



Model # K-251:

Cascade LE-1



Tested and listed by OMNI-Test
Laboratories Inc.
Portland OR, USA

Emissions tested to: ASTM 3053-2017
Report# 0123WM014E

Safety tested to UL 1482-2022
Report # 0123WN012S

INSTALLATION AND OPERATING INSTRUCTIONS SAVE THESE INSTRUCTIONS

Welcome to the Kuma family

Kuma is a modified version of the Greek word Kauma that means:
Burning, Glow, Heat (especially of the sun).

We would like to take the time to say thank you for purchasing a Kuma stove. We know that there are many choices in hearth products, and we appreciate that you chose a Kuma for your home heating. Our mission is to provide you with a quality product that will last a lifetime.

You may have noticed a portion of the Bible enclosed in your owner's packet. It is a small gift for you. Our faith in Jesus Christ is very important to us and we have that faith because there is hope in heaven. That hope comes from the message of truth that is found in this New Testament.

Thank you for allowing us the opportunity to warm your house and may God bless you.

Sincerely,
Mark & Lynnette Freeman
Founders - **Kuma Stoves**.

This manual describes the installation and operation of the Kuma Model K-251 Catalytic equipped wood heater. This heater meets the 2020 U.S. Environmental Protection Agency's crib wood emission limits for wood heaters sold after May 15, 2020. Under specific test conditions this heater has been shown to deliver heat at rates ranging from 11,219 to 30,612 Btu/hr. and an efficiency of 77.8% (High Heating Value). Please visit <https://www.kumastoves.com/content/page/EPA> for a detailed explanation of stove efficiencies. Particulate emissions are 1.11 grams per hour and average CO emissions are 0.49 grams per minute.

Please read the safety precautions and the entire installation and operation instructions carefully. Failure to properly install and maintain your wood stove can result in an unsafe condition.

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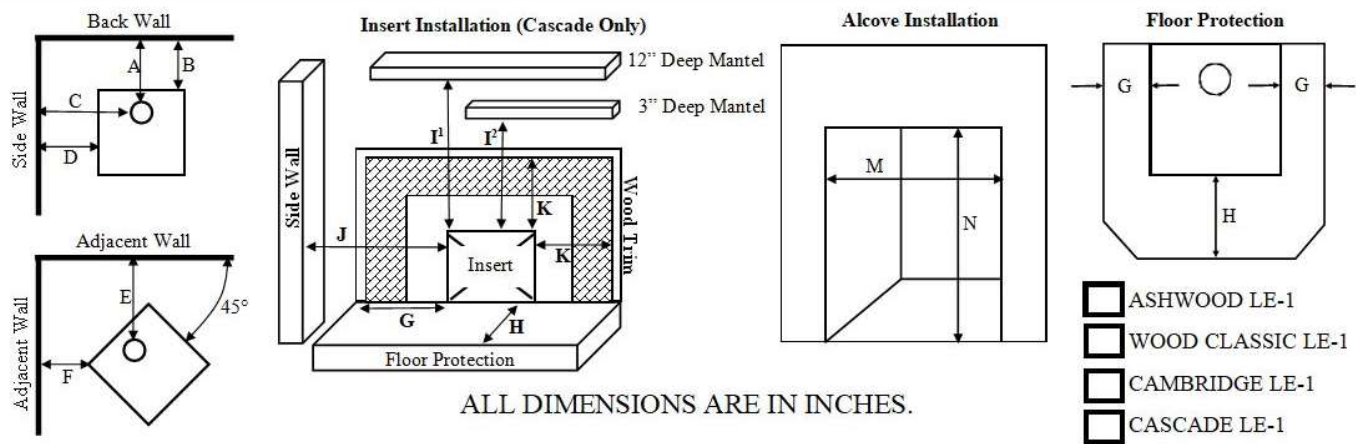
WARNING

- 🔥 If this stove is not properly installed, a house fire can occur. For your protection, follow the installation instructions provided. We recommend contacting local building or fire officials regarding restrictions and installation inspection requirements in your area. **We also recommend that your Kuma stove be installed by a properly trained and licensed installer, preferably an NFI (National Fireplace Institute) expert.**
- 🔥 **DO NOT CONNECT THIS UNIT TO A CHIMNEY FLUE SERVICING ANOTHER APPLIANCE.**
- 🔥 **Do not burn garbage or flammable fluids such as gasoline, naphtha or engine oil.** Do not use charcoal lighter fluid or similar liquids to start or “freshen up” a fire in this heater. Keep all such fluids well away from the heater while in use. Storing these fluids near a stove could cause a fire.
- 🔥 **DO NOT CONNECT TO ANY AIR DISTRIBUTION OR DUCT SYSTEM.**
- 🔥 **DO NOT OVERFIRE.** If any part of the stove or chimney glows, the stove is in an over fire condition. If this happens, shut the air control off immediately. Over firing can cause damage.
- 🔥 **WARNING: DO NOT INSTALL IN A SLEEPING ROOM.**
- 🔥 **An improperly drafting stove can cause smoke and carbon monoxide to enter the home. Smoke detectors and carbon monoxide monitors are recommended to be installed in the same room as this heater.**
- 🔥 **CAUTION: THE STRUCTURAL INTEGRITY OF THE FLOOR, WALLS, ROOF/CEILING, AND VAPOR BARRIERS MUST BE MAINTAINED.**
- 🔥 **DO NOT USE SINGLE WALL PIPE OR CONNECTOR PIPE FOR ANY CHIMNEY APPLICATION, EXTERIOR OR THROUGH THE WALL OR CEILING.** Single wall pipe may only be used as a connection between the stove and an approved masonry or stainless steel chimney. **Single wall pipe may not be used as a connector in mobile homes.**
- 🔥 When installing into an existing masonry or metal chimney, examine the chimney system carefully. If you have any questions, seek professional advice. We recommend having existing chimneys cleaned and inspected by a qualified professional prior to the installation of your new stove.
- 🔥 **NOTE ALL MINIMUM CLEARANCE REQUIREMENTS TO COMBUSTIBLES.** Installation must comply with minimum clearances as listed in this manual. **Clearances may only be reduced by means approved by the regulatory authority.**
- 🔥 Do not operate this stove with the door in an open position, except for cracking open during start-up. Continued operation with the door open can cause overheating of the unit, and expose embers to nearby combustibles.
- 🔥 **Do not operate with broken glass. Do not abuse glass such as striking or slamming the door.**
- 🔥 This stove must be connected to a minimum 6” diameter listed chimney that complies with U.L. type 103HT factory built chimney or a code approved masonry chimney. When installing into masonry chimneys, a U.L. 1777 approved liner must be installed.
- 🔥 When connecting single wall or double wall connector pipe to the stove and chimney, use 3 screws per pipe joint including 3 screws securing the pipe to the stove. Depending on the type of double wall pipe you are using, it may also be necessary to fasten it at the chimney.
- 🔥 Use only approved components for Chimney and Connector. Field fabricated or “makeshift” components are not allowed and can cause a fire.
- 🔥 **DO NOT USE THIS STOVE WITHOUT THE BAFFLE BOARDS AND CERAMIC INSULATION PACKAGED WITH YOUR STOVE.**
- 🔥 When connecting this stove to a masonry chimney, make sure you observe all applicable clearances including walls, ceilings and other combustible material. A masonry chimney must be minimum 6” diameter and constructed with a liner according to NFPA code 211. If you have any questions about the condition or the code compliance of your masonry chimney, please speak with a qualified professional.
- 🔥 **HOT WHILE IN OPERATION. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY. CONTACT MAY CAUSE SKIN BURNS.**

SECTION 2 - SPECIFICATIONS

CERTIFICATION TAG

Installation	Clearance	Connector	A	B	C	D	E	F	G	H	I ¹	I ²	J	K	M	N
Residential	Standard	Single Wall	15	11.5	24.5	14.5	15	5	6	16						
Residential or Mobile home	Reduced	Double Wall	10	7	23.5	14	14.5	5	6	16						
Insert	Standard	UL 1777 Liner							6	16	19.25	14.25	15	8.5		
Alcove	Reduced	Double Wall	10	7	23.5	14			6	16					56	84



INSTALL AND USE ONLY IN ACCORDANCE WITH KUMA STOVES' INSTALLATION AND OPERATION INSTRUCTIONS. CONTACT LOCAL BUILDING OR FIRE OFFICIALS ABOUT RESTRICTIONS AND INSTALLATION INSPECTION IN YOUR AREA. REFER TO INSTALLATION INSTRUCTIONS FOR PRECAUTIONS REQUIRED FOR PASSING A CHIMNEY THROUGH A COMBUSTIBLE WALL OR CEILING.



OMNI-Test Laboratories Inc.
Portland OR, USA

MANUFACTURED BY:
KUMA STOVES INC.
50145 N OLD HWY 95
RATHDRUM ID 83858




Serial Number

MODEL NAME: **K-251**

Emissions Test Report #: 0123WM014E Safety tested to UL 1482-2022 Report # 0123WS012S and 0123WN012S

ROOM HEATER, SOLID FUEL TYPE, ALSO FOR USE IN MOBILE HOMES. FOR USE WITH SOLID FUEL ONLY. USE ONLY SEASONED CORDWOOD. DO NOT CONNECT THIS UNIT TO A FLUE SERVICING ANOTHER APPLIANCE. DO NOT USE GRATE OR ELEVATE FIRE - BUILD WOOD FIRE DIRECTLY ON FIREBRICK. REPLACE GLASS ONLY WITH 5mm CERAMIC. ATTACH LEGS OR PEDESTAL USING INSTALLATION INSTRUCTIONS. BLOWER ELECTRICAL RATING: 115 VOLT, 18 WATT, 60 HERTZ. DO NOT ROUTE POWER CORD BENEATH HEATER.



