. Place cap on Chimney. There is no specific product sold for this use, but a five gallon bucket or something similar will cover the chimney keeping unwanted moisture and visitors away.
6. Properly clean Fan(s). (Refer to the "Air Supply" section of the Heatmor™ Operations and Maintenance Manual.)
 - 1) Turn off the main power supply to the furnace.
 - 2) Loosen and remove the two thumb nuts securing the blower / flipper assembly to the large air tube, and remove the blower / flipper assembly.
 - 3) With a small brush, scrape any dust or residue that has accumulated on the fins of the blower.
 - 4) With a scraper or brush, remove any residue built up on the flipper assembly.
 - 5) Ensure the flipper is resting completely on its seat. If it is not resting completely, perhaps there is dust or soot built up on the flipper, or some other obstruction not allowing it to close tightly.
 - 6) Replace firebox door elbows every other season. If you did not change your firedoor elbows last year, it is strongly suggested to change them following the steps on page 43.
 - 7) Securely fasten the blower / flipper assembly back to the large air tube ensuring there are no air leaks.
7. Check PH level of your system water. Your PH level should be between 8 - 10. (Refer to the "Water" section in the Heatmor™ Operations and Maintenance Manual.)

HEATMOR™

The water in the HEATMOR™ should be chemically analyzed once per year to ensure the proper levels of treatment are being maintained. Contact your local dealer as to where to have your water tested. Provide the testing person with an amount of water from your HEATMOR™, equal to approximately 20 ounces, in a clean container. The amount of water treatment that has to be added yearly is dependent on how much fresh water you have added to your system since the last test. Be certain to add a water treatment that is approved by your dealer and HEATMOR™ Inc.

NOTE: To keep the Control Image (water chemical) circulated and properly coated throughout the HEATMOR™ system, it is recommended to start pumps at least once a month for approximately 2 - 3 hours.

FREQUENTLY ASKED QUESTIONS

1. Q. *How much water should be in the bladder?*

A. When the furnace is initially filled, there should be about one inch of water in the bladder with the water at a temperature of 50 degrees Fahrenheit. When the furnace is at its operating temperature, the bladder should be near full but not hard. Overfilling the bladder can shorten the life of the bladder.

Refer to:

- Maintaining the correct amount of water in the bladder and in the HEATMOR™.

2. Q. *Why is water coming out of the overflow relief vent pipe?*

A. When the furnace is initially filled and too much water is in the furnace, it releases through the relief vent pipe when the furnace is up to temperature. If this happens, a small amount of water should be removed from the furnace so the bladder is not hard.

Refer to:

- Installation of the HEATMOR™ Furnace.

3. Q. *Why is my furnace wet on the inside of the firebox?*

A. When your furnace is first fired up, and also at times during normal operation, the atmosphere inside the firebox will exceed the dew point causing condensation.

Refer to:

- Furnace has excessive moisture in firebox (Located in Trouble Shooting and Solutions).
- Dew Point (Located in Safe Operating Guidelines).

4. Q. *Why does my furnace fail to respond to the switch at the front of the furnace? For example; the light will not come on and the fan will not operate?*

A. The high limit aquastat has probably overridden the operating aquastat. If this has happened, it should also trigger your distribution system or high water temperature warning.

Refer to:

- High Water Temperature Safety Shutoff Controller (Located in Electrical).

5. Q. *Why is it getting so warm in my house and I cannot reduce the temperature with the thermostat?*

A. At this point the high limit aquastat has been tripped on. To detect the precise reason, please contact your local dealer.

Refer to:

- High Water Temperature Safety Shutoff Controller (Located in Electrical).

6. Q. *My furnace is shut down but still continues to increase in water temperature?*

A. There is an air leak somewhere in the furnace. Check all flippers and seals, ensuring that there is an airtight seal.

Refer to:

- Checking for air leaks (Located in Air Leaks).

7. Q. *Why am I experiencing an excess build up of creosote in the furnace?*

A. You more than likely are introducing unwanted draft into the firebox. This may be caused by several things, including a door ajar, ash auger tube cover loose, flipper assembly stuck. If your furnace is in a location where wind may effect the pressure differential across the furnace, it could cause draft to leak past the flipper.

Refer to:

- Creosote Build-up (Located in Trouble Shooting and Solutions).

