TEST REPORT

SCOPE: EMISSIONS, EFFICIENCY AND OUTPUT

FUEL: CORDWOOD

TEST STANDARD: EPA

MODEL: BLACKCOMB II WOOD STOVE

intertek
Total Quality. Assured.

LISTING REPORT FOR APPLICANT

ISSUED: Apr 27 2018 2:35PM

INSPECTION TESTS AND EVALUATION OF
SBI - Series 1.7 (Blackcomb) Emissions and Efficiency - EPA (43615)

RENDERED TO
Stove Builder International Inc.
250, rue de Copenhague
St-Augustin-de-Desmaures, QC G3A 2H3
Canada

GENERAL: This report gives the results of the inspection, tests and evaluation of the above for compliance with applicable requirements of the following standards: CSA B415.1 (2010), ASTM E2515 Ed. 2011 (R2017),

CORRELATION FOR MULTIPLE LISTEES

Applicant/Basic Listee:

Stove Builder International Inc.
250, rue de Copenhague
St-Augustin-de-Desmaures, QC G3A 2H3
Canada

Applicant/Manufacturer(s):

Stove Builder International Inc. (Laguadeloupe)

Contact: Claude Pare
Phone: 418-878-3040 ext 255
Fax: 418-878-3001
Email: cpare@sbi-international.com

Parties Authorized to Apply Mark:

PRODUCT DESCRIPTION

Product Covered:

SBI - Series 1.7 (Blackcomb) Emissions and Efficiency - EPA

Product Description:

Product covered

Series 1.7 Wood Fuel Room Heaters

Final emission results are as follows:

Model	Series 1.7 /Blackcomb	Units
Maximum Output	23,300	Btu/hr
Weighted average Emission Rate	1.26	g/hr
Weighted Average CO Emissions Rate	0.97	g/min
Weighted Average Efficiency	70	%HHV
Test Fuel	Cordwood	

Attribute	Value
Criteria	CSA B415.1 (2010)
Criteria	ASTM E2515 Ed. 2011 (R2017)
CSI Code	10 30 00 Fireplaces and Stoves
Intertek Services	Certification
Listed or Inspected	LISTED
Listing Section	SOLID FUEL EMISSIONS AND EFFICIENCY
Report Number	G103328128
Spec ID	43615
Test Original Issue Date	December 27, 2017
Verification Testing	No

DRAWING INDEX

Certificate of Conformity SBI - Series 1.7 (Blackcomb) Emissions and Efficiency - EPA

Certificate of Conformity SBI - Series 1.7 (Blackcomb) Emissions and Efficiency - EPA

intertek

Certificate of Conformity

Emissions – Adjustable Burn Rate Wood Burning Heater

EPA 40CFR Part 60, subpart AAA, ASTM E2515-2011, CSA B415.1-2010

Certificate number: WHI18 – 21514308

This is a certificate of conformity to certify that the bearer has successfully completed the requirements of the above scheme which include the testing of products, the initial assessment, and are subject to continuing annual assessments of their compliance and testing of samples of products taken from production (as applicable to the scheme) and has been registered within the scheme for the products detailed.

Organization:

Stove Builder International Inc.
250 de Copenhague
St-Augustin-de-Desmaures, QC G3A 2H3
Canada

Product: SBI - Series 1.7 (Blackcomb) Emissions and Efficiency - EPA
Maximum Output: 23,300 Btu/hour
Weighted Average Emissions Rate: 1.26 g/hr
Weighted Average CO Emissions Rate: 0.97 g/min
Weighted Average Efficiency: 70% HHV
Test Fuel Type: Cordwood
Compliance: Certified to comply with 2020 particulate emissions standard.
Report Number: 103328128MTL-001

Certification body: Intertek Testing Services NA, Inc.
Initial registration: April 18, 2018
Date of expiry: No expiry date
Issue status: 1

Charles Meyers Certification Manager		April 18, 2018
Name	Signature	Date

Registered address:
Intertek Testing Services NA, Inc. 545 E. Algonquin Rd. Arlington Heights, IL 60005 USA

www.intertek.com

MANUFACTURING INFORMATION

Product Covered

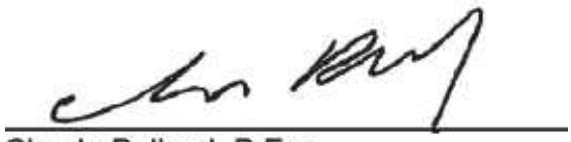
The model 1.7 Series Wood Fuel Room Heater is constructed of sheet steel. The outer dimensions are 23 19/32-inches deep, 29 3/8-inches high, and 22 1/2-inches wide. The unit has a door located on the front with a viewing glass.

Proprietary drawings and manufacturing methods are on file at Intertek in 1829
32nd Avenue Montreal (Lachine), QC Canada H8T 3J1 and in the EPA filing system. Drawings can also be found in this specification and in EPF' system.

The unit that was tested was the Blackcomb model. It is considered a representative unit of the Series 1.7.

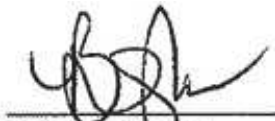
SIGNATURE PAGE

Reported By:



Claude Pelland, P.Eng.
Staff Engineer
Intertek Lachine

Reviewed By:



Brian Ziegler
Project Team Leader
Building Products Division

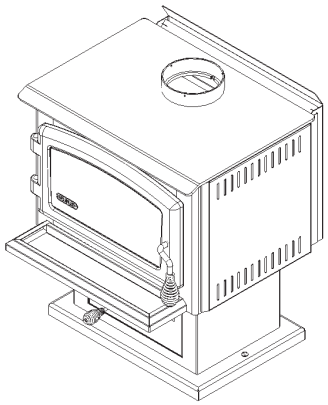
DRAWING INDEX

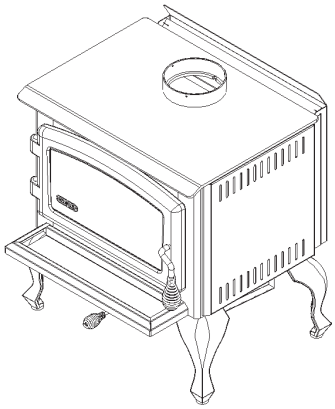
1.3 - Installation and Operation Manual English

DROLET
THE HIGHEST HEATING VALUE

Installation and Operation Manual
Blackcomb/Columbia
(DB02811 models)

"U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using cord wood."





www.drolet.ca

Stove Builder International Inc.
250, rue de Copenhague, St-Augustin-de-Desmaures (Quebec) Canada G3A 2H3
After-sale service: 418-908-8002 E-mail: tech@sbi-international.com

READ AND KEEP THIS MANUAL FOR REFERENCE

Printed in Canada

45920A
2017-12-14

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THANK YOU FOR CHOOSING THIS DROLET WOOD STOVE

As one of North America's largest and most respected wood stove and fireplace manufacturers, Stove Builder International takes pride in the quality and performance of all its products. We want to help you get maximum satisfaction as you use this product.

In the pages that follow you will find general advice on wood heating, detailed instructions for safe and effective installation, and guidance on how to get the best performance from this stove as you build and maintain fires, and maintain your wood heating system.

We recommend that our wood burning hearth products be installed and serviced by professionals who are certified in the United States by NFI (National Fireplace Institute®) or in Canada by WETT (Wood Energy Technology Transfer) or in Quebec by APC (Association des Professionnels du Chauffage).

Congratulations on making a wise purchase.

When this stove is not properly installed, a house fire may result. To reduce the risk of fire, follow the installation instructions. Contact local building or fire officials about restrictions and installation inspection requirements in your area.

Please read this entire manual before you install and use your new stove. Failure to follow instructions may result in property damage, bodily injury, or even death. It is important that you follow the installations guidelines exactly.

You may need to obtain a building permit for the installation of this stove and the chimney that it is connected to. Consult your municipal building department or fire department before installation to determine the need to obtain one. We recommend that you also inform your home insurance company to find out if the installation will affect your policy.

REGISTER YOUR WARRANTY ONLINE

To receive full warranty coverage, you will need to show evidence of the date you purchased your stove. Keep your sales invoice. We also recommend that you register your warranty online at:
http://www.drolet.ca/en/service-support/warranty-registration
Registering your warranty online will help us to quickly track the information we need about your stove.

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PART A - OPERATION AND MAINTENANCE

Please see Part B for installation instructions.

1 Safety Information

1.1 Summary of Operation and Maintenance Cautions and Warnings

- **HOT WHILE IN OPERATION, KEEP CHILDREN, CLOTHING AND FURNITURE AWAY. CONTACT MAY CAUSE SKIN BURNS. GLOVES MAY BE NEEDED FOR STOVE OPERATION.**
- **USING A STOVE WITH CRACKED OR BROKEN COMPONENTS, SUCH AS GLASS OR FIREBRICKS OR BAFFLES MAY PRODUCE AN UNSAFE CONDITION AND MAY DAMAGE THE STOVE.**
- **OPEN THE AIR CONTROL FULLY BEFORE OPENING FIRING DOOR.**
- **THIS STOVE HAS BEEN TESTED FOR USE WITH AN OPEN DOOR IN CONJUNCTION WITH A FIRE SCREEN (AC01315, SOLD SEPARATELY). THE DOOR MAY BE OPEN OR FIRE SCREEN REMOVED ONLY DURING LIGHTING PROCEDURES OR RELOADING. ALWAYS CLOSE THE DOOR OR PUT BACK THE FIRE SCREEN AFTER IGNITION. DO NOT LEAVE THE STOVE UNATTENDED WHEN THE DOOR IS OPENED WITH OR WITHOUT FIRE SCREEN.**
- **NEVER USE GASOLINE, GASOLINE-TYPE LANTERN FUEL (NAPHTHA), FUEL OIL, MOTOR OIL, KEROSENE, CHARCOAL LIGHTER FLUID, OR SIMILAR LIQUIDS OR AEROSOLS TO START OR 'FRESHEN UP' A FIRE IN THIS STOVE. KEEP ALL SUCH LIQUIDS OR AEROSOLS WELL AWAY FROM THE STOVE WHILE IT IS IN USE.**
- **DO NOT STORE FUEL WITHIN HEATER MINIMUM INSTALLATION CLEARANCES.**
- **BURN ONLY SEASONED NATURAL FIREWOOD.**
- **DO NOT BURN:**
    - **GARBAGE OF ANY KIND,**
    - **COAL OR CHARCOAL,**
    - **TREATED, PAINTED OR COATED WOOD,**
    - **PLYWOOD OR PARTICLE BOARD,**
    - **FINE PAPER, COLORED PAPER OR CARDBOARD,**
    - **SALT WATER DRIFTWOOD OR**
    - **RAILROAD TIES.**
- **DO NOT ELEVATE THE FIRE BY USING A GRATE IN THIS STOVE.**
- **THIS WOOD HEATER NEEDS PERIODIC INSPECTION AND REPAIR FOR PROPER OPERATION. IT IS AGAINST FEDERAL REGULATIONS TO OPERATE THIS WOOD HEATER IN A MANNER INSONSISTENT WITH OPERATING INSTRUCTIONS IN THIS MANUAL.**

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2 General Information on Blackcomb/Columbia

DB02811 Blackcomb/Columbia - On pedestal - black door

2.1 Appliance performance(1)

Fuel type	Dry cordwood	
Recommended heating area[*]	500 to 2,100 ft^2 (47 to 195 m^2)	
Firebox volume	1.44 ft^3 (0.057 m^3)	
Maximum burn time[*]	6 h	
Maximum heat output(2) (dry cordwood)	55,000 BTU/h	
Overall heat output rate (min. to max.)(2)(3)	14,680 BTU/h to 23,300 BTU/h	
Average overall efficiency(3) - Dry cordwood	70% (HHV(4))	75% (LHV(5))
Optimum efficiency(2)(6)	78%	
Average particulate emissions rate(7)	1.26 g/h	
Average CO(8)	58 g/h ; 1 g/min	

[*] Recommended heating area and maximum burn time may vary subject to location in home, chimney draft, heat loss factors, climate, fuel type and other variables. The recommended heated area for a given appliance is defined by the manufacturer as its capacity to maintain a minimum acceptable temperature in the designated area in case of a power failure.

(1) Values are as measured per test method, except for the recommended heating area, firebox volume, maximum burn time and maximum heat output.

(2) The maximum heat output (dry cordwood) is based on a loading density varying between 15 lb/ft^3 and 20 lb/ft^3. Other performances are based on a fuel load prescribed by the standard. The specified loading density varies between 7 lb/ft^3 and 12 lb/ft^3. The moisture content is between 19% and 25%.

(3) As measured per CSA B415.1-10 stack loss method.

(4) Higher Heating Value of the fuel.

(5) Lower Heating Value of the fuel.

(6) Optimum overall efficiency at a specific burn rate (LHV).

(7) This appliance is officially tested and certified by an independent agency.

(8) Carbon monoxide.

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2.2 General Features

Maximum log length	19 in (480 mm) east-west*
Flue outlet diameter	6 in (152 mm)
Recommended connector pipe diameter	6 in (152 mm)
Type of chimney	CAN/ULC S629, UL 103 HT (2100 °F)
Baffle material	Vermiculite
Approved for alcove installation	Not approved
Approved for mobile home installation‡	Yes
Shipping weight (without option)	TBD
Appliance weight (model with legs)	TBD
Appliance weight (model with pedestal)	TBD
Type of door	Single, glass with cast iron frame
Type of glass	Ceramic glass
Blower	Optional (up to 130 CFM)
Particulate emission standard	EPA / CSA B415.1-10

** *East-west: through the door you see the longitudinal sides of the logs; north-south: through the door you see the tips of the logs.*

‡ *Mobile home (Canada) or manufactured home (USA): The US department of Housing and Urban Development describes "manufactured homes" better known as "mobile homes" as followed; buildings built on fixed wheels and those transported on temporary wheels/axles and set on a permanent foundation. In Canada, a mobile home is a dwelling for which the manufacture and assembly of each component is completed or substantially completed prior to being moved to a site for installation on a foundation and connection to service facilities and which conforms to the CAN/CSA-Z240 MH standard*

The Blackcomb/Columbia wood burning stove is certified to comply with 2020 particulate emission standards. Not approved for sale after day/month/year (as per compliance certificate).

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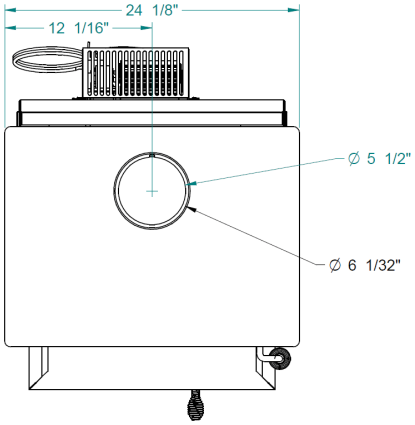
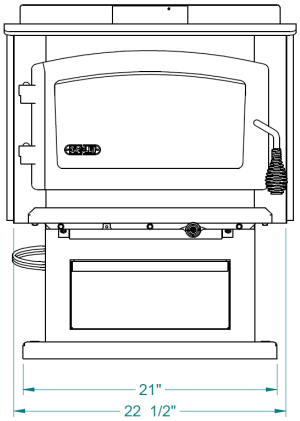
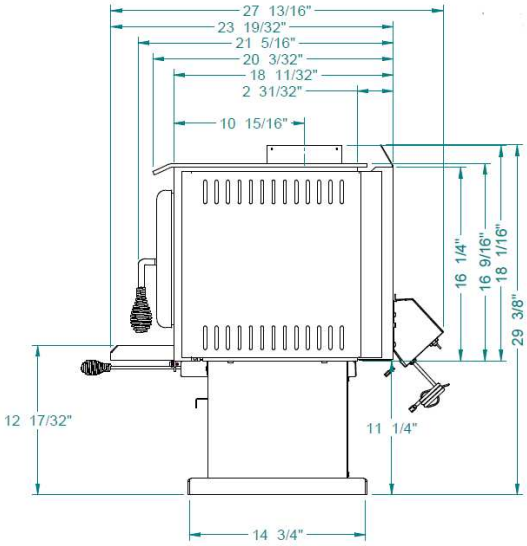
Models on pedestal







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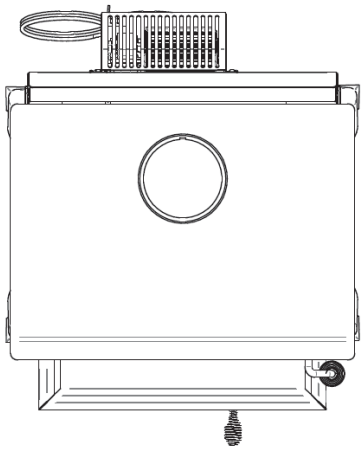
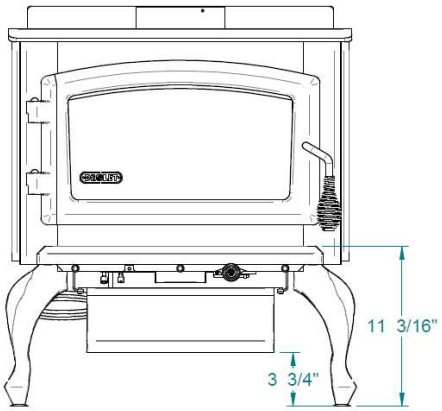
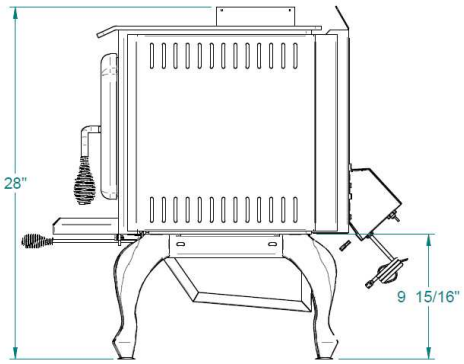
Model on legs







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2.3 Zone Heating and How to Make it Work for You

Your new Blackcomb/Columbia wood stove is a space heater, which means it is intended to heat the area it is installed in, as well as spaces that connect to that area, although to a lower temperature. This is called zone heating and it is an increasingly popular way to heat homes or spaces within homes.

Zone heating can be used to supplement another heating system by heating a particular space within a home, such as a basement family room or an addition that lacks another heat source.

Houses of moderate size and relatively new construction can be heated with a properly sized and located wood stove. Whole house zone heating works best when the stove is located in the part of the house where the family spends most of its time. This is normally the main living area where the kitchen, dining and living rooms are located. By locating the stove in this area, you will get the maximum benefit of the heat it produces and will achieve the highest possible heating efficiency and comfort. The space where you spend most of your time will be warmest, while bedrooms and basement (if there is one) will stay cooler. In this way, you will burn less wood than with other forms of heating.

Although the stove may be able to heat the main living areas of your house to an adequate temperature, we strongly recommend that you also have a conventional oil, gas or electric heating system to provide back up heating.

Your success with zone heating will depend on several factors, including the correct sizing and location of the stove, the size, layout and age of your home and your climate zone. Three-season vacation homes can usually be heated with smaller stoves than houses that are heated all winter.

2.4 The Benefits of Low Emissions and High Efficiency

The low smoke emissions produced by the special features inside the Blackcomb/Columbia firebox mean that your household will release up to 90 percent less smoke into the outside environment than if you used an older conventional stove. But there is more to the emission control technologies than protecting the environment.

The smoke released from wood when it is heated contains about half of the energy content of the fuel. By burning the wood completely, your stove releases all the heat energy from the wood instead of wasting it as smoke up the chimney. Also, the features inside the firebox allow you to reduce the air supply to control heat output, while maintaining clean and efficient flaming combustion, which boosts the efficient delivery of heat to your home.

The emission control and advanced combustion features of your stove can only work properly if your fuel is in the correct moisture content range of 15 to 20 percent. See **Section 3** of this manual for suggestions on preparing fuelwood and judging its moisture.

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2.5 The SBI Commitment to You and the Environment

The SBI team are committed to protecting the environment, so we do everything we can to use only materials in our products that will have no lasting negative impact on the environment.

2.5.1 What is Your New Stove Made Of?

The body of your stove, which is most of its weight, is carbon steel. Should it ever become necessary many years in the future, almost the entire stove can be recycled into new products, thus eliminating the need to mine new materials.

The paint coat on your stove is very thin. Its VOC content (Volatile Organic Components) is very low. VOCs can be responsible for smog, so all the paint used during the manufacturing process meets the latest air quality requirements with regards to VOC reduction or elimination.

The air tubes are stainless steel, which can also be recycled.

Vermiculite is used for the baffle. Vermiculite is a mineral. Large commercial mines exist in China, Russia, South Africa, and Brazil. Potassium silicate is used as binder to form a rigid board. Vermiculite can withstand temperatures above 2,000 °F. It is not considered hazardous waste. Disposal at a landfill is recommended.

Lightweight firebrick is made of pumice and cement. Pumice is in fact volcanic rock, a naturally green product found in the Northwest United States. Disposal at a landfill is recommended.

The door and glass gaskets are fibreglass which is spun from melted sand. Black gaskets have been dipped into a solvent-free solution. Disposal at a landfill is recommended.

The door glass is a 5 mm thick ceramic material that contains no toxic chemicals. It is basically made of raw earth materials such as sand and quartz that are combined in such a way to form a glass at high temperatures. Ceramic glass will not re-melt in the same way as normal glass, so it should not be recycled with your regular household products. Disposal at a landfill is recommended.

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3 Fuel

3.1 Materials That Should Not be Burned

- **GARBAGE OF ANY KIND, WASTE,**
- **COAL OR CHARCOAL,**
- **TREATED, PAINTED OR COATED WOOD, PLASTIC, RUBBER**
- **PLYWOOD OR PARTICLE BOARD, TREATED WOOD**
- **FINE PAPER, COLORED PAPER OR CARDBOARD,**
- **SALT WATER DRIFTWOOD,**
- **MANUFACTURED LOGS CONTAINING WAX OR CHEMICAL ADDITIVES,**
- **RAILROAD TIES, OR OTHER DEBRIS**
- **LIQUIDS SUCH AS KEROSCENE OR DIESEL FUEL TO START A FIRE.**

Burning these materials may result in release of toxic fumes or render ther heater ineffective and cause smoke

3.2 How to Prepare or Buy Good Firewood

3.2.1 What is Good Firewood?

Good firewood has been cut to the correct length for the stove, split to a range of sizes and stacked in the open until its moisture content is reduced to 15 to 20 per cent.

3.2.2 Tree Species

The tree species the firewood is produced from is less important than its moisture content. The main difference in firewood from various tree species is the density of the wood. Hardwoods are denser than softwoods. People who live in the coldest regions of North America usually have only spruce, birch and poplar, other low-density species to burn and yet they can heat their homes successfully.

Homeowners with access to both hardwood and softwood fuel sometimes use both types for different purposes. For example, softer woods make good fuel for relatively mild weather in spring and fall because they light quickly and produce less heat Softwoods are not as dense as hardwoods so a given volume of wood contains less energy. Using softwoods avoids overheating the house, which can be a common problem with wood heating in moderate weather. Harder woods are best for colder winter weather when more heat and longer burn cycles are desirable.

Note that hardwood trees like oak, maple, ash and beech are slower growing and longer lived than softer woods like poplar and birch. That makes hardwood trees more valuable. The advice that only hardwoods are good to burn is outdated. Old, leaky cast iron stoves wouldn’t hold a fire overnight unless they were fed large pieces of hardwood. That is no longer true. You can successfully heat your home by using the less desirable tree species and give the forest a break at the same time.

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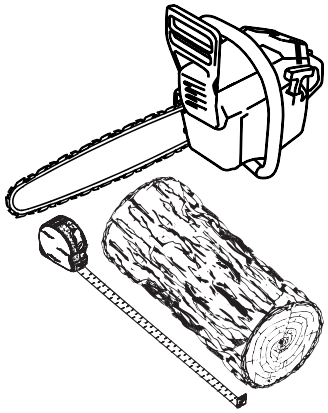
3.2.3 Log Length

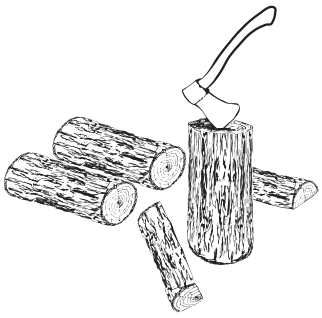
Logs should be cut about 1” (25 mm) shorter than the firebox so they fit in easily. Pieces that are even slightly too long make loading the stove very difficult. The most common standard length of firewood is 16” (400 mm).

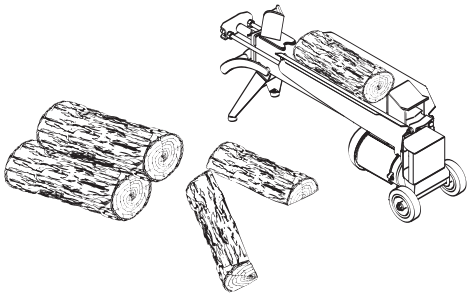
The pieces should be a consistent length, with a maximum of 1” (25 mm) variation from piece to piece.



3.2.4 Piece Size

Firewood dries more quickly when it is split. Large unsplit rounds can take years to dry enough to burn. Even when dried, unsplit logs are difficult to ignite because they don’t have the sharp edges where the flames first catch. Logs as small as 3” (75 mm) should be split to encourage drying.





Wood should be split to a range of sizes, from about 3” to 6” (75 mm to 150 mm) in cross section. Having a range of sizes makes starting and rekindling fires much easier. Often, the firewood purchased from commercial suppliers is not split finely enough for convenient stoking. It is sometimes advisable to resplit the wood before stacking to dry.

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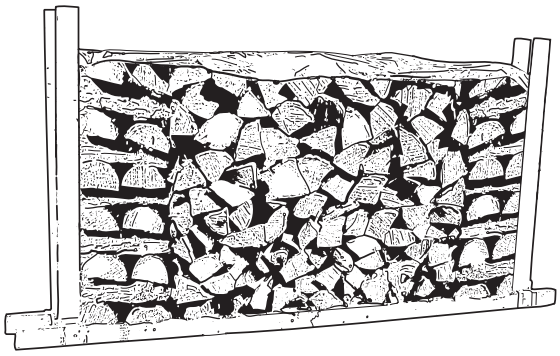
3.2.5 How to Dry Firewood

Firewood that is not dry enough to burn is the cause of most complaints about wood stoves. The complaints usually involve a lack of heat and dirty door glass.



Here are some things to consider in estimating drying time:

- firewood takes a long time to dry
- firewood bought from a dealer is rarely dry enough to burn, so it is advisable to buy the wood in spring and dry it yourself
- drying happens faster in dry weather than in damp, maritime climates
- drying happens faster in warm summer weather than in winter weather
- small pieces dry more quickly than large pieces
- split pieces dry more quickly than unsplit rounds
- softwoods take less time to dry than hardwoods
- softwoods like pine, spruce, and poplar/aspen can be dry enough to burn after being stacked in the open for only the summer months
- hardwoods like oak, maple and ash can take one, or even two years to dry fully, especially if the pieces are big
- firewood dries more quickly when stacked in the open where it is exposed to sun and wind; it takes much longer to dry when stacked in a wood shed
- firewood that is ready to burn has a moisture content between15 and 20% by weight and will allow your stove to produce its highest possible efficiency

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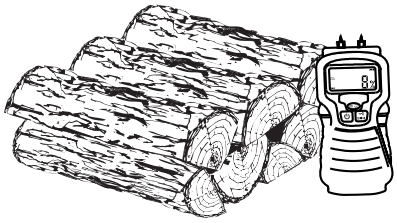
3.2.6 Judging Firewood Moisture Content

You can find out if some firewood is dry enough to burn by using these guidelines:

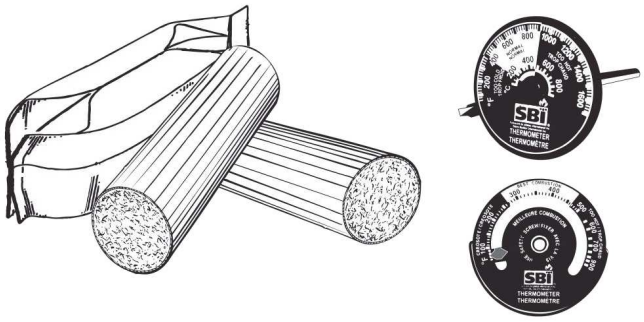
- cracks form at the ends of logs as they dry
- as it dries in the sun, the wood turns from white or cream coloured to grey or yellow,
- bang two pieces of wood together; seasoned wood sounds hollow and wet wood sounds dull,
- dry wood is much lighter in weight than wet wood,
- split a piece, and if the fresh face feels warm and dry it is dry enough to burn; if it feels damp, it is too wet,
- burn a piece; wet wood hisses and sizzles in the fire and dry wood does not.



You could buy a wood moisture meter to test your firewood.

3.3 Manufactured Logs

Do not burn manufactured logs made of wax impregnated sawdust or logs with any chemical additives. Manufactured logs made of 100% compressed sawdust can be burned, but use caution in the number of these logs burned at one time. Start with one manufactured log and see how the stove reacts. You can increase the number of logs burned at a time to making sure the temperature never rises higher than 475 °F (246 °C) on a magnetic thermometer for installation on single wall stove pipes or 900 °F (482 °C) on a probe thermometer for installation on double wall stove pipe. The thermometer should be placed about 18” (457 mm) above the stove. Higher temperatures can lead to overheat and damage your stove.



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4 Operating Your Stove

4.1 Your First Fires

Two things will happen as you burn your first few fires; the paint cures and the internal components of the stove are conditioned.

As the paint cures, some of the chemicals vaporize. The vapors are not poisonous, but they do smell bad. Fresh paint fumes can also cause false alarms in smoke detectors. So, when you first light your stove, be prepared by opening doors and/or windows to ventilate the house. As you burn hotter and hotter fires, more of the painted surfaces reach the curing temperature of the paint. The smell of curing paint does not disappear until you have burned one or two very hot fires.

Burn one or two small fires to begin the curing and conditioning process. Then build bigger and hotter fires until there is no longer any paint smell from the stove. Once the paint smell disappears, your stove is ready for serious heating.

4.2 Lighting Fires

Each person who heats with wood develops their own favorite way to light fires. Whatever method you choose, your goal should be to get a hot fire burning quickly. A fire that starts fast produces less smoke and deposits less creosote in the chimney. Here are three popular and effective ways to start wood fires.

4.2.1 BEST PRACTICE : The Top Down Fire

The top down fire starting method solves two problems with the conventional method: first, it does not collapse and smother itself as it burns; and second, it's cleaner. The top down method only works properly if the wood is well-seasoned.

Start by crisscrossing six medium-sized (2-3 inches) pieces of dry firewood in the firebox. Crisscross around 10 finely split and dry kindling (0.5 to 1 in) leaving air space between the pieces. Then put at least 5 news paper sheets to the top of the pieces. The best way to have your ignition clean and environmentally friendly is to roll the news papers to make a long cylinder, then to make 2 knots with it. The goal is to have the news papers as compact as possible to make it burn slowly. After the ignition of the news paper, let the door open of 1 inch for 5-10 minutes. The air control should be open. Let burn until you have a good coal bed. You are now ready for the main load.

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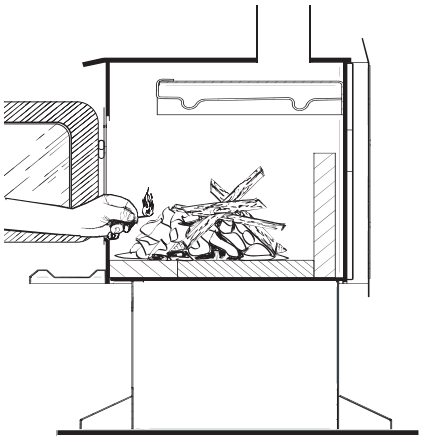
4.2.2 Conventional Fire Starting

The conventional way to build a wood fire is to bunch up 5 to 10 sheets of plain newspaper and place them in the firebox. Next, place 10 or so pieces of fine kindling on the newspaper. This kindling should be very thin; less than 1" (25 mm). Next, place some larger kindling pieces on the fine kindling. Open the air control fully and light the newspaper. If you have a tall, straight venting system you should be able to close the door immediately and the fire will ignite. If your venting system has elbows or an outside chimney, you may need to leave the door closed but unlatched for a few minutes as the newspaper ignites and heat in the chimney produces some draft. Once the fire has ignited, close the door and leave the air control fully open.



A conventional kindling fire with paper under finely split wood.

DO NOT LEAVE THE STOVE UNATTENDED WHEN THE DOOR IS SLIGHTLY OPENED DURING IGNITION. ALWAYS CLOSE THE DOOR AFTER IGNITION.

After the kindling fire has mostly burned, you can add standard firewood pieces until you have a fire of the right size for the conditions.

4.2.3 Two Parallel Logs

Place two spit logs in the firebox. Place a few sheets of twisted newspaper between the logs. Now place some fine kindling across the two logs and some larger kindling across those, log cabin style. Light the newspaper.

4.2.4 Using Fire Starters

Many people like to use commercial fire starters instead of newspaper. Some of these starters are made of sawdust and wax and others are specialized flammable solid chemicals. Follow the package directions for use.

Gel starter may be used but only if there are no hot embers present. Use only in a cold firebox to start a fire.

DO NOT USE FLAMMABLE LIQUIDS SUCH AS GASOLINE, NAPHTHA, FUEL OIL, MOTOR OIL, OR AEROSOLS TO START OR REKINDLE THE FIRE.

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4.3 Maintaining Wood Fires

4.3.1 General Advice

Wood heating with a space heater is very different than other forms of heating. There will be variations in the temperature in different parts of the house and there will be variations in temperature throughout the day and night. This is normal, and for experienced wood burners these are advantages of zone heating with wood.

Do not expect steady heat output from your stove. It is normal for its surface temperature to rise after a new load of wood is ignited and for its temperature to gradually decline as the fire progresses. This rising and falling of temperature can be matched to your household routines. For example, the area temperature can be cooler when you are active, such as when doing housework or cooking, and it can be warmer when you are inactive, such as when reading or watching television.