CAUTION: HOT WHILE IN OPERATION - DO NOT TOUCH - KEEP CHILDREN AND CLOTHING AWAY - CONTACT MAY CAUSE SKIN BURNS. SEE NAMEPLATE AND INSTRUCTIONS. KEEP FURNISHINGS AND OTHER COMBUSTIBLE MATERIALS A CONSIDERABLE DISTANCE FROM THE APPLIANCE. DO NOT OVERFIRE - IF HEATER OR CHIMNEY CONNECTOR GLOWS, YOU ARE OVERFIRING. INSPECT AND CLEAN CHIMNEY FREQUENTLY - UNDER CERTAIN CONDITIONS OF USE, CREOSOTE BUILDUP MAY OCCUR RAPIDLY. DO NOT PASS CONNECTOR PIPE THROUGH COMBUSTIBLE WALLS OR CEILINGS. DO NOT OBSTRUCT BENEATH THE HEATER.

USE ONLY LISTED CHIMNEY SYSTEMS THAT ARE 6" DIAMETER U.L. 103 TYPE HT, ALL FUEL, OR SOLID FUEL MASONRY CHIMNEY SHOULD BE LISTED TO UL 1777. USE ONLY 24 MSG BLACK OR 25 MSG BLUED STEEL SINGLE WALL CONNECTOR FOR STANDARD CLEARANCE. USE ONLY LISTED DOUBLE WALL CONNECTOR FOR REDUCED CLEARANCE AND MOBILE HOMES. SEE DIAGRAMS FOR STANDARD AND REDUCED CLEARANCE DIMENSIONS. USE ONLY U.L. 1618 TYPE 1 (EMBER PROTECTION) OR TYPE 2 (R-VALUE 1.0) HEARTH PAD OR EQUIVALENT. SEE DIAGRAM FOR HEARTH DIMENSIONS. FOR CASCADE INSERT: ONLY INSTALL INSERT INTO A MASONRY FIREPLACE. INSERT INSTALLATION MUST USE LISTED STAINLESS STEEL LINER. TO BE INSTALLED AS A FREESTANDING ROOM HEATER WITH THE CLEARANCES IN THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. NOT TO BE INSTALLED IN ANY FACTORY-BUILT FIREPLACE.

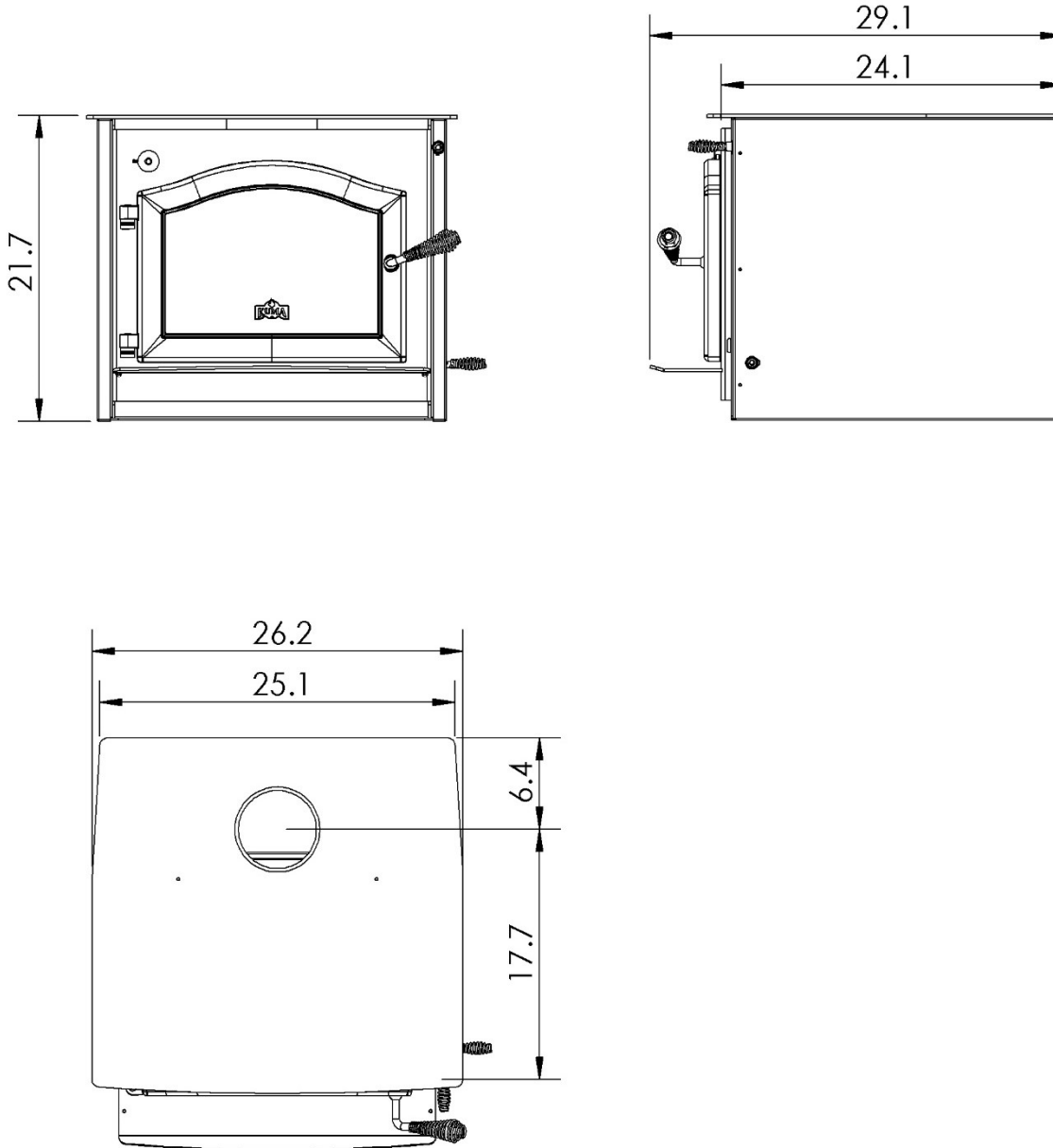
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC 2024 2025 2026 2027

This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against federal regulations to operate this wood heater in a manner inconsistent with the operating instruction in the owner's manual

U.S. ENVIRONMENTAL PROTECTION AGENCY: Certified to comply with 2020 particulate emission standards using crib wood. 1.11 Grams per hour.

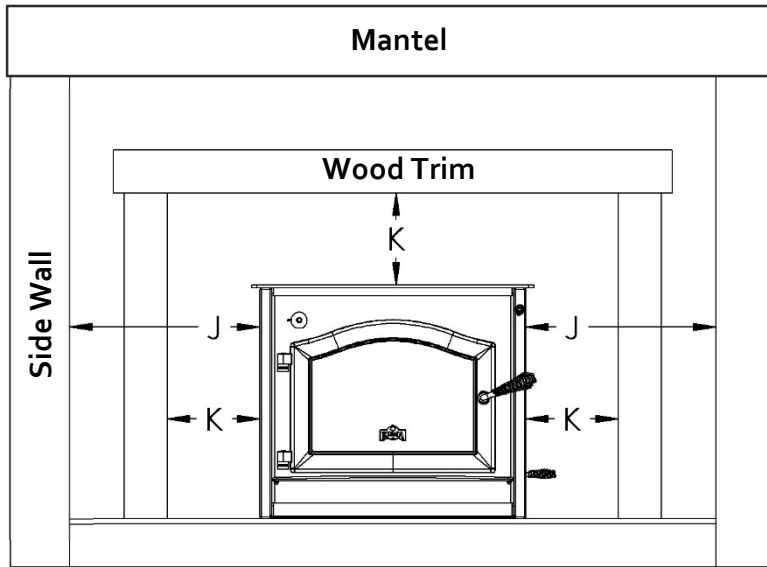
CASCADE DIMENSIONAL DRAWINGS

All dimensions are in inches.



CASCADE MINIMUM CLEARANCE REQUIREMENTS

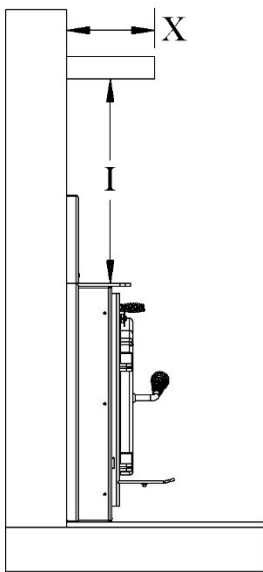
Side clearances are to the side wall of the insert. Top clearances are to the top plate of the insert.



Minimum Clearances	
J – Insert to side wall	15"
K – Insert to wood trim. Trim must be no thicker than 3/4"	8.5"

MANTEL CLEARANCE

Your mantel can be 12" deep or less. A 12" mantel must be a minimum of 19.25" above the top plate of the insert. If your mantel is shallower than 12" you can use the chart below to determine the minimum height above the top plate of the insert.