8. Q. *How do you change a door hose while the furnace is in operation?*

A. Never change a door hose unless the furnace is cooled. Please refer to the firebox door hose section in the manual for further details or contact your local dealer.

Refer to:

- Firebox Door Hoses and Elbows (Located in Firebox and Other Components).

9. Q. *My furnace combustion blower continues to run but the fire will not burn until I open the door?*

A. Your flipper assembly is most likely stuck closed. Please refer to the combustion blower, flipper assembly section in the manual for further details or contact your local dealer.

Refer to:

- Combustion Air Blower and Flipper Assembly (Located in Air Supply).

10. Q. *Water is coming out of the rectangular top chimney flue?*

A. Similar to the firebox, when your furnace is initially fired up and also at times during normal operation, the atmosphere inside the firebox and chimney flue will exceed the dew point causing condensation.

Refer to:

- Furnace has excessive moisture in firebox (Located in Trouble Shooting and Solutions)
- Dew Point (Located in Safe Operating Guidelines).

TROUBLESHOOTING AND SOLUTIONS

Main Principles to Remember

- ◆ Enough Wood.
- ◆ Enough Water.
- ◆ Fans On – Air Must Get In.
- ◆ Fans Off – Air Must Stay Out.
- ◆ Water Temperature between 165 and 180 degrees Fahrenheit.

**PROCEDURES ARE REFERENCED TO THIS HEATMOR™
"OPERATORS AND MAINTENANCE MANUAL"**

<u>PROBLEM</u>	<u>CAUSE</u>	<u>SOLUTION</u>	<u>PROCEDURE</u>
Furnace Boils	Draft flipper stuck open.	Remove blower and flipper assembly. Clean, lube or replace.	Refer to Steps to "Maintain your Blower and Flipper Assembly."
	Draft Flipper not closing 100 percent.	Remove blower and flipper assembly. Clean, lube or replace.	Refer to Steps to "Maintain your Blower and Flipper Assembly."
	Blower, Flipper Assembly plate not tight.	Tighten wing nuts.	Refer to Steps to "Maintain your Blower and Flipper Assembly."
	Ashes holding flipper open in air box(s).	Clean out ashes.	Refer to "Air Box(s)."
	Firebox door improperly adjusted.	Adjust Firebox Door.	Refer to "Firebox Door."
	Firebox door ajar, not shut tight.	Close Fire Door Tight.	Refer to "Firebox Door."
	Ash Auger tube not sealed tight.	Close Tube Cover Firmly.	Refer to "Ash Auger Tube Cover Plate."
	Top flue cover plate not sealed.	Tighten ½ inch nuts.	Refer to "Top Rectangular Flue."
	Door gasket damaged.	Replace Gasket.	Refer to "Firebox Door Gasket."

PROBLEM	CAUSE	SOLUTION	PROCEDURE
	Base leaks air.	Reseal Base.	Refer to “ Caulking around the Firebox Base. ”
	Aquastat set too high.	Set Aquastat.	Refer to “ Electrical (Water Temperature Range Control). ”
	Aquastat malfunction.	Replace Aquastat.	Refer to “ Electrical (Water Temperature Range Control). ”
	Water Level is Low.	Add Water.	Refer to “ Filling the HEATMOR™ Outdoor Furnace Initially with Water. ”
	Creosote buildup on firebox doorframe causing improper door seal.	Remove creosote from doorframe.	Refer to “ Firedoor Frame ”
	Flipper assembly plate not tight.	Tighten thumb nuts and ensure a tight seal is established.	Refer to “ Steps to Maintain your Blower and Flipper Assembly ”
	Wrong type of sand or not enough sand.	Remove and replace or add sand.	Refer to “ Sand (Firebox and other Components). ”
	Very windy day causing a negative draft on the chimney.	Consult Dealer.	Contact your Local Dealer.
	Too little heat draw off HEATMOR™.	Consult Dealer.	Contact your Local Dealer.
	Circulating Pump not Functioning.	Replace Pump.	Contact your Local Dealer.
No Heat in Building	Fire Out.	Light Fire.	Refer to “ Lighting your Heatmor. ”
	Water level low.	Add Water.	Refer to “ Water Level Maintenance. ”