Wood burns best in cycles. A cycle starts when a new load of wood is ignited by hot coals and ends when that load has been consumed down to a bed of charcoal about the same size as it was when the wood was loaded. Do not attempt to produce a steady heat output by placing a single log on the fire at regular intervals. Always place at least three, and preferably more, pieces on the fire at a time so that the heat radiated from one piece helps to ignite the pieces next to it. Each load of wood should provide several hours of heating. The size of each load can be matched to the amount of heat needed.

When you burn in cycles, you rarely need to open the stove's loading door while the wood is flaming. This is an advantage because there is more chance that smoke will leak from the stove when the door is opened as a full fire is burning. This is especially true if the chimney connector has 90° elbows and if the chimney runs up the outside wall of the house.

IF YOU MUST OPEN THE DOOR WHILE THE FUEL IS FLAMING, OPEN THE AIR CONTROL FULLY FOR A FEW MINUTES, THEN UNLATCH AND OPEN THE DOOR SLOWLY.

4.3.2 Ash Removal

Ash should be removed from the firebox every two or three days of full time heating. Do not let the ash build up in the firebox because it will interfere with proper fire management.

The best time to remove ash is after an overnight fire when the stove is relatively cool, but there is still some chimney draft to draw the ash dust into the stove and prevent it from coming into the room.

After ashes have been removed from the stove and placed in a tightly covered metal container, they should be taken outside immediately. The closed container of ashes should be placed on a non-combustible floor or on the ground well away from all combustible materials pending final disposal. Ashes normally contain some live charcoal that can stay hot for several days. If the ashes are disposed of by burial in soil or otherwise locally

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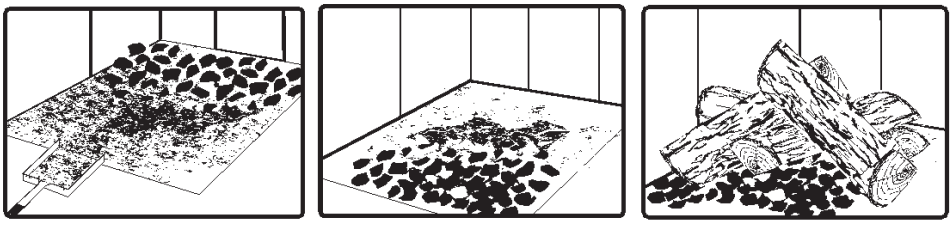
dispersed, they should be retained in the closed container until all cinders have thoroughly cooled. Other waste shall not be placed in this container.

NEVER STORE ASHES INDOORS OR IN A NON-METALIC CONTAINER OR ON A WOODEN DECK.

4.3.3 Raking Charcoal

Rekindle the fire when you notice that the room temperature has fallen. You will find most of the remaining charcoal at the back of the firebox, furthest from the door. Rake these coals towards the door before loading. There are two reasons for this raking of the coals. First, it concentrates them near where most of the combustion air enters the firebox and where they can ignite the new load quickly, and second, the charcoal will not be smothered by the new load of wood. If you were to simply spread the charcoal out, the new load will smoulder for a long time before igniting.



Remove ash first, and then rake charcoal towards the front of the firebox before loading so that it will ignite the new load.

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4.3.4 Firing Each New Load Hot

Place the new load of wood on and behind the charcoal, and not too close to the glass. Close the door and open the air control fully. Leave the air control fully open until the firebox is full of flames, the wood has charred to black and its edges are glowing red. Firing each load of wood hot accomplishes a few things:

- drives the surface moisture from the wood,
- creates a layer of char on the wood, which slows down its release of smoke,
- heats the firebox components so they reflect heat back to the fire, and
- heats the chimney so it can produce strong, steady draft for the rest of the cycle.

Although it is important to fire each new load hot to prepare for a clean burn, do not allow the fire to burn at full intensity for more than a few minutes.

DO NOT LEAVE THE STOVE UNATTENDED WHILE A NEW LOAD IS BEING FIRED HOT.

When you burn a new load of wood hot to heat up the wood, the stove and the chimney, the result will be a surge of heat from the stove. This heat surge is welcome when the room temperature is a little lower than desirable, but not welcome if the space is already warm. Therefore, allow each load of wood to burn down so that the space begins to cool off a little before loading. Letting the space cool before loading is one of the secrets to clean burning and effective zone heating.

Never overfire your stove. Overfiring can lead to overheating of combustible materials nearby, damage to the stove, and in extreme cases, cause a fire.

Overfiring is caused by too much air flowing through the stove too quickly, bad gaskets or bad operation of the air control.

Overfiring can be seen by excessive fuel consumption, and may cause parts of the stove or chimney connector to glow red. If you notice signs of overfiring, reduce the air supply to the fire, and make sure all gaskets are in good conditions.

4.3.5 Turning Down the Air Supply

Once the firewood, firebox and chimney are hot, you can begin to reduce the air supply for a steady burn.

As you reduce the air supply to the fire, two important things happen. First, the firing rate slows down to spread the heat energy in the fuel over a longer period of time. Second, the flow rate of exhaust through the stove and flue pipe slows down, which gives more time for the transfer of heat from the exhaust. You will notice that as you reduce the air setting, the flames slow down. This is your indication that the stove is burning at its peak efficiency.

If the flames get small and almost disappear when you turn down the air, you have turned down the air too early, or your firewood is wetter than it should be. With good fuel and

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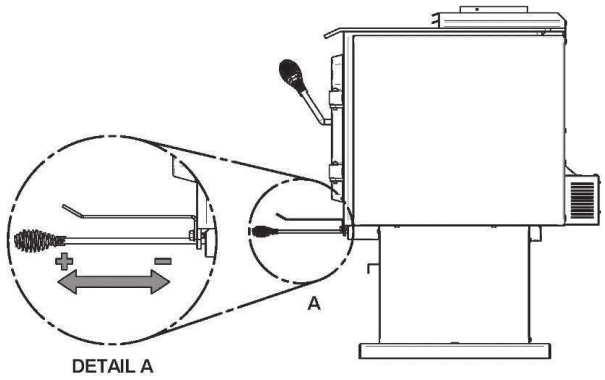
correct air control use, the flames should slow down, but should stay large and steady, even as the air supply is reduced.

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.



4.3.6 Building Different Fires for Different Needs

Using the air control is not the only way to match the stove's heat output to the heat demand. Your house will need far less heat in October than in January to be kept at a comfortable temperature. If you fill the firebox full in fall weather, you will either overheat the space or turn the stove down so much that the fire will be smoky and inefficient. Here are some suggestions for building fires to match different heat demand.

4.3.6.1 Small Fires to Take the Chill Off the House

To build a small fire that will produce a low heat output, use small pieces of firewood and load them crisscross in the firebox. The pieces should be only 3" to 4" in diameter. After raking the coals, you can lay two pieces parallel to each other corner to corner in the firebox and lay two more across them in the other direction. Open the air control fully and only reduce the air after the wood is fully flaming. This kind of fire is good for mild weather when you are around to tend the stove and should provide enough heat for four hours or more. Small fires like this are a good time to use softer wood species so there will be less chance of overheating the house.

4.3.6.2 Long Lasting Low Output Fires

Sometimes you will want to build a fire to last up to eight hours, but don't need intense heat. In this case use soft wood species and place the logs compactly in the firebox so the pieces are packed tightly together. You will need to fire the load hot for long enough to fully char the log surfaces before you can turn the air down. Make sure the fire is flaming brightly before leaving the fire to burn.

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4.3.6.3 High Output Fires for Cold Weather

When the heat demand is high during cold weather, you'll need a fire that burns steadily and brightly. This is the time to use your biggest pieces of hardwood fuel if you have it. Put the biggest pieces at the back of the firebox and place the rest of the pieces compactly. A densely built fire like this will produce the longest burn your stove is capable of.

You will need to be cautious when building fires like this because if the air is turned down too much, the fire could smoulder. Make sure the wood is flaming brightly before leaving the fire to burn.

4.3.6.4 Maximum Burn Cycle Times

The burn cycle time is the period between loading wood on a coal bed and the consumption of that wood back to a coal bed of the same size. The flaming phase of the fire lasts for roughly the first half of the burn cycle and the second half is the coal bed phase during which there is little or no flame. The length of burn you can expect from your stove, including both the flaming and coal bed phases, will be affected by a number of things, such as:

- firebox size,
- the amount of wood loaded,
- the species of wood you burn,
- the wood moisture content,
- the size of the space to be heated,
- the climate zone you live in and
- the time of year.

The table below provides a very general indication of the maximum burn cycle times you are likely to experience, based on firebox volume.

FIREBOX VOLUME	MAXIMUM BURN TIME
<1.5 cubic feet	3 to 5 hours
1.5 c.f. to 2.0 c.f	5 to 6 hours
2.0 c.f. to 2.5 c.f.	6 to 8 hours
2.5 c.f. to 3.0 c.f.	8 to 9 hours
>3.0 c.f.	9 to 10 hours

Long burn times are not necessarily an indication of efficient stove operation. When you are home during the day and able to tend the fire, it is preferable to build a smaller fire that might provide three or four hours of heating than to fully load the firebox for a much longer burn. Shorter burn cycles make it easier to match the heat output of the stove to the heat demand of the space.

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4.3.6.5 North-South Fires Versus East-West Fires

In fireboxes that are roughly square, wood can be loaded so that looking through the glass door you see the ends of the logs (north-south) or the sides of the logs (east-west).

East-west loads that are built compactly break down slowly when heated, but the amount of wood you can load is limited because if you put in too many pieces, one may fall against the glass. East-west loads are excellent for long, low output fires for relatively mild weather.

North-south loads break down more quickly, but much more wood can be loaded at a time. This makes north-south loading good for high output, long lasting fires for cold weather.

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5 Maintaining Your Wood Heating System

5.1 Stove Maintenance

Your new stove will give many years of reliable service if you use and maintain it correctly. Some of the internal components of the firebox, such as firebricks, baffles and air tubes, will wear over time under intense heat. You should always replace defective parts with original parts (see **Appendix 6: *Exploded Diagram and Parts List***). For firing each load hot to begin a cycle as described above will not cause premature deterioration of the stove. However, letting the stove run with the air control fully open for entire cycles can cause damage over time. The hotter you run the stove throughout burn cycles, the more quickly its components will deteriorate. For that reason, **never leave the stove unattended while a new load is being fired hot**.

5.1.1 Cleaning Door Glass

Under normal conditions, your door glass should stay relatively clear. If your firewood is dry enough and you follow the operating instructions in this manual, a whitish, dusty deposit will form on the inside of the glass after a week or so of use. This is normal and can be easily removed when the stove is cool by wiping with a damp cloth or paper towel and then drying. **Never try to clean the glass when the stove is hot.**

In spring and fall when the stove is run at lower temperatures, you may see some light brown stains forming, especially at the lower corners of the glass. This indicates that the fire has been smoky and some of the smoke has condensed on the glass. When the weather is mild, you may find that letting the fire go out is better than trying to maintain a continuous fire. Use the technique described above for building a fire to take the chill off the house.

If you do get brown stains on the glass you can remove them with special cleaners for wood stove glass doors. **Do not use abrasives to clean your stove's door glass.**

The deposits that form on the glass are the best indication of the quality of your fuel and how well you are doing in operating the stove. Your goal should be clear glass with no brown stains. If you continue to see brown stains on the glass, something about your fuel and operating procedure needs to be changed. Stains on the glass indicate incomplete combustion of the wood, which also means more smoke emissions and faster formation of creosote in the chimney.

If you see brown streaks coming from the edge of the glass, it is time to replace the gasket around the glass. Visit your stove retailer to get the self-adhesive glass gasket and follow the instructions below for installation.

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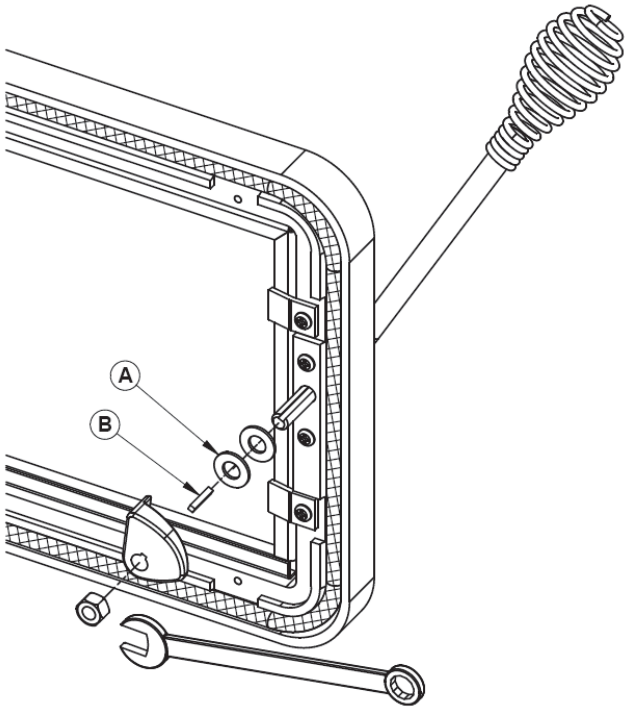
5.1.2 Door adjustment

1. Unscrew the nut.
2. Remove the door latch and the key path pin (B).
3. Remove or add one washer (A) as needed. Keep the removed washer for future adjustment.
4. Re-install the key path pin in the key-way and slide the latch along it.
5. Secure with the nut.



5.1.3 Replacing the Door Gasket

It is important to maintain the gasket in good condition. After a year or more of use, the door gasket will compress and become hard, which may allow air to leak past it. You can test the condition of the door gasket by closing and latching the door on a strip of paper. Test all around the door. If the paper slips out easily anywhere, it is time to replace the gasket.

Use the correct replacement gasket that you can purchase from your retailer. The diameter and density of the gasket is important to getting a good seal.

Place the door face-down on something soft like a cushion of rags or piece of carpet. Remove the old gasket from the door by pulling and prying it out with an old screw driver.

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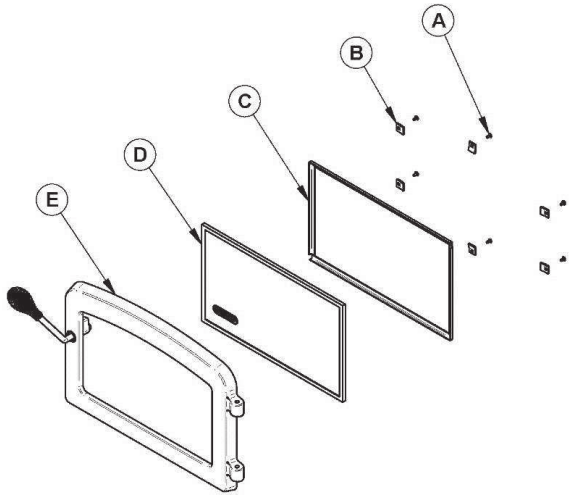
Then use the screwdriver to scrape the old gasket adhesive from the door. Now run a 1/4" (6 mm) bead of high temperature silicone in the door gasket groove. Starting from the middle of the hinge side, press the gasket into the groove. Do not stretch the gasket as you place it. Leave the gasket about 1/2" long when you cut it and press the end into the groove. Tuck any loose fibres under the gasket and into the silicone. Close the door and do not use the stove for 24 hours.

5.1.4 Replacing the Glass Gasket and/or the Glass

It is a good idea to replace the glass gasket when the door gasket is replaced. The gasket is flat, adhesive-backed, woven fibreglass. Remove the glass retaining screws (A), the clips (B) and the metal frame (C) that holds the glass to the door frame (E). Lift out the glass (D) and pull off the old gasket. This is a good time to clean the glass thoroughly.



The gasket must be centred on the edge of the glass. To do this easily, peel back a section of the paper covering the adhesive and place the gasket on a table with the adhesive side up. Stick the end of the gasket to the middle of one edge, then press the edge of the glass down onto the gasket, taking care that it is perfectly centred on the gasket. Peel off more of the backing and rotate the glass and press the next section onto the gasket. Do not stretch the gasket as you place it. Continue until you get to the start and trim the gasket to length. Now pinch the gasket to the glass in a U shape, all around the glass. Reinstall the glass, being careful to centre the glass carefully in the door. Do not over-tighten the screws. Note that the two main causes of broken door glass are uneven placement in the door and over-tightening of retaining screws.

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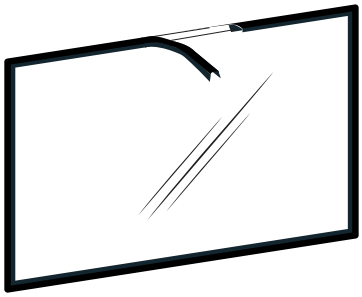

Do not abuse the glass door by striking or slamming shut. Do not use the stove if the glass is broken. To change the glass, perform the same operation described above.

5.1.5 Cleaning and Painting the Stove

Do not attempt to clean or paint the stove when the unit is hot. Painted surfaces can be wiped down with a damp cloth. Plated surfaces may be scratched by abrasive cleaners. To maintain the finish at its original brilliance, use only a damp soft cloth to clean plated surfaces.

If the paint becomes scratched or damaged, you can give your wood stove a brand new look by repainting it with heat-resistant paint. Before painting, roughen the surface with fine sand paper, wipe it down to remove dust, and apply two thin coats of paint. For best results, use the same paint that was originally used on the stove, which is available in spray cans. See your dealer for details.

5.2 Chimney and Chimney Connector Maintenance

5.2.1 Why Chimney Cleaning is Necessary

Wood smoke can condense inside the chimney connector and chimney, forming a combustible deposit called creosote. If creosote is allowed to build up in the venting system it can ignite when a hot fire is burned in the stove and a very hot fire can progress to the top of the chimney. Severe chimney fires can damage even the best chimneys. Smouldering, smoky fires can quickly cause a thick layer of creosote to form. When you avoid smouldering so the exhaust from the chimney is mostly clear, creosote builds up more slowly. Your new stove has the right characteristics to help you to burn clean fires with little or no smoke, resulting in less creosote in the chimney.

5.2.2 How Often Should You Clean the Chimney?

It is not possible to predict how much or how quickly creosote will form in your chimney. It is important, therefore, to check the build-up in your chimney monthly when getting used to the new stove until you determine the rate of creosote formation. Even if creosote forms slowly in your system, the chimney should be cleaned and inspected at least once each year.

Contact your local municipal or provincial fire authority for information on how to handle a chimney fire. Have a clearly understood plan to handle a chimney fire.

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5.2.3 Cleaning the Chimney

Chimney cleaning can be a difficult and dangerous job. If you don't have experience cleaning chimneys, you might want to hire a professional chimney sweep to clean and inspect the system for the first time. After having seen the cleaning process, you can decide if it is a job you would like to take on.

The most common equipment used are fibreglass rods with threaded fittings and stiff plastic brushes. The brush is forced up and down inside the chimney flue to scrub off the creosote.

The chimney connector assembly should always be cleaned at the same time the chimney is cleaned.

CAUTION: *Operation of your stove without the baffle may cause unsafe and hazardous temperature conditions and will void the warranty*. **NOTE:** Before installing the firebrick, check to ensure that none are broken or damaged in any way. If so, have the damaged ones replaced. Check the firebrick for damage at least annually and replace any broken or damaged ones with new ones. Inspection and cleaning of the chimney is facilitated by the removable baffle.

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PART B - INSTALLATION

6 Safety Information

6.1 Summary of Installation Cautions and Warnings

- **THE INFORMATION GIVEN ON THE CERTIFICATION LABEL AFFIXED TO THE APPLIANCE ALWAYS OVERRIDES THE INFORMATION PUBLISHED, IN ANY OTHER MEDIA (OWNER'S MANUAL, CATALOGUES, FLYERS, MAGAZINES AND/OR WEB SITES).**
- **MIXING OF APPLIANCE COMPONENTS FROM DIFFERENT SOURCES OR MODIFYING COMPONENTS MAY RESULT IN HAZARDOUS CONDTIONS. WHERE ANY SUCH CHANGES ARE PLANNED, STOVE BUILDER INTERNATIONAL INC. SHOULD BE CONTACTED IN ADVANCE.**
- **ANY MODIFICATION OF THE APPLIANCE THAT HAS NOT BEEN APPROVED IN WRITING BY THE TESTING AUTHORITY VIOLATES CSA B365 (CANADA), AND ANSI NFPA 211 (USA).**
- **CONNECT THIS STOVE ONLY TO A LISTED FACTORY-BUILT CHIMNEY FOR USE WITH SOLID FUEL OR TO A LINED MASONRY CHIMNEY CONFORMING TO NATIONAL AND LOCAL BUILDING CODES.**
- **IF REQUIRED, A SUPPLY OF COMBUSTION AIR SHALL BE PROVIDED TO THE ROOM OR SPACE.**
- **DO NOT CONNECT TO OR USE IN CONJUNCTION WITH ANY AIR DISTRIBUTION DUCTWORK UNLESS SPECIFICALLY APPROVED FOR SUCH INSTALLATION.**
- **DO NOT CONNECT THIS UNIT TO A CHIMNEY FLUE SERVING ANOTHER APPLIANCE.**
- **MAY BE INSTALLED IN A MOBILE HOME**
- **THIS MOBILE HOME APPROVED STOVE REQUIRES INSTALLATION OF A FRESH AIR KIT, SOLD SEPARATELY.**

WARNING: DO NOT INSTALL IN SLEEPING ROOM.

WARNING: THE STOVE MUST BE ATTACHED TO THE STRUCTURE OF THE MOBILE HOME.

CAUTION: THE STRUCTURAL INTEGRITY OF THE MOBILE HOME FLOOR, WALL, AND CEILING/ROOF MUST BE MAINTAINED.

- **INSTALL AT LEAST ONE SMOKE DETECTOR ON EACH FLOOR OF YOUR HOME. DETECTORS SHOULD BE LOCATED AWAY FROM THE HEATING APPLIANCE AND CLOSE TO SLEEPING AREAS. FOLLOW THE SMOKE DETECTOR MANUFACTURER'S INSTALLATION INSTRUCTIONS.**

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6.2 Regulations Covering Stove Installation

When installed and operated as described in these instructions, the Blackcomb/Columbia wood stove is suitable for use as a freestanding heater in residential installations. The Blackcomb/Columbia wood stove is not intended for installation in a sleeping room of a mobile home.

In Canada, the CSA B365 Installation Code for Solid Fuel Burning Appliances and Equipment and the CSA C22.1 Canadian National Electrical Code are to be followed in the absence of local code requirements. In the USA, the ANSI NFPA 211 Standard for Chimneys, Fireplaces, Vents and Solid Fuel-Burning Appliances and the ANSI NFPA 70 National Electrical Code are to be followed in the absence of local code requirements.

This stove must be connected to a chimney complying with the requirements for Type HT chimneys in the Standard for Factory-Built Chimneys for Residential Type and Building Heating Appliances, UL 103 and ULC S629 or to a code-approved masonry chimney with a flue liner.

6.3 Location of the certification label

Since the information given on the certification label affixed to the appliance always overrides the information published, in any other media (owner's manual, catalogues, flyers, magazines and/or web sites) it is important to refer to it in order to have a safe and compliant installation. In addition, you will find information about your stove (model, serial number, etc.). You can find the certification label on the back of the stove.

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6.4 Clearances to Walls and Ceiling

The clearances to combustible walls may be slightly different in Canada and the U.S.A. and may also differ depending on whether you use single or double wall flue pipe. Please be sure to choose the correct clearance for your location and type of flue pipe. See figure ***Clearances to combustible materials and floor protection*** to match each letter to a clearance.

	APPLIANCE CLEARANCES (INSTALLATION WITH SINGLE WALL PIPE CONNECTOR)	
	CANADA	USA
A	15" (381 mm)	15" (381 mm)
B	17" (432 mm)	17" (432 mm)
C	10" (254 mm)	10" (254 mm)
K	48" (1220 mm)	48" (1220 mm)
L	84" (213 cm)	84" (213 cm)

	APPLIANCE CLEARANCES (INSTALLATION WITH DOUBLE WALL PIPE CONNECTOR)	
	CANADA	USA
A	6" (152 mm)	6" (152 mm)
B	17" (432 mm)	17" (432 mm)
C	5" (127 mm)	5" (127 mm)
K	48" (1220 mm)	48" (1220 mm)
L	84" (213 cm)	84" (213 cm)

If the above clearances are met, then the distances measured from the flue outlet will be:

	DISTANCES* FROM PIPE CONNECTOR TO THE COMBUSTIBLE MATERIALS	
	CANADA	USA
D	18¾" (476 mm)	18¾" (476 mm)
E	27" (686 mm)	27" (686 mm)
F	21¼" (540 mm)	21¼" (540 mm)

	DISTANCES* FROM PIPE CONNECTOR TO THE COMBUSTIBLE MATERIALS	
	CANADA	USA
D	9¾" (248 mm)	9¾" (248 mm)
E	27" (686 mm)	27" (686 mm)
F	16¼" (413 mm)	16¼" (413 mm)

***The pipe distances listed in this table refer to the distances obtained when the stove is installed in accordance with the appliance clearances above mentioned. However, you can install the stove at reduced clearances; follow the instructions in Section 7.4: *Reducing Wall and Ceiling Clearances Safely*. Where they are followed, the new distance of the pipe to combustible materials must be respected in the appropriate certification of the pipe.**

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Clearances with ceiling (L) lowered to 76" (193 cm)

	APPLIANCE CLEARANCES (INSTALLATION WITH SINGLE WALL PIPE CONNECTOR)	
	CANADA	USA
A	15" (381 mm)	15" (381 mm)
B	17" (432 mm)	17" (432 mm)
C	14" (356 mm)	14" (356 mm)
K	48" (1220 mm)	48" (1220 mm)
L	76" (193 cm)	76" (193 cm)

	APPLIANCE CLEARANCES (INSTALLATION WITH DOUBLE WALL PIPE CONNECTOR)	
	CANADA	USA
A	8" (203 mm)	8" (203 mm)
B	17" (432 mm)	17" (432 mm)
C	9" (229 mm)	9" (229 mm)
K	48" (1220 mm)	48" (1220 mm)
L	76" (193 cm)	76" (193 cm)

If the above clearances are met, then the distances measured from the flue outlet will be:

	DISTANCES* FROM PIPE CONNECTOR TO THE COMBUSTIBLE MATERIALS	
	CANADA	USA
D	18¾" (476 mm)	18¾" (476 mm)
E	27" (686 mm)	27" (686 mm)
F	25¼" (641 mm)	25¼" (641 mm)

	DISTANCES* FROM PIPE CONNECTOR TO THE COMBUSTIBLE MATERIALS	
	CANADA	USA
D	11¾" (298 mm)	11¾" (298 mm)
E	27" (686 mm)	27" (686 mm)
F	20¼" (514 mm)	20¼" (514 mm)

***The pipe distances listed in this table refer to the distances obtained when the stove is installed in accordance with the appliance clearances above mentioned. However, you can install the stove at reduced clearances; follow the instructions in Section 7.4: *Reducing Wall and Ceiling Clearances Safely*. Where they are followed, the new distance of the pipe to combustible materials must be respected in the appropriate certification of the pipe.**

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Clearances for mobile homes

	MOBILE HOME APPLIANCE CLEARANCES (INSTALLATION WITH DOUBLE WALL PIPE CONNECTOR)	
	CANADA	USA
A	14" (356 mm)	14" (356 mm)
B	19" (483 mm)	19" (483 mm)
C	13" (330 mm)	13" (330 mm)
K	48" (1220 mm)	48" (1220 mm)
L	84" (213 cm)	84" (213 cm)

If the above clearances are met, then the distances measured from the flue outlet will be:

	DISTANCES* FROM PIPE CONNECTOR TO THE COMBUSTIBLE MATERIALS	
	CANADA	USA
D	17¾" (451 mm)	17¾" (451 mm)
E	29" (737 mm)	29" (737 mm)
F	24¼" (616 mm)	24¼" (616 mm)

***The pipe distances listed in this table refer to the distances obtained when the stove is installed in accordance with the appliance clearances above mentioned. However, you can install the stove at reduced clearances; follow the instructions in Section 7.4: *Reducing Wall and Ceiling Clearances Safely*. Where they are followed, the new distance of the pipe to combustible materials must be respected in the appropriate certification of the pipe.**

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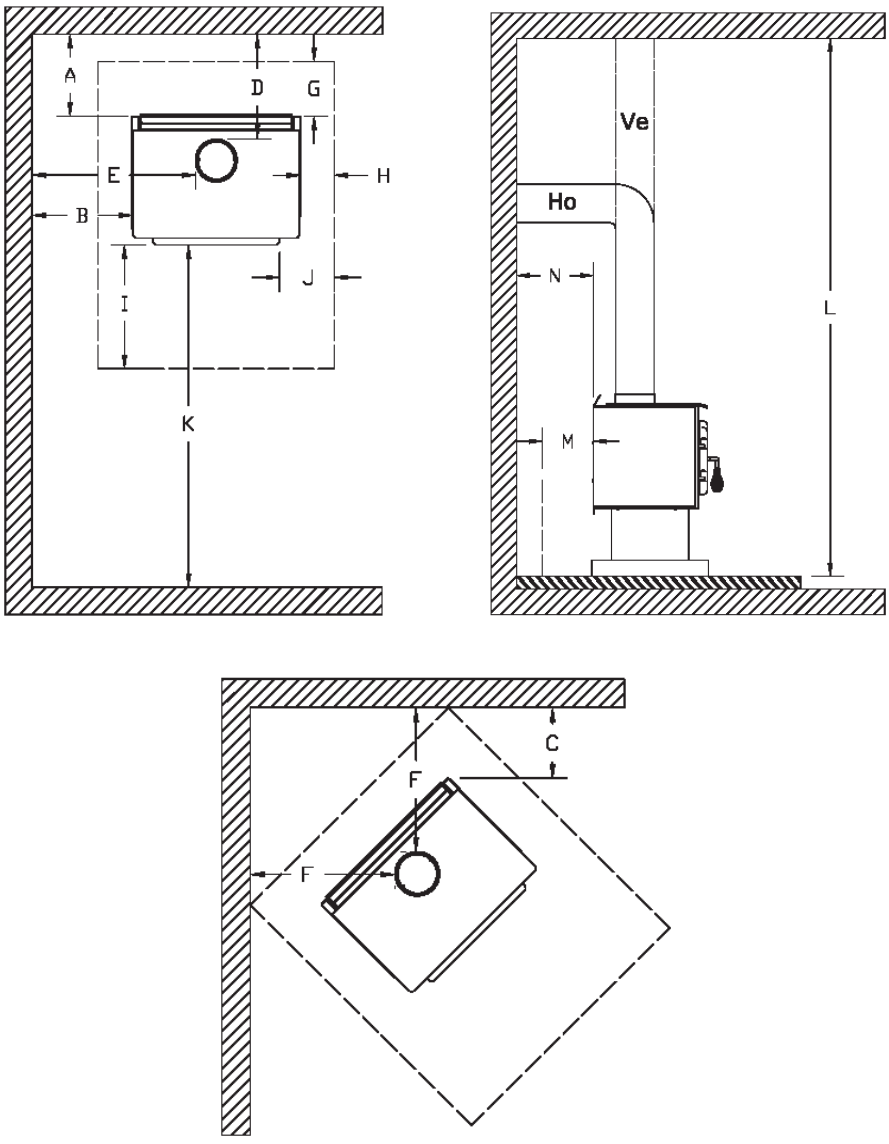

Clearances to combustible materials and floor protection

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6.5 Floor protector

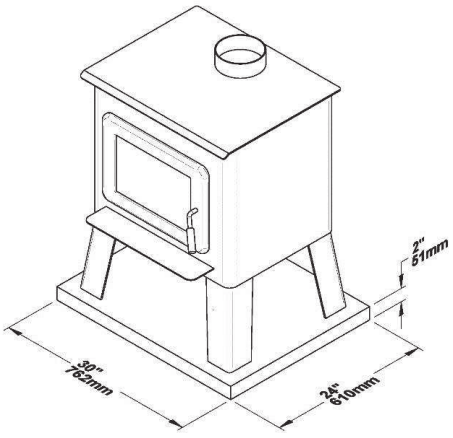
Your stove is designed to keep the floor from overheating. It should be placed on a non combustible surface to protect the floor of hot embers that could fall from the stove during loading and maintenance. As shown in the table below and by the dotted area in the figure ***Clearances to combustibles and floor protection***, there are differences between the floor protections in Canada and in the United States.

	FLOOR PROTECTOR*	
	CANADA	**USA**
G	8" (203 mm) – Note 1	N/A (Canada only)
H	8" (203 mm)	N/A (Canada only)
I	18" (457 mm) From door opening	16" (406 mm) From door opening
J	N/A (USA only)	8" (203 mm)
M	8" (203 mm)	N/A (Canada only)
N	N/A (USA only)	Note 2

**Steel with a minimum thickness of 0.015" (0.38 mm) or ceramic tiles sealed together with grout. No protection is required if the unit is installed on a non-combustible floor (ex: concrete).*

Note 1: The floor protection at the back of the stove is limited to the stove's required clearance if such clearance is smaller than 8 inches (203 mm).

Note 2: Only required under the horizontal section of the connector. Must exceed each side of the connector by at least 2 inches (51 mm).



Important Note: Addition required to the floor protection when the stove is installed in a mobile home and assembled on legs version only:

In addition to meeting the minimum size of the floor protection, the stove must be placed on a podium having a maximum dimension of 30" (762 mm) x 24" (610 mm) and a minimum height of 2" (51 mm). This podium can be constructed of combustible materials as long as it is covered of non-combustible materials. See figure beside.