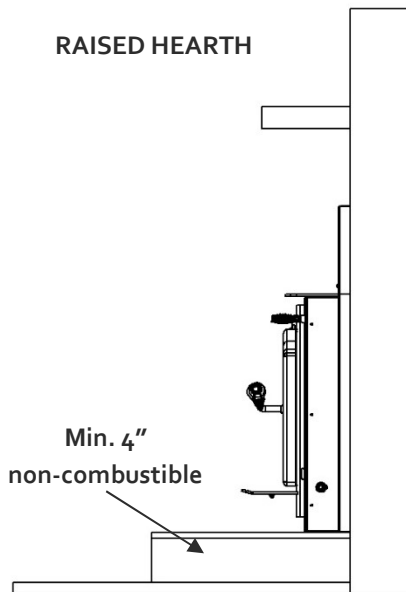
Mantel Depth (X)	Minimum Clearance (I)
3	14.25
4	14.875
5	15.375
6	16
7	16.5
8	17.125
9	17.625
10	18.25
11	18.75
12	19.25

SECTION 3 – ^(IN) INSTALLATION INSTRUCTIONS

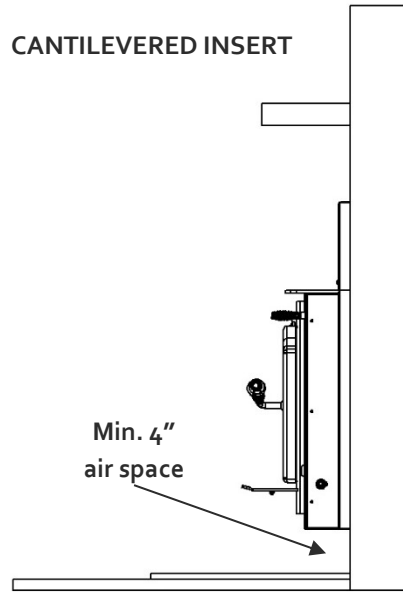
- 🔥 It is highly recommended that this insert is installed by a qualified professional certified by the National Fireplace Institute.
- 🔥 The structural integrity of the floor, walls and ceiling/roof must be maintained.
- 🔥 NEVER INSTALL AN INSERT IN A SLEEPING ROOM
- 🔥 This insert is heavy: Get help from another person and use proper lifting techniques

FLOOR PROTECTION REQUIREMENTS

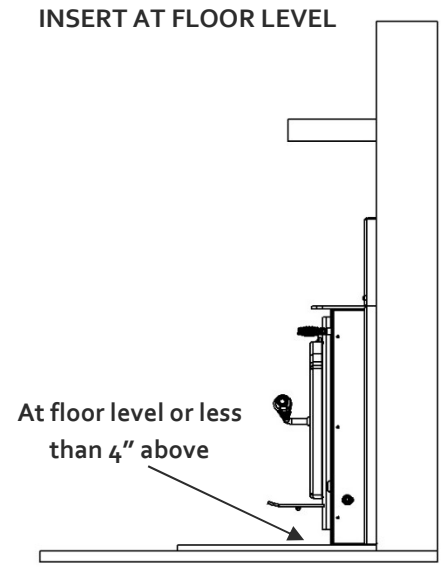
If the bottom of the insert is raised at least 4" from the combustible floor, then a hearth that provides ember protection only (no R-value) is sufficient. If the bottom of the insert is less than 4" from the combustible floor, then Type 2 thermal protection (with an R-value of 1.4) is required.



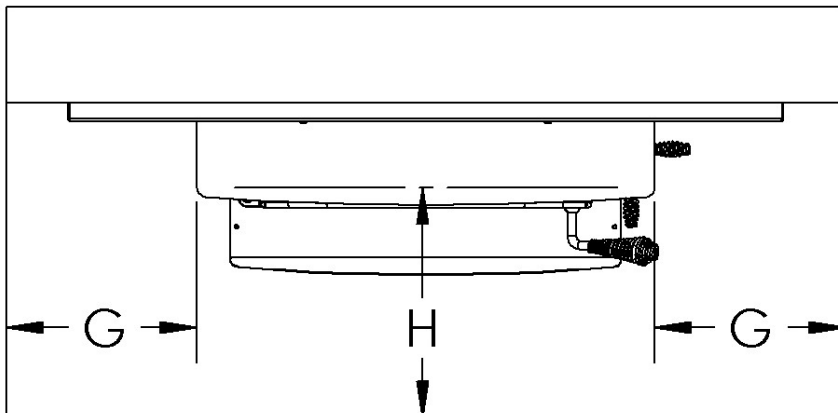
TYPE 1 - Ember protection



TYPE 1 - Ember protection



TYPE 2 - 1.4 R-Value



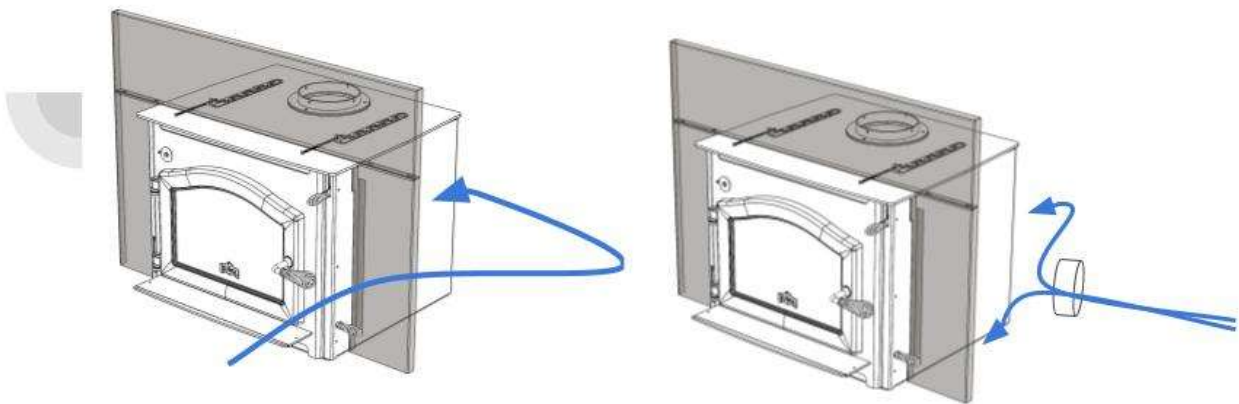
Minimum Hearth Size	
G	6"
H	16"

INSTALLING THE INSERT

Uncrate the insert. Each piece of the insert will be included in a separate box. Follow the instructions located in each box to install the components of the insert. Install the insert in the following order:

1. Install the chimney liner according to the manufacturer's instructions.
2. Carefully place the insert into the fireplace and level.
3. Connect the liner to the insert.
4. Install the fireplace surround (this kit includes hardware for leveling the insert).
5. Install the catalyst and flame diffuser.
6. Install the door.
7. Install the blower (optional)

INTAKE AIR REQUIREMENTS



ROOM AIR: Travels through the louvres on the sides of the surround trim and enters a 4" round hole at the back of the insert.

OUTSIDE AIR: Do not modify a fireplace to bring in outside air. If outside air is already supplied to the fireplace then you may seal the room air louvres on the side of the surround trim and make sure that an adequate amount of fresh air can passively enter the 4" round hole at the back of the insert.

FIREPLACE CHIMNEY REQUIREMENTS



A properly installed and maintained venting system is critical to the safe operation of your wood insert. This insert may be connected, with a liner, to a **masonry fireplace** that meets the standards of NFPA 211. This insert cannot be installed in a factory-built fireplace or into a mobile home. Some homes will have multiple fireplaces: When choosing the location for your insert, decide on a central location in the main living area of the home. Uninhabited areas of the home such as an uninsulated basement or a garage would be an inefficient location for the heater. Also consider not using a chimney that is too close to your neighbors or in a valley that would cause a nuisance or unhealthy outdoor air quality. For proper draft, the chimney must exit the roof a minimum of 3 feet and at least 2 feet above any portion of the roof that is within 10 feet of the chimney.

Minimum Flue Height Recommendations	
No offsets in the chimney	14 ft
30° or 45° offsets in the chimney	15 ft
90° offsets in the chimney	16 ft.
90° offsets with 2-3 feet of horizontal run	20 ft.
90° offsets into exterior chimney	22 ft.





The standards referenced in this section are easy to find online and the products that meet these standards will be readily available from your dealer. Refer to this glossary of terms for a better understanding of these standards:

Standard	Description
UL 103	Covers the safety requirements for factory-built chimneys that vent wood stoves. Chimney manufacturers can either comply with a 1700° or a 2100° flue-gas temperature test.
UL 103HT	Chimney manufacturers that choose to comply with the 2100° flue-gas temperature test will receive the designation of a 103HT chimney system. HT stands for High Temperature and virtually all modern wood stoves will require this type of chimney.
UL 1777	Covers the safety requirements for chimney liners that are installed into masonry fireplaces. Your chimney liner will meet the safety requirements of UL 1777 only if the installation instructions for the liner are followed.
NFPA 211	A publication put out by the National Fire Protection Association that details the proper installation of wood stoves, chimneys, fireplaces, and venting systems.
IRC - Chapter 10	The International Residential Code covers the safety requirements for residential homes. Chapter 10 specifically covers chimneys and fireplaces

WHEN CONNECTING TO A MASONRY FIREPLACE

-  This insert must be connected to a code approved (e.g. NFPA 211) masonry fireplace with a 6" flue liner that meets the type HT requirements (2100°) per the UL 1777 standard.
-  This insert cannot be installed in a factory-built fireplace or into a mobile home.

1. Your masonry fireplace and chimney must be built according to an approved method of construction such as the NFPA 211 standard. Visit nfpa.org for free access to the standard.
2. You must install a flue liner that meets the type HT requirements (2100°) per the UL 1777 standard.
3. Have a certified chimney inspector clean and inspect your chimney and fireplace to make sure that there are no code violations, cracks, damaged mortar joints, or blockages.
4. If your chimney is damaged or does not meet code requirements, you may need to re-line or rebuild your chimney.
5. Kuma recommends that an **insulated** chimney liner be installed into a masonry chimney for improved performance.
6. Chimney liners should not be smaller than 6" diameter or the equivalent cross-sectional area of 28 square inches. Any reduction in flue size may result in smoking or poor performance.
7. Maintain all minimum clearance requirements for this insert as shown at the beginning of this section and on the listing tag.

-  NEVER USE FLAMMABLE LIQUIDS TO START OR FRESHEN UP A FIRE
-  CAUTION: Do not use any fuels that are not seasoned natural wood.
-  Do not leave the stove unattended with the door open.
-  DO NOT OVERFIRE THIS HEATER – Attempts to achieve heat output rates that exceed heater design specifications can result in permanent damage to the heater and to the catalytic combustor.

YOUR 1ST FIRE (BREAK-IN PERIOD)

Paint Curing: When building your 1st fire, be careful to start small and increase the heat slowly over a 4 to 5-hour period. The paint on the stove cures with heat and needs to be done slowly. As the paint cures, it gives off a smell and even sometimes a visible haze into the room. Make sure the area is well ventilated during the curing operation. The smell will subside after a few hours of operation.

Popping and creaking: As the metal heats up and cools down, it moves. This movement can cause a normal popping or creaking sound that will likely decrease after the first several weeks.