<u>PROBLEM</u>	<u>CAUSE</u>	<u>SOLUTION</u>	<u>PROCEDURE</u>
	Power loss.		Refer to “Electrical Supply.”
	Pump malfunction.	Replace Pump or Cartridge.	Contact your Local Dealer.
	Air trapped in water lines.	Bleed lines.	Contact your Local Dealer.
	Malfunction of heating appliances in building.	Repair, adjust or replace.	Contact your Local Dealer.
Furnace will not burn properly or will not maintain water temperature.	Chimney plugged.	Clean Chimney.	Refer to “Chimney Stub.”
	Not enough wood in Firebox.	Add wood.	Refer to “Loading wood into the HEATMOR™.”
	Poor quality wood.	Better wood.	Refer to “Types of Wood.”
	Draft flipper stuck.	Remove blower and flipper assembly-clean, lube or replace.	Refer to “Steps to Maintain your Blower and Flipper Assembly.”
	Electrical power is off or not constant.	Check all electrical connections. Call dealer or licensed electrician.	Refer to “Electrical (Contact Local Dealer).”
	Fire is out.	Re-light fire.	Refer to “Lighting Your HEATMOR™.”
	Flue plugged.	Clean Flue.	Refer to “Top Rectangular Flue.”
	Blower fins are full of dust.	Clean Blowers.	Refer to “Steps to Maintain your Blower and Flipper Assembly.”

<u>PROBLEM</u>	<u>CAUSE</u>	<u>SOLUTION</u>	<u>PROCEDURE</u>
	Blowers not running properly or up to speed.	Clean Blowers.	Refer to “Steps to Maintain your Blower and Flipper Assembly.”
	Ashes in Air Box(s).	Clean Air Box(s).	Refer to Air Box(s).
	Too many ashes in Firebox restricting air flow.	Clean out ashes with Auger.	Refer to “Ash Management and Ash Removal.”
	Restricted air flow into Blower(s) air inlet.	Clean Blowers.	Refer to “Steps to Maintain your Blower and Flipper Assembly.”
	Aquastat not set properly.	Set Aquastat.	Refer to “Electrical (Water Temperature Range Control).”
	Too much heat draw on Heatmor Furnace.	Verify HEATMOR™ furnace size for application.	Contact your Local Dealer.
	Wood is too big in diameter - not enough surface area to burn to provide enough heat.	Re-size fuel.	Refer to “Wood.”
	Water Level low.	Add Water.	Refer to “Filling the HEATMOR™ Outdoor Furnace Initially with Water.”
	Excessive moisture in Fuel.	Use dryer wood.	Refer to “Types of Wood.”
Furnace has excessive moisture in Firebox.	Chimney plugged.	Clean Chimney.	Refer to “Chimney Stub / Chimney Extension(s).”
	Flue plugged.	Clean Flue.	Refer to “Top Rectangular Flue.”
	Ashes in Air Box(s).	Clean Air Box(s).	Refer to “Air Box.”

PROBLEM	CAUSE	SOLUTION	PROCEDURE
	Too many ashes in Furnace.	Clean out ashes.	Refer to "Ash Management and Removal."
	Water temperature not being held in the 160-180 degree Fahrenheit range.	Adjust aquastat setting.	Refer to "Electrical (Water Temperature Range Control)." Contact your Local Dealer.
	Excessive Moisture in Fuel	Use dryer wood	Refer to "Types of Wood."
Furnace boils or rattles before reaching maximum operating temperature.	Water temperature range too broad.	Reduce Temperature.	Contact your "Electrical (Water Temperature Range Control)."
	Improper Antifreeze.	Use recommended Anti-freeze.	Contact your Local Dealer.
	Operating temperature too high.	Maximum temperature setting should not exceed 180 degrees Fahrenheit.	Refer to "Electrical (Water Temperature Range Control)."
Firebox Door pops or rattles.	Elbow(s) or hoses are clogged, restricting water flow through door hoses.	Unclog or replace elbow(s) or hoses.	Refer to "Firebox Door Hoses and Elbows."
	Loading fuel too close to the firebox door.	Load your fuel away from the firebox door.	Refer to "Loading wood into the HEATMOR™."
	Water temperature range setting is too wide	Adjust aquastat spread setting closer	Refer to "Electrical (Water Temperature Range Control)."
	Very hot burning fire.	Mix in some bigger or less cured wood.	Refer to "Wood."
	Flash Curtain / Heat Shield has been removed.	Install Flash Curtain / Heat Shield.	Refer to "Flash Curtain / Heat Shield."