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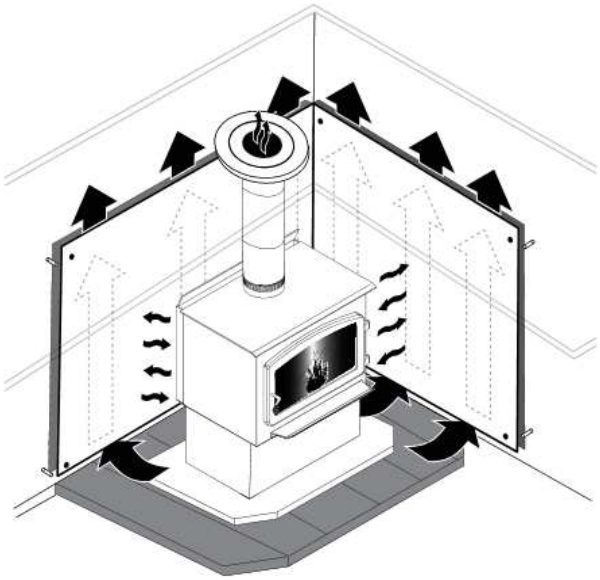
6.6 Reducing Wall and Ceiling Clearances Safely

It is often desirable to reduce the minimum installation clearances by placing the stove closer to walls so the installation takes up less floor space. You can safely reduce the minimum clearances by permanently installing a shield between the stove and combustible material. The rules for safe shields can be complicated, so read them carefully and follow them exactly. Note that there may be minor regional differences in clearance reduction rules so be sure to check with your building or fire inspector before proceeding.



6.6.1 Shield Construction Rules

See figure ***Clearances for shield construction*** to match each letter to a clearance.

- Adhesives used in shield construction must not ignite or lose adhesive qualities at temperatures likely to be encountered.
- Mounting hardware which extends from the shield surface into combustibles may be used only at the edges of the shield.
- Mounting hardware must allow full vertical ventilation.

A Minimum clearance between the appliance top and an unshielded combustible ceiling: 1118 mm (44 in.).

B Shield extension above appliance: 500 mm (20 in.).

C Minimum space behind shield: 25 mm (1 in.). In Canada 21 mm (7/8 in).

D Clearance along the bottom of shield: minimum: 25 mm (1 in.) and maximum: 75 mm (3 in.).

E Minimum clearance along the top of shield at ceiling: 75 mm (3 in.).

F Mounting hardware must not be located closer than 200 mm (8 in.) from the vertical centre line of the appliance.

G Edge clearance for ceiling shields to side and back walls: 75 mm (3 in.).

H Shield extension beyond each side of appliance: 450 mm (18 in.).

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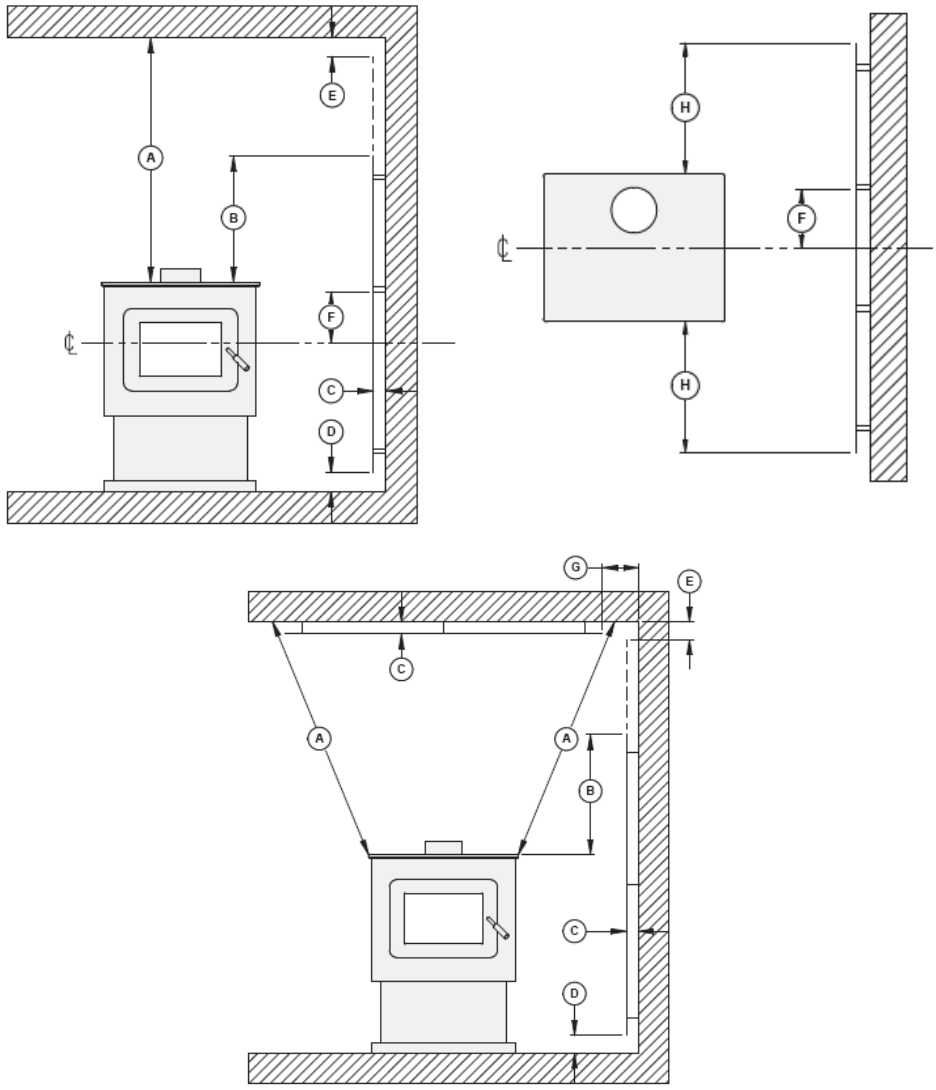

Clearances for shield construction

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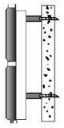
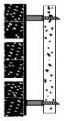
6.6.2 Table of Clearance Reduction Percentages

Type of shield	Clearances may be reduced by these percentages				
	Sides and rear %		Top % (ceiling)		
	Can/USA (%)	USA min.	Can/USA (%)	USA min.	
Sheet metal, a minimum of 24 gauge (0.61 mm) in thickness , spaced out at least 25 mm (1 in)* by non-combustible spacers	67	12 in	50	18 in	
Ceramic tiles, or equivalent non-combustible material, on non-combustible board spaced out at least 25 mm (1 in)* by non-combustible spacers	50	18 in	33	24 in	
Ceramic tiles, or equivalent non-combustible material, on non-combustible board, with a minimum of 24 gauge (0.61 mm) sheet metal backing spaced out at least 25 mm (1 in)* by non-combustible spacers	67	12 in	50	24 in	
Brick, spaced out at least 25 mm (1 in)* by non-combustible spacers	50	18 in	N/A	N/A	
Brick, with a minimum of 24 gauge (0.61 mm) sheet metal backing, spaced out at least 25 mm (1 in)* by non-combustible spacers	67	12 in	N/A	N/A	

** In Canada this space can be 21 mm (7/8 in).*

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7 The Venting System

7.1 General

The venting system, made up of the chimney and the connecting pipe between the stove and the chimney, acts as the engine that drives your wood heating system. Even the best stove will not function safely and efficiently as intended if it is not connected to a suitable chimney.

The heat in the flue gases that pass from the stove and chimney connector into the chimney is not waste heat. This heat is what the chimney uses to make the draft that draws in combustion air, keeps smoke inside the stove and safely vents exhaust to outside. You can think of heat in the flue gas as the fuel the chimney uses to make draft.

Overdraft can be caused by a very tall chimney even if it is the recommended size, and can cause overfiring of your stove. Signs of an overdraft include rapid fuel consumption, inability to slow the fire, and parts of the stove or chimney connector glowing red. It is important that you follow the chimney guidelines in this manual, including size, type, and height to avoid draft problems.

7.2 Suitable Chimneys

Your wood stove will provide optimum efficiency and performance when connected to a 6-inch diameter chimney flue system. The connection to a chimney having a diameter of at least 5 inches (Canada only) or no more than 7 inches is permitted, if it allows the proper venting of combustion gases and that such application is verified and authorized by a qualified installer. Otherwise, the diameter of the flue should be 6 inches.

To be suitable, a factory-built metal chimney must comply with UL 103 (U.S.A.) or ULC S629 (Canada).

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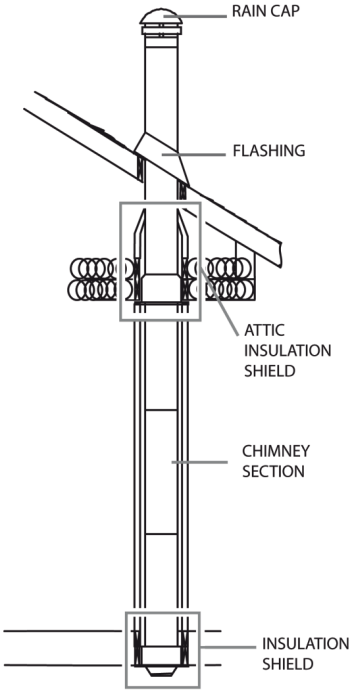
7.2.1 Factory-built Metal Chimneys

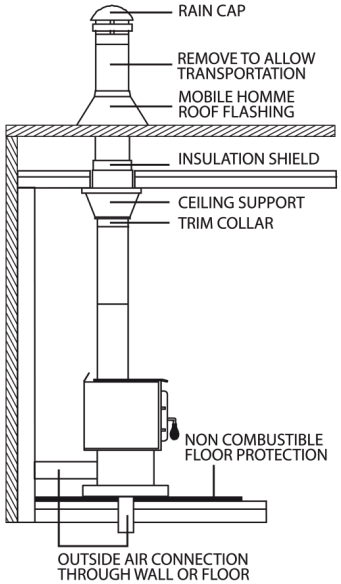
These are sometimes referred to as 'high temp' chimneys because they have the special characteristics to withstand the temperatures that can be created by wood burning stoves. Factory-built chimneys are tested as a system with all the necessary components for installation. The instructions provided with the chimney by its manufacturer are the only reliable source of installation guidelines. To be safe and effective, the chimney must be installed exactly in accordance with the manufacturer's instructions. **Use only components intended for the brand and model of chimney you are using. Never substitute parts from other chimney brands or fabricate your own components. The chimney must be a type suitable for solid fuel.**



7.2.2 Factory-built Metal Chimneys in mobile homes

For use in a mobile home, this stove is to be connected to a 6" in diameter double wall factory built chimney conforming to CAN/UCL-S629, Standards for 650°C Factory-built chimney. The total length of the flue system should be at least (12) feet including elbows, from the top of the stove.

To maintain an effective vapour barrier, insulation and waterproof at the chimney and outside flue pipe, install a mobile home roof flashing and seal it with silicone.



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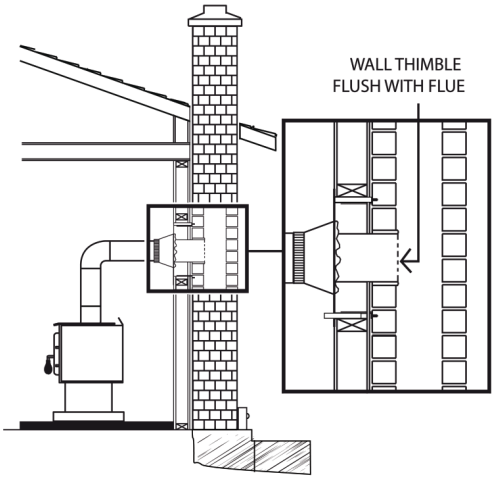
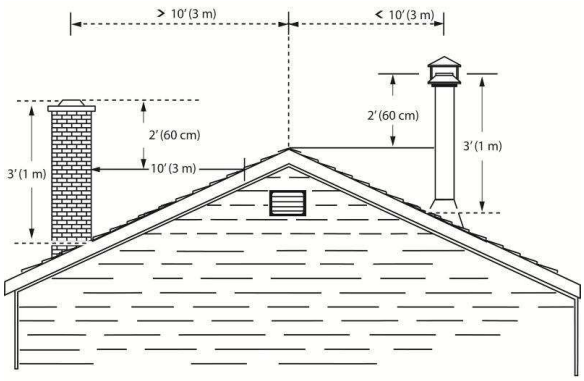
7.2.3 Masonry Chimneys

The stove may also be connected to a masonry chimney, provided the chimney complies with the construction rules found in the building code enforced locally. The chimney must have either a clay liner or a suitably listed stainless steel liner. If the masonry chimney has a square or rectangular liner that is larger in cross sectional area than a round 6" flue, it should be relined with a suitably listed 6" stainless steel liner. Do not downsize the flue to less than 6" unless the venting system is straight and exceeds 25 feet in height. When passing through a combustible wall, the use of an insulated listed thimble is required.



7.3 Minimum Chimney Height

The top of the chimney should be tall enough to be above the air turbulence caused when wind blows against the house and its roof. The chimney must extend at least 1 m (3 ft.) above the highest point of contact with the roof, and at least 60 cm (2 ft.) higher than any roof line or obstacle within a horizontal distance of 3 m (10 ft.).



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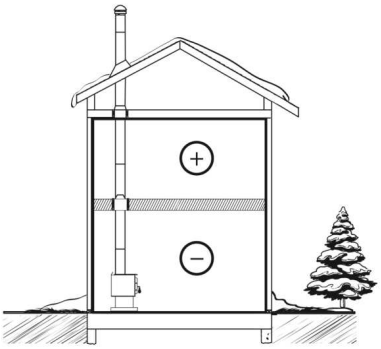
7.4 The Relationship Between the Chimney and the House

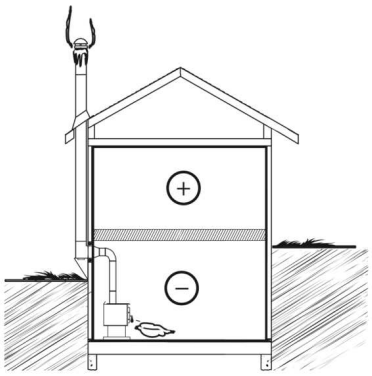
Because the venting system is the engine that drives the wood heating system, it must have the right characteristics. The signs of bad system design are cold backdrafting when there is no fire in the stove, slow kindling of new fires, and smoke roll-out when the door is opened for loading. There are two guidelines to follow. First, the chimney should be installed up through the heated space of the house, not out and up an outside wall. Second, the chimney should penetrate the top of the building at or near the highest heated space.

7.4.1 Why inside chimneys are preferred

Venting systems that rise straight up from the stove flue collar provide the best performance. Chimneys that rise inside the warm space of the house tend to provide a small amount of draft even when there is no fire burning. This means that when you light a fire, the initial smoke goes up the chimney and strong draft builds quickly as the chimney flue warms up. Although they are common in North America, chimneys that exit a house wall and run up outside can cause problems.



Good System Design
Inside chimneys are preferred because even when no fire is burning, there is normally upward flow in the system.



Inferior System Design
Outside chimneys are a problem because when no fire burns they will go into cold backdraft if the stove is installed low in the house.

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7.4.2 Why the chimney should penetrate the highest heated space

When it is cold outside, the warm air in the house is buoyant so it tends to rise. This tendency of warm air to rise creates a slight pressure difference in the house. Called 'stack effect', it produces a slightly negative pressure low in the house (relative to outside) and a slightly positive pressure zone high in the house. If there is no fire burning in a heater connected to a chimney that is shorter than the warm space inside the house, the slight negative pressure low in the house will compete against the desired upward flow in the chimney.

There are two reasons why the chimney in the house at right will cold backdraft when it is cold outside and there is no fire burning in the stove. First, the chimney runs up the outside of the house, so the air in it is colder and denser than the warm air in the house. And second, the chimney is shorter than the heated space of the house, meaning the negative pressure low in the house will pull outside air down the chimney, through the stove and into the room. Even the finest stove will not work well when connected to this chimney.

7.5 Supply of Combustion Air

In Canada, wood stoves are not required to have a supply of combustion air from outdoors (except in mobile homes) because research has shown that these supplies do not give protection against house depressurization and may fail to supply combustion air during windy weather.

However, to protect against the risk of smoke spillage due to house depressurization, **a carbon monoxide (CO) detector/alarm is required** in the room in which the stove is installed. The CO detector will provide warning if for any reason the wood stove fails to function correctly.Carbon monoxide, is a colorless, odorless gas that is produced during combustion of wood and other fuels. **CO fumes are toxic and can be fatal.** CO is not specifically heavier or lighter than air. Therefore, it is best to install the detector at table top level rather than on the ceiling like a smoke detector.

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7.5.1 Combustion Air Supply in Mobile Homes

Only a wood stove certified and labelled as 'mobile home approved' may be installed in a mobile home. This Blackcomb/Columbia stove is 'mobile home approved'. Wood stoves installed in mobile homes must have a ducted supply of combustion air from outdoors. This air supply should be routed down through the house floor into the vented crawl space under the mobile home. The air supply duct should be non-combustible aluminum flex duct with a screened weatherhood on the outside end.

Note: Fabric duct may also be used, provided it is suitable for HVAC use and meets the requirements of ULC-S110 or UL-181 Class 1 standards. It must have a non-combustible insulation and be corrosion resistant.

Where a mobile home has been converted to a standard house by mounting it on a permanent basement foundation, the supply of outdoor air is not required.

7.5.2 Air Supply in Conventional Houses

The safest and most reliable supply of combustion air for your wood stove is from the room in which it is installed. Room air is already preheated so it will not chill the fire, and its availability is not affected by wind pressures on the house. Contrary to commonly expressed concerns, almost all tightly-sealed new houses have enough natural leakage to provide the small amount of air needed by the stove. The only case in which the wood stove may not have adequate access to combustion air is if the operation of a powerful exhaust device (such as a kitchen range exhaust) causes the pressure in the house to become negative relative to outdoors.

Some jurisdictions in the United States require that wood stoves have a supply of combustion air from outdoors. If you do install an air supply through the wall of the house, be aware that its pressure can be affected during windy weather. If you notice changes in wood stove performance in windy weather, and in particular if smoke puffs from the stove, you should disconnect the outdoor air duct from the stove and remove the duct. In some windy conditions, negative pressure at the duct weatherhood outside the house wall may draw hot exhaust gases from the stove backwards through the duct to outdoors. Check the outdoor air duct for soot deposits when the full system is cleaned and inspected at least once each year.

7.6 Installing the Chimney Connector

The chimney connector is the single or double wall pipe installed between the stove flue collar and the chimney breech. Single wall pipe components are available from most hardware and building supply stores. These components are not usually tested to a particular standard and certified as compliant. Therefore, a list of rules found in solid fuel installation codes apply to the installation of single wall pipe.

Double wall chimney connectors are tested and certified. The rules for double wall pipe are found in the manufacturer's installation instructions. These rules will be very different than those for single wall.

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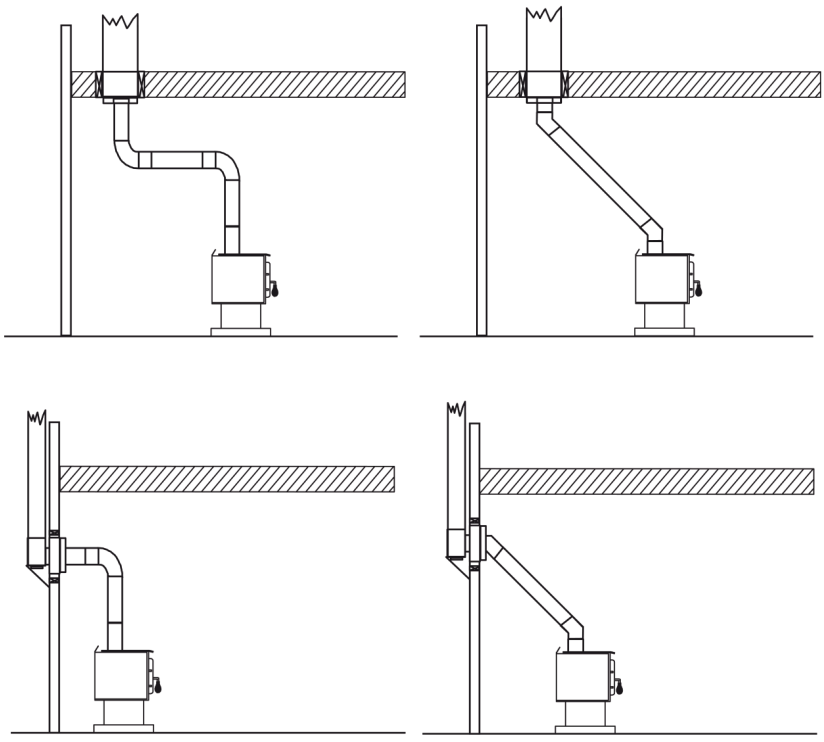
7.6.1 Installation of Single Wall Chimney Connector

The chimney connector assembly has been called 'the weak link' in the safety of wood heating systems because failure to install the connector properly (which has been common in the past) can result in house fires.

The best flue pipe assembly is one that rises straight up from the stove to the base of the chimney with no elbows. Straight assemblies are less likely to cause problems like smoke roll-out when the door is opened for loading. They are also more stable and easier to maintain than assemblies with elbows. Horizontal runs of flue pipe should be avoided where possible because they reduce chimney draft.



Use 45° elbows where possible, instead of 90° elbows.

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The rules below are based on those found in the CSA B365 installation code. Please carefully follow these installation instruction rules, or those enforced where you live.

- Maximum overall length of straight pipe: 3 m (10 ft.) including elbows.
- Minimum clearance from combustible material: 450 mm (18 in.). The minimum clearance may be reduced by 50 percent to 225 mm (9 in.) if suitable shielding is installed either on the pipe or on the combustible surface.
- The assembly should be as short and direct as possible between the stove and chimney. The use of two 45° elbows is often preferable to a single 90° elbow because less turbulence is created in the exhaust flow and they result in less horizontal run.
- Maximum number of 90° elbows: 2.
- Maximum unsupported horizontal length: 1 m (3 feet).
- Galvanized flue pipes must not be used because the coatings vaporize at high temperatures and release dangerous gases. Use black painted flue pipes.
- Flue pipes must be at least 24 gauge in thickness.
- Flue pipe joints should overlap 30 mm (1 1/4 in.)
- Each joint in the assembly must be fastened with at least three screws.
- The assembly must have allowance for expansion: elbows in assemblies allow for expansion; straight assemblies should include an inspection wrap with one end unfastened, or a telescopic section.
- Minimum upward slope towards the chimney: 20 mm/m (1/4 in/ft.).
- One end of the assembly must be securely fastened to the flue collar with 3 sheet metal screws and the other end securely fastened to the chimney.
- There must be provision for cleaning of the pipes, either through a clean out or by removal of the pipe assembly. Removal of the assembly should not require that the stove be moved.
- The male ends of the sections must be oriented towards the appliance so that falling dust and condensation stay inside the pipe.
- A flue pipe must never pass through a combustible floor or ceiling or through an attic, roof space, closet or concealed space.
- Where passage through a wall or partition of combustible construction is desired, the installation shall conform to CAN/CSA-B365, Installation Code for Solid-Fuel-Burning Appliances and Equipment.

The ideal flue pipe assembly is one that rises straight up from the appliance flue collar and directly into the chimney with no elbows. A straight up connector assembly needs either a telescopic length or an inspection wrap (pipe coupler) to allow it to be assembled and disassembled without moving the stove.

A straight flue pipe assembly offers the least restriction to gas flow and results in stronger draft. Straight assemblies also need less maintenance because there are no corners to collect creosote.

The chimney connector must be in good condition.

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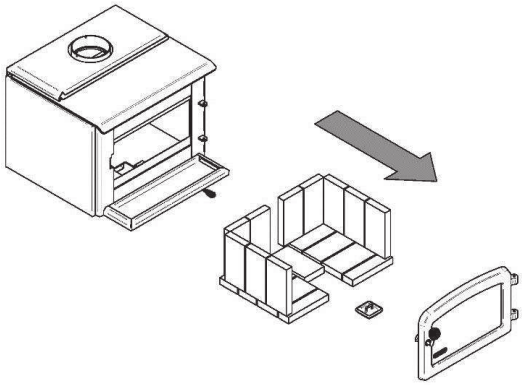
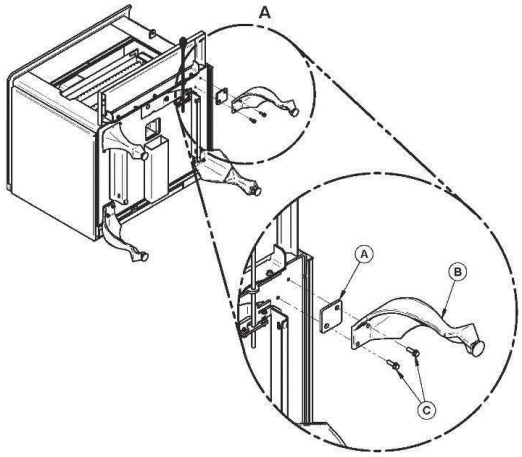
Appendix 1: Installing the Legs (DB02811 Only)

The leg kit must be assembled to the firebox before positioning the stove. See installation instructions below:



1- Remove the firebricks, the ash dump plug and the loading door from the stove to avoid breaking any parts and facilitate handling in the followings steps.



DETAIL A

2- Gently flip the stove on its back.

3- Secure the shims (A) and legs (B) with the bolts (C).

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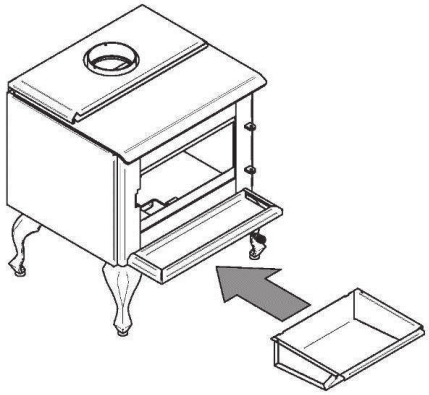

4- Gently flip the stove back on its legs making sure not to put too much weight on the rear legs.

5- Open the ash drawer lid then slide it on the left and right bend of the support brackets.

6- Position the stove for its installation and reinstall the door, the bricks and the ash dump plug (see **Appendix 6: *Exploded Diagram and Parts List*** for layout).

Note: Make sure that baffle components have not moved during the leg installation process since a flue blockage may occur.

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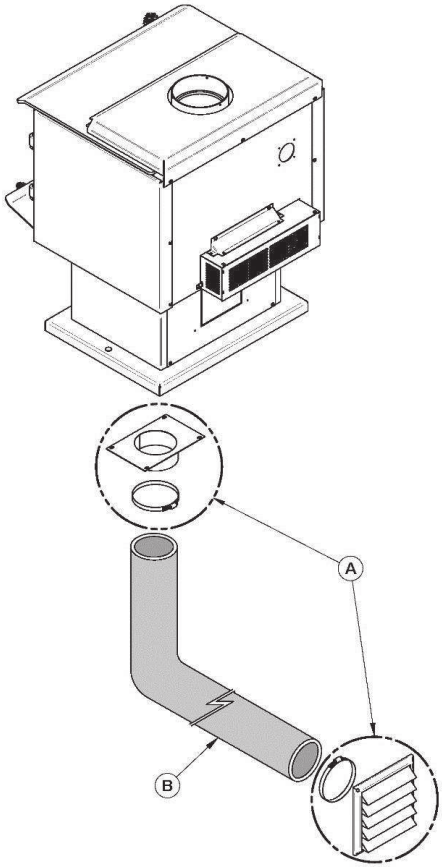
Appendix 2: Installing the Optional Fresh Air Intake Kit (AC01336)

This mobile home approved stove requires installation of a fresh air intake kit (A) and an insulated fresh air intake pipe (B), sold separately.

Installation on the bottom for models on pedestal (AC01336):



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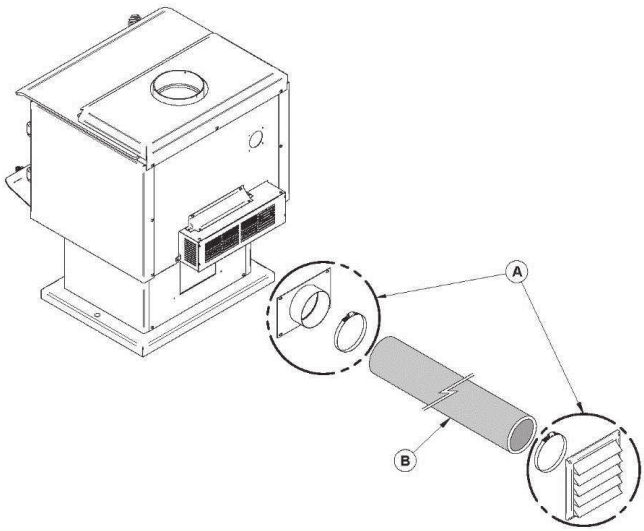
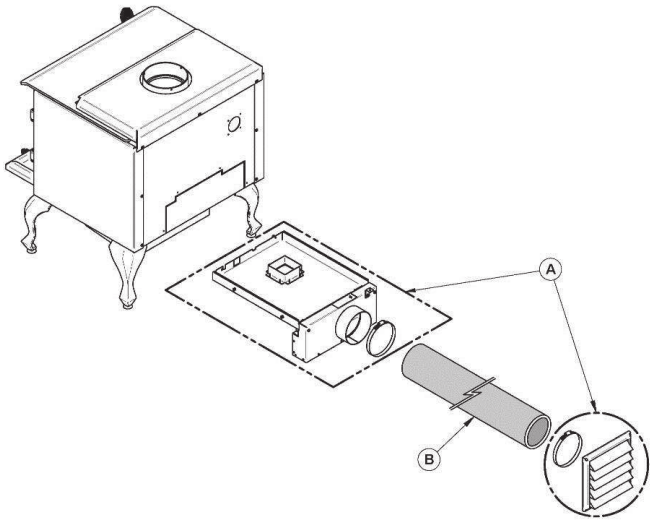
Installation on the back for models on pedestal (AC01336):



Installation on the back for models on legs (AC01316):



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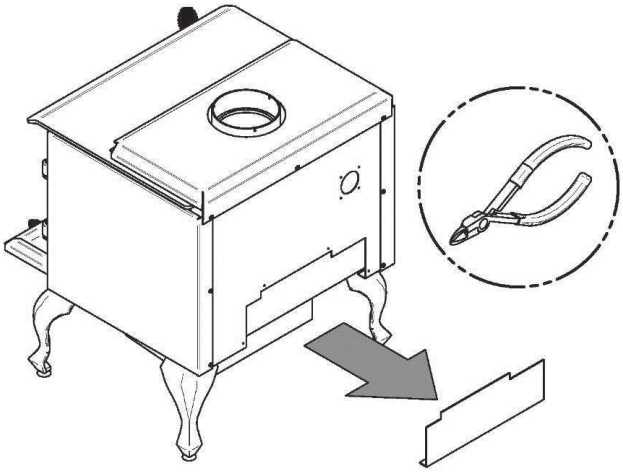
Appendix 3: Use and Installation of the Optional Blower and Thermodisc

An optional blower may be installed on the back of the stove to increase the flow of air past heat exchange surfaces and to help circulate warm air in the room. When used regularly, the blower can provide a small increase in efficiency, up to 2 percent. However, the use of a blower should not be used as a way to gain more output from a stove that is undersized for the space it is intended to heat.



When using the blower, allow the stove to reach operating temperature (approximately one hour), before turning it on. The increased airflow from the blower cools the firebox and could affect the start-up combustion efficiency if the blower is turned on too early. You can also install an optional thermodisc kit to enable the blower to start or stop automatically when the stove is hot or too cold. The thermodisc part number is AC05530 for a basic model and ACO2055 for a quick connect model. Installation instructions are supplied with the blower and the thermodisc.

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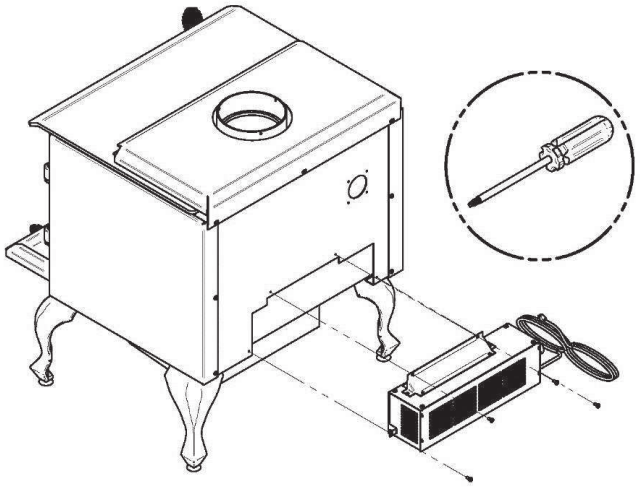

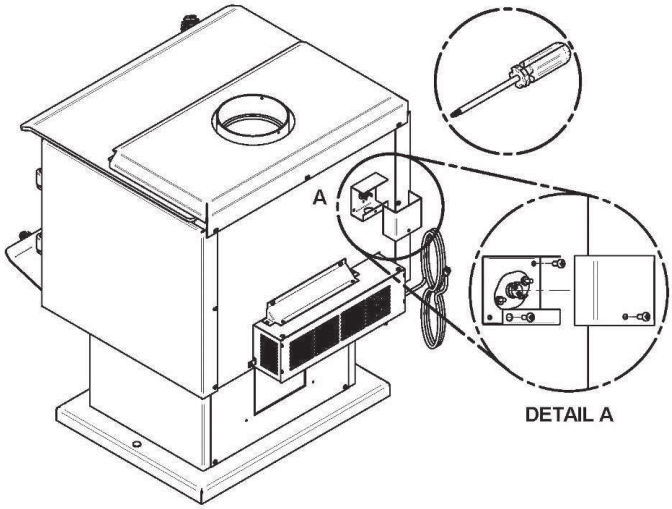

Characteristics of the thermodisc:

- Starts the blower when the stove's temperature reaches 43 °C (110 °F).
- Cuts the electrical contact when the temperature falls to 32 °C (90 °F).