Performance: It is normal for the first few fires to seem a bit lazy. As moisture evaporates from the brick, the fire will become more active. A layer of ash in the bottom of the stove will also help to keep your coal bed hot and active. A good thick coal bed and full load of wood are key to optimum performance.

SELECTING WOOD

The leading cause for creosote build-up in the stove or chimney is moisture in the wood. Wood should be protected from rain and seasoned for 1 full year prior to being used. Your wood must have a moisture content of 20% or less. You will need to use a moisture meter to determine the moisture content of the wood. The recommended wood length for this heater is 18". This heater is designed to burn natural wood only. Higher efficiencies and lower emissions generally result when burning air dried seasoned hardwoods, as compared to softwoods or to green or freshly cut hardwoods.

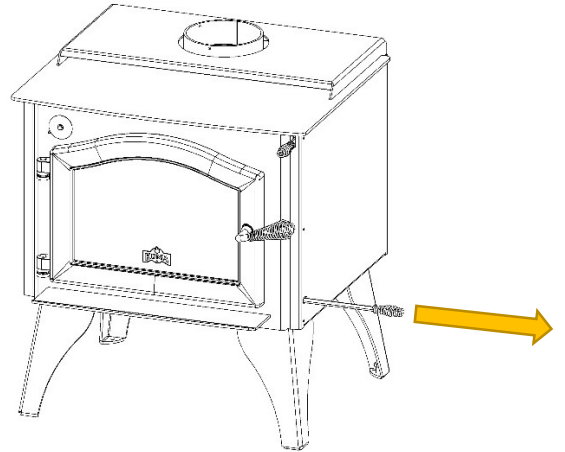
DO NOT BURN:

- a. Garbage;
- b. Lawn clippings or yard waste;
- c. Materials containing rubber, including tires;
- d. Materials containing plastic;
- e. Waste petroleum products, paints or paint thinners, or asphalt products;
- f. Materials containing asbestos;
- g. Construction or demolition debris;
- h. Railroad ties or pressure-treated wood;
- i. Manure or animal remains;
- j. Salt water driftwood or other previously salt water saturated materials;
- k. Unseasoned wood; or
- l. Paper products, cardboard, plywood, or particleboard.

Burning these materials may result in release of toxic fumes or render the heater ineffective and cause smoke. The prohibition against burning these materials does not prohibit the use of fire starters made from paper, cardboard, saw dust, wax and similar substances.

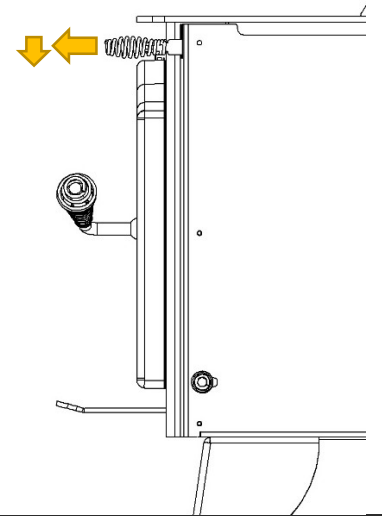
LIGHTING A FIRE

Step 1: Slide the air control out away from the stove until it stops. The air is now fully open for starting a fire.



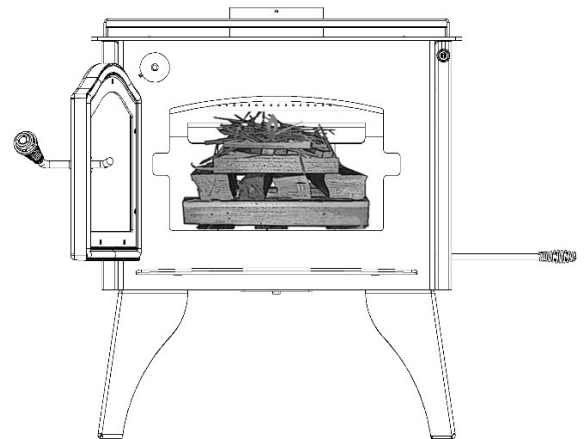
Step 2: Pull the bypass control open: a short pull toward yourself (about $\frac{3}{4}$ ") and down will open the bypass allowing the chimney to heat quickly. This also prevents smoke from coming into the room when the door is open.

Note: This control is called a "bypass" because it opens a plate causing heat to bypass the catalytic filter and go directly up the chimney.

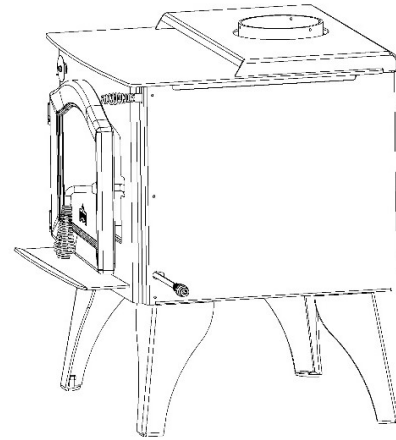


Step 3: Open the door and place kindling, Firestarter, and small pieces of wood in the stove. Do not use a grate or elevate the fire – Build the fire directly on the fire brick. When starting a fire, you should never use un-split pieces of wood unless they are small, such as twigs and branches.

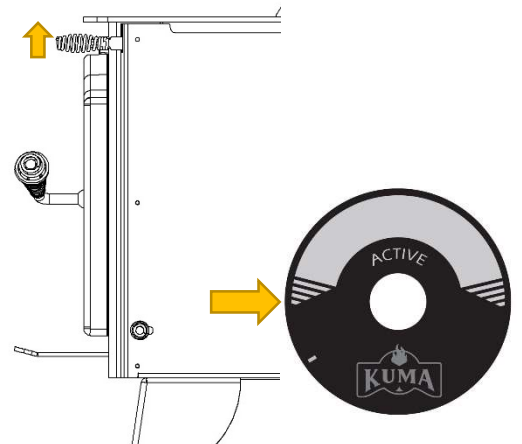
Shown to the right is an example of what is called a "top down" fire: Start by loading larger pieces of wood into the firebox bottom then stack progressively smaller pieces so that the kindling pieces are at the top of the stack. You may use a fire starter such as shredded paper on top of the kindling.



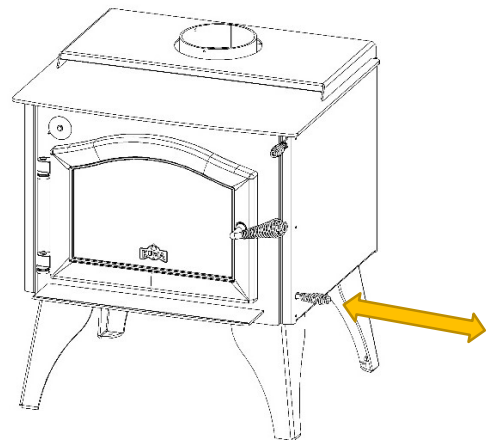
Step 4: Light the Fire, you can optionally leave the door slightly cracked open to aid in the start-up of your stove. Close the door once the fire is well lit. **Do not leave the stove unattended with the door open.**



Step 5: After 15 minutes, or once the catalytic thermometer enters the active range, close the bypass control engaging the combustor (Simply lift the bypass control and you will feel it return to the closed position). Leave the air control open for 20-30 minutes so that the fire becomes well established. If you shut the stove down too soon, it may go out or the combustor may stop working.



Step 6: After 20-30 minutes, begin to regulate the heat output and burn rate by sliding in the air control. Use the table below to adjust your rate of burn:



Desired Burn Rate	Position of the air control	Approximate Burn Time
Low Burn	Fully Closed	7-9 hours
Medium Burn	About ¼" Open	4-6 hours
Start Up or High Burn	Fully Open	2-3 hours

ADDING MORE WOOD TO THE FIRE

1. Slide the air control to fully open and pull open the bypass just as you would do when you are starting a fire (see steps 1 & 2 above). Wait 5 minutes to allow the coals to become active and to allow the smoke to draft up the chimney.
2. Slowly open the wood loading door and rake the coals breaking up any larger pieces. Add wood then shut the door.
3. Once the catalytic thermometer is in the active range AND your wood is well lit, close the bypass control re-engaging the combustor.
4. Leave the air control open for 10-20 minutes so that the fire becomes well established then begin to adjust your rate of burn. This is especially important during the refueling and rekindling of a cool fire, or a fire that has burned down to the charcoal phase.

ADDITIONAL TIPS FOR BURNING EFFICIENTLY

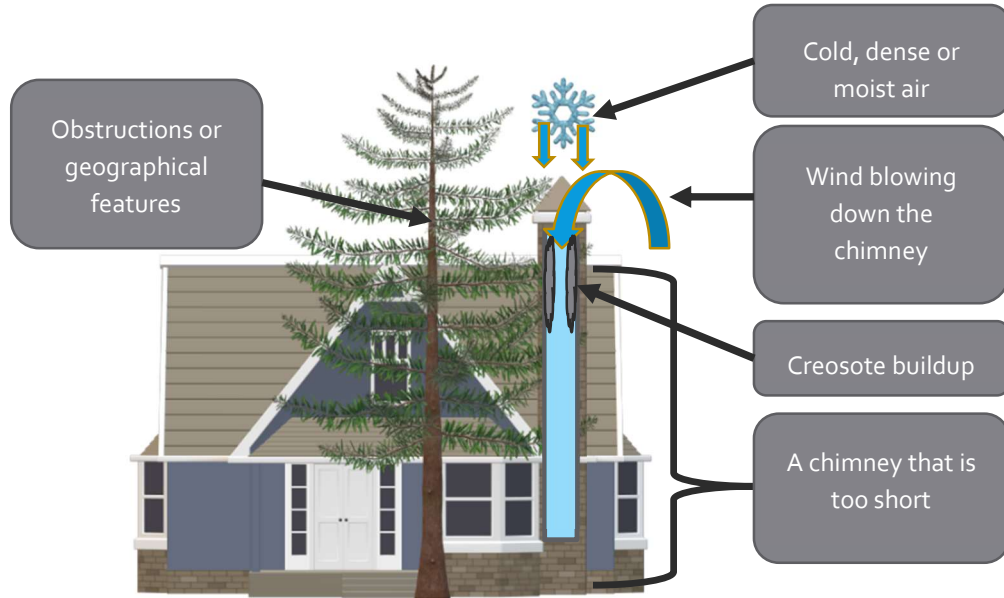
Burning wood produces both visible emissions (e.g. particulate matter or smoke) as well as invisible emissions (e.g. Carbon Monoxide). When operating your stove, periodically check for visible emissions coming from the chimney and adjust the burn rate and fuel load to reduce emissions.