<u>PROBLEM</u>	<u>CAUSE</u>	<u>SOLUTION</u>	<u>PROCEDURE</u>
Building too warm.	Defective in-house thermostat.	Replace thermostat.	Contact your Local Dealer.
	Air leakage around Door.	Replace Door Gasket.	Refer to “Firebox Door Gasket.”
	Aquastat malfunction.	Replace Aquastat.	Refer to “Electrical (Water Temperature Range Control).”
	Outdoor furnace is overheating.	Check for air leaks.	Refer to “Checking for Air Leaks.”
	Controls for heating appliances in building need to be adjusted.	Adjust, relocate, add more controls to monitor and control heat.	Contact your Local Dealer.
	Water Controls in building.	Add controls to control hot water flow for heat.	Contact your Local Dealer.
	Too much supply water going to certain heating appliances.	Adjust water flow.	Contact your Local Dealer.
	Outdoor temperatures are warmer and supply controls have not been adjusted.	Adjust water flow.	Contact your Local Dealer.
	High limit switch set too low.	Adjust setting.	Refer to “Electrical (Water Temperature Range Control).”
Creosote build-up.	Air leakage around Door.	Replace Door Gasket.	Refer to “Firebox Door Gasket.”
	Firebox receiving air somewhere when fans are off.	Check all seals for air leaks. Run a smoke check.	Refer to “Checking for Air Leaks.”
	Fire is not burning hot.	Check type of wood burning and if blowers working properly.	Refer to “Types of Wood, Combustion Air Blowers / Flipper Assemblies.”

<u>PROBLEM</u>	<u>CAUSE</u>	<u>SOLUTION</u>	<u>PROCEDURE</u>
	Burning high surface area wood (small pieces).	Add larger pieces of wood.	Refer to “Types of Wood.”
	Air flow is not sufficient for the type of fuel.	Check and clean fan blades. Check and clean flipper assembly.	Refer to “Combustion Air Blowers / Flipper Assemblies.”
	Ashes in Air Box(s).	Clean Air Box(s).	Refer to “Air Box.”
	Chimney Plugged.	Clean Chimney.	Refer to “Chimney Stub.”
	Burning wet wood.	Add dryer wood as fuel.	Refer to “Types of Wood.”
	Burning unseasoned wood.	Add seasoned wood to your fuel.	Refer to “Types of Wood.”
	Flue plugged.	Clean Flue.	Refer to “Top Rectangular Flue.”
	Water temperature not being held in the 160 to 180 degree range	Adjust setting.	Refer to “Electrical (Water Temperature Range Control).”
Thermometer (temp gauge) exceeds 212 degrees Fahrenheit. Furnace is not boiling.	Low water level	Add water. (Let Furnace cool first)	Refer to “Water Level Maintenance.”
Charcoal build-up in rear of firebox.	Excessive ashes.	Remove ashes.	Refer to “Ash Management and Ash Removal.”
	Faulty back blower. (400 DCSS ONLY)	Replace Blower.	Refer to “Combustion Air Blowers / Flipper Assemblies.”
	Back blower has air flow restriction. (400 DCSS ONLY)	Clean Blower and Air Box.	Refer to “Combustion Air Blowers / Flipper Assemblies, Air Box(s).”

<u>PROBLEM</u>	<u>CAUSE</u>	<u>SOLUTION</u>	<u>PROCEDURE</u>
	Failure to rake ashes periodically.	Rake ashes.	Refer to “Ash Management and Ash Removal.”
Blowers continue to operate and thermometer is reading a higher than setting temperature.	Water level is low.	Add water.	Refer to “Filling the Furnace Initially with Water.”
	Defective thermometer.	Replace thermometer.	Refer to “Thermometer.”
	Defective aquastat(s)	Replace aquastat(s)	Refer to “Electrical (Water Temperature Range Control).”
	Defective Automatic Fan Switch (A.F.S.)	Replace A.F.S.	Refer to “Automatic Fan Switch.”
Too much smoke comes out firebox door while loading.	Opening firebox door when there is fuel still inside.	Do not add so much fuel all at one time.	Refer to “Loading Wood into the HEATMOR™.”
	Burning wet wood or poor quality wood.	Add dryer, seasoned wood.	Refer to “Types of Wood.”
	Opening door within two minutes of blowers turning off.	Open door sooner or wait for next cycle to start.	Refer to “Loading Wood into the HEATMOR™.”
	Firebox air leak.	Check all seals for or air leaks. Run a smoke check.	Refer to “Air Leaks.”
	Flash Curtain / Heat Shield has been removed.	Install Flash Curtain / Heat Shield	Refer to “Flash Curtain / Heat Shield.”
	Water temperature is low.	Fuel fire.	Refer to “Loading Wood into the HEATMOR™.”