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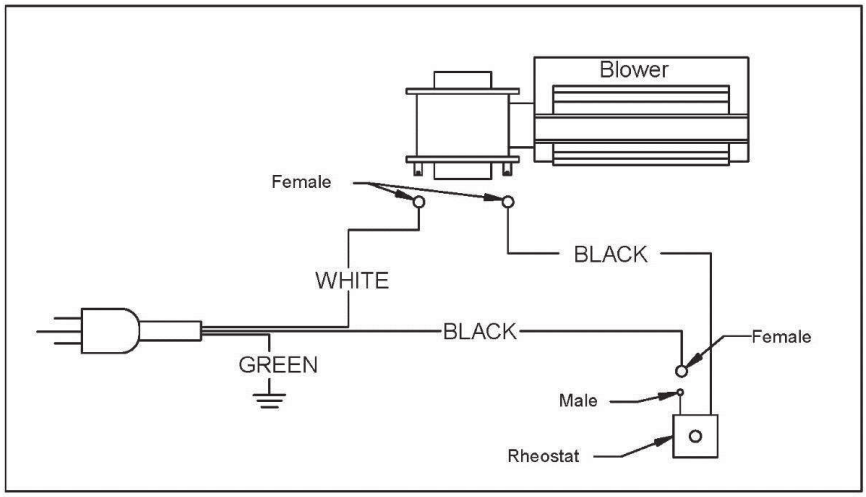

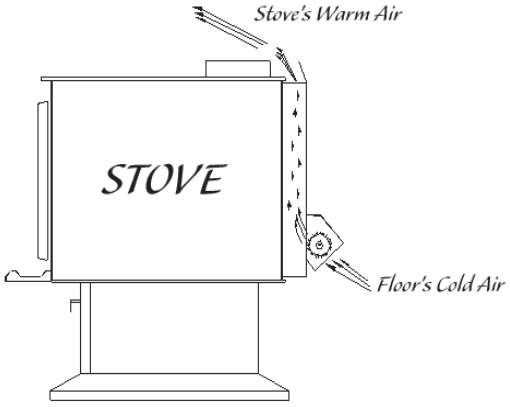

CAUTION: ENSURE THAT THE BLOWER'S POWER CORD IS NOT IN CONTACT WITH ANY SURFACE OF THE STOVE TO PREVENT ELECTRICAL SHOCK OR FIRE DAMAGE. DO NOT RUN THE POWER CORD BENEATH THE STOVE.

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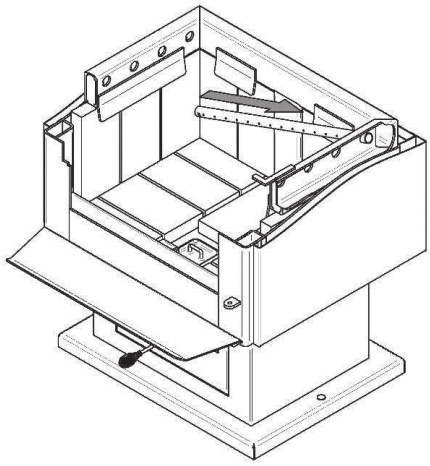
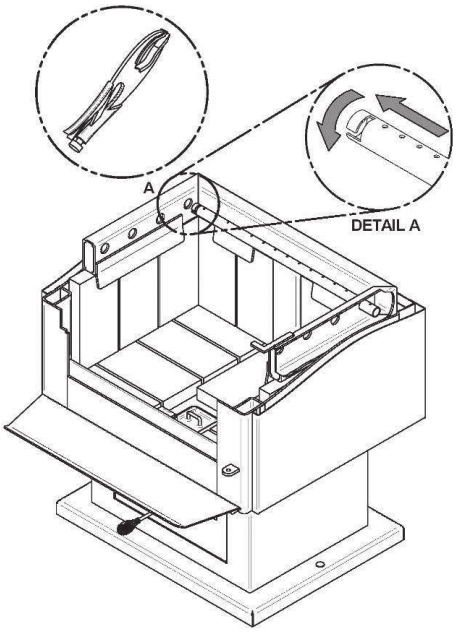
Appendix 4: Installation of Secondary Air Tubes and Baffle



1- Starting with the rear tube, lean and insert the right end of the secondary air tube into the rear right channel hole. Then lift and insert the left end of the tube into the rear left channel.



2- Align the notch in the left end of the tube with the key of the left air channel hole. Using a « Wise grip » hold the tube and lock it in place by turning the tube as shown in **detail A**. Make sure the notch reaches the end of the key way.

3- Repeat **step 1** and **2** for the other secondary air tubes.

4- To remove the tubes use the above steps in reverse order.

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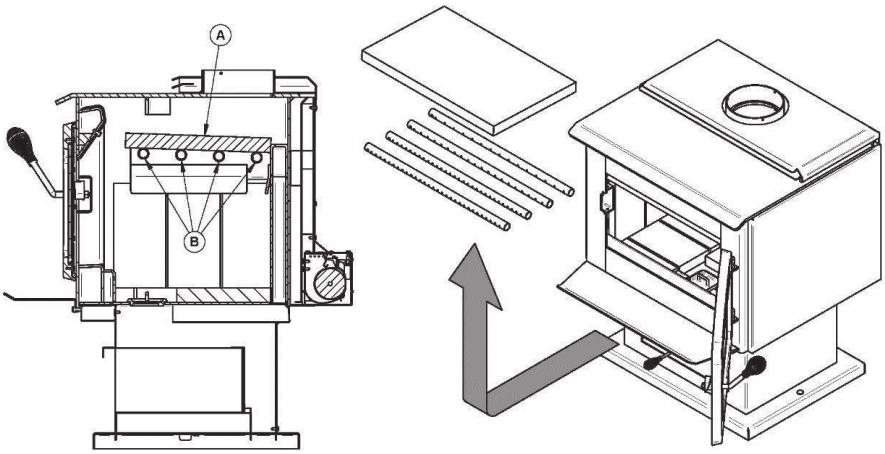
Note that secondary air tubes (B) can be replaced without removing the baffle board (A).



Important Notes:

All air tubes are equals.

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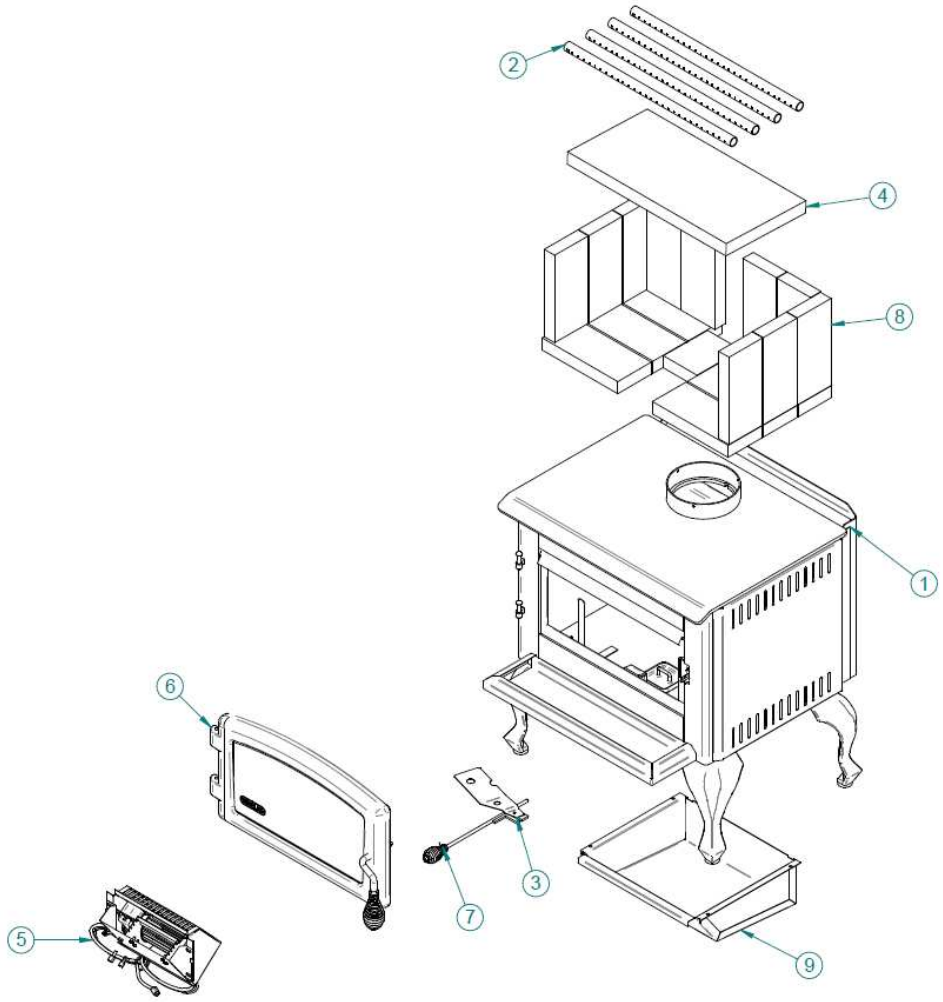
Appendix 5: Exploded Diagram and Parts List

DB02811



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IMPORTANT: THIS IS DATED INFORMATION. When requesting service or replacement parts for your stove, please provide the model number and the serial number. We reserve the right to change parts due to technology upgrade or availability. Contact an authorized dealer to obtain any of these parts. Never use substitute materials. Use of non-approved parts can result in poor performance and safety hazards.

#	Item	Description	Qty
1	PL53795	DECORATIVE PANEL	2
2	PL70516	SECONDARY AIR TUBE	4
3	PL70517	AIR CONTROL DAMPER	1
4	21521	BAFFLE	1
5	SE09909-02	FAN KIT	1
6	SE24085	DOOR AND HANDLE	1
7	SE70518	AIR CONTROL ROD	1
8	SE70521	FIREBRICK SET	1
9	SE70523	ASH PAN	1

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DROLET LIMITED LIFETIME WARRANTY

The warranty of the manufacturer extends only to the original retail purchaser and is not transferable. This warranty covers brand new products only, which have not been altered, modified nor repaired since shipment from factory. Proof of purchase (dated bill of sale), model name and serial number must be supplied when making any warranty claim to your DROLET dealer.

This warranty is void if the unit is used to burn materials other than cordwood (for which the unit is not certified by the EPA) and void if not operated according to the owner's manual. This warranty applies to normal residential use only. Damages caused by misuse, abuse, improper installation, lack of maintenance, over firing, negligence or accident during transportation, power failures, downdrafts, venting problems or under-estimated heating area are not covered by this warranty. The recommended heated area for a given appliance is defined by the manufacturer as its capacity to maintain a minimum acceptable temperature in the designated area in case of a power failure.

This warranty does not cover any scratch, corrosion, distortion, or discoloration. Any defect or damage caused by the use of unauthorized or other than original parts voids this warranty. An authorized qualified technician must perform the installation in accordance with the instructions supplied with this product and all local and national building codes. Any service call related to an improper installation is not covered by this warranty.

The manufacturer may require that defective products be returned or that digital pictures be provided to support the claim. Returned products are to be shipped prepaid to the manufacturer for investigation. Transportation fees to ship the product back to the purchaser will be paid by the manufacturer. Repair work covered by the warranty, executed at the purchaser's domicile by an authorized qualified technician requires the prior approval of the manufacturer. All parts and labour costs covered by this warranty are limited according to the table below.

The manufacturer, at its discretion, may decide to repair or replace any part or unit after inspection and investigation of the defect. The manufacturer may, at its discretion, fully discharge all obligations with respect to this warranty by refunding the wholesale price of any warranted but defective parts. The manufacturer shall, in no event, be responsible for any uncommon, indirect, consequential damages of any nature, which are in excess of the original purchase price of the product. A one-time replacement limit applies to all parts benefiting from lifetime coverage. This warranty applies to products purchased after March 1st, 2015.

DESCRIPTION	WARRANTY APPLICATION*	
	PARTS	LABOUR
Combustion chamber (welds only) and cast iron door frame.	Lifetime	3 years
Surrounds, heat shields, ash drawer, steel legs, pedestal, trims (aluminum extrusions), plating (defective manufacture**), and convector air-mate.	5 years	3 years
Removable stainless steel combustion chamber components, secondary air tubes**, deflectors, and supports.	5 years	N/A
Glass retainers, handle assembly, and air control mechanism.	3 years	1 year
Carbon steel combustion chamber components, vermiculite baffle**, and C-Cast baffle**.	2 years	N/A
Standard blower, heat sensors, switches, rheostat, wiring, and other electronics.	1 year	1 year
Optional blower, paint (peeling**), ceramic glass (thermal breakage only**), ceramic fibre blankets, gaskets, insulation, and other options.	1 year	N/A
Firebricks.	N/A	N/A
All parts replaced under the warranty.	90 days	N/A

Subject to limitations above.** ****Picture required.

Labour cost and repair work to the account of the manufacturer are based on a predetermined rate schedule and must not exceed the wholesale price of the replacement part.

Shall your unit or a components be defective, contact immediately your **DROLET** dealer. To accelerate processing of your warranty claim, make sure to have on hand the following information when calling:

- Your name, address and telephone number;
- Bill of sale and dealer's name;
- Installation configuration;
- Serial number and model name as indicated on the nameplate fixed to the back of your unit;
- Nature of the defect and any relevant information.

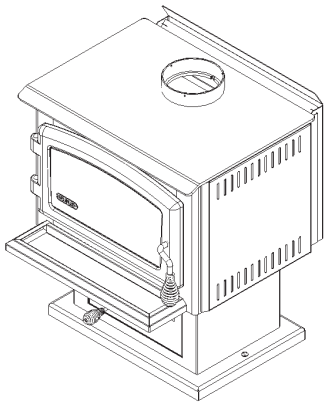
Before shipping your unit or defective component to our plant, you must obtain an Authorization Number from your DROLET dealer. Any merchandise shipped to our plant without authorization will be refused automatically and returned to sender.

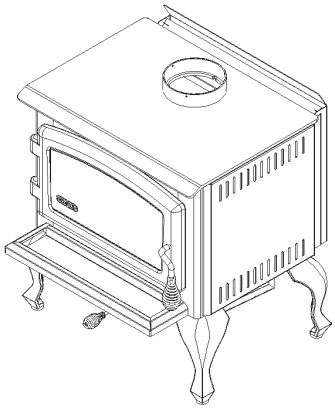
1.5 - Installation and Operation Manual French

DROLET
THE HIGHEST HEATING VALUE

Installation and Operation Manual
Blackcomb/Columbia
(DB02811 models)

''U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using cord wood.''





www.drolet.ca

Stove Builder International Inc.
250, rue de Copenhague, St-Augustin-de-Desmaures (Quebec) Canada G3A 2H3
After-sale service: 418-908-8002 E-mail: tech@sbi-international.com

READ AND KEEP THIS MANUAL FOR REFERENCE

Printed in Canada

45920A
2017-12-14

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THANK YOU FOR CHOOSING THIS DROLET WOOD STOVE

As one of North America's largest and most respected wood stove and fireplace manufacturers, Stove Builder International takes pride in the quality and performance of all its products. We want to help you get maximum satisfaction as you use this product.

In the pages that follow you will find general advice on wood heating, detailed instructions for safe and effective installation, and guidance on how to get the best performance from this stove as you build and maintain fires, and maintain your wood heating system.

We recommend that our wood burning hearth products be installed and serviced by professionals who are certified in the United States by NFI (National Fireplace Institute®) or in Canada by WETT (Wood Energy Technology Transfer) or in Quebec by APC (Association des Professionnels du Chauffage).

Congratulations on making a wise purchase.

When this stove is not properly installed, a house fire may result. To reduce the risk of fire, follow the installation instructions. Contact local building or fire officials about restrictions and installation inspection requirements in your area.

Please read this entire manual before you install and use your new stove. Failure to follow instructions may result in property damage, bodily injury, or even death. It is important that you follow the installations guidelines exactly.

You may need to obtain a building permit for the installation of this stove and the chimney that it is connected to. Consult your municipal building department or fire department before installation to determine the need to obtain one. We recommend that you also inform your home insurance company to find out if the installation will affect your policy.

REGISTER YOUR WARRANTY ONLINE

To receive full warranty coverage, you will need to show evidence of the date you purchased your stove. Keep your sales invoice. We also recommend that you register your warranty online at:
http://www.drolet.ca/en/service-support/warranty-registration
Registering your warranty online will help us to quickly track the information we need about your stove.

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PART A - OPERATION AND MAINTENANCE

Please see Part B for installation instructions.

1 Safety Information

1.1 Summary of Operation and Maintenance Cautions and Warnings

- **HOT WHILE IN OPERATION, KEEP CHILDREN, CLOTHING AND FURNITURE AWAY. CONTACT MAY CAUSE SKIN BURNS. GLOVES MAY BE NEEDED FOR STOVE OPERATION.**
- **USING A STOVE WITH CRACKED OR BROKEN COMPONENTS, SUCH AS GLASS OR FIREBRICKS OR BAFFLES MAY PRODUCE AN UNSAFE CONDITION AND MAY DAMAGE THE STOVE.**
- **OPEN THE AIR CONTROL FULLY BEFORE OPENING FIRING DOOR.**
- **THIS STOVE HAS BEEN TESTED FOR USE WITH AN OPEN DOOR IN CONJUNCTION WITH A FIRE SCREEN (AC01315, SOLD SEPARATELY). THE DOOR MAY BE OPEN OR FIRE SCREEN REMOVED ONLY DURING LIGHTING PROCEDURES OR RELOADING. ALWAYS CLOSE THE DOOR OR PUT BACK THE FIRE SCREEN AFTER IGNITION. DO NOT LEAVE THE STOVE UNATTENDED WHEN THE DOOR IS OPENED WITH OR WITHOUT FIRE SCREEN.**
- **NEVER USE GASOLINE, GASOLINE-TYPE LANTERN FUEL (NAPHTHA), FUEL OIL, MOTOR OIL, KEROSENE, CHARCOAL LIGHTER FLUID, OR SIMILAR LIQUIDS OR AEROSOLS TO START OR 'FRESHEN UP' A FIRE IN THIS STOVE. KEEP ALL SUCH LIQUIDS OR AEROSOLS WELL AWAY FROM THE STOVE WHILE IT IS IN USE.**
- **DO NOT STORE FUEL WITHIN HEATER MINIMUM INSTALLATION CLEARANCES.**
- **BURN ONLY SEASONED NATURAL FIREWOOD.**
- **DO NOT BURN:**
    - **GARBAGE OF ANY KIND,**
    - **COAL OR CHARCOAL,**
    - **TREATED, PAINTED OR COATED WOOD,**
    - **PLYWOOD OR PARTICLE BOARD,**
    - **FINE PAPER, COLORED PAPER OR CARDBOARD,**
    - **SALT WATER DRIFTWOOD OR**
    - **RAILROAD TIES.**
- **DO NOT ELEVATE THE FIRE BY USING A GRATE IN THIS STOVE.**
- **THIS WOOD HEATER NEEDS PERIODIC INSPECTION AND REPAIR FOR PROPER OPERATION. IT IS AGAINST FEDERAL REGULATIONS TO OPERATE THIS WOOD HEATER IN A MANNER INSONSISTENT WITH OPERATING INSTRUCTIONS IN THIS MANUAL.**

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2 General Information on Blackcomb/Columbia

DB02811 Blackcomb/Columbia - On pedestal - black door

2.1 Appliance performance(1)

Fuel type	Dry cordwood	
Recommended heating area[*]	500 to 2,100 ft^2 (47 to 195 m^2)	
Firebox volume	1.44 ft^3 (0.057 m^3)	
Maximum burn time[*]	6 h	
Maximum heat output(2) (dry cordwood)	55,000 BTU/h	
Overall heat output rate (min. to max.)(2)(3)	14,680 BTU/h to 23,300 BTU/h	
Average overall efficiency(3) - Dry cordwood	70% (HHV(4))	75% (LHV(5))
Optimum efficiency(2)(6)	78%	
Average particulate emissions rate(7)	1.26 g/h	
Average CO(8)	58 g/h ; 1 g/min	

[*] Recommended heating area and maximum burn time may vary subject to location in home, chimney draft, heat loss factors, climate, fuel type and other variables. The recommended heated area for a given appliance is defined by the manufacturer as its capacity to maintain a minimum acceptable temperature in the designated area in case of a power failure.

(1) Values are as measured per test method, except for the recommended heating area, firebox volume, maximum burn time and maximum heat output.

(2) The maximum heat output (dry cordwood) is based on a loading density varying between 15 lb/ft^3 and 20 lb/ft^3. Other performances are based on a fuel load prescribed by the standard. The specified loading density varies between 7 lb/ft^3 and 12 lb/ft^3. The moisture content is between 19% and 25%.

(3) As measured per CSA B415.1-10 stack loss method.

(4) Higher Heating Value of the fuel.

(5) Lower Heating Value of the fuel.

(6) Optimum overall efficiency at a specific burn rate (LHV).

(7) This appliance is officially tested and certified by an independent agency.

(8) Carbon monoxide.

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2.2 General Features

Maximum log length	19 in (480 mm) east-west*
Flue outlet diameter	6 in (152 mm)
Recommended connector pipe diameter	6 in (152 mm)
Type of chimney	CAN/ULC S629, UL 103 HT (2100 °F)
Baffle material	Vermiculite
Approved for alcove installation	Not approved
Approved for mobile home installation‡	Yes
Shipping weight (without option)	TBD
Appliance weight (model with legs)	TBD
Appliance weight (model with pedestal)	TBD
Type of door	Single, glass with cast iron frame
Type of glass	Ceramic glass
Blower	Optional (up to 130 CFM)
Particulate emission standard	EPA / CSA B415.1-10

** *East-west: through the door you see the longitudinal sides of the logs; north-south: through the door you see the tips of the logs.*

‡ *Mobile home (Canada) or manufactured home (USA): The US department of Housing and Urban Development describes "manufactured homes" better known as "mobile homes" as followed; buildings built on fixed wheels and those transported on temporary wheels/axles and set on a permanent foundation. In Canada, a mobile home is a dwelling for which the manufacture and assembly of each component is completed or substantially completed prior to being moved to a site for installation on a foundation and connection to service facilities and which conforms to the CAN/CSA-Z240 MH standard*

The Blackcomb/Columbia wood burning stove is certified to comply with 2020 particulate emission standards. Not approved for sale after day/month/year (as per compliance certificate).

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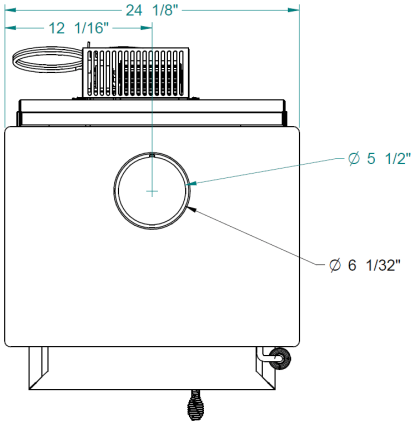
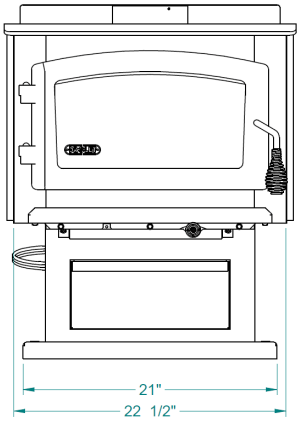
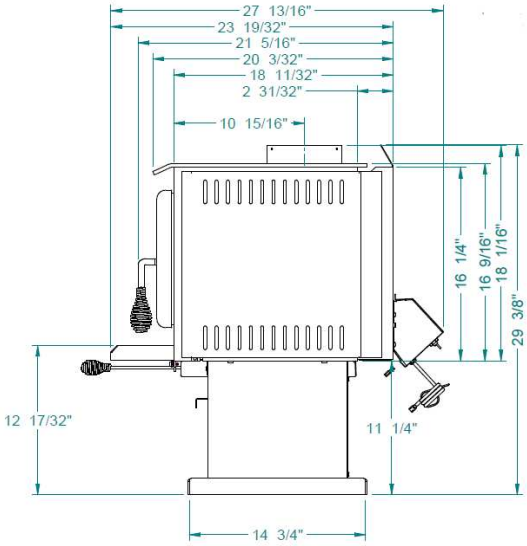
Models on pedestal







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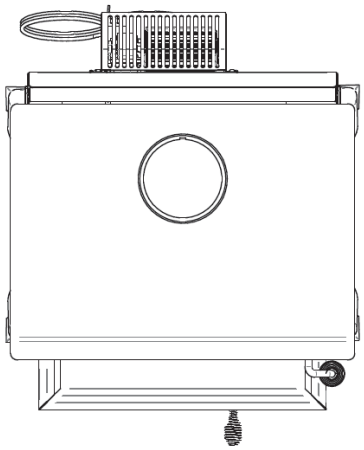
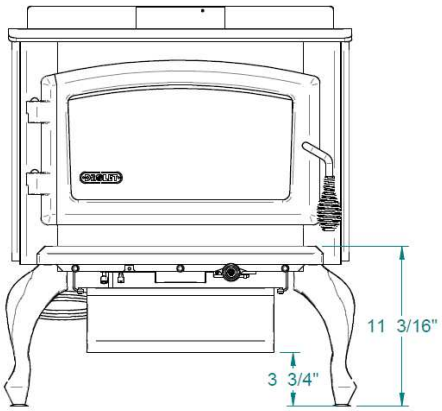
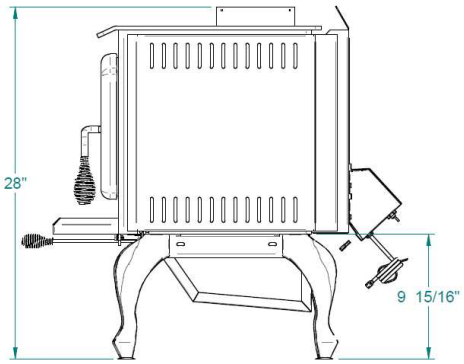
Model on legs







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2.3 Zone Heating and How to Make it Work for You

Your new Blackcomb/Columbia wood stove is a space heater, which means it is intended to heat the area it is installed in, as well as spaces that connect to that area, although to a lower temperature. This is called zone heating and it is an increasingly popular way to heat homes or spaces within homes.

Zone heating can be used to supplement another heating system by heating a particular space within a home, such as a basement family room or an addition that lacks another heat source.

Houses of moderate size and relatively new construction can be heated with a properly sized and located wood stove. Whole house zone heating works best when the stove is located in the part of the house where the family spends most of its time. This is normally the main living area where the kitchen, dining and living rooms are located. By locating the stove in this area, you will get the maximum benefit of the heat it produces and will achieve the highest possible heating efficiency and comfort. The space where you spend most of your time will be warmest, while bedrooms and basement (if there is one) will stay cooler. In this way, you will burn less wood than with other forms of heating.

Although the stove may be able to heat the main living areas of your house to an adequate temperature, we strongly recommend that you also have a conventional oil, gas or electric heating system to provide back up heating.

Your success with zone heating will depend on several factors, including the correct sizing and location of the stove, the size, layout and age of your home and your climate zone. Three-season vacation homes can usually be heated with smaller stoves than houses that are heated all winter.

2.4 The Benefits of Low Emissions and High Efficiency

The low smoke emissions produced by the special features inside the Blackcomb/Columbia firebox mean that your household will release up to 90 percent less smoke into the outside environment than if you used an older conventional stove. But there is more to the emission control technologies than protecting the environment.

The smoke released from wood when it is heated contains about half of the energy content of the fuel. By burning the wood completely, your stove releases all the heat energy from the wood instead of wasting it as smoke up the chimney. Also, the features inside the firebox allow you to reduce the air supply to control heat output, while maintaining clean and efficient flaming combustion, which boosts the efficient delivery of heat to your home.

The emission control and advanced combustion features of your stove can only work properly if your fuel is in the correct moisture content range of 15 to 20 percent. See **Section 3** of this manual for suggestions on preparing fuelwood and judging its moisture.

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2.5 The SBI Commitment to You and the Environment

The SBI team are committed to protecting the environment, so we do everything we can to use only materials in our products that will have no lasting negative impact on the environment.

2.5.1 What is Your New Stove Made Of?

The body of your stove, which is most of its weight, is carbon steel. Should it ever become necessary many years in the future, almost the entire stove can be recycled into new products, thus eliminating the need to mine new materials.

The paint coat on your stove is very thin. Its VOC content (Volatile Organic Components) is very low. VOCs can be responsible for smog, so all the paint used during the manufacturing process meets the latest air quality requirements with regards to VOC reduction or elimination.

The air tubes are stainless steel, which can also be recycled.

Vermiculite is used for the baffle. Vermiculite is a mineral. Large commercial mines exist in China, Russia, South Africa, and Brazil. Potassium silicate is used as binder to form a rigid board. Vermiculite can withstand temperatures above 2,000 °F. It is not considered hazardous waste. Disposal at a landfill is recommended.

Lightweight firebrick is made of pumice and cement. Pumice is in fact volcanic rock, a naturally green product found in the Northwest United States. Disposal at a landfill is recommended.

The door and glass gaskets are fibreglass which is spun from melted sand. Black gaskets have been dipped into a solvent-free solution. Disposal at a landfill is recommended.

The door glass is a 5 mm thick ceramic material that contains no toxic chemicals. It is basically made of raw earth materials such as sand and quartz that are combined in such a way to form a glass at high temperatures. Ceramic glass will not re-melt in the same way as normal glass, so it should not be recycled with your regular household products. Disposal at a landfill is recommended.

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3 Fuel

3.1 Materials That Should Not be Burned

- **GARBAGE OF ANY KIND, WASTE,**
- **COAL OR CHARCOAL,**
- **TREATED, PAINTED OR COATED WOOD, PLASTIC, RUBBER**
- **PLYWOOD OR PARTICLE BOARD, TREATED WOOD**
- **FINE PAPER, COLORED PAPER OR CARDBOARD,**
- **SALT WATER DRIFTWOOD,**
- **MANUFACTURED LOGS CONTAINING WAX OR CHEMICAL ADDITIVES,**
- **RAILROAD TIES, OR OTHER DEBRIS**
- **LIQUIDS SUCH AS KEROSCENE OR DIESEL FUEL TO START A FIRE.**

Burning these materials may result in release of toxic fumes or render ther heater ineffective and cause smoke

3.2 How to Prepare or Buy Good Firewood

3.2.1 What is Good Firewood?

Good firewood has been cut to the correct length for the stove, split to a range of sizes and stacked in the open until its moisture content is reduced to 15 to 20 per cent.

3.2.2 Tree Species

The tree species the firewood is produced from is less important than its moisture content. The main difference in firewood from various tree species is the density of the wood. Hardwoods are denser than softwoods. People who live in the coldest regions of North America usually have only spruce, birch and poplar, other low-density species to burn and yet they can heat their homes successfully.

Homeowners with access to both hardwood and softwood fuel sometimes use both types for different purposes. For example, softer woods make good fuel for relatively mild weather in spring and fall because they light quickly and produce less heat Softwoods are not as dense as hardwoods so a given volume of wood contains less energy. Using softwoods avoids overheating the house, which can be a common problem with wood heating in moderate weather. Harder woods are best for colder winter weather when more heat and longer burn cycles are desirable.

Note that hardwood trees like oak, maple, ash and beech are slower growing and longer lived than softer woods like poplar and birch. That makes hardwood trees more valuable. The advice that only hardwoods are good to burn is outdated. Old, leaky cast iron stoves wouldn’t hold a fire overnight unless they were fed large pieces of hardwood. That is no longer true. You can successfully heat your home by using the less desirable tree species and give the forest a break at the same time.

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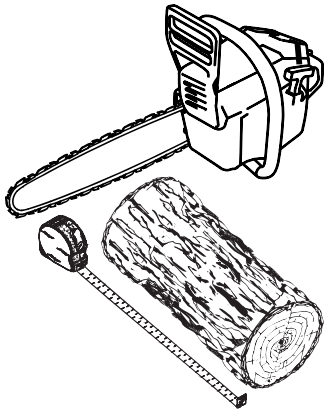
3.2.3 Log Length

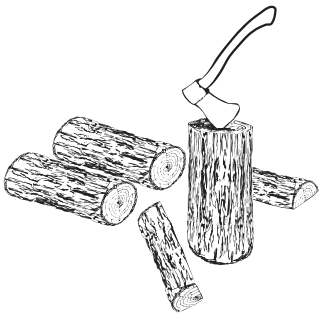
Logs should be cut about 1” (25 mm) shorter than the firebox so they fit in easily. Pieces that are even slightly too long make loading the stove very difficult. The most common standard length of firewood is 16” (400 mm).

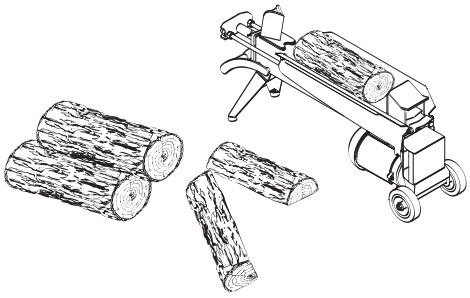
The pieces should be a consistent length, with a maximum of 1” (25 mm) variation from piece to piece.



3.2.4 Piece Size

Firewood dries more quickly when it is split. Large unsplit rounds can take years to dry enough to burn. Even when dried, unsplit logs are difficult to ignite because they don’t have the sharp edges where the flames first catch. Logs as small as 3” (75 mm) should be split to encourage drying.





Wood should be split to a range of sizes, from about 3” to 6” (75 mm to 150 mm) in cross section. Having a range of sizes makes starting and rekindling fires much easier. Often, the firewood purchased from commercial suppliers is not split finely enough for convenient stoking. It is sometimes advisable to resplit the wood before stacking to dry.

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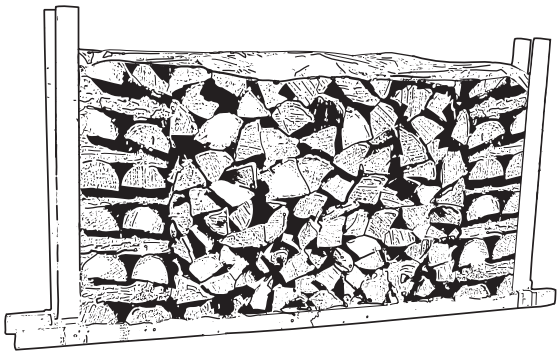
3.2.5 How to Dry Firewood

Firewood that is not dry enough to burn is the cause of most complaints about wood stoves. The complaints usually involve a lack of heat and dirty door glass.