Remember to let your stove burn open for 20-30 minutes each time you reload it with wood. Shutting the air control prematurely can cause excessive creosote in the chimney. The temperature in the stove and the gases entering the combustor must be raised to between 500 ° to 700 °F for catalytic activity to be initiated. During the startup of a cold stove, a medium to high firing rate must be maintained for about 20 minutes. This ensures that the stove, catalyst, and fuel are all stabilized at proper operating temperatures. Even though it is possible to have gas temperatures reach 600 °F within 2 to 3 minutes after a fire is started, if the fire is allowed to die down immediately, it may go out or the combustor may stop working. Once the combustor starts working, heat generated in it by burning the smoke will keep it working.

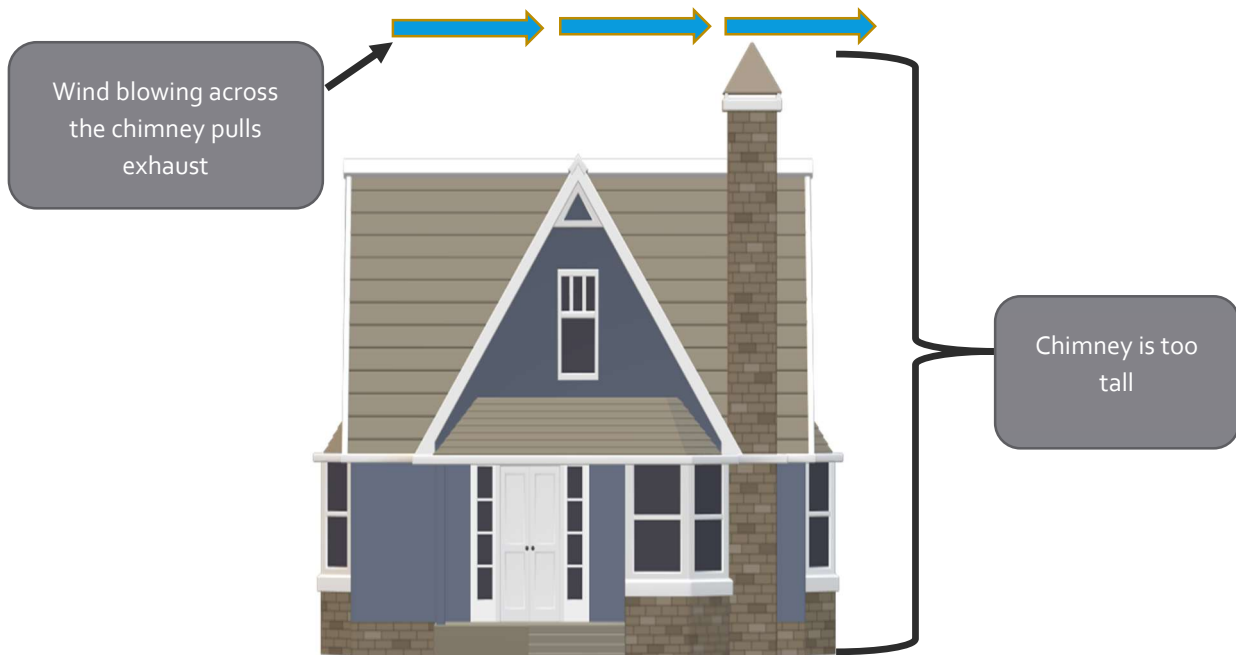
This wood heater has a manufacturer-set minimum low burn rate that must not be altered. It is against federal regulations to alter this setting or otherwise operate this wood heater in a manner inconsistent with operating instructions in this manual. Small hot fires produce less creosote than long, low smoldering fires. When you start your stove or reload your stove with more wood, open the draft fully and burn the stove at high burn for 10-30 minutes to heat up the chimney and secondary burn system. This ensures that when the draft control is pushed in for a lower, longer burn, the stove will burn cleaner.

UNDERSTANDING DRAFT

Draft is the force which moves exhaust from the appliance up through the chimney. A properly drafting chimney will pull the correct amount of air into the stove and will provide you with excellent performance and heat output. Inadequate draft may cause back puffing of smoke into the room and creosote formation in the chimney. Inadequate draft will cause the appliance to leak smoke and carbon monoxide into the room through appliance and chimney connector joints. Factors that reduce draft are:



Too much draft may cause excessive temperatures in the appliance and may damage the internal components of the stove. An uncontrollable burn or excessive temperature indicates excessive draft. Factors that increase draft are:

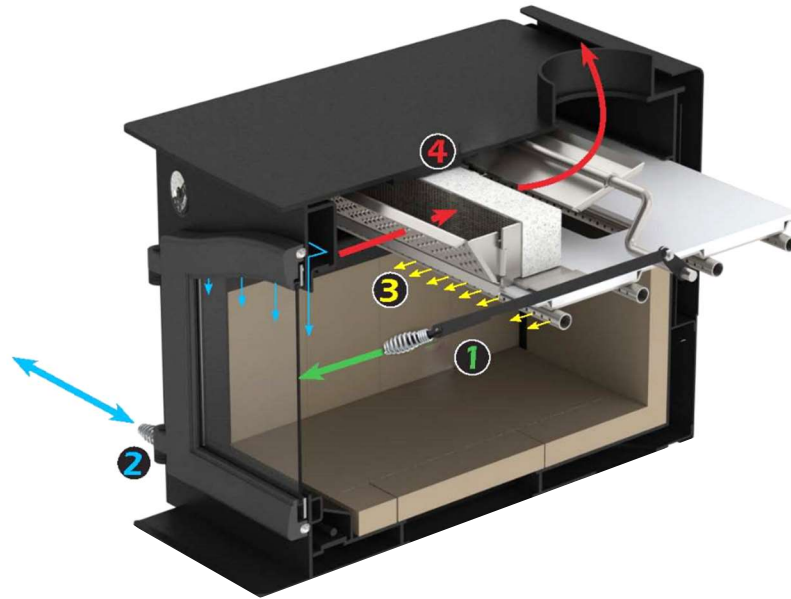


BEYOND THE BASICS - DETAILED INFORMATION ABOUT YOUR NEW WOOD STOVE

You learned above, the simple process of starting and reloading your stove. This section provides a more in-depth look at what is going on inside your stove as you operate it. This stove's design combines a thermal secondary burn system (burn tubes) with a catalytic combustion system to create an easy to use, ultra-low emission hybrid appliance. Read about each feature below to help you operate your stove efficiently and beautifully. You can see both systems illustrated in the cut-away drawing below:

① Bypass Control

② Primary Air Control



③ Secondary Burn System ④ Catalytic & Catalytic Thermometer

1. **Bypass Control** – Located on the upper right side of the stove, the bypass control allows smoke and heat to temporarily bypass the hybrid burn system. This helps to quickly heat the chimney and prevent smoke from coming into the room when the door is open.

Start/Reload Position – This position helps to quickly heat the chimney and the catalyst during start-up by allowing some heat to bypass the catalyst. This position also allows you to reload the stove while preventing smoke from coming into the room. A short pull forward (**about ¾"**) and down will engage the bypass in the Start/Reload Position.

Run Position – This is the normal operating position for the stove. Your stove should always be in this position unless you are starting or reloading the stove. Simply lift the bypass control and you will feel it return to the run position.

2. **Primary Air Control** – Located on the lower right side of the stove, this control changes the rate of burn for the stove. Slide out for high heat output and slide in for low heat output. You can operate the stove at any burn rate in between high and low.
 - a. Always set the air control to high for 20 to 30 minutes when starting or after refueling your stove. This allows the stove and chimney to come up to operating temperature.
 - b. When set to high, the primary air washes the glass as it feeds the fire to help keep it clean. If your glass has built up any smoke deposits from slow burning, set the air control to high for 20 to 30 minutes.
 - c. Never over fire the stove by leaving the air control on high for too long (see Catalytic and Catalytic Thermometer below).
3. **Secondary Burn System** – There are no controls for this system. The stove will automatically draw air into the secondary burn tubes to re-burn smoke before it reaches the catalyst.
4. **Catalytic & Catalytic Thermometer** – The catalytic is a metal honeycomb shaped device that cleans up most of the remaining smoke before it travels up the chimney. The catalytic thermometer shows you the correct temperature to operate the stove at.
 - a. Always operate the stove in the active range (anywhere in the light grey area is perfectly normal).
 - b. **If the probe travels above the active range:** You are exceeding the recommended operating temperature of the catalyst (1300°F). It is fine to go above the recommended operating range for short periods of time.
 - c. Use the Primary Air Control to change the temperature of the stove.
 - d. **If the probe travels below the active range:** Your stove is becoming too cool to operate efficiently: reload your stove before the catalytic combustor becomes inactive.



TAMPER WARNING

This wood heater contains a catalytic combustor which needs periodic inspection and replacement for proper operation. It is against federal regulations to operate this wood stove in a manner inconsistent with the operating instructions in this manual, or if the catalytic element is deactivated or removed.

CATALYST TYPE

The combustor supplied with this wood stove is an Applied Catalysts ACI-5M combustor. Please refer to section 6 for catalyst maintenance. Refer to section 7 for catalyst troubleshooting. Refer to section 8 for catalyst warranty information.