<u>PROBLEM</u>	<u>CAUSE</u>	<u>SOLUTION</u>	<u>PROCEDURE</u>
	Furnace pad has not been raised above ground level.	Raise pad.	Contact your Local Dealer.
	Draft fan has not been turned off while loading.	Turn off fan before loading.	Refer to "Loading Wood into the HEATMOR™."
Losing Water	Furnace is boiling (could happen when away, sleeping or at work).	Add water. Complete a full furnace check of all systems.	Refer to "Filling the Furnace Initially with Water."
	Very slow leak somewhere in the system.	Check and tighten any leaking fittings.	Contact your Local Dealer.
	Someone is taking hot water from the system when needed.	Add water.	Refer to "Water Level Maintenance."
	Someone has accidentally opened a valve and not told anyone.	Add water.	Refer to "Water Level Maintenance."
	Leaking water line.	Fix leak in water line.	Contact your Local Dealer.
	Bladder is leaking.	Replace bladder.	Refer to "Bladder."
	Door hoses are leaking.	Replace door hoses.	Refer to "Firebox Door Hoses and Elbows."
	Bladder gate valve needs adjusting.	Adjust and tighten gate valve.	Refer to "Bladder Gate Valve and Bladder Hose."
	Hose clamps are leaking.	Tighten hose clamps.	Contact your Local Dealer.

<u>PROBLEM</u>	<u>CAUSE</u>	<u>SOLUTION</u>	<u>PROCEDURE</u>
Smoke from chimney is an annoyance.	Chimney is not high enough.	Add Chimney Extension.	Refer to "Chimney Extension(s)."
	Improper location of furnace (trees, buildings, winds, neighbors).	Possibly relocate furnace. Contact local dealer.	Contact your Local Dealer.
	Built up creosote is burning off firebox surface. Wood pieces are too small - too much surface area.	Maintain hot fire.	Refer to "Wood."
	Draft blowers have just turned off.	Smoke will dissipate.	
	Burning garbage.	DO NOT BURN GARBAGE.	Contact your Local Dealer.
	Burning wet wood.	Burn dryer wood.	Refer to "Types of Wood."
Burning what seems to be a lot of wood.	Losing heat into the ground. Poor insulation.	Re-insulate water lines and maintain a dry perimeter.	Contact Your Local Dealer.
	Ground water is extracting heat from the water lines.	Provide a method for ground water to drain.	Contact Your Local Dealer.
	Wood is too dry.	Burning too fast and hard.	Refer to "Types of Wood."
	Wood is too small of pieces.	Add larger pieces of wood.	Refer to "Wood."
	Top flue is clogged.	Clean Top Flue.	Refer to "Top Rectangular Flue."

<u>PROBLEM</u>	<u>CAUSE</u>	<u>SOLUTION</u>	<u>PROCEDURE</u>
	Using more heat in building than you realize (heating more sq.ft., appliances, with one heat source than before).	Consult your dealer. Verify furnace size for complete applications.	Contact Your Local Dealer.
Cannot get building(s) warm enough.	Insufficient heating devices in building.	Call your local dealer.	Contact Your Local Dealer.
	Improperly installed heating devices in building.	Correct installation of heating devices.	Contact Your Local Dealer.
	Heating devices need maintenance.	Maintain heating devices.	Contact Your Local Dealer.
	HEATMOR™ not running between 160-180 degrees Fahrenheit.	Adjust aquastats.	Refer to "Electrical-aquastat."
	Insufficient water circulation from HEATMOR™.	a) Check circulating pumps. Replace if necessary . b) Line that is kinked. c) Air in system. d) Need a larger pump. e) Lines are too small. f) Pump has a restriction in the intake (piece of plastic or foil).	Contact Your Local Dealer.
	Unbalanced supply water distribution.	Re-balance and distribute water from outdoor furnace. Balance the system by adjusting the flows of water to the different heating appliances.	Contact your Local Dealer.
	One appliance getting more than it's share of the total flow of hot water.	Balance the system by adjusting the flows of water to the different heating appliances.	Contact your Local Dealer.
	Defective in house (building) thermostat and controls.	Replace thermostats and controls.	Contact your Local Dealer.