Here are some things to consider in estimating drying time:

- firewood takes a long time to dry
- firewood bought from a dealer is rarely dry enough to burn, so it is advisable to buy the wood in spring and dry it yourself
- drying happens faster in dry weather than in damp, maritime climates
- drying happens faster in warm summer weather than in winter weather
- small pieces dry more quickly than large pieces
- split pieces dry more quickly than unsplit rounds
- softwoods take less time to dry than hardwoods
- softwoods like pine, spruce, and poplar/aspen can be dry enough to burn after being stacked in the open for only the summer months
- hardwoods like oak, maple and ash can take one, or even two years to dry fully, especially if the pieces are big
- firewood dries more quickly when stacked in the open where it is exposed to sun and wind; it takes much longer to dry when stacked in a wood shed
- firewood that is ready to burn has a moisture content between15 and 20% by weight and will allow your stove to produce its highest possible efficiency

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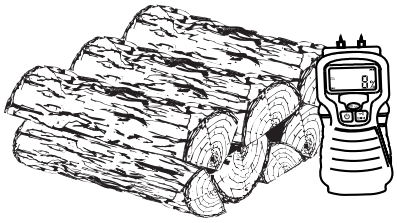
3.2.6 Judging Firewood Moisture Content

You can find out if some firewood is dry enough to burn by using these guidelines:

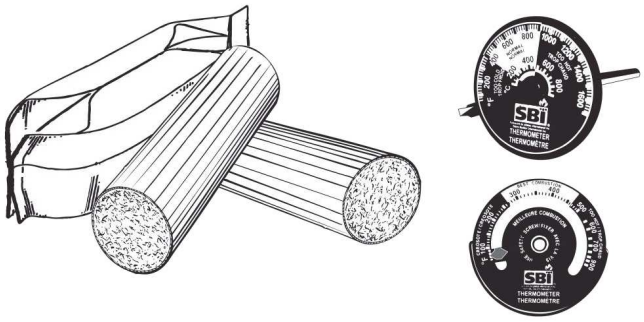
- cracks form at the ends of logs as they dry
- as it dries in the sun, the wood turns from white or cream coloured to grey or yellow,
- bang two pieces of wood together; seasoned wood sounds hollow and wet wood sounds dull,
- dry wood is much lighter in weight than wet wood,
- split a piece, and if the fresh face feels warm and dry it is dry enough to burn; if it feels damp, it is too wet,
- burn a piece; wet wood hisses and sizzles in the fire and dry wood does not.



You could buy a wood moisture meter to test your firewood.

3.3 Manufactured Logs

Do not burn manufactured logs made of wax impregnated sawdust or logs with any chemical additives. Manufactured logs made of 100% compressed sawdust can be burned, but use caution in the number of these logs burned at one time. Start with one manufactured log and see how the stove reacts. You can increase the number of logs burned at a time to making sure the temperature never rises higher than 475 °F (246 °C) on a magnetic thermometer for installation on single wall stove pipes or 900 °F (482 °C) on a probe thermometer for installation on double wall stove pipe. The thermometer should be placed about 18” (457 mm) above the stove. Higher temperatures can lead to overheat and damage your stove.



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4 Operating Your Stove

4.1 Your First Fires

Two things will happen as you burn your first few fires; the paint cures and the internal components of the stove are conditioned.

As the paint cures, some of the chemicals vaporize. The vapors are not poisonous, but they do smell bad. Fresh paint fumes can also cause false alarms in smoke detectors. So, when you first light your stove, be prepared by opening doors and/or windows to ventilate the house. As you burn hotter and hotter fires, more of the painted surfaces reach the curing temperature of the paint. The smell of curing paint does not disappear until you have burned one or two very hot fires.

Burn one or two small fires to begin the curing and conditioning process. Then build bigger and hotter fires until there is no longer any paint smell from the stove. Once the paint smell disappears, your stove is ready for serious heating.

4.2 Lighting Fires

Each person who heats with wood develops their own favorite way to light fires. Whatever method you choose, your goal should be to get a hot fire burning quickly. A fire that starts fast produces less smoke and deposits less creosote in the chimney. Here are three popular and effective ways to start wood fires.

4.2.1 BEST PRACTICE : The Top Down Fire

The top down fire starting method solves two problems with the conventional method: first, it does not collapse and smother itself as it burns; and second, it's cleaner. The top down method only works properly if the wood is well-seasoned.

Start by crisscrossing six medium-sized (2-3 inches) pieces of dry firewood in the firebox. Crisscross around 10 finely split and dry kindling (0.5 to 1 in) leaving air space between the pieces. Then put at least 5 news paper sheets to the top of the pieces. The best way to have your ignition clean and environmentally friendly is to roll the news papers to make a long cylinder, then to make 2 knots with it. The goal is to have the news papers as compact as possible to make it burn slowly. After the ignition of the news paper, let the door open of 1 inch for 5-10 minutes. The air control should be open. Let burn until you have a good coal bed. You are now ready for the main load.

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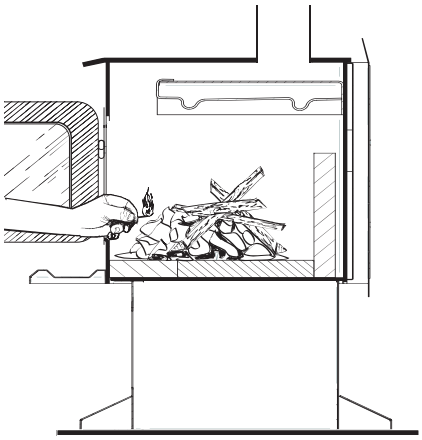
4.2.2 Conventional Fire Starting

The conventional way to build a wood fire is to bunch up 5 to 10 sheets of plain newspaper and place them in the firebox. Next, place 10 or so pieces of fine kindling on the newspaper. This kindling should be very thin; less than 1" (25 mm). Next, place some larger kindling pieces on the fine kindling. Open the air control fully and light the newspaper. If you have a tall, straight venting system you should be able to close the door immediately and the fire will ignite. If your venting system has elbows or an outside chimney, you may need to leave the door closed but unlatched for a few minutes as the newspaper ignites and heat in the chimney produces some draft. Once the fire has ignited, close the door and leave the air control fully open.



A conventional kindling fire with paper under finely split wood.

DO NOT LEAVE THE STOVE UNATTENDED WHEN THE DOOR IS SLIGHTLY OPENED DURING IGNITION. ALWAYS CLOSE THE DOOR AFTER IGNITION.

After the kindling fire has mostly burned, you can add standard firewood pieces until you have a fire of the right size for the conditions.

4.2.3 Two Parallel Logs

Place two spit logs in the firebox. Place a few sheets of twisted newspaper between the logs. Now place some fine kindling across the two logs and some larger kindling across those, log cabin style. Light the newspaper.

4.2.4 Using Fire Starters

Many people like to use commercial fire starters instead of newspaper. Some of these starters are made of sawdust and wax and others are specialized flammable solid chemicals. Follow the package directions for use.

Gel starter may be used but only if there are no hot embers present. Use only in a cold firebox to start a fire.

DO NOT USE FLAMMABLE LIQUIDS SUCH AS GASOLINE, NAPHTHA, FUEL OIL, MOTOR OIL, OR AEROSOLS TO START OR REKINDLE THE FIRE.

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4.3 Maintaining Wood Fires

4.3.1 General Advice

Wood heating with a space heater is very different than other forms of heating. There will be variations in the temperature in different parts of the house and there will be variations in temperature throughout the day and night. This is normal, and for experienced wood burners these are advantages of zone heating with wood.

Do not expect steady heat output from your stove. It is normal for its surface temperature to rise after a new load of wood is ignited and for its temperature to gradually decline as the fire progresses. This rising and falling of temperature can be matched to your household routines. For example, the area temperature can be cooler when you are active, such as when doing housework or cooking, and it can be warmer when you are inactive, such as when reading or watching television.

Wood burns best in cycles. A cycle starts when a new load of wood is ignited by hot coals and ends when that load has been consumed down to a bed of charcoal about the same size as it was when the wood was loaded. Do not attempt to produce a steady heat output by placing a single log on the fire at regular intervals. Always place at least three, and preferably more, pieces on the fire at a time so that the heat radiated from one piece helps to ignite the pieces next to it. Each load of wood should provide several hours of heating. The size of each load can be matched to the amount of heat needed.

When you burn in cycles, you rarely need to open the stove's loading door while the wood is flaming. This is an advantage because there is more chance that smoke will leak from the stove when the door is opened as a full fire is burning. This is especially true if the chimney connector has 90° elbows and if the chimney runs up the outside wall of the house.

IF YOU MUST OPEN THE DOOR WHILE THE FUEL IS FLAMING, OPEN THE AIR CONTROL FULLY FOR A FEW MINUTES, THEN UNLATCH AND OPEN THE DOOR SLOWLY.

4.3.2 Ash Removal

Ash should be removed from the firebox every two or three days of full time heating. Do not let the ash build up in the firebox because it will interfere with proper fire management.

The best time to remove ash is after an overnight fire when the stove is relatively cool, but there is still some chimney draft to draw the ash dust into the stove and prevent it from coming into the room.

After ashes have been removed from the stove and placed in a tightly covered metal container, they should be taken outside immediately. The closed container of ashes should be placed on a non-combustible floor or on the ground well away from all combustible materials pending final disposal. Ashes normally contain some live charcoal that can stay hot for several days. If the ashes are disposed of by burial in soil or otherwise locally

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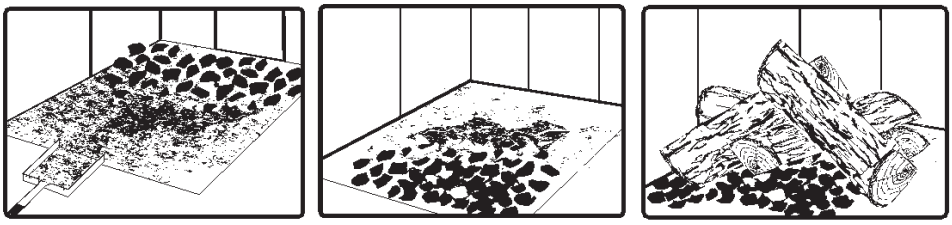
dispersed, they should be retained in the closed container until all cinders have thoroughly cooled. Other waste shall not be placed in this container.

NEVER STORE ASHES INDOORS OR IN A NON-METALIC CONTAINER OR ON A WOODEN DECK.

4.3.3 Raking Charcoal

Rekindle the fire when you notice that the room temperature has fallen. You will find most of the remaining charcoal at the back of the firebox, furthest from the door. Rake these coals towards the door before loading. There are two reasons for this raking of the coals. First, it concentrates them near where most of the combustion air enters the firebox and where they can ignite the new load quickly, and second, the charcoal will not be smothered by the new load of wood. If you were to simply spread the charcoal out, the new load will smoulder for a long time before igniting.



Remove ash first, and then rake charcoal towards the front of the firebox before loading so that it will ignite the new load.

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4.3.4 Firing Each New Load Hot

Place the new load of wood on and behind the charcoal, and not too close to the glass. Close the door and open the air control fully. Leave the air control fully open until the firebox is full of flames, the wood has charred to black and its edges are glowing red. Firing each load of wood hot accomplishes a few things:

- drives the surface moisture from the wood,
- creates a layer of char on the wood, which slows down its release of smoke,
- heats the firebox components so they reflect heat back to the fire, and
- heats the chimney so it can produce strong, steady draft for the rest of the cycle.

Although it is important to fire each new load hot to prepare for a clean burn, do not allow the fire to burn at full intensity for more than a few minutes.

DO NOT LEAVE THE STOVE UNATTENDED WHILE A NEW LOAD IS BEING FIRED HOT.

When you burn a new load of wood hot to heat up the wood, the stove and the chimney, the result will be a surge of heat from the stove. This heat surge is welcome when the room temperature is a little lower than desirable, but not welcome if the space is already warm. Therefore, allow each load of wood to burn down so that the space begins to cool off a little before loading. Letting the space cool before loading is one of the secrets to clean burning and effective zone heating.

Never overfire your stove. Overfiring can lead to overheating of combustible materials nearby, damage to the stove, and in extreme cases, cause a fire.

Overfiring is caused by too much air flowing through the stove too quickly, bad gaskets or bad operation of the air control.

Overfiring can be seen by excessive fuel consumption, and may cause parts of the stove or chimney connector to glow red. If you notice signs of overfiring, reduce the air supply to the fire, and make sure all gaskets are in good conditions.

4.3.5 Turning Down the Air Supply

Once the firewood, firebox and chimney are hot, you can begin to reduce the air supply for a steady burn.

As you reduce the air supply to the fire, two important things happen. First, the firing rate slows down to spread the heat energy in the fuel over a longer period of time. Second, the flow rate of exhaust through the stove and flue pipe slows down, which gives more time for the transfer of heat from the exhaust. You will notice that as you reduce the air setting, the flames slow down. This is your indication that the stove is burning at its peak efficiency.

If the flames get small and almost disappear when you turn down the air, you have turned down the air too early, or your firewood is wetter than it should be. With good fuel and

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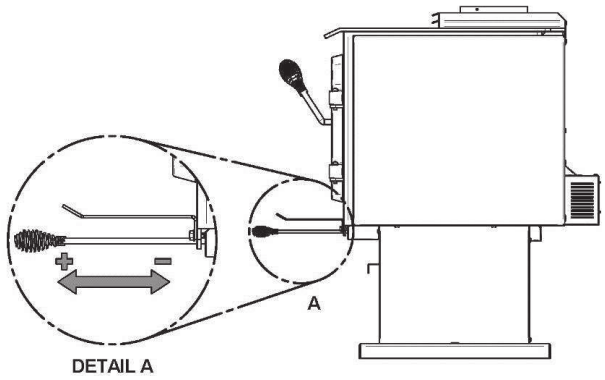
correct air control use, the flames should slow down, but should stay large and steady, even as the air supply is reduced.

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.



4.3.6 Building Different Fires for Different Needs

Using the air control is not the only way to match the stove's heat output to the heat demand. Your house will need far less heat in October than in January to be kept at a comfortable temperature. If you fill the firebox full in fall weather, you will either overheat the space or turn the stove down so much that the fire will be smoky and inefficient. Here are some suggestions for building fires to match different heat demand.

4.3.6.1 Small Fires to Take the Chill Off the House

To build a small fire that will produce a low heat output, use small pieces of firewood and load them crisscross in the firebox. The pieces should be only 3" to 4" in diameter. After raking the coals, you can lay two pieces parallel to each other corner to corner in the firebox and lay two more across them in the other direction. Open the air control fully and only reduce the air after the wood is fully flaming. This kind of fire is good for mild weather when you are around to tend the stove and should provide enough heat for four hours or more. Small fires like this are a good time to use softer wood species so there will be less chance of overheating the house.

4.3.6.2 Long Lasting Low Output Fires

Sometimes you will want to build a fire to last up to eight hours, but don't need intense heat. In this case use soft wood species and place the logs compactly in the firebox so the pieces are packed tightly together. You will need to fire the load hot for long enough to fully char the log surfaces before you can turn the air down. Make sure the fire is flaming brightly before leaving the fire to burn.

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4.3.6.3 High Output Fires for Cold Weather

When the heat demand is high during cold weather, you'll need a fire that burns steadily and brightly. This is the time to use your biggest pieces of hardwood fuel if you have it. Put the biggest pieces at the back of the firebox and place the rest of the pieces compactly. A densely built fire like this will produce the longest burn your stove is capable of.

You will need to be cautious when building fires like this because if the air is turned down too much, the fire could smoulder. Make sure the wood is flaming brightly before leaving the fire to burn.

4.3.6.4 Maximum Burn Cycle Times

The burn cycle time is the period between loading wood on a coal bed and the consumption of that wood back to a coal bed of the same size. The flaming phase of the fire lasts for roughly the first half of the burn cycle and the second half is the coal bed phase during which there is little or no flame. The length of burn you can expect from your stove, including both the flaming and coal bed phases, will be affected by a number of things, such as:

- firebox size,
- the amount of wood loaded,
- the species of wood you burn,
- the wood moisture content,
- the size of the space to be heated,
- the climate zone you live in and
- the time of year.

The table below provides a very general indication of the maximum burn cycle times you are likely to experience, based on firebox volume.

FIREBOX VOLUME	MAXIMUM BURN TIME
<1.5 cubic feet	3 to 5 hours
1.5 c.f. to 2.0 c.f	5 to 6 hours
2.0 c.f. to 2.5 c.f.	6 to 8 hours
2.5 c.f. to 3.0 c.f.	8 to 9 hours
>3.0 c.f.	9 to 10 hours

Long burn times are not necessarily an indication of efficient stove operation. When you are home during the day and able to tend the fire, it is preferable to build a smaller fire that might provide three or four hours of heating than to fully load the firebox for a much longer burn. Shorter burn cycles make it easier to match the heat output of the stove to the heat demand of the space.

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4.3.6.5 North-South Fires Versus East-West Fires

In fireboxes that are roughly square, wood can be loaded so that looking through the glass door you see the ends of the logs (north-south) or the sides of the logs (east-west).

East-west loads that are built compactly break down slowly when heated, but the amount of wood you can load is limited because if you put in too many pieces, one may fall against the glass. East-west loads are excellent for long, low output fires for relatively mild weather.

North-south loads break down more quickly, but much more wood can be loaded at a time. This makes north-south loading good for high output, long lasting fires for cold weather.

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5 Maintaining Your Wood Heating System

5.1 Stove Maintenance

Your new stove will give many years of reliable service if you use and maintain it correctly. Some of the internal components of the firebox, such as firebricks, baffles and air tubes, will wear over time under intense heat. You should always replace defective parts with original parts (see **Appendix 6: *Exploded Diagram and Parts List***). For firing each load hot to begin a cycle as described above will not cause premature deterioration of the stove. However, letting the stove run with the air control fully open for entire cycles can cause damage over time. The hotter you run the stove throughout burn cycles, the more quickly its components will deteriorate. For that reason, **never leave the stove unattended while a new load is being fired hot**.

5.1.1 Cleaning Door Glass

Under normal conditions, your door glass should stay relatively clear. If your firewood is dry enough and you follow the operating instructions in this manual, a whitish, dusty deposit will form on the inside of the glass after a week or so of use. This is normal and can be easily removed when the stove is cool by wiping with a damp cloth or paper towel and then drying. **Never try to clean the glass when the stove is hot.**

In spring and fall when the stove is run at lower temperatures, you may see some light brown stains forming, especially at the lower corners of the glass. This indicates that the fire has been smoky and some of the smoke has condensed on the glass. When the weather is mild, you may find that letting the fire go out is better than trying to maintain a continuous fire. Use the technique described above for building a fire to take the chill off the house.

If you do get brown stains on the glass you can remove them with special cleaners for wood stove glass doors. **Do not use abrasives to clean your stove's door glass.**

The deposits that form on the glass are the best indication of the quality of your fuel and how well you are doing in operating the stove. Your goal should be clear glass with no brown stains. If you continue to see brown stains on the glass, something about your fuel and operating procedure needs to be changed. Stains on the glass indicate incomplete combustion of the wood, which also means more smoke emissions and faster formation of creosote in the chimney.

If you see brown streaks coming from the edge of the glass, it is time to replace the gasket around the glass. Visit your stove retailer to get the self-adhesive glass gasket and follow the instructions below for installation.

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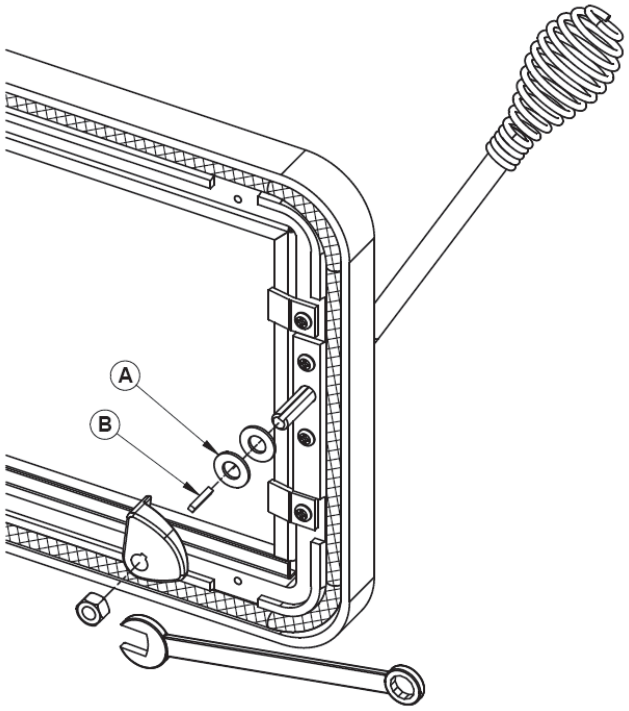
5.1.2 Door adjustment

1. Unscrew the nut.
2. Remove the door latch and the key path pin (B).
3. Remove or add one washer (A) as needed. Keep the removed washer for future adjustment.
4. Re-install the key path pin in the key-way and slide the latch along it.
5. Secure with the nut.



5.1.3 Replacing the Door Gasket

It is important to maintain the gasket in good condition. After a year or more of use, the door gasket will compress and become hard, which may allow air to leak past it. You can test the condition of the door gasket by closing and latching the door on a strip of paper. Test all around the door. If the paper slips out easily anywhere, it is time to replace the gasket.

Use the correct replacement gasket that you can purchase from your retailer. The diameter and density of the gasket is important to getting a good seal.

Place the door face-down on something soft like a cushion of rags or piece of carpet. Remove the old gasket from the door by pulling and prying it out with an old screw driver.

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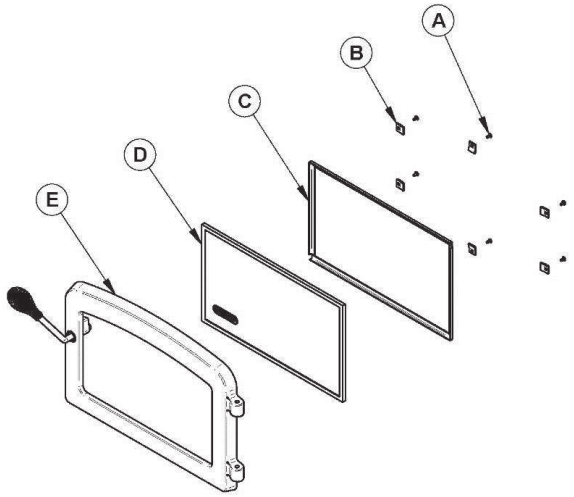
Then use the screwdriver to scrape the old gasket adhesive from the door. Now run a 1/4" (6 mm) bead of high temperature silicone in the door gasket groove. Starting from the middle of the hinge side, press the gasket into the groove. Do not stretch the gasket as you place it. Leave the gasket about 1/2" long when you cut it and press the end into the groove. Tuck any loose fibres under the gasket and into the silicone. Close the door and do not use the stove for 24 hours.

5.1.4 Replacing the Glass Gasket and/or the Glass

It is a good idea to replace the glass gasket when the door gasket is replaced. The gasket is flat, adhesive-backed, woven fibreglass. Remove the glass retaining screws (A), the clips (B) and the metal frame (C) that holds the glass to the door frame (E). Lift out the glass (D) and pull off the old gasket. This is a good time to clean the glass thoroughly.



The gasket must be centred on the edge of the glass. To do this easily, peel back a section of the paper covering the adhesive and place the gasket on a table with the adhesive side up. Stick the end of the gasket to the middle of one edge, then press the edge of the glass down onto the gasket, taking care that it is perfectly centred on the gasket. Peel off more of the backing and rotate the glass and press the next section onto the gasket. Do not stretch the gasket as you place it. Continue until you get to the start and trim the gasket to length. Now pinch the gasket to the glass in a U shape, all around the glass. Reinstall the glass, being careful to centre the glass carefully in the door. Do not over-tighten the screws. Note that the two main causes of broken door glass are uneven placement in the door and over-tightening of retaining screws.

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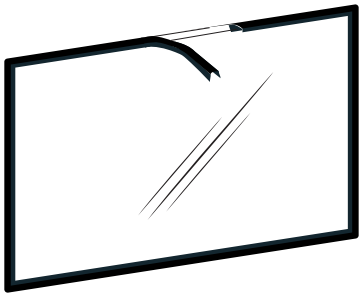

Do not abuse the glass door by striking or slamming shut. Do not use the stove if the glass is broken. To change the glass, perform the same operation described above.

5.1.5 Cleaning and Painting the Stove

Do not attempt to clean or paint the stove when the unit is hot. Painted surfaces can be wiped down with a damp cloth. Plated surfaces may be scratched by abrasive cleaners. To maintain the finish at its original brilliance, use only a damp soft cloth to clean plated surfaces.

If the paint becomes scratched or damaged, you can give your wood stove a brand new look by repainting it with heat-resistant paint. Before painting, roughen the surface with fine sand paper, wipe it down to remove dust, and apply two thin coats of paint. For best results, use the same paint that was originally used on the stove, which is available in spray cans. See your dealer for details.

5.2 Chimney and Chimney Connector Maintenance

5.2.1 Why Chimney Cleaning is Necessary

Wood smoke can condense inside the chimney connector and chimney, forming a combustible deposit called creosote. If creosote is allowed to build up in the venting system it can ignite when a hot fire is burned in the stove and a very hot fire can progress to the top of the chimney. Severe chimney fires can damage even the best chimneys. Smouldering, smoky fires can quickly cause a thick layer of creosote to form. When you avoid smouldering so the exhaust from the chimney is mostly clear, creosote builds up more slowly. Your new stove has the right characteristics to help you to burn clean fires with little or no smoke, resulting in less creosote in the chimney.

5.2.2 How Often Should You Clean the Chimney?

It is not possible to predict how much or how quickly creosote will form in your chimney. It is important, therefore, to check the build-up in your chimney monthly when getting used to the new stove until you determine the rate of creosote formation. Even if creosote forms slowly in your system, the chimney should be cleaned and inspected at least once each year.

Contact your local municipal or provincial fire authority for information on how to handle a chimney fire. Have a clearly understood plan to handle a chimney fire.

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5.2.3 Cleaning the Chimney

Chimney cleaning can be a difficult and dangerous job. If you don't have experience cleaning chimneys, you might want to hire a professional chimney sweep to clean and inspect the system for the first time. After having seen the cleaning process, you can decide if it is a job you would like to take on.

The most common equipment used are fibreglass rods with threaded fittings and stiff plastic brushes. The brush is forced up and down inside the chimney flue to scrub off the creosote.

The chimney connector assembly should always be cleaned at the same time the chimney is cleaned.

CAUTION: *Operation of your stove without the baffle may cause unsafe and hazardous temperature conditions and will void the warranty*. **NOTE:** Before installing the firebrick, check to ensure that none are broken or damaged in any way. If so, have the damaged ones replaced. Check the firebrick for damage at least annually and replace any broken or damaged ones with new ones. Inspection and cleaning of the chimney is facilitated by the removable baffle.

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PART B - INSTALLATION

6 Safety Information

6.1 Summary of Installation Cautions and Warnings

- **THE INFORMATION GIVEN ON THE CERTIFICATION LABEL AFFIXED TO THE APPLIANCE ALWAYS OVERRIDES THE INFORMATION PUBLISHED, IN ANY OTHER MEDIA (OWNER'S MANUAL, CATALOGUES, FLYERS, MAGAZINES AND/OR WEB SITES).**
- **MIXING OF APPLIANCE COMPONENTS FROM DIFFERENT SOURCES OR MODIFYING COMPONENTS MAY RESULT IN HAZARDOUS CONDTIONS. WHERE ANY SUCH CHANGES ARE PLANNED, STOVE BUILDER INTERNATIONAL INC. SHOULD BE CONTACTED IN ADVANCE.**
- **ANY MODIFICATION OF THE APPLIANCE THAT HAS NOT BEEN APPROVED IN WRITING BY THE TESTING AUTHORITY VIOLATES CSA B365 (CANADA), AND ANSI NFPA 211 (USA).**
- **CONNECT THIS STOVE ONLY TO A LISTED FACTORY-BUILT CHIMNEY FOR USE WITH SOLID FUEL OR TO A LINED MASONRY CHIMNEY CONFORMING TO NATIONAL AND LOCAL BUILDING CODES.**
- **IF REQUIRED, A SUPPLY OF COMBUSTION AIR SHALL BE PROVIDED TO THE ROOM OR SPACE.**
- **DO NOT CONNECT TO OR USE IN CONJUNCTION WITH ANY AIR DISTRIBUTION DUCTWORK UNLESS SPECIFICALLY APPROVED FOR SUCH INSTALLATION.**
- **DO NOT CONNECT THIS UNIT TO A CHIMNEY FLUE SERVING ANOTHER APPLIANCE.**
- **MAY BE INSTALLED IN A MOBILE HOME**
- **THIS MOBILE HOME APPROVED STOVE REQUIRES INSTALLATION OF A FRESH AIR KIT, SOLD SEPARATELY.**

WARNING: DO NOT INSTALL IN SLEEPING ROOM.

WARNING: THE STOVE MUST BE ATTACHED TO THE STRUCTURE OF THE MOBILE HOME.

CAUTION: THE STRUCTURAL INTEGRITY OF THE MOBILE HOME FLOOR, WALL, AND CEILING/ROOF MUST BE MAINTAINED.

- **INSTALL AT LEAST ONE SMOKE DETECTOR ON EACH FLOOR OF YOUR HOME. DETECTORS SHOULD BE LOCATED AWAY FROM THE HEATING APPLIANCE AND CLOSE TO SLEEPING AREAS. FOLLOW THE SMOKE DETECTOR MANUFACTURER'S INSTALLATION INSTRUCTIONS.**

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6.2 Regulations Covering Stove Installation

When installed and operated as described in these instructions, the Blackcomb/Columbia wood stove is suitable for use as a freestanding heater in residential installations. The Blackcomb/Columbia wood stove is not intended for installation in a sleeping room of a mobile home.

In Canada, the CSA B365 Installation Code for Solid Fuel Burning Appliances and Equipment and the CSA C22.1 Canadian National Electrical Code are to be followed in the absence of local code requirements. In the USA, the ANSI NFPA 211 Standard for Chimneys, Fireplaces, Vents and Solid Fuel-Burning Appliances and the ANSI NFPA 70 National Electrical Code are to be followed in the absence of local code requirements.

This stove must be connected to a chimney complying with the requirements for Type HT chimneys in the Standard for Factory-Built Chimneys for Residential Type and Building Heating Appliances, UL 103 and ULC S629 or to a code-approved masonry chimney with a flue liner.

6.3 Location of the certification label

Since the information given on the certification label affixed to the appliance always overrides the information published, in any other media (owner's manual, catalogues, flyers, magazines and/or web sites) it is important to refer to it in order to have a safe and compliant installation. In addition, you will find information about your stove (model, serial number, etc.). You can find the certification label on the back of the stove.

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6.4 Clearances to Walls and Ceiling

The clearances to combustible walls may be slightly different in Canada and the U.S.A. and may also differ depending on whether you use single or double wall flue pipe. Please be sure to choose the correct clearance for your location and type of flue pipe. See figure ***Clearances to combustible materials and floor protection*** to match each letter to a clearance.