CATALYST MONITORING

It is important to periodically monitor the operation of the catalytic combustor to ensure that it is functioning properly and to determine when it needs to be replaced. A non-functioning combustor will result in a loss of heating efficiency, and an increase in creosote and emissions. Following is a list of items that should be checked on a periodic basis:

1. Combustors should be visually inspected at least three times during the heating season to determine if physical degradation has occurred. Actual removal of the combustor is not recommended unless more detailed inspection is warranted because of decreased performance. If any of these conditions exists, refer to Catalyst Troubleshooting section of this owner's manual.
2. This hybrid heater is equipped with a temperature probe to monitor catalyst operation. Properly functioning combustors typically maintain temperatures in excess of 500°F, and often reach temperatures in excess of 1,000°F. If catalyst temperatures are not in excess of 500°F, refer to the Catalyst Troubleshooting section of this owner's manual.
3. You can get an indication of whether the catalyst is working by comparing the amount of smoke leaving the chimney when the smoke is going through the combustor and catalyst light-off has been achieved, to the amount of smoke leaving the chimney when the smoke is not routed through the combustor (bypass mode).
 - Step 1—Light stove in accordance with instructions in section 4.
 - Step 2—With smoke routed through the catalyst, go outside and observe the emissions leaving the chimney.
 - Step 3—Engage the bypass mechanism and again observe the emissions leaving the chimney.
 - Significantly more smoke will be seen when the exhaust is not routed through the combustor (Start/Reload Position).

READING THE CATALYST PROBE

Follow the instructions in section 4 to build and maintain a fire. During normal operation the probe should read in the active range. If, during normal operation, the probe reads less than the active range, the stove should be refueled following the instruction in section 4. If the probe is climbing above the active range, you need to decrease the primary air control so that you do not over-fire the stove or catalyst.

 This wood heater needs periodic inspection and repair for proper operation.

FIRE EXTINGUISHER

Every home should have a type A:B:C fire extinguisher that is checked and maintained on a regular basis. The National Fire Protection Agency (nfpa.org) recommends having an extinguisher on each floor of your home. The location of the extinguisher should be known to everyone in the house.

ASH DISPOSAL

Empty the ashes when they get 3" to 4" deep. Make sure that the fire is out - Never try to empty the ashes when the stove has an active or full fire, doing so will over heat the stove. Always wear gloves while handling hot ashes. The ashes may be removed by pulling out the ash drawer (if equipped on freestanding models) or scooping out the loading door of the stove. To operate the ash drawer:

1. Turn the ash drawer handle to the left or right to release the latch
2. Pull out the drawer and empty the ashes safely as described below.
3. Clean out any ashes that may have fallen into the cavity that the ash drawer slides in to. **If any ashes remain in the cavity it can prevent the ash pan from sealing, resulting in excessive air to the fire.**
4. Slide the ash drawer back into place, push in to compress the spring and turn the handle down.
5. **NEVER OPERATE THE STOVE WITH THE ASH DRAWER REMOVED OR OPENED.**

Leave 1" of ash in the bottom of the stove to help maintain a hot charcoal bed. Dump the ashes into a metal container with a tight-fitting lid and keep away from the house. **NEVER EMPTY ASHES INTO A COMBUSTIBLE CONTAINER SUCH AS A PLASTIC BUCKET OR PAPER BAG. NEVER LEAVE ASHES NEAR THE HOUSE OR GARAGE.**

CHIMNEY INSPECTION AND CLEANING

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 once every two months during the heating season to determine if a creosote buildup has occurred. If creosote has accumulated, it should be removed to reduce the risk of a chimney fire. Failure to remove creosote can result in a chimney fire which can damage both the chimney and the stove. We recommend having the chimney cleaned and inspected by a licensed, professional chimney sweep. If the chimney is damaged, it must be replaced.

GASKET INSPECTION AND REPLACEMENT

Inspect the gaskets around the door, glass and ash pan (if equipped) at least once a year. Check for areas that are frayed or missing. Press the gasket with your finger to see if the gasket is somewhat soft. Gaskets that are hard will not conform to the stove and may leak air. When the stove is cold, check to see if the glass moves up and down or left to right. If the glass moves, you may need to tighten the screws around the

retaining ring or replace the gasket. Replacement gaskets and service are available through your local dealer or by visiting kumastoves.com.

GLASS CLEANING AND REPLACEMENT

Never clean the glass when it is hot. Your stove is equipped with an air wash system that will self-clean. Burn the stove on high for 20 to 30 minutes every time you add fuel to the fire. This will reduce the creosote on the glass. If needed, clean the glass with a soft cloth and stove glass cleaner. Do not use steel wool, sandpaper or abrasive cleaners. If you close the door on a piece of wood that is too long, you will break the glass. If the glass breaks in your stove, shut off the primary air control and let the fire burn out. Do not leave the stove unattended with a broken glass. To replace broken glass:

1. Carefully lift the door from the stove and place it on a clean soft work area.
2. Using a Phillips screw driver, remove the retaining ring screws and the retaining ring.
3. Carefully discard the broken glass. **CAUTION: BROKEN GLASS WILL BE SHARP.**
4. Clean the door and set the new piece of glass into the door so that the logo reads correctly from the front side of the door. Kuma replacement glass will have the gasket pre-installed.
5. Replace the retaining ring and screws. Be careful to tighten the screws evenly and tighten just enough to hold the glass firmly

SECONDARY BURN TUBE REPLACEMENT

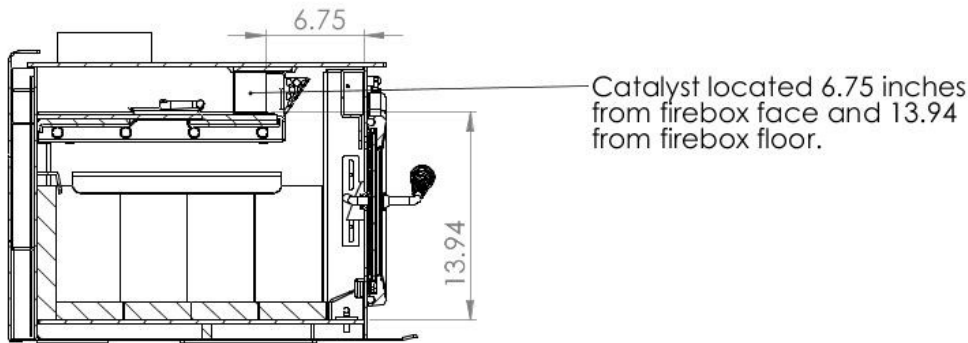
The burn tubes are one of two burn systems that causes your stove to operate efficiently, this stove also uses a catalyst to clean some of the remaining smoke before it leaves the stove. If your burn tubes are not physically degraded (falling apart, crushed or excessively warped) then they are functioning and will not need replacement. To remove a burn tube, un-bolt the tube using a 7/16" wrench. Pull the tube to the right then down and out of the stove. Replace the tube and re-install the bolt the holds the tube in place.

CATALYST INSPECTION, CLEANING AND REPLACEMENT

The catalyst is one of two burn systems that causes your stove to operate efficiently, this stove also uses secondary burn tubes to re-burn smoke before it reaches the catalyst. To inspect your catalyst, unhook the flame deflector from the face of the baffle by pulling it forward. If your catalyst has not physically degraded (falling apart, crushed or excessively warped) then it is likely functioning and will not need replacement. If your Catalytic combustor becomes plugged with ash, clean the catalyst **in place** using a soft brush or for deeper cleaning use a slight to moderate (~20-30 psi.) amount of air pressure blowing any ash through the cells of the catalyst. To replace the catalyst:

1. Remove the flame guard from the face of the baffle by pulling forward. Set aside.
2. Pull the catalyst out using the 2 handles on the front of the catalyst. You may need to wiggle the catalyst to loosen the gasket material.
3. Remove any gasket material that was left in the baffle cavity.
4. Your new catalyst will be wrapped in a gasket material that is held in place with masking tape and a stretch film. There is no need to remove the tape or the stretch film.
5. Slide the new catalyst into the cavity until it stops. If you see any gaps larger than 1/8" around the sides or top of the catalyst you will need to slide the catalyst out and wrap those areas with additional

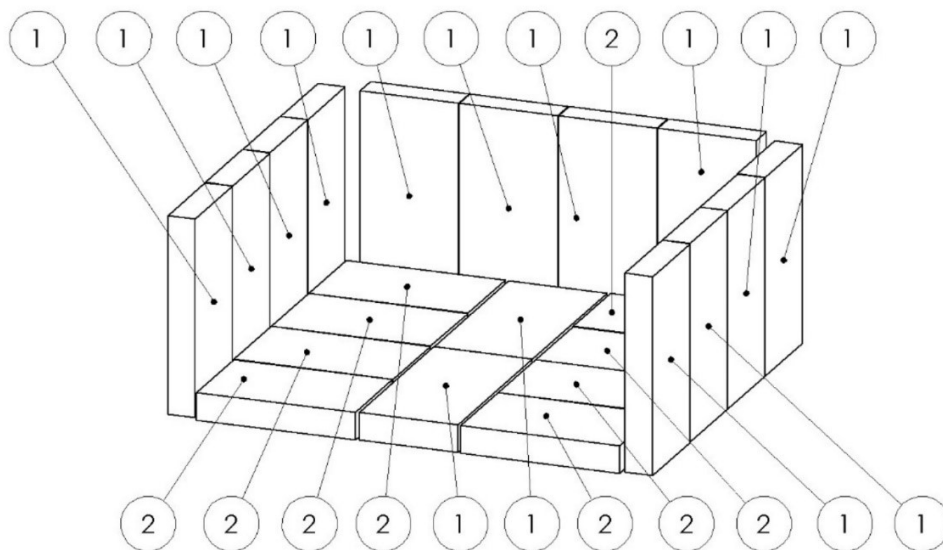
gasket material (you can use masking tape to hold it in place). The gasket provided will expand 2-3 times its original thickness once heated to seal gaps.