<u>PROBLEM</u>	<u>CAUSE</u>	<u>SOLUTION</u>	<u>PROCEDURE</u>
	Faulty electrical supply.	Check electrical connections and check	Contact your Electrician .
	Indoor forced air furnace fan is full of dirt or filter is plugged and therefore the air flow is reduced going through the coil.		Contact your Local Dealer .
	Improper installation of coil in forced air furnace.		Contact your Local Dealer .
	Too small a coil in forced air furnace. Inadequate Baseboard.	When a water-to-water heat exchanger is installed, a temp drop of 20-30° across heat exchanger may be experienced.	Contact your Local Dealer .
Not enough domestic hot water.	Hot water heater is too small.	Sidearm exchanger needs to have a pump installed.	Contact your Local Dealer .
	Somewhere in the domestic water system of the house, the hot and the cold can mix, (as in a single faucet outlet) and the resulting mixed warm water is being sent to the hotwater taps instead of pure hotwater		Contact your Local Dealer .
	Manifold not balanced properly. One appliance getting more than its share of the total flow of hot water.	Balance the system by adjusting the flow of water to the different heating appliances.	Contact your Local Dealer .
	Outdoor furnace water temperature is not consistently between 160 and 180 degrees Fahrenheit.	Adjust aquastat.	Contact your Local Dealer .

<u>PROBLEM</u>	<u>CAUSE</u>	<u>SOLUTION</u>	<u>PROCEDURE</u>
	Over time, (approx. five years) with some water conditions, the sidearm will clog up with scale (lime) and restrict or shut off the flow completely through the sidearm.		Contact your Local Dealer.
	Improper hook up of the sidearm exchanger.		Contact your Local Dealer.
Water in Auger Tube.	Condensation formation on cooler steel.	Maintain constant firebox temperature.	Refer to "Ash Auger Tube."
Water temperature doesn't correspond with aquastat settings.	Inadequate rate of flow of water allowing layering of water temperatures.	Flow should be at least eight gallons per minute. Check pump and installation.	Contact your Local Dealer.
	No contact paste applied to well of Aquastat and / or High Limit Aquastat.	Remove aquastat from well and apply paste.	Refer to "Water Temperature Range Control."
	No contact paste applied to well of Temperature Gauge.	Remove Temperature Gauge from well and apply paste.	Refer to "Temperature Gauge."
	Faulty Aquastat.	Replace Aquastat.	Refer to "Water Temperature Range Control."



**PLEASE READ THE HEATMOR™ STAINLESS STEEL
LIMITED LIFETIME WARRANTY.**

**IF YOU HAVE ANY QUESTIONS, PLEASE CONTACT YOUR LOCAL DEALER.
COMPLETE AND SEND THE FURNACE REGISTRATION TO YOUR
LOCAL DEALER, DISTRIBUTOR OR HEATMOR INC. WITHIN
30 DAYS OF PURCHASE DATE TO VALIDATE THE WARRANTY.**





Outdoor Heating Systems by

HEATMOR™

HEATMOR™ STAINLESS STEEL LIMITED LIFETIME WARRANTY

HEATMOR™ warrants this outdoor furnace, to the owner, to be free of defect in material and workmanship throughout the lifetime of the purchase. This warranty excludes the electrical components such as aquastats, thermostats, fans, and pumps, as their manufacturer guarantees them. The bladder, firebrick, cast iron grates, gaskets and auger are all under warranty by HEATMOR™ for a period of one (1) year from the date of purchase.

HEATMOR™ does not warranty parts damaged by freezing, overheating, pressurization, use of unauthorized fuels or abuse. The HEATMOR™ is designed to be least susceptible to corrosion; therefore corrosion is covered under this warranty. The initial five (5) years warranty coverage of the furnace weldment and ash pan is 100 percent. After five (5) years, HEATMOR™ will credit a percent of the original purchase price of the furnace weldment and ash pan. The percent credit from HEATMOR™ applied to the current price of a replacement unit is as follows: 70 percent in year 6, 60 percent in year 7, 40 percent in year 8, 20 percent in year 9, 15 percent in years 10 through 19, 10 percent in years 20 and beyond. Customer will receive a percentage discount on the replacement furnace only. No cash surrender value.