	APPLIANCE CLEARANCES (INSTALLATION WITH SINGLE WALL PIPE CONNECTOR)	
	CANADA	USA
A	15" (381 mm)	15" (381 mm)
B	17" (432 mm)	17" (432 mm)
C	10" (254 mm)	10" (254 mm)
K	48" (1220 mm)	48" (1220 mm)
L	84" (213 cm)	84" (213 cm)

	APPLIANCE CLEARANCES (INSTALLATION WITH DOUBLE WALL PIPE CONNECTOR)	
	CANADA	USA
A	6" (152 mm)	6" (152 mm)
B	17" (432 mm)	17" (432 mm)
C	5" (127 mm)	5" (127 mm)
K	48" (1220 mm)	48" (1220 mm)
L	84" (213 cm)	84" (213 cm)

If the above clearances are met, then the distances measured from the flue outlet will be:

	DISTANCES* FROM PIPE CONNECTOR TO THE COMBUSTIBLE MATERIALS	
	CANADA	USA
D	18¾" (476 mm)	18¾" (476 mm)
E	27" (686 mm)	27" (686 mm)
F	21¼" (540 mm)	21¼" (540 mm)

	DISTANCES* FROM PIPE CONNECTOR TO THE COMBUSTIBLE MATERIALS	
	CANADA	USA
D	9¾" (248 mm)	9¾" (248 mm)
E	27" (686 mm)	27" (686 mm)
F	16¼" (413 mm)	16¼" (413 mm)

***The pipe distances listed in this table refer to the distances obtained when the stove is installed in accordance with the appliance clearances above mentioned. However, you can install the stove at reduced clearances; follow the instructions in Section 7.4: *Reducing Wall and Ceiling Clearances Safely*. Where they are followed, the new distance of the pipe to combustible materials must be respected in the appropriate certification of the pipe.**

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Clearances with ceiling (L) lowered to 76" (193 cm)

	APPLIANCE CLEARANCES (INSTALLATION WITH SINGLE WALL PIPE CONNECTOR)	
	CANADA	USA
A	15" (381 mm)	15" (381 mm)
B	17" (432 mm)	17" (432 mm)
C	14" (356 mm)	14" (356 mm)
K	48" (1220 mm)	48" (1220 mm)
L	76" (193 cm)	76" (193 cm)

	APPLIANCE CLEARANCES (INSTALLATION WITH DOUBLE WALL PIPE CONNECTOR)	
	CANADA	USA
A	8" (203 mm)	8" (203 mm)
B	17" (432 mm)	17" (432 mm)
C	9" (229 mm)	9" (229 mm)
K	48" (1220 mm)	48" (1220 mm)
L	76" (193 cm)	76" (193 cm)

If the above clearances are met, then the distances measured from the flue outlet will be:

	DISTANCES* FROM PIPE CONNECTOR TO THE COMBUSTIBLE MATERIALS	
	CANADA	USA
D	18¾" (476 mm)	18¾" (476 mm)
E	27" (686 mm)	27" (686 mm)
F	25¼" (641 mm)	25¼" (641 mm)

	DISTANCES* FROM PIPE CONNECTOR TO THE COMBUSTIBLE MATERIALS	
	CANADA	USA
D	11¾" (298 mm)	11¾" (298 mm)
E	27" (686 mm)	27" (686 mm)
F	20¼" (514 mm)	20¼" (514 mm)

***The pipe distances listed in this table refer to the distances obtained when the stove is installed in accordance with the appliance clearances above mentioned. However, you can install the stove at reduced clearances; follow the instructions in Section 7.4: *Reducing Wall and Ceiling Clearances Safely*. Where they are followed, the new distance of the pipe to combustible materials must be respected in the appropriate certification of the pipe.**

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Clearances for mobile homes

	MOBILE HOME APPLIANCE CLEARANCES (INSTALLATION WITH DOUBLE WALL PIPE CONNECTOR)	
	CANADA	USA
A	14" (356 mm)	14" (356 mm)
B	19" (483 mm)	19" (483 mm)
C	13" (330 mm)	13" (330 mm)
K	48" (1220 mm)	48" (1220 mm)
L	84" (213 cm)	84" (213 cm)

If the above clearances are met, then the distances measured from the flue outlet will be:

	DISTANCES* FROM PIPE CONNECTOR TO THE COMBUSTIBLE MATERIALS	
	CANADA	USA
D	17¾" (451 mm)	17¾" (451 mm)
E	29" (737 mm)	29" (737 mm)
F	24¼" (616 mm)	24¼" (616 mm)

***The pipe distances listed in this table refer to the distances obtained when the stove is installed in accordance with the appliance clearances above mentioned. However, you can install the stove at reduced clearances; follow the instructions in Section 7.4: *Reducing Wall and Ceiling Clearances Safely*. Where they are followed, the new distance of the pipe to combustible materials must be respected in the appropriate certification of the pipe.**

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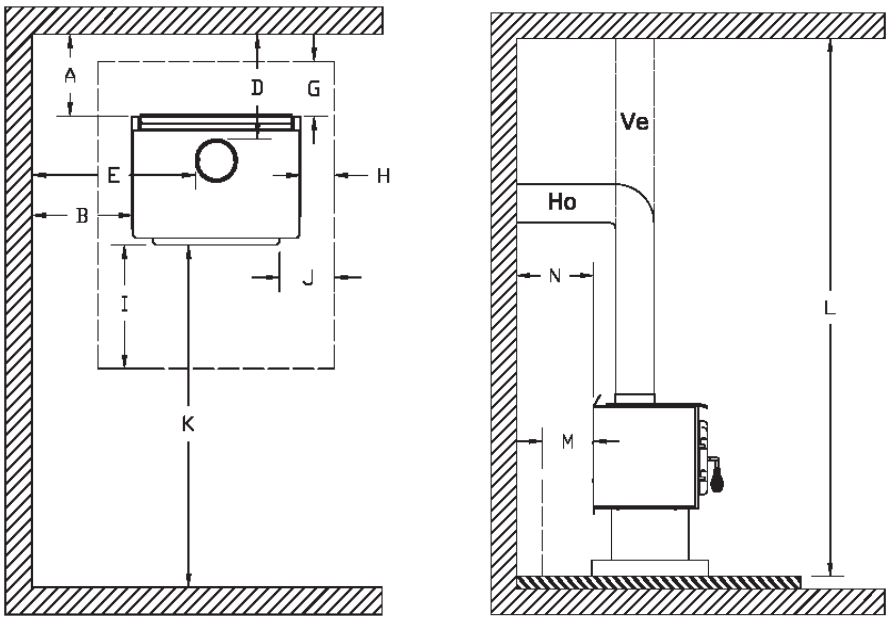

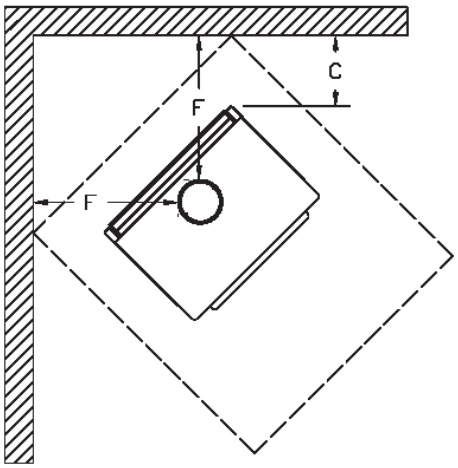

Clearances to combustible materials and floor protection

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6.5 Floor protector

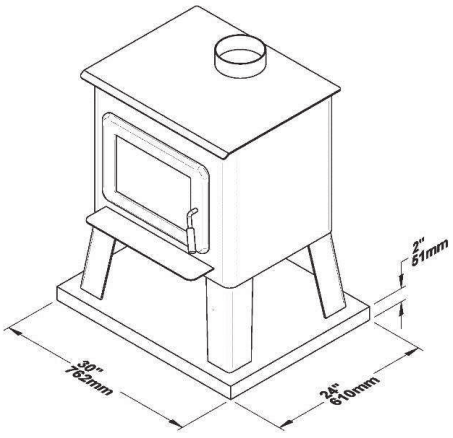
Your stove is designed to keep the floor from overheating. It should be placed on a non combustible surface to protect the floor of hot embers that could fall from the stove during loading and maintenance. As shown in the table below and by the dotted area in the figure ***Clearances to combustibles and floor protection***, there are differences between the floor protections in Canada and in the United States.

	FLOOR PROTECTOR*	
	CANADA	**USA**
G	8" (203 mm) – Note 1	N/A (Canada only)
H	8" (203 mm)	N/A (Canada only)
I	18" (457 mm) From door opening	16" (406 mm) From door opening
J	N/A (USA only)	8" (203 mm)
M	8" (203 mm)	N/A (Canada only)
N	N/A (USA only)	Note 2

**Steel with a minimum thickness of 0.015" (0.38 mm) or ceramic tiles sealed together with grout. No protection is required if the unit is installed on a non-combustible floor (ex: concrete).*

Note 1: The floor protection at the back of the stove is limited to the stove's required clearance if such clearance is smaller than 8 inches (203 mm).

Note 2: Only required under the horizontal section of the connector. Must exceed each side of the connector by at least 2 inches (51 mm).



Important Note: Addition required to the floor protection when the stove is installed in a mobile home and assembled on legs version only:

In addition to meeting the minimum size of the floor protection, the stove must be placed on a podium having a maximum dimension of 30" (762 mm) x 24" (610 mm) and a minimum height of 2" (51 mm). This podium can be constructed of combustible materials as long as it is covered of non-combustible materials. See figure beside.

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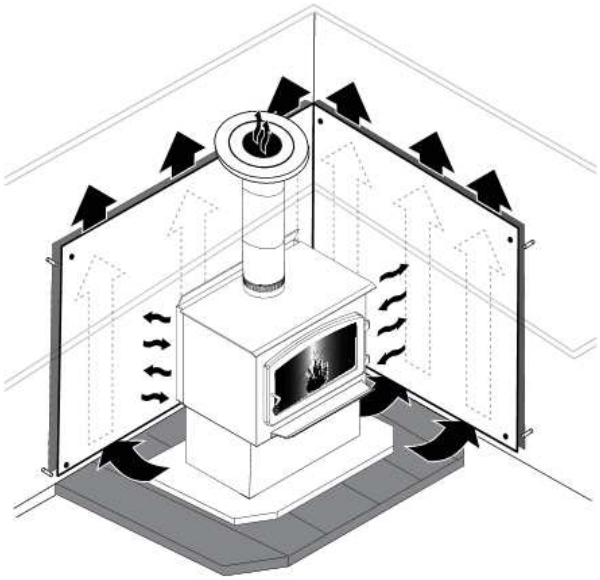
6.6 Reducing Wall and Ceiling Clearances Safely

It is often desirable to reduce the minimum installation clearances by placing the stove closer to walls so the installation takes up less floor space. You can safely reduce the minimum clearances by permanently installing a shield between the stove and combustible material. The rules for safe shields can be complicated, so read them carefully and follow them exactly. Note that there may be minor regional differences in clearance reduction rules so be sure to check with your building or fire inspector before proceeding.



6.6.1 Shield Construction Rules

See figure ***Clearances for shield construction*** to match each letter to a clearance.

- Adhesives used in shield construction must not ignite or lose adhesive qualities at temperatures likely to be encountered.
- Mounting hardware which extends from the shield surface into combustibles may be used only at the edges of the shield.
- Mounting hardware must allow full vertical ventilation.

A Minimum clearance between the appliance top and an unshielded combustible ceiling: 1118 mm (44 in.).

B Shield extension above appliance: 500 mm (20 in.).

C Minimum space behind shield: 25 mm (1 in.). In Canada 21 mm (7/8 in).

D Clearance along the bottom of shield: minimum: 25 mm (1 in.) and maximum: 75 mm (3 in.).

E Minimum clearance along the top of shield at ceiling: 75 mm (3 in.).

F Mounting hardware must not be located closer than 200 mm (8 in.) from the vertical centre line of the appliance.

G Edge clearance for ceiling shields to side and back walls: 75 mm (3 in.).

H Shield extension beyond each side of appliance: 450 mm (18 in.).

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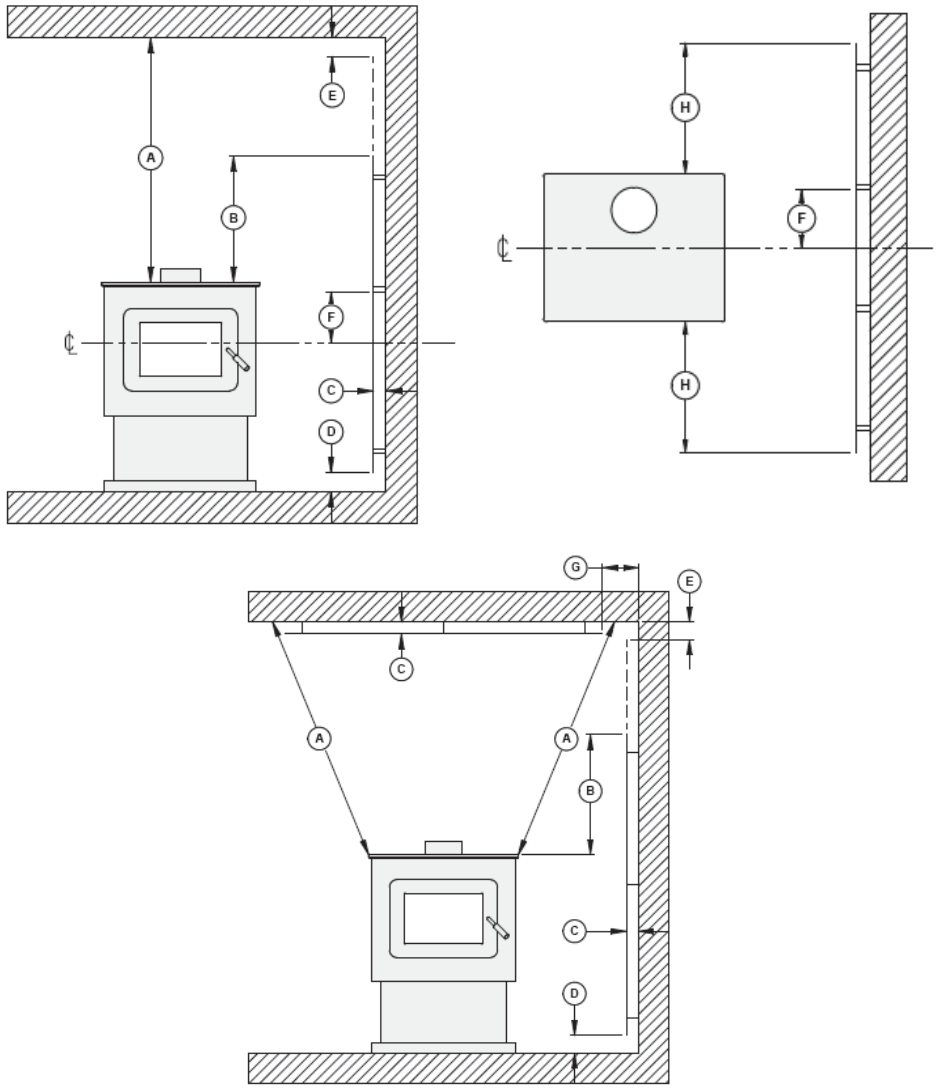

Clearances for shield construction

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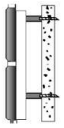
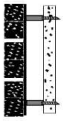
6.6.2 Table of Clearance Reduction Percentages

Type of shield	Clearances may be reduced by these percentages				
	Sides and rear %		Top % (ceiling)		
	Can/USA (%)	USA min.	Can/USA (%)	USA min.	
Sheet metal, a minimum of 24 gauge (0.61 mm) in thickness , spaced out at least 25 mm (1 in)* by non-combustible spacers	67	12 in	50	18 in	
Ceramic tiles, or equivalent non-combustible material, on non-combustible board spaced out at least 25 mm (1 in)* by non-combustible spacers	50	18 in	33	24 in	
Ceramic tiles, or equivalent non-combustible material, on non-combustible board, with a minimum of 24 gauge (0.61 mm) sheet metal backing spaced out at least 25 mm (1 in)* by non-combustible spacers	67	12 in	50	24 in	
Brick, spaced out at least 25 mm (1 in)* by non-combustible spacers	50	18 in	N/A	N/A	
Brick, with a minimum of 24 gauge (0.61 mm) sheet metal backing, spaced out at least 25 mm (1 in)* by non-combustible spacers	67	12 in	N/A	N/A	

** In Canada this space can be 21 mm (7/8 in).*

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7 The Venting System

7.1 General

The venting system, made up of the chimney and the connecting pipe between the stove and the chimney, acts as the engine that drives your wood heating system. Even the best stove will not function safely and efficiently as intended if it is not connected to a suitable chimney.

The heat in the flue gases that pass from the stove and chimney connector into the chimney is not waste heat. This heat is what the chimney uses to make the draft that draws in combustion air, keeps smoke inside the stove and safely vents exhaust to outside. You can think of heat in the flue gas as the fuel the chimney uses to make draft.

Overdraft can be caused by a very tall chimney even if it is the recommended size, and can cause overfiring of your stove. Signs of an overdraft include rapid fuel consumption, inability to slow the fire, and parts of the stove or chimney connector glowing red. It is important that you follow the chimney guidelines in this manual, including size, type, and height to avoid draft problems.

7.2 Suitable Chimneys

Your wood stove will provide optimum efficiency and performance when connected to a 6-inch diameter chimney flue system. The connection to a chimney having a diameter of at least 5 inches (Canada only) or no more than 7 inches is permitted, if it allows the proper venting of combustion gases and that such application is verified and authorized by a qualified installer. Otherwise, the diameter of the flue should be 6 inches.

To be suitable, a factory-built metal chimney must comply with UL 103 (U.S.A.) or ULC S629 (Canada).

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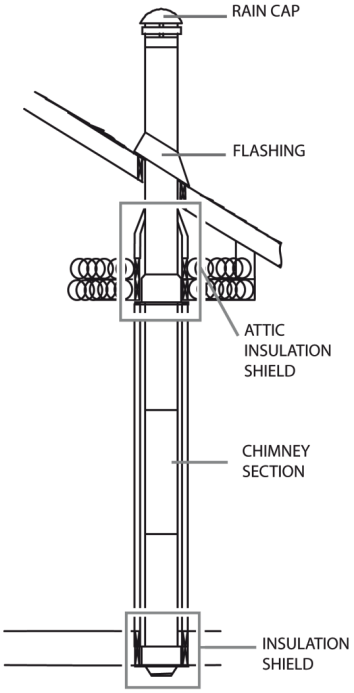
7.2.1 Factory-built Metal Chimneys

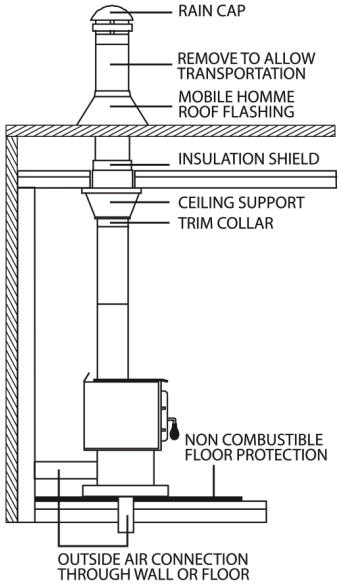
These are sometimes referred to as 'high temp' chimneys because they have the special characteristics to withstand the temperatures that can be created by wood burning stoves. Factory-built chimneys are tested as a system with all the necessary components for installation. The instructions provided with the chimney by its manufacturer are the only reliable source of installation guidelines. To be safe and effective, the chimney must be installed exactly in accordance with the manufacturer's instructions. **Use only components intended for the brand and model of chimney you are using. Never substitute parts from other chimney brands or fabricate your own components. The chimney must be a type suitable for solid fuel.**



7.2.2 Factory-built Metal Chimneys in mobile homes

For use in a mobile home, this stove is to be connected to a 6" in diameter double wall factory built chimney conforming to CAN/UCL-S629, Standards for 650°C Factory-built chimney. The total length of the flue system should be at least (12) feet including elbows, from the top of the stove.

To maintain an effective vapour barrier, insulation and waterproof at the chimney and outside flue pipe, install a mobile home roof flashing and seal it with silicone.



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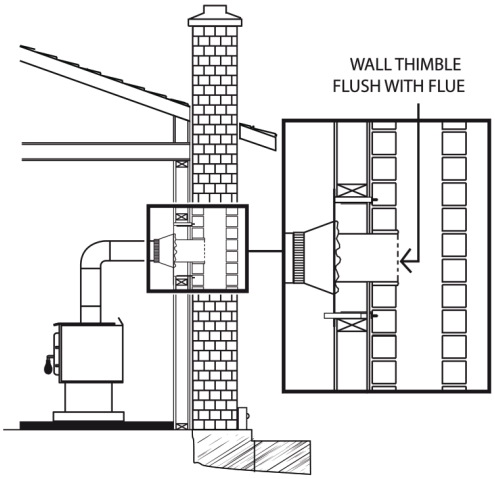
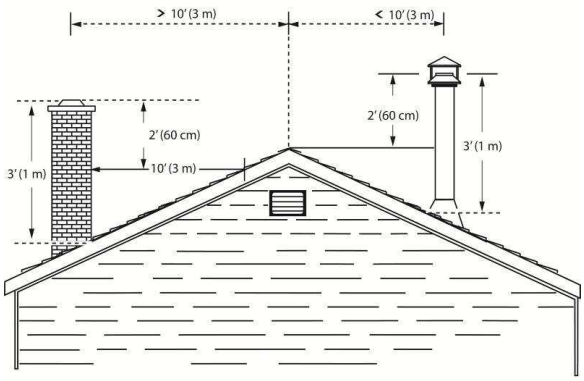
7.2.3 Masonry Chimneys

The stove may also be connected to a masonry chimney, provided the chimney complies with the construction rules found in the building code enforced locally. The chimney must have either a clay liner or a suitably listed stainless steel liner. If the masonry chimney has a square or rectangular liner that is larger in cross sectional area than a round 6" flue, it should be relined with a suitably listed 6" stainless steel liner. Do not downsize the flue to less than 6" unless the venting system is straight and exceeds 25 feet in height. When passing through a combustible wall, the use of an insulated listed thimble is required.



7.3 Minimum Chimney Height

The top of the chimney should be tall enough to be above the air turbulence caused when wind blows against the house and its roof. The chimney must extend at least 1 m (3 ft.) above the highest point of contact with the roof, and at least 60 cm (2 ft.) higher than any roof line or obstacle within a horizontal distance of 3 m (10 ft.).



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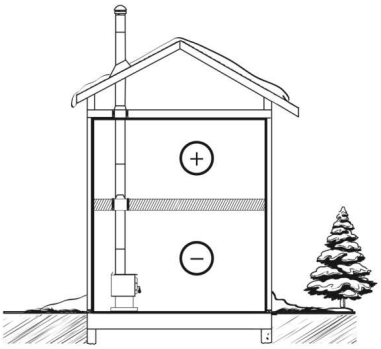
7.4 The Relationship Between the Chimney and the House

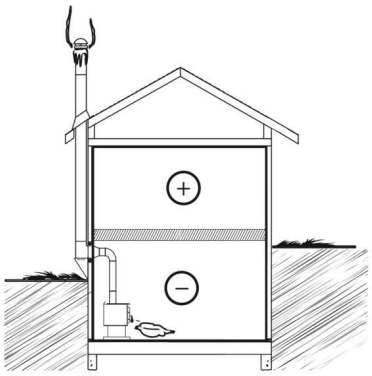
Because the venting system is the engine that drives the wood heating system, it must have the right characteristics. The signs of bad system design are cold backdrafting when there is no fire in the stove, slow kindling of new fires, and smoke roll-out when the door is opened for loading. There are two guidelines to follow. First, the chimney should be installed up through the heated space of the house, not out and up an outside wall. Second, the chimney should penetrate the top of the building at or near the highest heated space.

7.4.1 Why inside chimneys are preferred

Venting systems that rise straight up from the stove flue collar provide the best performance. Chimneys that rise inside the warm space of the house tend to provide a small amount of draft even when there is no fire burning. This means that when you light a fire, the initial smoke goes up the chimney and strong draft builds quickly as the chimney flue warms up. Although they are common in North America, chimneys that exit a house wall and run up outside can cause problems.



Good System Design
Inside chimneys are preferred because even when no fire is burning, there is normally upward flow in the system.



Inferior System Design
Outside chimneys are a problem because when no fire burns they will go into cold backdraft if the stove is installed low in the house.

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7.4.2 Why the chimney should penetrate the highest heated space

When it is cold outside, the warm air in the house is buoyant so it tends to rise. This tendency of warm air to rise creates a slight pressure difference in the house. Called 'stack effect', it produces a slightly negative pressure low in the house (relative to outside) and a slightly positive pressure zone high in the house. If there is no fire burning in a heater connected to a chimney that is shorter than the warm space inside the house, the slight negative pressure low in the house will compete against the desired upward flow in the chimney.

There are two reasons why the chimney in the house at right will cold backdraft when it is cold outside and there is no fire burning in the stove. First, the chimney runs up the outside of the house, so the air in it is colder and denser than the warm air in the house. And second, the chimney is shorter than the heated space of the house, meaning the negative pressure low in the house will pull outside air down the chimney, through the stove and into the room. Even the finest stove will not work well when connected to this chimney.

7.5 Supply of Combustion Air

In Canada, wood stoves are not required to have a supply of combustion air from outdoors (except in mobile homes) because research has shown that these supplies do not give protection against house depressurization and may fail to supply combustion air during windy weather.

However, to protect against the risk of smoke spillage due to house depressurization, **a carbon monoxide (CO) detector/alarm is required** in the room in which the stove is installed. The CO detector will provide warning if for any reason the wood stove fails to function correctly.Carbon monoxide, is a colorless, odorless gas that is produced during combustion of wood and other fuels. **CO fumes are toxic and can be fatal.** CO is not specifically heavier or lighter than air. Therefore, it is best to install the detector at table top level rather than on the ceiling like a smoke detector.

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7.5.1 Combustion Air Supply in Mobile Homes

Only a wood stove certified and labelled as 'mobile home approved' may be installed in a mobile home. This Blackcomb/Columbia stove is 'mobile home approved'. Wood stoves installed in mobile homes must have a ducted supply of combustion air from outdoors. This air supply should be routed down through the house floor into the vented crawl space under the mobile home. The air supply duct should be non-combustible aluminum flex duct with a screened weatherhood on the outside end.

Note: Fabric duct may also be used, provided it is suitable for HVAC use and meets the requirements of ULC-S110 or UL-181 Class 1 standards. It must have a non-combustible insulation and be corrosion resistant.

Where a mobile home has been converted to a standard house by mounting it on a permanent basement foundation, the supply of outdoor air is not required.

7.5.2 Air Supply in Conventional Houses

The safest and most reliable supply of combustion air for your wood stove is from the room in which it is installed. Room air is already preheated so it will not chill the fire, and its availability is not affected by wind pressures on the house. Contrary to commonly expressed concerns, almost all tightly-sealed new houses have enough natural leakage to provide the small amount of air needed by the stove. The only case in which the wood stove may not have adequate access to combustion air is if the operation of a powerful exhaust device (such as a kitchen range exhaust) causes the pressure in the house to become negative relative to outdoors.

Some jurisdictions in the United States require that wood stoves have a supply of combustion air from outdoors. If you do install an air supply through the wall of the house, be aware that its pressure can be affected during windy weather. If you notice changes in wood stove performance in windy weather, and in particular if smoke puffs from the stove, you should disconnect the outdoor air duct from the stove and remove the duct. In some windy conditions, negative pressure at the duct weatherhood outside the house wall may draw hot exhaust gases from the stove backwards through the duct to outdoors. Check the outdoor air duct for soot deposits when the full system is cleaned and inspected at least once each year.

7.6 Installing the Chimney Connector

The chimney connector is the single or double wall pipe installed between the stove flue collar and the chimney breech. Single wall pipe components are available from most hardware and building supply stores. These components are not usually tested to a particular standard and certified as compliant. Therefore, a list of rules found in solid fuel installation codes apply to the installation of single wall pipe.

Double wall chimney connectors are tested and certified. The rules for double wall pipe are found in the manufacturer's installation instructions. These rules will be very different than those for single wall.

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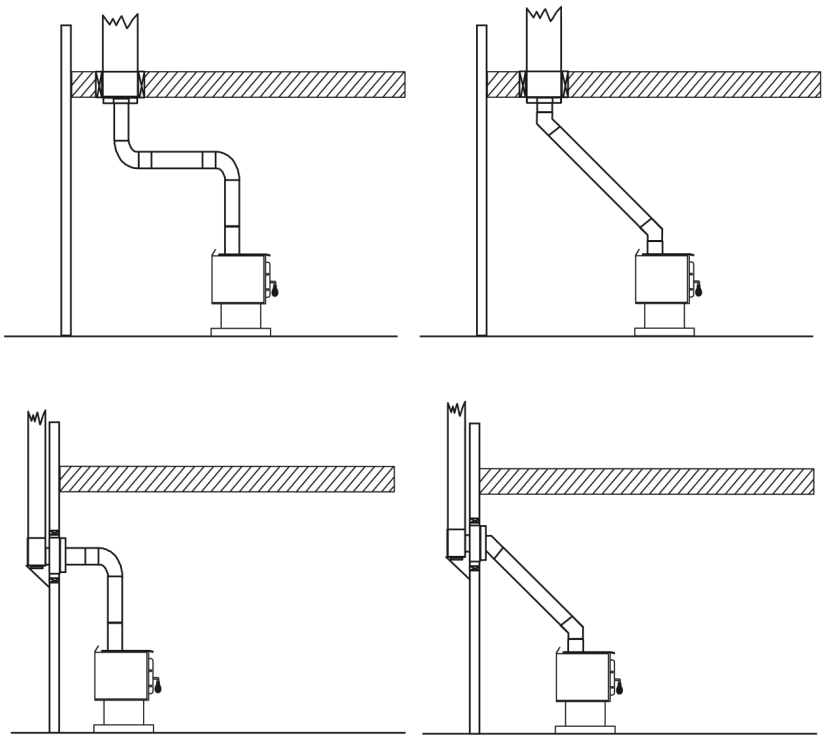
7.6.1 Installation of Single Wall Chimney Connector

The chimney connector assembly has been called 'the weak link' in the safety of wood heating systems because failure to install the connector properly (which has been common in the past) can result in house fires.

The best flue pipe assembly is one that rises straight up from the stove to the base of the chimney with no elbows. Straight assemblies are less likely to cause problems like smoke roll-out when the door is opened for loading. They are also more stable and easier to maintain than assemblies with elbows. Horizontal runs of flue pipe should be avoided where possible because they reduce chimney draft.



Use 45° elbows where possible, instead of 90° elbows.

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The rules below are based on those found in the CSA B365 installation code. Please carefully follow these installation instruction rules, or those enforced where you live.

- Maximum overall length of straight pipe: 3 m (10 ft.) including elbows.
- Minimum clearance from combustible material: 450 mm (18 in.). The minimum clearance may be reduced by 50 percent to 225 mm (9 in.) if suitable shielding is installed either on the pipe or on the combustible surface.
- The assembly should be as short and direct as possible between the stove and chimney. The use of two 45° elbows is often preferable to a single 90° elbow because less turbulence is created in the exhaust flow and they result in less horizontal run.
- Maximum number of 90° elbows: 2.
- Maximum unsupported horizontal length: 1 m (3 feet).
- Galvanized flue pipes must not be used because the coatings vaporize at high temperatures and release dangerous gases. Use black painted flue pipes.
- Flue pipes must be at least 24 gauge in thickness.
- Flue pipe joints should overlap 30 mm (1 1/4 in.)
- Each joint in the assembly must be fastened with at least three screws.
- The assembly must have allowance for expansion: elbows in assemblies allow for expansion; straight assemblies should include an inspection wrap with one end unfastened, or a telescopic section.
- Minimum upward slope towards the chimney: 20 mm/m (1/4 in/ft.).
- One end of the assembly must be securely fastened to the flue collar with 3 sheet metal screws and the other end securely fastened to the chimney.
- There must be provision for cleaning of the pipes, either through a clean out or by removal of the pipe assembly. Removal of the assembly should not require that the stove be moved.
- The male ends of the sections must be oriented towards the appliance so that falling dust and condensation stay inside the pipe.
- A flue pipe must never pass through a combustible floor or ceiling or through an attic, roof space, closet or concealed space.
- Where passage through a wall or partition of combustible construction is desired, the installation shall conform to CAN/CSA-B365, Installation Code for Solid-Fuel-Burning Appliances and Equipment.

The ideal flue pipe assembly is one that rises straight up from the appliance flue collar and directly into the chimney with no elbows. A straight up connector assembly needs either a telescopic length or an inspection wrap (pipe coupler) to allow it to be assembled and disassembled without moving the stove.

A straight flue pipe assembly offers the least restriction to gas flow and results in stronger draft. Straight assemblies also need less maintenance because there are no corners to collect creosote.

The chimney connector must be in good condition.

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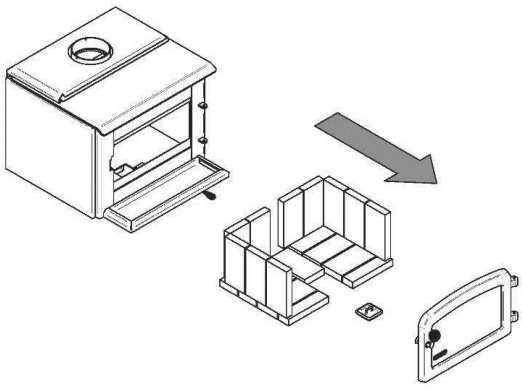
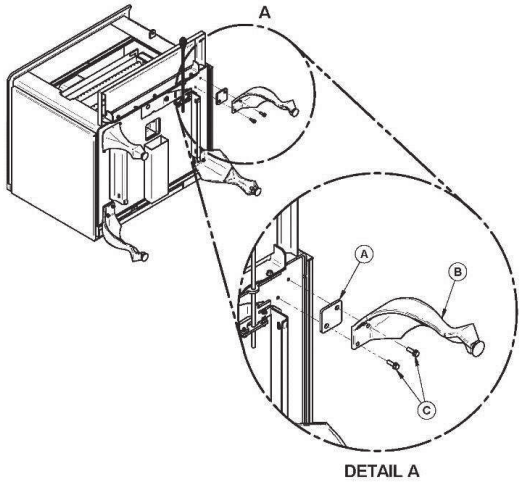
Appendix 1: Installing the Legs (DB02811 Only)

The leg kit must be assembled to the firebox before positioning the stove. See installation instructions below:



1- Remove the firebricks, the ash dump plug and the loading door from the stove to avoid breaking any parts and facilitate handling in the followings steps.



DETAIL A

2- Gently flip the stove on its back.

3- Secure the shims (A) and legs (B) with the bolts (C).

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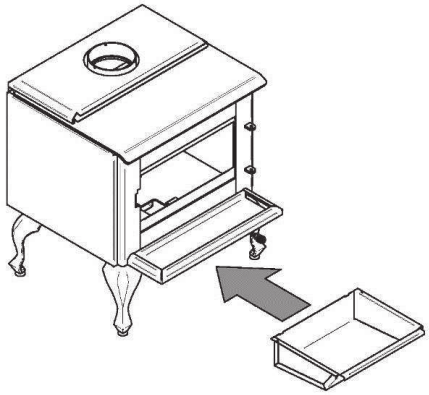

4- Gently flip the stove back on its legs making sure not to put too much weight on the rear legs.

5- Open the ash drawer lid then slide it on the left and right bend of the support brackets.

6- Position the stove for its installation and reinstall the door, the bricks and the ash dump plug (see **Appendix 6: *Exploded Diagram and Parts List*** for layout).

Note: Make sure that baffle components have not moved during the leg installation process since a flue blockage may occur.

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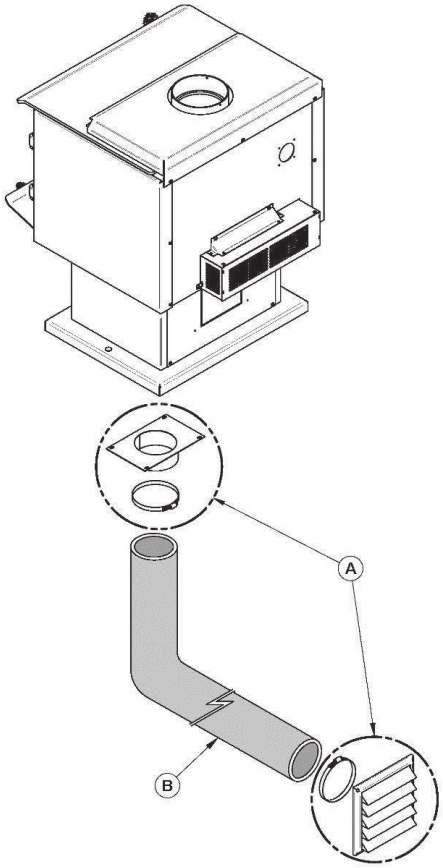
Appendix 2: Installing the Optional Fresh Air Intake Kit (AC01336)

This mobile home approved stove requires installation of a fresh air intake kit (A) and an insulated fresh air intake pipe (B), sold separately.