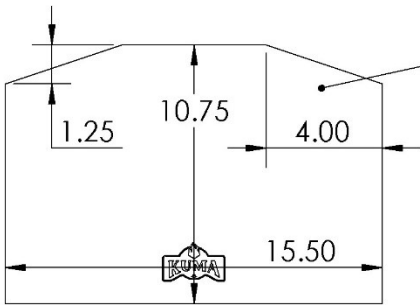
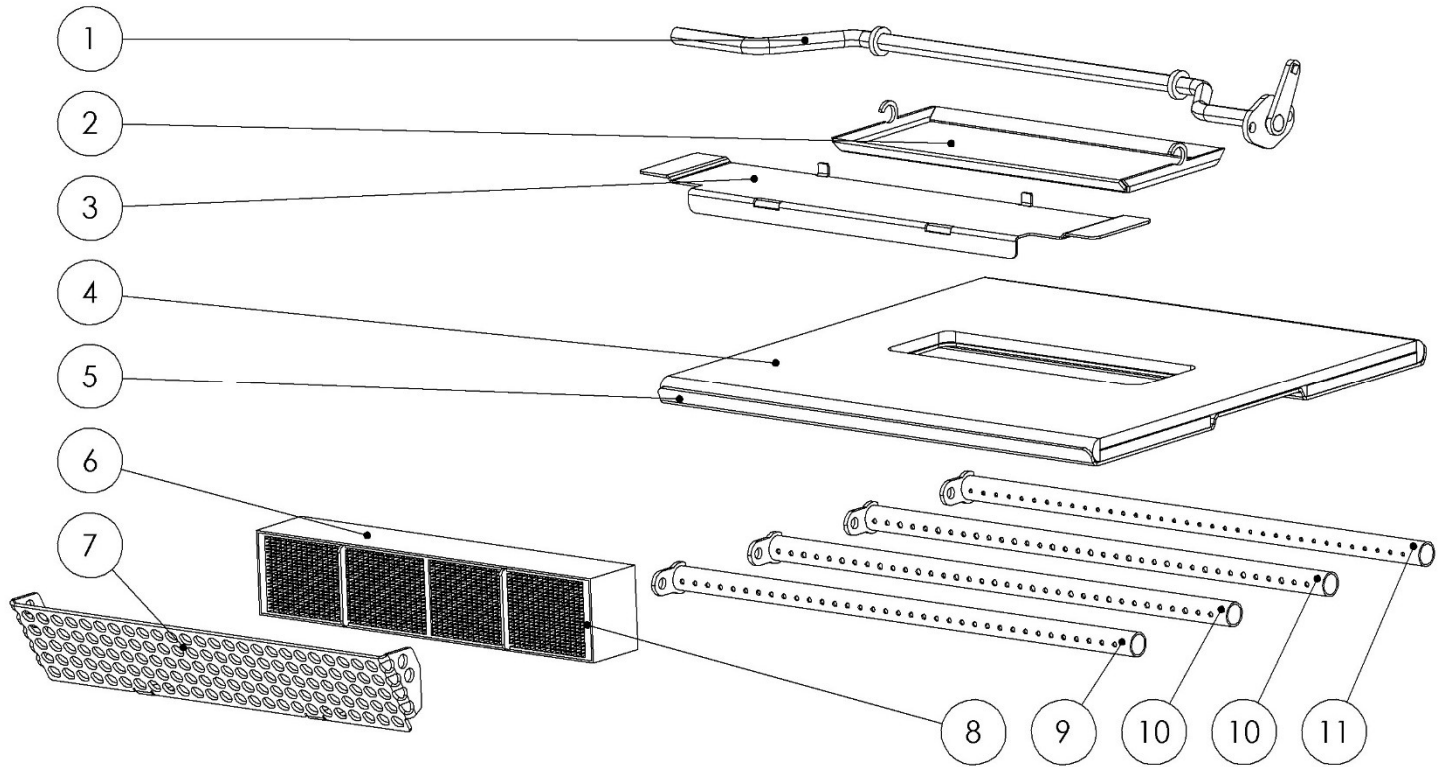
BRICK AND CERAMIC INSULATION REPLACEMENT

Bricks and ceramic insulation should be inspected annually and replaced if necessary. Cracked bricks are fine if they remain in place. Bricks that are crumbling or falling out need to be replaced. The ceramic insulation is located on the top of the stove's baffle and is designed to keep heat in the stove and increase efficiency. If the insulation is in place it can be left alone. If the insulation becomes torn during cleaning, simply lay it back together tightly in that area. If the insulation tears to multiple pieces, it should be replaced. To replace the ceramic insulation, remove the 3 burn tubes allowing the entire baffle to come down and out of the stove. Mark or otherwise note the order of the tubes so they can be replaced in the same location. Place the insulation blanket on top of the baffle so that the cut-out aligns with the bypass opening in the baffle. Reinstall the baffle and the 4 burn tubes.

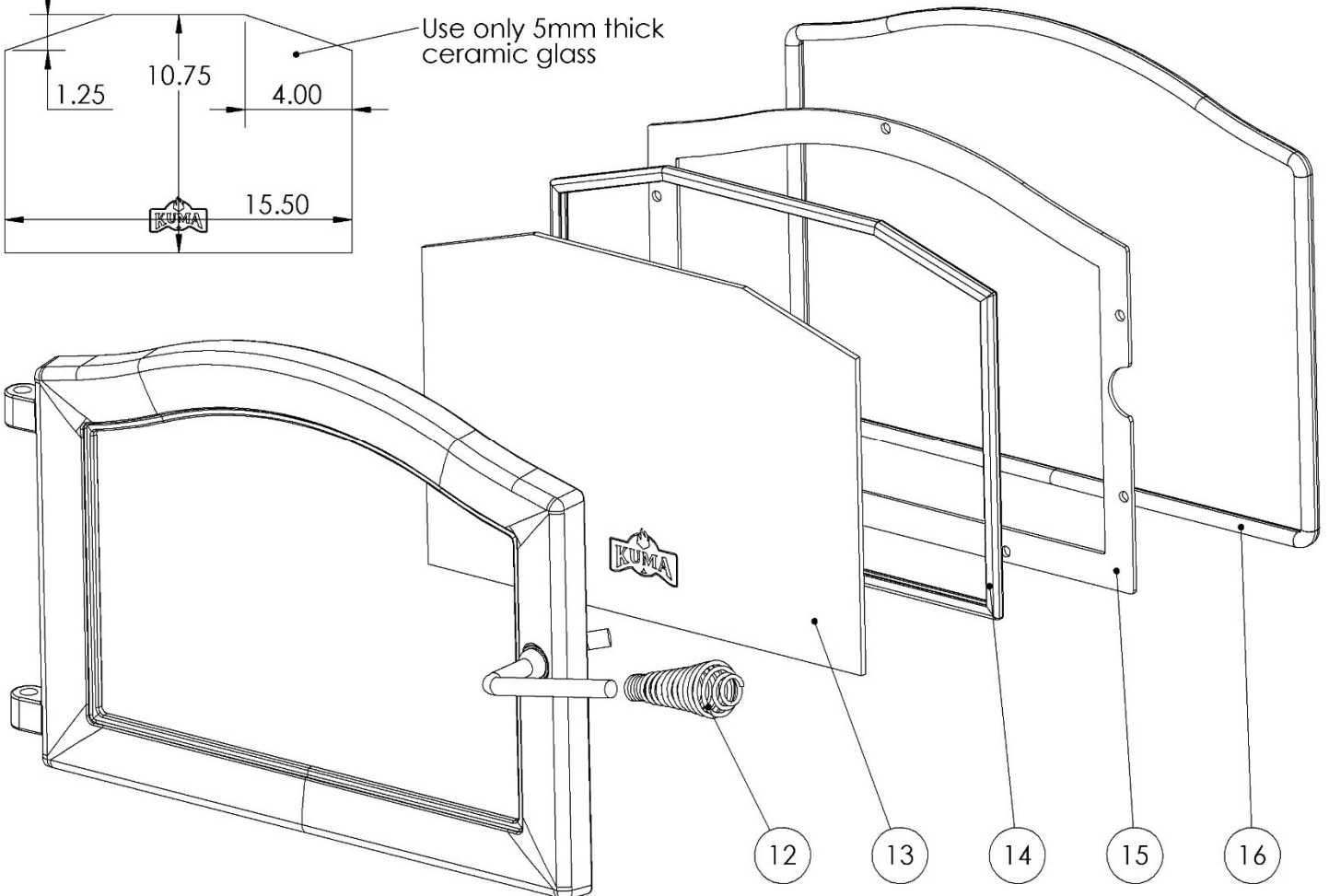
MAINTENANCE DIAGRAMS & PARTS LIST



ID	Item #	Description
1	KR-BR-01	Brick, standard size. 9" x 4-1/2".
2	KR-BR-251	Brick, cut size. 7-1/2" x 4-1/2"



Use only 5mm thick ceramic glass



Parts and support are available from your local dealer, by contacting Kuma Stoves at 888-714-5294 or visiting kumastoves.com and clicking on the support tab.

ID	Item #	Description
1	KR-BH-25	Bypass hinge assembly, stainless steel. Fits: ASH/WCL/CAM/CAS.
2	KR-BP-01	Bypass plate, stainless steel. Fits: All models.
3	KR-CS-01	Catalytic support tray, stainless steel. Fits: All models.
4	KR-IN-25	Ceramic baffle insulation set. Fits: ASH/WCL/CAM/CAS.
5	KR-BF-25	Baffle plate, stainless steel. Includes Insulation blanket (KR-IN-25) Fits: ASH/WCL/CAM/CAS.
6	KR-GK-01	Catalytic gasket, expanding. Fits: All models with catalytic KR-CT-01.
7	KR-FG-01	Catalytic flame guard, stainless steel. Fits: All models.
8	KR-CT-01	Catalytic combustor, metal alloy. Includes Gasket (KR-GK-01)Fits: All models.
9	KR-BT-251	Baffle burn tube, front. Fits: ASH/WCL/CAM/CAS.
10	KR-BT-252	Baffle burn tube, middle front or middle rear. Fits: ASH/WCL/CAM/CAS.
11	KR-BT-253	Baffle burn tube, rear. Fits ASH/WCL/CAM/CAS.
12	KR-SP-02G	Door handle, gold. Fits: All KA-DR-25 and KA-DR-18 doors.
12	KR-SP-02P	Door handle, pewter. Fits: All KA-DR-25 and KA-DR-18 doors.
13	KR-GL-25	Door glass, includes gasket. Fits: All KA-DR-25 doors.
14	KR-GK-034	Gasket, 3/4" fiberglass channel, 5 feet. Fits: All glass sizes.
15	KR-GR-25	Glass retainer. Fits: All KA-DR-25 doors.
16	KR-GK-058	Gasket, 5/8" fiberglass, 8 feet. Fits: All doors and ash pans.
n/a	KR-SP-01P	Control handle, pewter. Fits: All models.
n/a	KR-SP-01G	Control handle, gold. Fits: All models.
n/a	KR-AH-01	Gasket adhesive, fiberglass to metal. Fits: All doors and ash pans.