If warranty requires replacement of any part, HEATMOR™ will take responsibility for the actual cost of the replacement part only. The customer is responsible for the transportation cost and labor. No other warranty is expressed or implied. HEATMOR™ is not responsible for the cost of plumbing, replacement of antifreeze, shipping costs, or any other indirect costs associated with the replacement of the part. Outdoor furnaces are not intended to be the only source of heat. Therefore, it is recommended that a back-up system be in place to prevent damages caused by lack of heat. No unauthorized adjustment or repairs will be covered by warranty.

HEATMOR™ specifically disavows any other representation, warranty, or liability related to the condition or use of the product.

To validate this warranty, your registration must be completed within thirty (30) days of purchase date and mailed to: HEATMOR™, 105 Industrial Park Ct. N.E., P.O. Box 787, Warroad, MN 56763.

REGISTRATION

(Please Print Clearly)

Purchaser's Name: _____
Last First Initial

Address: _____
Mailing Address/Box # City State/Province Zip/Postal Code

Phone: (____) _____ Model: _____

See inside of front door for data plate that has model information

Serial No. _____ Date of Purchase: _____ / _____ / _____
Month Day Year

Referred By: _____
Name and Address

"I have read and understand the conditions of this warranty."

Dealership Name: (please print) _____

Dealer Signature: _____ Customer Signature: _____

You will receive an acknowledgement from HEATMOR™ regarding the receipt of your warranty and registration forms.
Please retain the acknowledgment in your records.

In the event of resale of a HEATMOR™ Stainless Steel Outdoor Furnace, HEATMOR™ will honor the remaining warranty if a fee of \$25.00 is submitted along with a Warranty Transfer Certificate.
Please contact your local dealer for information regarding the transfer of a warranty.

07/12/2011

Copy Distribution

White – Heatmor / Yellow – Distributor / Pink – Dealer / Gold – Customer



NEW FURNACE

Copy Distribution
White - Heatmor
Yellow - Distributor
Pink - Dealer
Gold - Customer

DELIVERY CHECK SHEET

Congratulations on your new furnace purchase! We are pleased you have chosen a Heatmor and we wish you many years of enjoyable wood heat. If you like your Heatmor, tell your friends and neighbors about it. A satisfied customer is our best salesperson!

Sincerely,

DELIVERY CHECKLIST

- ☐ Review owners manual.
- ☐ Describe installations methods and recommendations.
- ☐ Review warranty and maintenance requirements.
- ☐ Explain required maintenance schedule.
- ☐ Demonstrate safety hazards and proper operation of Heatmor.
- ☐ Describe possible problems caused by different wood/conditions.

Model: 100CSS 200CSS 400DCSS 600CSS 800CSS 200SSR11

Serial No. _____ Date: _____

(Please print)

CUSTOMER APPROVAL

I have inspected my new Heatmor and acknowledge that all the items on the delivery checklist have been reviewed with me by the salesperson. I have been presented with a key for my locked Heatmor and assume the responsibility of operation and maintenance of it.

Customer Signature

Date

HEATMOR™

HEATMOR

STAINLESS STEEL

Outdoor Furnaces

Manufacturing quality outdoor furnaces since 1984

Dear Heatmor Registered Heatmor Owner:

Heatmor Inc. is proud to introduce “Heatmor for Life”.

Any registered Heatmor Outdoor Furnace owner that is listed as the 1st referral contact for a Heatmor Furnace **sold** after July 31, 2010 will be mailed a \$100 check for each confirmed referral after the sale of the new furnace is finalized and warranty is sent in.

- Only Heatmor owners that have sent in their warranty registrations are eligible.
- Referral will be verified by lead information and warranty information.
- A \$100 check will then be sent to the Heatmor owner, verified from warranty information on file.
- There is no limit to how many referrals can be made.

NOTE: Only registered Heatmor Outdoor Furnace owners are eligible. THE HEATMOR DISTRIBUTOR / DEALER NETWORK IS NOT ELIGIBLE.

The following 2 sources must be verified in writing for an eligible referral:

- Heatmor owners must be identified as the referral source in writing on lead information gathered through Heatmor, Inc., Heatmor Dealers, or Heatmor Distributors.
- Heatmor owners must be identified as the referral source in writing on a returned warranty registration **after the purchase***

All checks will be issued in U.S. Funds.

If you have any questions, please contact your distributor!

Sincerely,

Heatmor Inc.
800-834-7552

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