Installation on the bottom for models on pedestal (AC01336):



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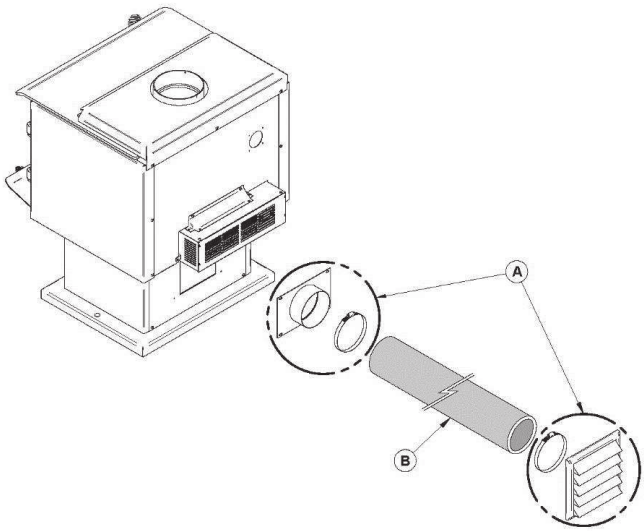
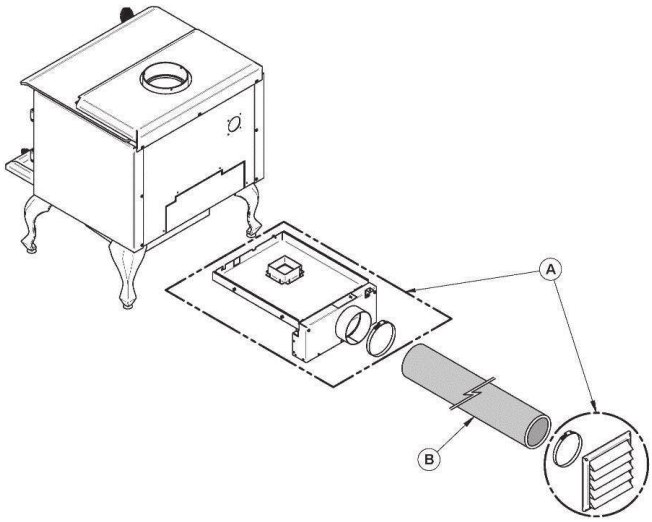
Installation on the back for models on pedestal (AC01336):



Installation on the back for models on legs (AC01316):



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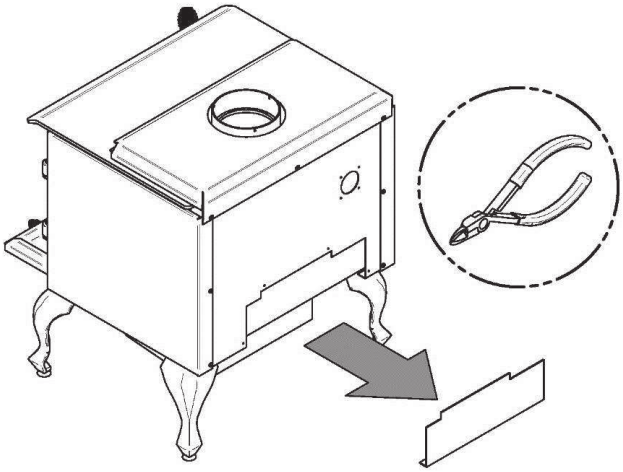
Appendix 3: Use and Installation of the Optional Blower and Thermodisc

An optional blower may be installed on the back of the stove to increase the flow of air past heat exchange surfaces and to help circulate warm air in the room. When used regularly, the blower can provide a small increase in efficiency, up to 2 percent. However, the use of a blower should not be used as a way to gain more output from a stove that is undersized for the space it is intended to heat.



When using the blower, allow the stove to reach operating temperature (approximately one hour), before turning it on. The increased airflow from the blower cools the firebox and could affect the start-up combustion efficiency if the blower is turned on too early. You can also install an optional thermodisc kit to enable the blower to start or stop automatically when the stove is hot or too cold. The thermodisc part number is AC05530 for a basic model and ACO2055 for a quick connect model. Installation instructions are supplied with the blower and the thermodisc.

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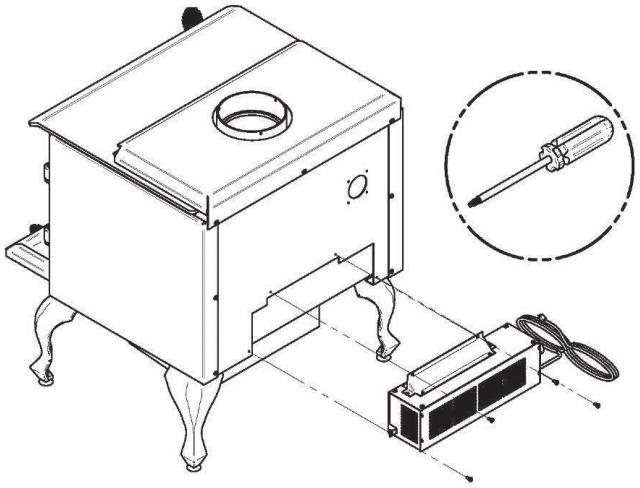

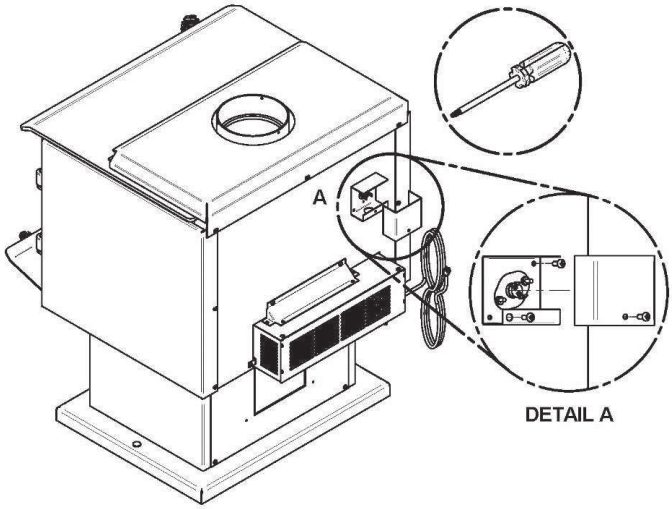

Characteristics of the thermodisc:

- Starts the blower when the stove's temperature reaches 43 °C (110 °F).
- Cuts the electrical contact when the temperature falls to 32 °C (90 °F).

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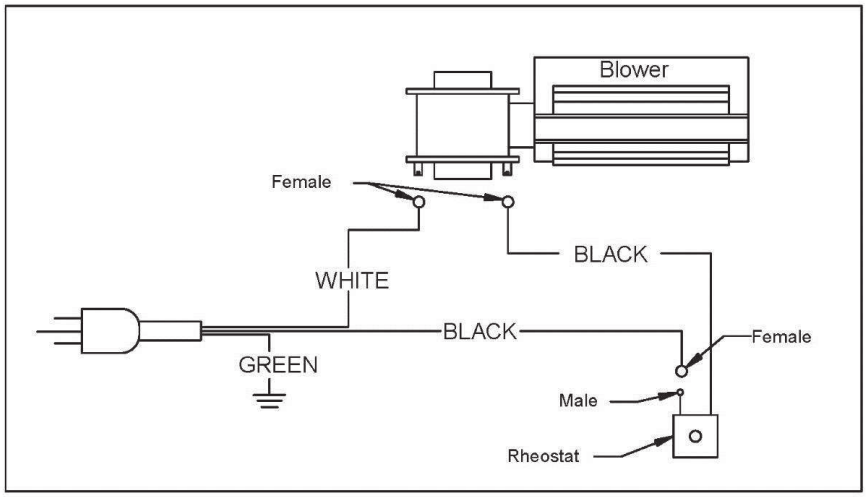

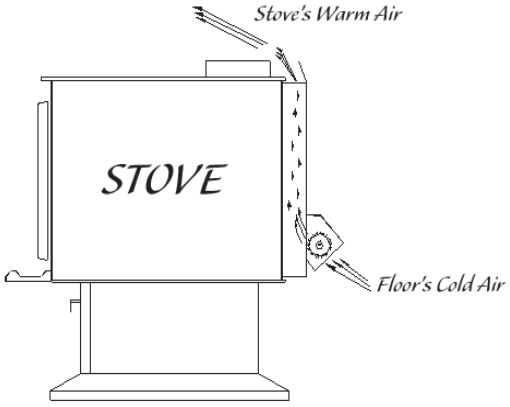

CAUTION: ENSURE THAT THE BLOWER'S POWER CORD IS NOT IN CONTACT WITH ANY SURFACE OF THE STOVE TO PREVENT ELECTRICAL SHOCK OR FIRE DAMAGE. DO NOT RUN THE POWER CORD BENEATH THE STOVE.

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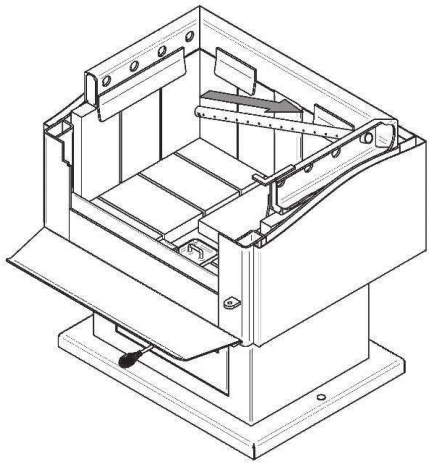
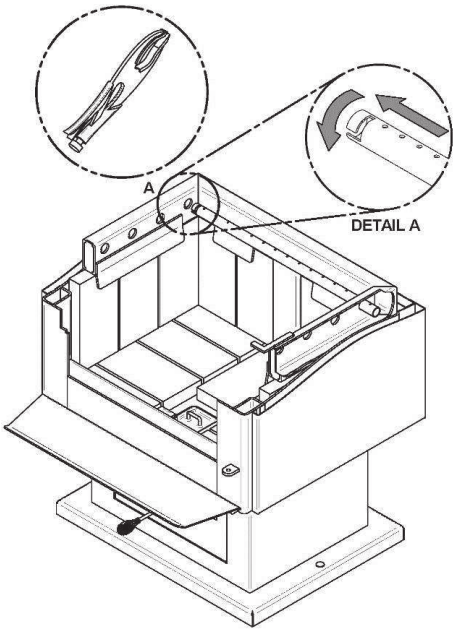
Appendix 4: Installation of Secondary Air Tubes and Baffle



1- Starting with the rear tube, lean and insert the right end of the secondary air tube into the rear right channel hole. Then lift and insert the left end of the tube into the rear left channel.



2- Align the notch in the left end of the tube with the key of the left air channel hole. Using a « Wise grip » hold the tube and lock it in place by turning the tube as shown in **detail A**. Make sure the notch reaches the end of the key way.

3- Repeat **step 1** and **2** for the other secondary air tubes.

4- To remove the tubes use the above steps in reverse order.

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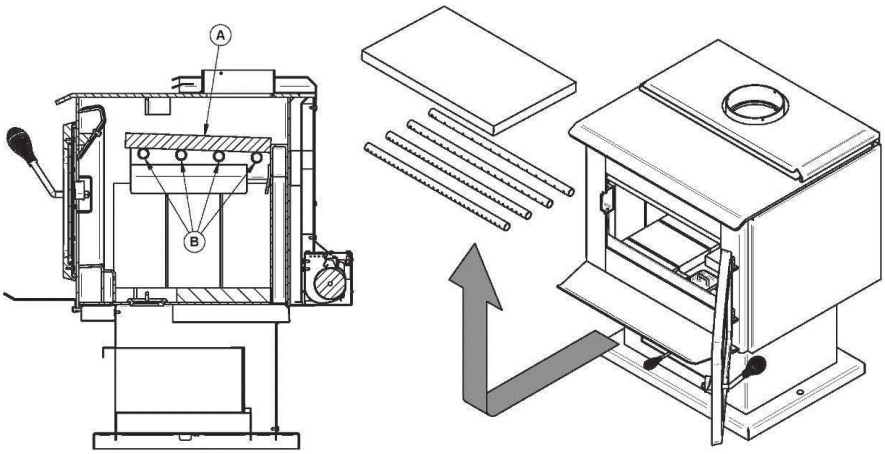
Note that secondary air tubes (B) can be replaced without removing the baffle board (A).



Important Notes:

All air tubes are equals.

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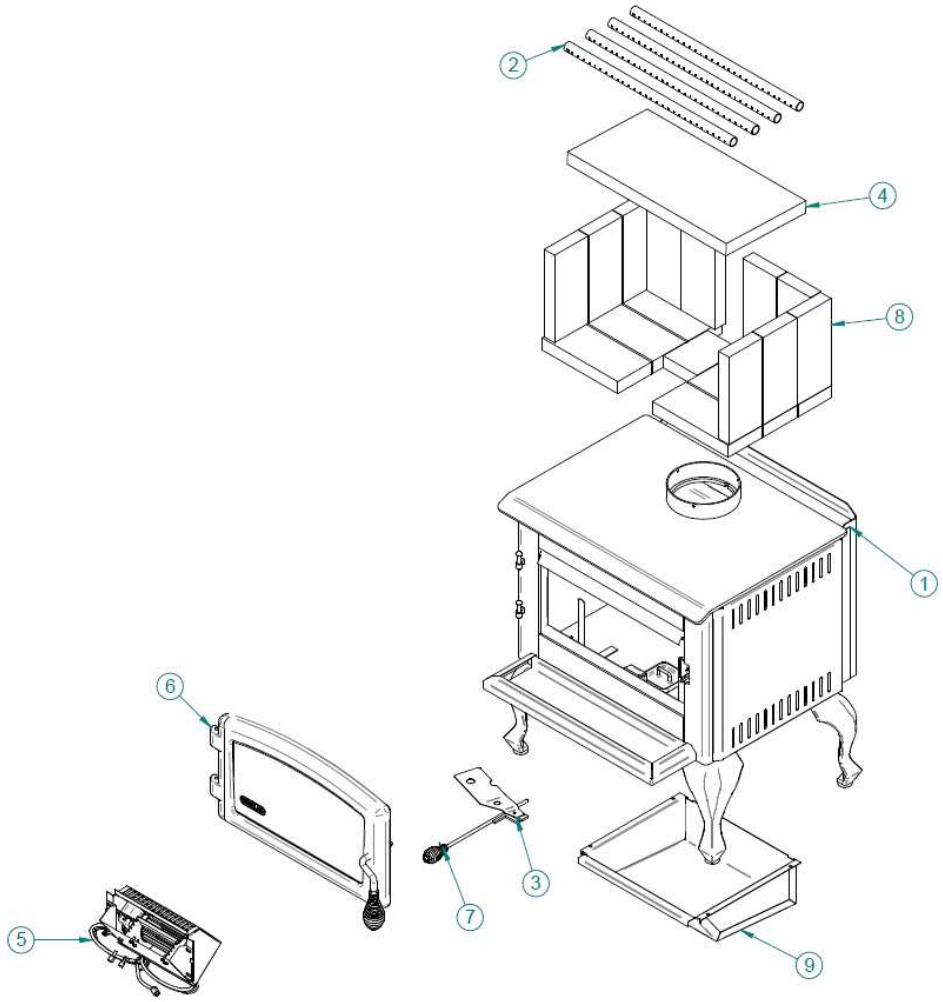
Appendix 5: Exploded Diagram and Parts List

DB02811



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IMPORTANT: THIS IS DATED INFORMATION. When requesting service or replacement parts for your stove, please provide the model number and the serial number. We reserve the right to change parts due to technology upgrade or availability. Contact an authorized dealer to obtain any of these parts. Never use substitute materials. Use of non-approved parts can result in poor performance and safety hazards.

#	Item	Description	Qty
1	PL53795	DECORATIVE PANEL	2
2	PL70516	SECONDARY AIR TUBE	4
3	PL70517	AIR CONTROL DAMPER	1
4	21521	BAFFLE	1
5	SE09909-02	FAN KIT	1
6	SE24085	DOOR AND HANDLE	1
7	SE70518	AIR CONTROL ROD	1
8	SE70521	FIREBRICK SET	1
9	SE70523	ASH PAN	1

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DROLET LIMITED LIFETIME WARRANTY

The warranty of the manufacturer extends only to the original retail purchaser and is not transferable. This warranty covers brand new products only, which have not been altered, modified nor repaired since shipment from factory. Proof of purchase (dated bill of sale), model name and serial number must be supplied when making any warranty claim to your DROLET dealer.

This warranty is void if the unit is used to burn materials other than cordwood (for which the unit is not certified by the EPA) and void if not operated according to the owner's manual. This warranty applies to normal residential use only. Damages caused by misuse, abuse, improper installation, lack of maintenance, over firing, negligence or accident during transportation, power failures, downdrafts, venting problems or under-estimated heating area are not covered by this warranty. The recommended heated area for a given appliance is defined by the manufacturer as its capacity to maintain a minimum acceptable temperature in the designated area in case of a power failure.

This warranty does not cover any scratch, corrosion, distortion, or discoloration. Any defect or damage caused by the use of unauthorized or other than original parts voids this warranty. An authorized qualified technician must perform the installation in accordance with the instructions supplied with this product and all local and national building codes. Any service call related to an improper installation is not covered by this warranty.

The manufacturer may require that defective products be returned or that digital pictures be provided to support the claim. Returned products are to be shipped prepaid to the manufacturer for investigation. Transportation fees to ship the product back to the purchaser will be paid by the manufacturer. Repair work covered by the warranty, executed at the purchaser's domicile by an authorized qualified technician requires the prior approval of the manufacturer. All parts and labour costs covered by this warranty are limited according to the table below.

The manufacturer, at its discretion, may decide to repair or replace any part or unit after inspection and investigation of the defect. The manufacturer may, at its discretion, fully discharge all obligations with respect to this warranty by refunding the wholesale price of any warranted but defective parts. The manufacturer shall, in no event, be responsible for any uncommon, indirect, consequential damages of any nature, which are in excess of the original purchase price of the product. A one-time replacement limit applies to all parts benefiting from lifetime coverage. This warranty applies to products purchased after March 1st, 2015.

DESCRIPTION	WARRANTY APPLICATION*	
	PARTS	LABOUR
Combustion chamber (welds only) and cast iron door frame.	Lifetime	3 years
Surrounds, heat shields, ash drawer, steel legs, pedestal, trims (aluminum extrusions), plating (defective manufacture**), and convector air-mate.	5 years	3 years
Removable stainless steel combustion chamber components, secondary air tubes**, deflectors, and supports.	5 years	N/A
Glass retainers, handle assembly, and air control mechanism.	3 years	1 year
Carbon steel combustion chamber components, vermiculite baffle**, and C-Cast baffle**.	2 years	N/A
Standard blower, heat sensors, switches, rheostat, wiring, and other electronics.	1 year	1 year
Optional blower, paint (peeling**), ceramic glass (thermal breakage only**), ceramic fibre blankets, gaskets, insulation, and other options.	1 year	N/A
Firebricks.	N/A	N/A
All parts replaced under the warranty.	90 days	N/A

Subject to limitations above.** ****Picture required.

Labour cost and repair work to the account of the manufacturer are based on a predetermined rate schedule and must not exceed the wholesale price of the replacement part.

Shall your unit or a components be defective, contact immediately your **DROLET** dealer. To accelerate processing of your warranty claim, make sure to have on hand the following information when calling:

- Your name, address and telephone number;
- Bill of sale and dealer's name;
- Installation configuration;
- Serial number and model name as indicated on the nameplate fixed to the back of your unit;
- Nature of the defect and any relevant information.

Before shipping your unit or defective component to our plant, you must obtain an Authorization Number from your DROLET dealer. Any merchandise shipped to our plant without authorization will be refused automatically and returned to sender.

2 - Label Blackcomb

LISTED SOLID FUEL BURNING APPLIANCE
POÊLE À COMBUSTIBLE SOLIDE HOMOLOGUÉ

C ETL LISTED US CSA B415.1-10

MODEL / MODÈLE : BLACKCOMB

Intertek Control number: 4002461

Serial Number / No. de Série: 1

Clearances to combustibles / Dégagements aux combustibles

protection / ction de plancher

DOOR OPENING / OUVERTURE DE PORTE

CANADA

	Single wall connector / Tuyau à paroi simple	Double wall connector / Tuyau à paroi double	Single wall connector / Tuyau à paroi simple	Double wall connector / Tuyau à paroi double
A:	14.5 in./po. (368 mm)	6 in./po. (152 mm)	14 in./po. (356 mm)	6 in./po. (152 mm)
B:	12 in./po. (305 mm)	11 in./po. (279 mm)	12 in./po. (305 mm)	11 in./po. (279 mm)
C:	8.25 in./po. (210 mm)	5 in./po. (127 mm)	7 in./po. (178 mm)	5 in./po. (127 mm)
D:	18 in./po. (457 mm)	9.75 in./po. (248 mm)	17.75 in./po. (451 mm)	9.75 in./po. (248 mm)
E:	22 in./po. (559 mm)	21 in./po. (533 mm)	22 in./po. (559 mm)	21 in./po. (533 mm)
F:	18 in./po. (457 mm)	15 in./po. (381 mm)	17 in./po. (432 mm)	15 in./po. (381 mm)

U.S.A.

G:	8 in./po.	(203 mm) CANADA
H:	8 in./po	(203 mm) CANADA
I:	18 in./po.	(457 mm) CANADA
	16 in./po.	(406 mm) USA
J:	8 in./po.	(203 mm) USA
K:	48 in./po.	(1219 mm)

MOBILE HOME / MAISONS MOBILES
Double wall connector / Tuyau à paroi double

A:	6 in./po.	(152 mm)
B:	11 in./po.	(279 mm)
C:	5 in./po.	(127 mm)
D:	9.75 in./po.	(248 mm)
E:	21 in./po.	(533 mm)
F:	15 in./po.	(381 mm)

Minimum floor to ceiling distance / Distance minimale plafond-plancher: 84 in./po. (213cm)

PREVENT HOUSE FIRES

- Install and use only in accordance with the manufacturer's installation and operating instructions.
- Contact local building or fire officials about restrictions and installation inspection in your area.
- Use listed 152 mm /6 in. diameter single or double wall connectors with prefabricated chimneys approved UL 103 HT (US) and ULC S629 (CAN) suitable for solid fuels or lined masonry chimneys.
- See local building code and manufacturer's instructions for precautions required for passing a chimney through a combustible wall or ceiling.
- Do not pass connector through combustible wall or ceiling.
- Do not connect this unit to a chimney serving another appliance.
- For use with solid fuel only. Do not use other fuels.
- Operate only with door closed. Open door to feed fire only.
- Do not obstruct the space underneath the stove.
- Do not use grate or elevate fire. Build fire directly on hearth.
- Do not overfire. If heater or chimney connector glows, you are overfiring.
- Inspect and clean chimney frequently. Under certain condition of use, creosote buildup occur rapidly.
- Replace glass with ceramic type only.
- Install unit on a non-combustible material extending as shown above on this label.
- Suitable for mobile-home installation.
- Combustion air openings shall not be obstructed.
- This wood heater needs periodic inspection and repair for proper operation. Consult the owner's manual for further information. It is against US federal regulations to operate this wood heater in a manner inconsistent with the operating instructions in the owner's manual.

PRÉVENEZ LES INCENDIES

- Installer et utiliser conformément au manuel d'utilisation du fabricant.
- Contacter les autorités de votre localité ayant juridiction concernant les restrictions et inspections d'installation.
- Utiliser des tuyaux d'évacuation à parois simple ou double homologués d'un diamètre de 6 po. (152 mm) avec une cheminée préfabriquée approuvée UL 103 HT (US) et ULC S629 (CAN) pour utilisation au bois ou une cheminée de maçonnerie gainée.
- Voir les codes locaux et le manuel d'installation du manufacturier pour le passage de la cheminée à travers un mur ou un plafond combustible.
- Ne pas traverser un plafond ou un mur combustible avec un tuyau d'évacuation.
- Ne pas raccorder cet appareil à une cheminée déservant un autre appareil.
- Pour l'usage avec du combustible solide seulement. Ne pas utiliser d'autres combustibles.
- N'ouvrir la porte que lors du chargement.
- Ne rien entreposer sous l'appareil.
- Ne pas utiliser de grilles ou de chenets pour surélever le feu.Préparer le feu directement sur l'âtre.
- Ne pas surchauffer. Si l'appareil ou le tuyau rougit, il y a surchauffe.
- Inspecter et nettoyer la cheminée fréquemment. Sous certaines conditions, l'accumulation de créosote peut être rapide.
- Remplacer la vitre seulement avec un verre de céramique.
- Installer l'appareil sur une plaque non combustible tel qu'indiqué sur l'étiquette.
- Poêle approuvé pour maison mobile.
- Les entrées d'air servant à la combustion ne doivent pas être obstruées.
- Cet appareil de chauffage requiert des inspections et réparations périodiques. Consulter le manuel de l'utilisateur pour plus d'information. Opérer cet appareil de chauffage de façon inconsistente par rapport au manuel de l'utilisateur consiste une violation de la loi fédérale (USA).

Optional blower: (115V, 0.8A, 60Hz) #AC02050. Option ventilateur: (115V, 0.8A, 60Hz) #AC02050.

U.S. ENVIRONMENTAL PROTECTION AGENCY Certified to comply with 2020 particulate emission standards using cordwood.
AGENCE DE PROTECTION DE L'ENVIRONNEMENT DES É.-U. Conforme aux normes d'émission de particules de 2020 avec bûche de bois.
Weighted average emission rate / Moyenne pondérée des émissions : 1.26 g/h
When tested in accordance with/Lorsque testé selon ASTM E2515
Tested and certified in compliance with CFR 40 part 60, subpart AAA, section 60.534(a)(1(ii)) and Draft ASTM WK47329-14

CAUTION

- HOT WHILE IN OPERATION.
- DO NOT TOUCH. KEEP CHILDREN, CLOTHING AND FURNITURE AWAY.
- CONTACT MAY CAUSE SKIN BURNS. SEE NAME-PLATE AND INSTRUCTIONS.

ATTENTION

- CHAUD EN FONCTIONNEMENT.
- NE PAS TOUCHER. GARDER LES ENFANTS, LES VÊTEMENTS ET LES MEUBLES ÉLOIGNÉS.
- UN CONTACT AVEC LA PEAU PEUT OCCASIONNER DES BRÛLURES. VOIR LES INSTRUCTIONS.

Made in St-Augustin-de-Desmaures (Qc), Canada
27/04/2018 (# test)

SBI Fabricant de poêles international / Stove Builder International

Fabriqué à St-Augustin-de-Desmaures (Qc), Canada
27/04/2018 (# test)

27734

TESTING INFORMATION

Test Report 103328128MTL-001

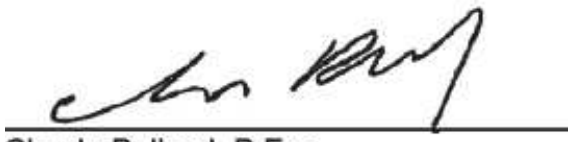
The SBI Model 1.7 Series Wood Fuel Room Heater has been found to be in compliance with the applicable performance requirements of the following criteria: “CSA B415.1-2010(R2015) – Performance Testing of Solid-Fuel-Burning Heating Appliances”, ASTM E2515-2011-Standard test method for determination of particulate matter emissions collected by a dilution tunnel, ASTM E3053-2017- Standard test method for determining particulate matter emissions from wood heaters using cord wood test fuel.

Testing was performed at the client's facility located in St-Augustin, Quebec. QC.

To make this SpecDIRECT document less voluminous, a number of appendices to the attached report were omitted. They can be found in EPF under the identified project number as well as in documentation supplied to EPA..

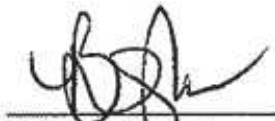
SIGNATURE PAGE

Reported By:



Claude Pelland, P.Eng.
Staff Engineer
Intertek Lachine

Reviewed By:



Brian Ziegler
Project Team Leader
Building Products Division

DRAWING INDEX

Appendix I - EPA Correspondance
Test report 103328128MTL-001

Appendix I - EPA Correspondance

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

OCT 12 2017

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

Mr. Guillaume Thibodeau-Fortin, P. Eng.
Stove Builder International
Mechanical Engineer
250 rue de Copenhague
Saint-Augustin-de-Desmaures
Quebec Canada, G3A 2H3

Dear Mr. Thibodeau-Fortin,

I am writing in response to your September 25, 2017 letter regarding the 1.7 series of wood stoves manufactured by Stove Builder International. You are requesting an alternative test method using cordwood and your follow up email of September 28, 2017 as referenced in Section 60.534 (a) (ii) of 40 CFR Part 60 Subpart AAA, Standards of Performance for New Residential Wood Heaters. You request to use the procedures and specifications found in the ASTM draft cordwood test method dated September 8, 2016, ASTM Work Item WK47329-14, titled "Standard Method for Determining Particulate Matter Emissions from Wood Heaters using Cordwood Test Fuel."

With the caveats listed below, we approve your alternative method request for testing the 1.7 series of wood stoves using the Blackcomb Freestanding which will be representative of a number of additional stoves that you plan to design in the near future. As required in Subpart AAA, Standards of Performance for New Residential Wood Heaters, Section 60.534 (d), the manufacturer or approved test lab must also measure the first hour of particulate matter emissions for each test run using a separate filter in one of the two parallel sampling trains. These results must be reported separately and also included in the total particulate matter emissions per run. In addition, as per Section 60.534 (e), the manufacturer must have the approved test laboratory measure the efficiency, heat output and carbon monoxide emissions of the tested wood heater using Canadian Standards Administration (CSA) Method B415.1-10. For particulate matter emission concentrations, ASTM 2515-11 should be used; four inch filters are acceptable.

The following changes to ASTM Work Item WK47329-14, titled "Standard Method for Determining Particulate Matter Emissions from Wood Heaters using Cordwood Test Fuel" must be followed:

1. The end of test criterion is defined as when the weight scale indicates the remaining weight of the test fuel as 0.0 lbs (0.00 kg) or less for 30 seconds. This criterion should be used for the high, low, and medium burn rates.

2. Coal bed conditions prior to loading test fuel: The coal bed should be a level plane without valleys or ridges for all test runs in the high, low, and medium burn rate categories.

The following changes to ASTM E2515-11 "Standard Test Method for Determination of Particulate Matter Emissions Collected by a Dilution Tunnel" must be followed:

1. The filter temperature must be maintained between 80 and 90 degrees F during testing.

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Appendix I - EPA Correspondance (2 of 16)

2. Filters must be weighed in pairs to reduce weighing error propagation. See ASTM E2515-11 Section 10.2.1 Analytical Procedure.

3. Sample filters must be Pall TX-40 or equivalent Teflon coated glass fiber, and of 47 mm, 90 mm, 100 mm or 110 mm in diameter.

4. Only one point is allowed outside the +/- 10% proportionality range per test run.

Please include this approval in any certification test report where the alternative is applied. If you have additional questions regarding these decisions, please contact Michael Toney of my staff at (919) 541-5247.

Sincerely,

Steffan Johnson, Group Leader
Measurement Technology Group

cc: Michael Toney, EPA/AQAD (E143-02)
Rafael Sanchez, EPA/OECA (2227A)
Adam Baumgart-Getz, EPA/OID (C304-05)
David Cole, EPA/OID (C304-5)
Amanda Aldridge, EPA/OID (C304-5)

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United States
Environmental Protection
Agency

OMB Control No. 2060-0161
Approval expires 3/31/2019

OMB Control No. 2060-0693
Approval expires 3/31/2019

EPA Form 6400-03

RESIDENTIAL WOOD HEATER CERTIFICATE OF COMPLIANCE APPLICATION

INSTRUCTIONS

Pursuant to the 2015 Clean Air Act Standards of Performance for New Residential Wood Heaters, New Residential Hydronic Heaters and Forced-Air Furnaces, 40 CFR Part 60 Subparts AAA and QQQQ (2015 Wood Heater Rule), any manufacturer of an affected residential wood heater must apply to the EPA for a certificate of compliance for each model line. Without applying for and obtaining a certificate of compliance, a manufacturer may not manufacture, advertise for sale, offer for sale, or sell affected residential wood heaters in the United States.

Under Subpart AAA, affected residential wood-burning room heaters currently include, but are not limited to, adjustable burn rate stoves, catalytic adjustable burn rate stoves; hybrid adjustable burn rate stoves; single burn rate stoves; and pellet stoves.

Under Subpart QQQQ, affected residential wood-burning central heaters currently include, but are not limited to, indoor hydronic heaters ("wood boilers"); outdoor hydronic heaters ("outdoor wood boilers"); and forced-air furnaces ("warm air furnaces").

By completing and submitting this application to EPA, you will satisfy the requirement to apply for a certificate of compliance. To submit a complete application, this application must include the following:

(1) Certification test report prepared by an EPA-approved test laboratory
(2) Certification of conformity by an EPA-approved third party certifier
(3) Quality assurance plan
(4) All required supporting documentation and manufacturer statements pursuant to the 2015 Wood Heater Rule (Sections 60.533 or 60.5475)

This application must be signed by a responsible representative of the manufacturer or an authorized representative. Once completed with all required information/documentation included, this application must be submitted to WoodHeaterReports@epa.gov.

The public reporting and recordkeeping burden for this collection of information is estimated to average 8 hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Regulatory Support Division, U.S. Environmental Protection Agency (EPA) (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed application to this address.

Disclaimer: The statutory provisions and the EPA regulations described in this document contain legally binding requirements. This document is not a substitute for those provisions or regulations, nor is it a regulation itself. In the event of a discrepancy, please refer to Part 60 Subparts AAA AND QQQQ, Sections 60.537 and 60.5479. If you have additional questions, please contact Rafael Sanchez at 202-

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564-7028, Residential Wood Heater Compliance Program Lead, or via email at sanchez.rafael@epa.gov.