STOVE BURNS LAZY AT START UP.

1. The chimney is still cool, allow more time to warm up.
2. Wood is not seasoned (still green). Wood should sit for about 1 year, split and loosely stacked if it was cut green.
3. Wood is well seasoned but has a lot of surface moisture. Your wood supply must be covered. Check your tarps or other covering to see that no rain or snow is getting to your wood. Wood should be covered on top, but open on the sides to allow air movement to aid in drying.
4. Stove is being shut down too soon. Leave the air open for longer. (do not leave the stove unattended with door open) See Section 4 for lighting instructions.

STOVE BACK-PUFFS OR SMOKES INTO THE ROOM AT START UP.

1. Make sure the bypass rod is pulled open.
2. Chimney is cold. Cold chimneys can produce a "reverse draft" where cold air is rushing down the chimney into the stove. Open a door or a window for about 5 minutes to equalize pressure in the house then try restarting with small strips of newspaper. Using small strips of newspaper or an approved fast burning fire starter and small pieces of kindling will create heat faster to help reverse the cold air.
3. Chimney and/or the chimney cap needs to be cleaned. Your chimney should be checked and cleaned, if necessary, every few months. Even a small amount of buildup can cause a draft restriction, for example: ¼ inch of buildup on the side wall of an 8" chimney reduces the effective area of the chimney by about 20%. Pay close attention to the chimney cap, especially if it has a screen. Screened chimney caps can become blocked enough to restrict flow in just a few weeks.

STOVE SMOKES OUT THE DOOR WHEN IT IS OPEN.

1. The door was opened before the bypass rod was pulled open. Open the bypass for 1 minute before opening the door.
2. The door was opened too quickly. Crack the door open just a small amount and let the stove "breathe" a few seconds before slowly opening all the way.
3. Chimney and/or the chimney cap needs to be cleaned. Your chimney should be checked and cleaned, if necessary, every few months. Even a small amount of buildup can cause a draft restriction, for example: ¼ inch of buildup on the side wall of a 6" chimney reduces the effective area of the chimney by about 20%. Pay close attention to the chimney cap, especially if it has a screen. Screened chimney caps can become blocked enough to restrict flow in just a few weeks.

STOVE WON'T SHUT DOWN.

1. Check the main door gasket and glass gasket for proper seal. See section 6 for instructions on checking your gaskets.
2. Chimney is too tall, see Section 3 for flue height recommendations.

STOVE WON'T BURN HOT ENOUGH. LAZY BURN.

1. Wood is not seasoned (still green). Wood should sit for about 1 year, split and loosely stacked if it was cut green.
2. Wood is well seasoned but has a lot of surface moisture. Your wood supply must be covered. Check your tarps or other covering to see that no rain or snow is getting to your wood. Wood should be covered on top, but open on the sides to allow air movement to aid in drying.

3. Chimney and/or the chimney cap needs to be cleaned. Your chimney should be checked and cleaned, if necessary, every few months. Even a small amount of buildup can cause a draft restriction, for example: ¼ inch of buildup on the side wall of an 8" chimney reduces the effective area of the chimney by about 20%. Pay close attention to the chimney cap, especially if it has a screen. Screened chimney caps can become blocked enough to restrict flow in just a few weeks.
4. Catalytic combustor is plugged with ash. Clean the catalyst in place using a slight to moderate (~20-30 psi.) amount of air pressure blown through the baffle grid removing ash from the catalyst cells.
5. Atmospheric conditions. Occasionally, barometric episodes occur that affect draft, thereby affecting stove performance. If your stove has been working fine and performance drops suddenly, this is most likely the cause, and will usually go away within a few days.
6. Your fuel load may be too small or the wood size too large for the coal bed. A small bed of coals requires re-kindling to build up the heat, only put large chunks of wood on a very hot and active bed of coals.

BURN TIME TOO SHORT.

1. Your fuel load may be too small or the wood size too large for the coal bed. A small bed of coals requires re-kindling to build up the heat, only put large chunks of wood on a very hot and active bed of coals. If there are large chunks of charred wood left after the fire has gone out, the coal bed was not hot enough.
2. Fuel quality. Harder, denser woods produce longer burn times. Likewise, softer woods produce shorter burn times.
3. Check the main door gasket and glass gasket for proper seal. See for instructions on checking your gaskets.

CATALYST TROUBLESHOOTING.

Problem	Cause	Solution
Catalyst plugged with creosote	Burning wet wood or pushing in the bypass rod too soon.	Burn only dry, seasoned natural wood. Burn a hot fire to burn off the creosote buildup then brush off the face of the catalyst with a soft bristle brush.
Catalyst masked with soot or fly ash.	Pushing in the bypass rod too soon. Burning improper material such as cardboard, coal or wrapping paper.	Remove the flame guard but leave the catalyst in place. Brush off the face of the catalyst with a soft bristle brush or gently blow out the cells with a can of dusting air. Burn only dry seasoned natural wood.
Lower Efficiency	Flames contacting the catalyst from excessive draft can reduce the effectiveness of the catalyst.	Use less wood or lower the air to the stove. Install a damper to reduce draft. Do not burn material that will poison the catalyst such as colored paper, cardboard, paneling, painted or treated wood.
Catalyst is plugged with fly ash	Pushing in the bypass rod too soon. Burning material that produces fly ash and char. See section 4 for a list of improper materials	Make sure you achieve catalyst light off (see section 4) Remove the flame guard but leave the catalyst in place. Gently blow out the cells with a can of dusting air. Burn only dry, seasoned natural wood.

SECTION 8 – LIMITED WARRANTY

Our Promise:

If any maintenance items wear out in the first three years, we will supply you with the parts to fix it. For as long as you own your stove, if you ever have a defect in the material or workmanship of your stove's firebox, we will repair or replace it for you. See full details below:

Items Covered	Parts Coverage Period	Labor Coverage Period
Maintenance Items: Bricks, gasket, ceramic insulation, and paint.	3 Years	No Labor Coverage
Blowers, brick supports. All removable wear items including the ash grate, baffle plate, bypass mechanism, catalytic support tray, and catalytic flame guard.	5 Years	3 Years
Stove firebox, burn tubes, legs, glass (thermal breakage) and door casting.	Forever	3 Years

Catalyst Warranty: The combustor supplied with this heater is an Applied Catalysts ACI-5M, Long Life Combustor. Kuma part# KR-CT-01 Following is the catalytic combustor warranty supplied with this wood heater. Catalyst warranty claims should be addressed to: Kuma Stoves 50145 N. Old Highway 95 Rathdrum ID, 83858. Ph. 888-714-5294.

6-year structural warranty: Warranty claim must meet the following conditions: 1. warranty has been registered proving the date of purchase and that you are the original owner. 2. You return the catalyst to Kuma stoves: No advanced exchange is available under this warranty. 3. The catalyst has not been abused by over-firing or using unauthorized fuels. If the catalyst loses its structural integrity due to a manufacturing defect, Kuma stoves will replace the catalyst at no charge. The replacement catalyst will have a 90-day warranty coverage.

12-year performance warranty: One replacement catalyst is available for purchase from Kuma Stoves at a 50% discount from MSRP. The only condition of this pro-rated performance warranty is that your warranty has been registered proving the date of purchase and that you are the original owner. The catalyst does not need to be returned.

Warranty Coverage:

To ensure warranty coverage, it is very important that you register your Kuma Stove warranty within 30 days of purchase at kumastoves.com or fill out and return the warranty registration in your owner's packet. Operation of this stove in a manner inconsistent with the owner's manual, especially the burning of materials for which this unit is not certified by the EPA, will void the warranty. This warranty covers your new Kuma Stove from defects in material and workmanship for the period outlined in this warranty. Kuma Stoves reserves the right to replace, repair or authorize repair of any defective part at its sole discretion. This warranty is not transferrable and covers the original owner of the product from the time of purchase. All parts that have been replaced under this warranty will have a 90-day warranty coverage. The maximum value of this warranty is the original purchase price of the product. This warranty is subject to the conditions and limitations outlined below. This warranty covers stoves purchased from an authorized Kuma Stoves dealer.

Warranty Instructions:

Please contact the dealer where you purchased your stove. You may also contact Kuma stoves directly at 50145 N. Old Highway 95, Rathdrum ID 83858 or by phone at 1-888-714-5294 or contact us online at kumastoves.com. When calling, you will need to have your proof of purchase, the model name, and the serial number of your stove. When calling please remember that shipping and handling costs are not covered under this warranty.

Warranty Exclusions:

This Warranty does not cover: 1. Changes in the color of the surface of the stove as this naturally happens during the firing of the stove and is considered normal. 2. Damage to plating due to chemical cleaners, fingerprints, or scratching. 3. Shattered glass caused from wood impact. 4. Discoloration of plating or glass. 5. Expansion and contraction of the firebox causing noise. 6. Damage caused from: power surges, unauthorized modifications, using incorrect fuel and/or accelerants, shipping/handling, failure to follow the manufacturer's installation instructions, failure to follow any local building codes. 7. Damages to any product not manufactured by Kuma Stoves. 8. Any stoves ability to heat a specific area. Heating capacity is given as a guideline and is not guaranteed. 9. Shipping costs or travel time. Please talk with an authorized dealer or Kuma representative about the potential charges for travel or shipping. 10. This warranty is void in the case of abuse, over firing, unauthorized repair, alterations, improper installation and/or service.