MANUFACTURER INFORMATION

Manufacturer's Name: Stove Builder International

Manufacturer's Physical Address:
250 rue de Copenhague
Saint-Augustin-de-Desmaures,
Canada, G3A 2H3

Manufacturer's Mailing Address (if different from physical address):

Name and Title of Manufacturer's Responsible/Authorized Representative Submitting this Application:
Guillaume Thibodeau-Fortin

Manufacturer's Contact E-mail: gthibodeaufortin@sbi-international.com

Manufacturer's Phone Number: 1-418-878-3040 x224

Manufacturer's Website Address:
www.sbi-international.com

Manufacturer's Website Address where the test report and owner's manual will be posted, if known:
www.drolet.ca

AFFECTED WOOD HEATER MODEL INFORMATION

Model Name(s) (as appearing on the certification test report). Please note: the model name and design number must clearly distinguish one model from another. The name and design number cannot include the EPA symbol or logo or name or derivatives such as "EPA": 1.7 Series

Model Number(s) (as appearing on the certification test report): Blackcomb/Columbia

Heater Type Check one):	☒Adjustable Burn Rate Wood Stover	☐Pellet Stove	☐Single Burn Rate Wood Stove	☐Hydronic Heater	☐Forced-Air Furnace (FAF)
Hydronic Heater Type (Check one):	☐Full Storage	☐Partial Storage	☐Indoor	☐Outdoor	
Forced-Air Furnace Type (Check one):	☐Small (less than 65,000 BTU/hr heat output)		☐Large (greater than 65,000 BTU/hr heat output)		
Fuel Tested (Check one):	☐Crib	☐Pellet	☒Cordwood	☐Wood Chips	☐Other:
Certification Step:	☐2015 / ☐2016 (FAFs only)	☐2017 (FAFs only)	☒2020 (ALL HEATERS)		

Was this heater tested using an EPA-approved Alternative Test Method (ATM)? ☒Yes ☐No

If yes, provide date of EPA approval and attach copy of EPA approved ATM letter):
10/12/2017

If not, what Test Method(s) did the test laboratory use for the certification test? (List all applicable test methods):

Heater equipped with a catalytic combustor? ☐Yes ☒No

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Appendix I - EPA Correspondance (5 of 16)

Date of submission of 30-Day Notice to the EPA:10/27/2017		
What was the proposed date(s) of testing? 11/27/2017		
What was the actual date(s) of testing? 11/27/2017		
Was the compliance test postponed or suspended? ☐Y ☒N If yes, date of EPA notification of postponement or suspension:		
Explain reason for postponing or suspending the certification test:		
EPA-APPROVED TEST LABORATORY		
Name of EPA-Approved Test Laboratory: Intertek		
Name(s) of Person(s) Authorized and/or Responsible for Conducting Certification Test: Claude Pelland, Eng.		
Position/Title: Project Engineer		
Address: 1829, 32nd avenue		
City: Lachine	**State: Québec**	**ZIP Code: H8T 3J1**
Phone: 1-514-631-3100 x277	**Email: claude.pellant@intertek.com**	
EPA-APPROVED THIRD PARTY CERTIFIER		
Name of EPA-Approved Third-Party Certifier: Intertek		
Name(s) of Person(s) Authorized and/or Responsible for Reviewing Test Report and/or Issuing Certification of Conformity: Brian Ziegler		
Position/Title: Technical Team Leader		
Address: 8431 Murphy Drive		
City: Middleton	**State: WI**	**ZIP Code: 53562**
Phone: 608-824-7425	**Email: brian.ziegler@intertek.com**	

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Appendix I - EPA Correspondance (6 of 16)

REQUIRED SUPPORTING DOCUMENTATION/MANUFACTURER STATEMENTS

NOTE: TO COMPLETE THIS APPLICATION, ALL REQUIRED DOCUMENTATION AND MANUFACTURER STATEMENTS MUST ACCOMPANY THIS APPLICATION.

1. Engineering Drawings
Engineering drawings and specifications of components that may affect emissions (including specifications for each component listed in paragraphs (k)(2), (3) and (4) of 60.533(b) and 60.5475(b). Manufacturers may use assembly or design drawings that have been prepared for other purposes, but must designate on the drawings the dimensions of each component listed in paragraph (k) of this section. Manufacturers must identify tolerances of components listed in paragraph (k)(2) of 60.533(b) and 60.5475(b) that are different from those specified in that paragraph, and show that such tolerances cannot reasonably be anticipated to cause wood heaters in the model line to exceed the applicable emission limits. The drawings must identify how the emission-critical parts, such as air tubes and catalyst, can be readily inspected and replaced.

2. Firebox Statement Requirement
A statement whether the firebox or any firebox component (including the materials listed in paragraph (k)(3) of 60.533(b) and 60.5475(b) will be composed of material different from the material used for the firebox or firebox component in the wood heater on which certification testing was performed, a description of any such differences and demonstration that any such differences may not reasonably be anticipated to adversely affect emissions or efficiency.

3. Confidential Business Information
Clear identification of any claimed confidential business information (CBI). Submit such information under separate cover to the EPA CBI Office; Attn: Residential Wood Heater Compliance Program Lead, 1200 Pennsylvania Ave., NW, Room 7149-D, MS:2227A, Washington, DC 20460. **Note that all emissions data, including all information necessary to determine emission rates in the format of the standard, cannot be claimed as CBI.**

4. **All Documentation Pertaining to a Valid Certification Test**
All documentation pertaining to a valid certification test including the complete test report and, for all test runs: Raw data sheets, laboratory technician notes, calculations and test results. Documentation must include the items specified in the applicable test methods. Documentation must include discussion of each test run and its appropriateness and validity, and must include detailed discussion of all anomalies, whether all burn rate categories were achieved, any data not used in the calculations and, for any test runs not completed, the data collected during the test run and the reason(s) that the test run was not completed and why. The burn rate for the low burn rate category must be no greater than the rate that an operator can achieve in home use and no greater than is advertised by the manufacturer or retailer. The test report must include a summary table that clearly presents the individual and overall emission rates, efficiencies and heat outputs. Submit the test report and all associated required information, according to the procedures for electronic reporting specified in § 60.537(f) and 60.5475(f).

5. Warranties
A copy of the warranties for the model line, which must include a statement that the warranties are void if the unit is used to burn materials for which the unit is not certified by the EPA and void if not operated according to the owner's manual.

6. Quality Assurance Program Statement
A statement that the manufacturer will conduct a quality assurance program for the model line that satisfies the requirements of § 60.533(m).

7. Laboratory Sealing of Unit
A statement describing how the tested unit was sealed by the laboratory after the completion of certification testing and asserting that such unit will be stored by the manufacturer in the sealed state until 5 years after the certification test.

8. Statements that the Wood Heaters Manufactured under this Certificate will be:
(i) Similar in all material respects that would affect emissions as defined in § 60.531 to the wood heater submitted for certification testing, and
(ii) Labeled as prescribed in § 60.536 and 60.5478, and
(iii) Accompanied by an owner's manual that meets the requirements in § 60.536 and 60.5478. In addition, a copy of the owner's manual must be submitted to the EPA and be available to the public on the manufacturer's web site.

9. Third Party Certification Statement
A statement that the manufacturer has entered into contracts with an approved laboratory and an approved third-party certifier that satisfy the requirements of § 60.533(f).

10. Approved Laboratory/Third Party Statement
A statement that the approved laboratory and approved third-party certifier are allowed to submit information on behalf of the manufacturer, including any claimed to be CBI.

11. Manufacturer's Website Certification Test Reports Availability Statement
A statement that the manufacturer will place a copy of the certification test report and summary on the manufacturer's web site available to the public within 30 days after the EPA issues a certificate of compliance.

12. Transferability Acknowledgement Statement
A statement of acknowledgment that the certificate of compliance cannot be transferred to another manufacturer or model line without written approval by the EPA.

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Appendix I - EPA Correspondance (7 of 16)

13. Statement about Selling Wood Heaters without an EPA Certificate
A statement acknowledging that it is unlawful to sell, distribute or offer to sell or distribute an affected wood heater without a valid certificate of compliance.

PLEASE ACKNOWLEDGE THAT ALL REQUIRED SUPPORTING DOCUMENTATION AND MANUFACTURER STATEMENTS ACCOMPANY THIS APPLICATION.

Initials GTF

SIGNATURE OF RESPONSIBLE OFFICER OR AUTHORIZED REPRESENTATIVE OF THE MANUFACTURER CERTIFYING THE ACCURACY AND COMPLETENESS OF THIS APPLICATION:

Signature: , Eng.

Print Name: Guillaume Thibodeau-Fortin, Eng.

Title: Engineer

Date: Dec. 7th, 2017

The responsible officer or authorized representative of the manufacturer whose signature is above is certifying that the manufacturer has complied with all requirements of the 2015 Wood Heater Rule for compliance certification and will continue to do so. The manufacturer remains responsible for compliance regardless of any error by the EPA-approved test laboratory or third-party certifier.

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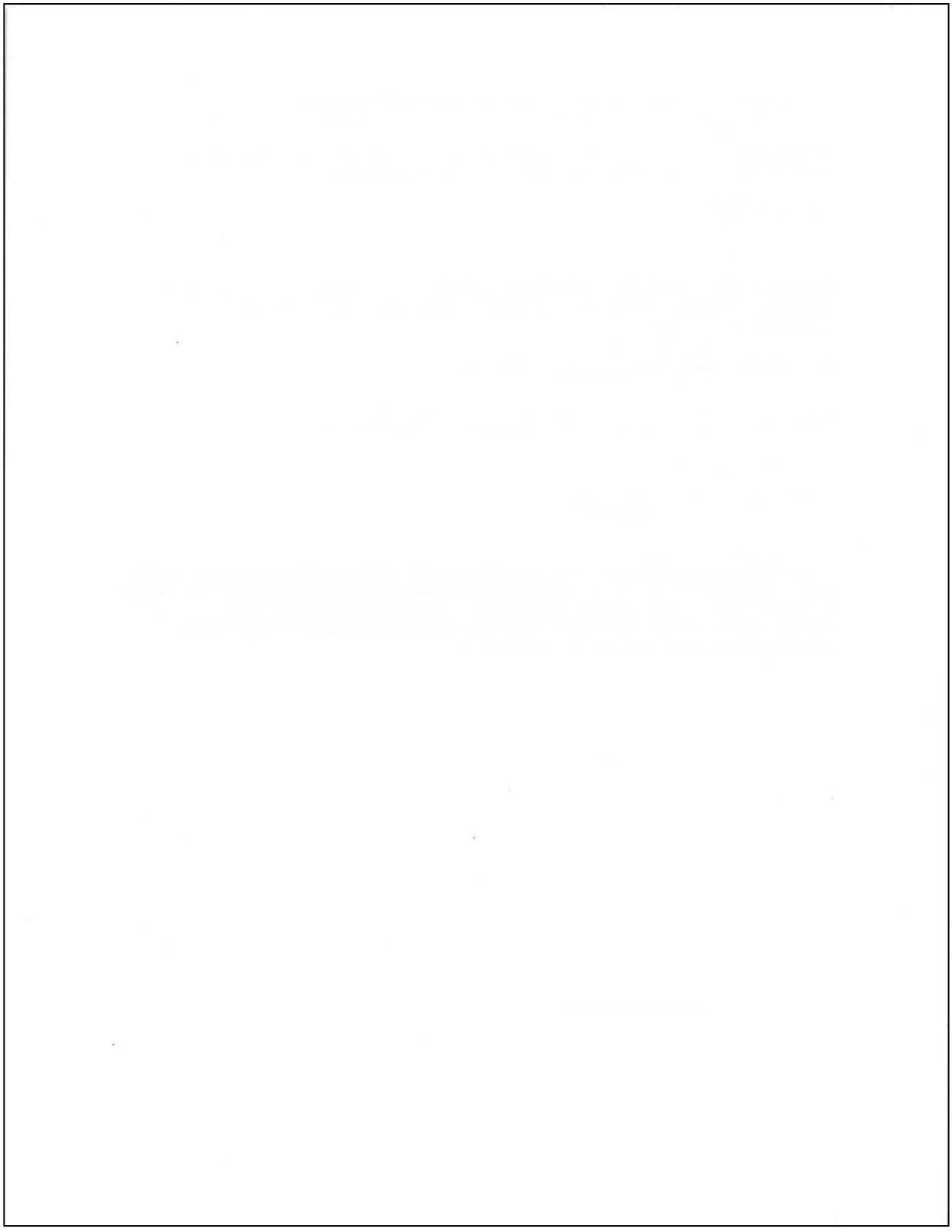

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SBI Fabricant de poêles international inc.
Stove Builder International Inc.

Notre passion devient source d'énergie
We Turn passion Into Energy

December 6th, 2017

Air Branch/Wood Heater Program Lead
Monitoring, Assistance, and Media Programs Division
Office of Compliance
U.S. EPA
1200 Pennsylvania Ave., NW
MS:2227A
Washington, DC 20004
Attn: EPA Administrator

Subject: Compliance Statements and Acknowledgements

Dear Administrator,
As stated in the application for certificate of compliance, Stove Builder International Inc (SBI) states and acknowledges the 13 items below.

1. SBI provided all engineering drawing (including specifications for each component listed in paragraphs (k)(2), (3) and (4) of 60.533(b) and 60.5475(b) available in Intertek Test Report 103328128-MTL001 at Appendix D. Tolerances are identified on all part draft and cannot reasonably be anticipated to cause wood heater in the model line to exceed the applicable emission limits. The user's manual shows how to replace and inspect emission-critical part such as the secondary tubes.
2. SBI confirm that the firebox or any firebox component (including the materials listed in paragraph (k)(3) of 60.533(b) and 60.5475(b) will be composed of material similar from the material used for the firebox or firebox component in the wood heater on which certification testing was performed. Individual brick size and color may vary but the specification of the material remains the same. The inner firebox brick coverage remains also always the same. If other differences occur over time, a description of any such differences and demonstration that any such differences may not reasonably be anticipated to adversely affect emissions or efficiency will be communicate with Residential Wood Heater Compliance Program Lead.
3. SBI will provide to Residential Wood Heater Compliance Program Lead the Confidential Business Information (CBI) report including all test data and drawings by e-mail to Sanchez.Rafael@epa.gov.
4. SBI provided all documentation that proves that the certification tests were valid. Raw data sheets, laboratory technician notes, calculations and test results were provided to Residential Wood Heater Compliance Program Lead in the appendix of Intertek Test Report 103328128-MTL001. SBI confirms that the burn rate for the low burn rate category is no greater than the rate that an operator can achieve in home use and no greater than is advertised by the manufacturer or retailer.
5. SBI provided in Appendix D of Intertek Test Report 103328128-MTL001 a copy of the warranty that stated: "This warranty is void if the unit is used to burn materials other than cordwood (for which the unit is not certified by the EPA) and void if not operated according to the owner's manual. This warranty applies to normal residential use only. Damages caused by misuse, abuse, improper installation, lack of maintenance, over firing, negligence or accident during transportation, power failures, downdrafts, venting problems or under-estimated heating area are not covered by this warranty. The recommended heated area for a given appliance is defined by the manufacturer as its capacity to maintain a minimum

250, rue De Copenhague, Saint-Augustin-de-Desmaures, Qc G3A 2H3 • Tél.: 418-878-3040 • Fax : 418-878-3001
www.sbi-international.com

Appendix I - EPA Correspondance (10 of 16)

SBI Fabricant de poêles International inc. / Stove Builder International Inc.

Notre passion devient source d'énergie / We Turn passion Into Energy

acceptable temperature in the designated area in case of a power failure."

6. SBI, with the help of the certification laboratory, Intertek, built a Quality Assurance Program. A quality control is performed for each unit produced and 4 times a year, Intertek audits our production line to make sure that the models in production comply with the certification unit.
7. SBI confirms that the certification model was sealed by Intertek as per picture of Appendix H. Permanent straps holds the unit on a wooden palette and prevent the door from opening. Intertek logo is painted over the unit and the strap as a protection. The sealed unit will be store at SBI laboratory as long as the unit is in production, but a least for 5 years after certification test.
8. SBI states that the units produce under this certificate will be:
    a. Similar in all material respects that would affect emissions as defined in § 60.531 to the wood heater submitted for certification testing, and labeled as prescribed in § 60.536 and 60.5478.
    b. Accompanied by an owner's manual that meets the requirements in § 60.536 and 60.5478. A copy of the owner's manual was submitted to the Administrator and will be available to the public on the manufacturer's web site at production launch.
9. SBI has entered into contracts with an approved laboratory and third-party certifier which is Intertek. Intertek Montreal is the approved laboratory and the third-party certifier is the Middleton chapter of Intertek.
10. SBI allows the approved laboratory and approved third-party certifier to submit information to Residential Wood Heater Compliance Program Lead on behalf of SBI, including any claimed to be CBI.
11. SBI will place a copy of the certification test report, summary and all non-CBI on the manufacturer's web site available to the public within 30 days after the Administrator issues a certificate of compliance.
12. SBI acknowledges that the certificate of compliance cannot be transferred to another manufacturer or model line without written approval by the Administrator.
13. SBI acknowledges that it is unlawful to sell, distribute or offer to sell or distribute an affected wood heater without a valid certificate of compliance.

Print name and title : Guillaume Thibodeau-Fortin, Engineer Date : 2017-12-21

Signature of responsible representative of the manufacturer certifying the accuracy of the above statements:

The authorized or responsible party whose signature is above is certifying that the manufacturer has complied with and will continue to comply with all requirements of the 2015 CAA Standards for compliance certification and that the manufacturer remains responsible for compliance regardless of any error by the test laboratory or third-party certifier.

250, rue De Copenhague, Saint-Augustin-de-Desmaures, Qc G3A 2H3 • Tél.: 418-878-3040 • Fax : 418-878-3001
www.sbi-international.com

Appendix I - EPA Correspondance (11 of 16)

EPA
United States
Environmental Protection
Agency

OMB Control No. 2060-0161
Approval expires 03/31/2019

OMB Control No. 2060-0693
Approval expires 03/31/2019

EPA Form 6400-05

Office of Enforcement and Compliance Assurance

30-DAY NOTIFICATION

2015 CLEAN AIR ACT (CAA) STANDARDS OF PERFORMANCE FOR NEW RESIDENTIAL WOOD HEATERS, NEW RESIDENTIAL HYDRONIC HEATERS AND FORCED-AIR FURNACES 40 CFR PART 60 SUBPARTS AAA AND QQQQ

The public reporting and recordkeeping burden for this collection of information is estimated to average 2 hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Regulatory Support Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

Disclaimer: The statutory provisions and the EPA regulations described in this document contain legally binding requirements. This document is not a substitute for those provisions or regulations, nor is it a regulation itself. In the event of a discrepancy, please refer to 40 CFR PART 60 Subparts AAA AND QQQQ, sections 60.537 and 60.5479. If you have additional questions, please contact Rafael Sanchez at 202-564-7028 or via email at sanchez.rafael@epa.gov.

Instructions: The manufacturer of an affected wood/pellet heater/central heater model line must notify the Administrator of the date that certification testing is scheduled to begin by email to WoodHeaterReports@epa.gov. This notice must be received by the EPA at least 30 days before the start of testing.

GENERAL INFORMATION						
Manufacturer's Name: Stove Builder International						
Heater Type Check one):	☒Adjustable Burn Rate Wood Heater	☐Pellet Stove	☐Single Burn Rate Heater	☐Hydronic Heater	☐Forced Air Furnace	☐Other:
Hydronic Heater Type (Check one):	☐Full Storage	☐Partial Storage	☐Indoor	☐Outdoor	☐Other:	
Forced-Air Furnace Type (Check one):	☐Small (less than 65,000 BTU/hr heat output)		☐Large (greater than 65,000 BTU/hr heat output)			
Fuel Tested (Check one):	☐Crib	☐Pellet	☒Cordwood	☐Wood Chips	☐Other:	
Model Name(s) (as will appear on test report): 1.7 Series						
Model Number(s) (as will appear on test report): Blackcomb						
Equipped with a catalytic combustor? ☐Yes ☒No						

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EPA
United States
Environmental Protection
Agency

OMB Control No. 2060-0161
Approval expires 03/31/2019

OMB Control No. 2060-0693
Approval expires 03/31/2019

EPA Form 6400-05

Office of Enforcement and Compliance Assurance

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Mailing Address: Same as street address		
Street Address: 250 rue de Copenhague		
City: Saint-Augustin-de-Desmaures	**State: Québec**	**ZIP Code: G3A 2H3**
Phone:1-418-878-3040 x224	**Fax: 1-418-878-3001**	**Web Site:** www.sbi-international.com
Address of Manufacturer: **Same as above.**		
City:	**State**	**ZIP Code:**
EPA APPROVED TEST LABORATORY		
Name and Title of Authorized Representative: Claude Pelland, Project Engineer		
Company: Intertek		
Phone: 1-514-631-3100 x277	**E-mail:** **claude.pelland@intertek.com**	**Fax: 1-514-631-1133**

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United States Environmental Protection Agency

OMB Control No. 2060-0161
Approval expires 03/31/2019

OMB Control No. 2060-0693
Approval expires 03/31/2019

EPA Form 6400-05

Office of Enforcement and Compliance Assurance

30-DAY NOTIFICATION

2015 CLEAN AIR ACT (CAA) STANDARDS OF PERFORMANCE FOR NEW RESIDENTIAL WOOD HEATERS, NEW RESIDENTIAL HYDRONIC HEATERS AND FORCED-AIR FURNACES 40 CFR PART 60 SUBPARTS AAA AND QQQQ

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Instructions: The manufacturer of an affected wood/pellet heater/central heater model line must notify the Administrator of the date that certification testing is scheduled to begin by email to WoodHeaterReports@epa.gov. This notice must be received by the EPA at least 30 days before the start of testing.

City: Lachine	**State: Québec**	**ZIP Code: H8T 3J1**
EPA APPROVED THIRD-PARTY CERTIFIER		
Name and Title of Authorized Representative: Brian Ziegler		
Company: Intertek		
Phone: 608-824-7425	**E-mail:** brian.ziegler@intertek.com	**Fax:**
City: Middleton	**State: WI**	**ZIP Code: 53562**
COMPLIANCE TEST INFORMATION		
Test Method(s): WK47329-14 as per letter from EPA of 10/12/2017		
Date(s) of Proposed Test: 11/27/2017		

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United States
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Agency

OMB Control No. 2060-0161
Approval expires 03/31/2019

OMB Control No. 2060-0693
Approval expires 03/31/2019

EPA Form 6400-05

Office of Enforcement and Compliance Assurance

30-DAY NOTIFICATION

2015 CLEAN AIR ACT (CAA) STANDARDS OF PERFORMANCE FOR NEW RESIDENTIAL WOOD HEATERS, NEW RESIDENTIAL HYDRONIC HEATERS AND FORCED-AIR FURNACES 40 CFR PART 60 SUBPARTS AAA AND QQQQ

The public reporting and recordkeeping burden for this collection of information is estimated to average 2 hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Regulatory Support Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

Disclaimer: The statutory provisions and the EPA regulations described in this document contain legally binding requirements. This document is not a substitute for those provisions or regulations, nor is it a regulation itself. In the event of a discrepancy, please refer to 40 CFR PART 60 Subparts AAA AND QQQQ, sections 60.537 and 60.5479. If you have additional questions, please contact Rafael Sanchez at 202-564-7028 or via email at sanchez.rafael@epa.gov.

Instructions: The manufacturer of an affected wood/pellet heater/central heater model line must notify the Administrator of the date that certification testing is scheduled to begin by email to WoodHeaterReports@epa.gov. This notice must be received by the EPA at least 30 days before the start of testing.

Testing Location (Name and Address): Stove Builder International Laboratory 250 rue de Copenhague, Saint-Augustin-de-Desmaures, Québec, Canada, G3A 2H3	
Contact Name: Guillaume Thibodeau-Fortin	**Title: Engineer**
Phone Number: 1-418-878-3040 x224	**Email Address:** gthibodeaufortin@sbi-international.com

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Appendix I - EPA Correspondance (15 of 16)

EPA
United States
Environmental Protection
Agency

OMB Control No. 2060-0161
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Guillaume Thibodeau-Fortin, Engineer
Print Name and Title of Authorized Official

Signature

10/27/2017
Date

Telephone Number: 1-418-878-3040 x224

Email Address: gthibodeaufortin@sbi-international.com

Remarks:

v1

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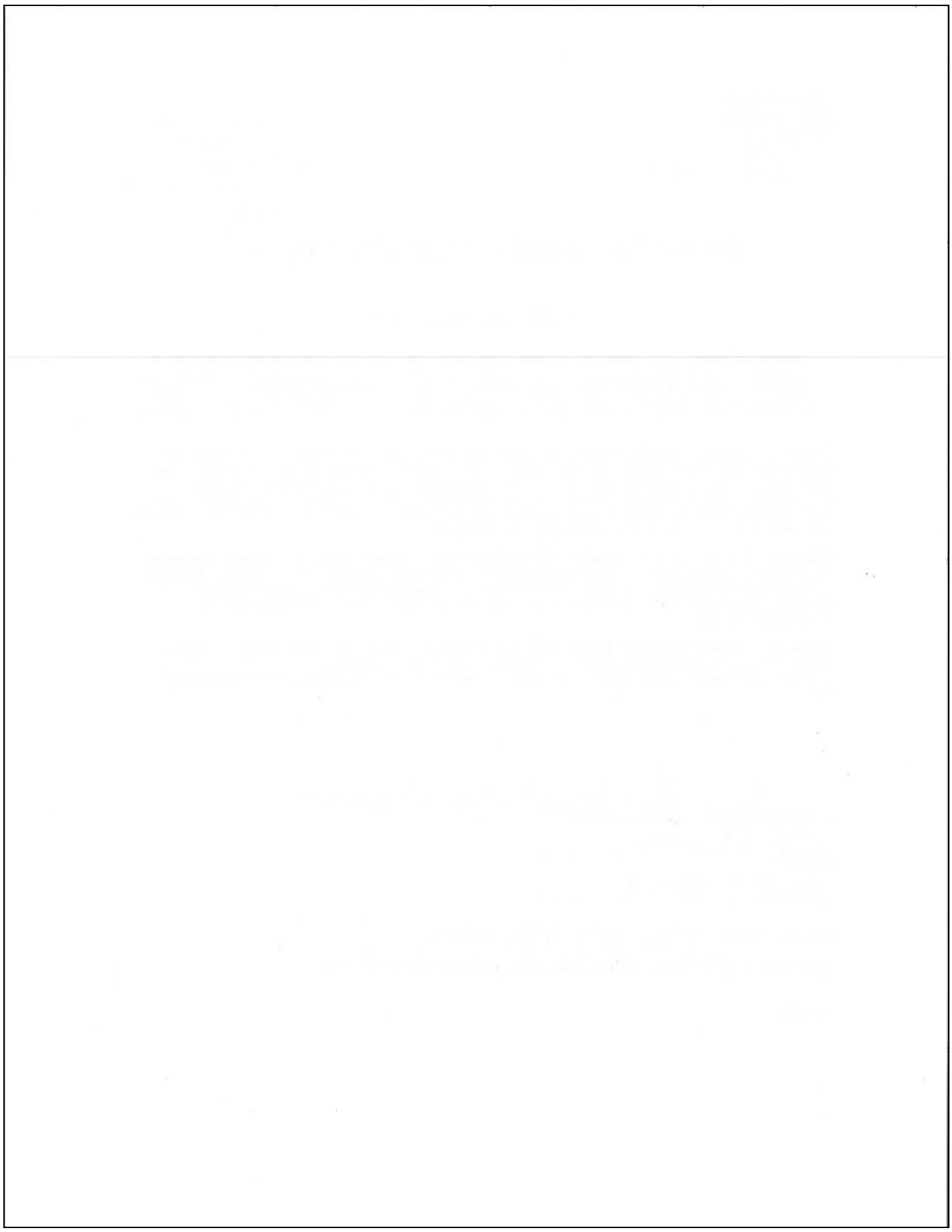
Appendix I - EPA Correspondance (16 of 16)



Test report 103328128MTL-001

TEST REPORT

Intertek

REPORT NUMBER: 103328128MTL-001
REPORT DATE: December 27, 2017

EVALUATION CENTER
Intertek Testing Services NA Inc.
1829 32nd Avenue
Montreal (Lachine), QC
Canada H8T 3J1

RENDERED TO
Stove Builder International Inc.
250 de Copenhague
St-Augustin-de-Desmaures, QC
Canada G3A 2H3

PRODUCT EVALUATED:

MODEL 1.7 Series WOOD FUEL ROOM HEATER

Report of Testing Model 1.7 Series Wood Fuel Room Heater for compliance as an "Affected Wood Heater" with the applicable requirements of the following criteria: EPA 40 CFR Part 60 "Standards of Performance for New Residential Wood Heaters, New Residential Hydronic Heaters and Forced-Air Furnaces", March 16, 2015.

Test report 103328128MTL-001 (2 of 18)

Contents

Test report 103328128MTL-001 (3 of 18)

Note: See electronic version for Appendices content.

Test report 103328128MTL-001 (4 of 18)

I. INTRODUCTION

Intertek Testing Services NA (Intertek) has conducted testing for Stove Builder International Inc., on model 1.7 Series Wood Burning Room Heater to evaluate all applicable performance requirements included in "Determination of particulate matter emissions from wood heaters."

I.A *PURPOSE OF TEST*

The test program was conducted to determine if the unit is in accordance with U.S. EPA requirements under EPA 40 CFR Part 60 "Standards of Performance for New Residential Wood Heaters, New Residential Hydronic Heaters and Forced-Air Furnaces". This evaluation was conducted from November 27th to November 30th 2017. The following test methods were applicable:

ASTM E2515-11- Standard Test Method for Determination of Particulate Matter Emissions Collected by a Dilution Tunnel

WK47329-14 - Standard Test Method for Determining Particulate Matter Emissions from Wood Heaters using Cordwood Test Fuel. It is based on the ATM send by EPA on October 12th, 2017.

CSA B415.1-10 - Performance Testing of Solid-Fuel-Burning Heating Appliances

I.B LABORATORY

The tests on the model 1.7 Series Wood Burning Heater were conducted at the client facility in St-Augustin-de-Desmaures, Quebec located at 250 de Copenhague, St-Augustin-de-Desmaures, Quebec, Canada G3A 2H3. The laboratory elevation is 213 feet above sea level. The test was conducted by Claude Pelland, P.E. and observed by Guillaume Thibodeau-Fortin of Stove Builder International Inc.

I.C DESCRIPTION OF UNIT

The model 1.7 Series Wood Fuel Room Heater is constructed of sheet steel. The outer dimensions are 23 19/32-inches deep, 29 3/8-inches high, and 22 1/2-inches wide. The unit has a door located on the front with a viewing glass. (See product drawings.)

Proprietary drawings and manufacturing methods are on file at Intertek at 1829, 32nd Avenue Montreal (Lachine), QC Canada H8T 3J1

Test report 103328128MTL-001 (5 of 18)

I.D REPORT ORGANIZATION

This report includes summaries of all data necessary to determine compliance with the regulations. Raw data, calibration records, intermediate calculations, drawings, specifications and other supporting information are contained in appendices to this report.

II. SUMMARY

II.A PRETEST INFORMATION

A sample was submitted to Intertek directly from the client. The sample was not independently selected for testing. The test unit was handed to the Intertek representative at client's facility in St-Augustin-de-Desmaures, Quebec. The unit was inspected upon receipt and found to be in good condition. The unit was set up following the manufacturer's instructions without difficulty.

Following assembly, the unit was placed on the test stand. Prior to beginning the emissions tests, the manufacturer operated the unit for a minimum of 50 hours at medium burn rates to break in the stove. The unit was found to be operating satisfactory during this break-in. The 50 plus hours of pre-burning were conducted from November 7th to November 22nd 2017. The fuel used for the break-in process was beech cordwood.

Following the pre-burn break-in process the unit was allowed to cool and ash and residue was removed from the firebox. The unit's chimney system and laboratory dilution tunnels were cleaned using standard wire brush chimney cleaning equipment. On November 17th 2017, the unit was set-up for testing.

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II.B INFORMATION LOG

II.B(1) TEST STANDARD

On November 27th to November 30th, the unit was tested for EPA emissions. For Wood stoves, the test was conducted in accordance with WK47329-14 - Standard Test Method for Determining Particulate Matter Emissions from Wood Heaters using Cordwood Test Fuel. The fuel used for the test run was cordwood.

The applicable EPA regulatory limits are:

Step 1 – 2015 – 4.50 grams per hour.

Step 2 – 2020 – 2.50 grams per hour.

II.B(2) DEVIATION FROM STANDARD METHOD

The following were modified from initial version of the standards utilized for this test program as per EPA's letter of October 12th 2017 reproduced in appendix I to this report:
Changes to ASTM WK47329-14 are:

1. The end of test criterion is defined when the weight scale indicates the remaining weight of the test fuel as 0.0 lbs or less for at least 30 seconds.
2. Coal bed conditions prior to loading test fuel : The coal bed should be a level plane without valleys or ridges for all test runs in the high fire, low and medium burn rate categories.

Changes to ASTM E2515-11 must be as followed:

1- The filter temperature must be maintained between 80 and 90 Degrees F during testing.
2- Filters must be weighed in pairs to reduce weighing error propagation.
3- Sample filters must be Pall TX-40 or equivalent Teflon coated glass fiber, and either 47 mm, 90mm, 100mm of 110mm in diameter.
4- Only one point is allowed outside the +/- 10% proportionality range per test run.

II.C SUMMARY OF TEST RESULTS

The appliance tests resulted in the following performance:

Particulate Emissions: 1.26 g/hr

Carbon Monoxide Emissions: 58 g/hr or 0.97 g/min

Heating Efficiency: 70% (Higher Heating Value Basis)

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II.D DESCRIPTION OF TEST RUNS

RUN #1 Low burn rate

Stove lighting: 6.5 lbs

Split the start-up fuel log into 6 pieces. Crisscross the 6 pieces on the brick, leaving some space between each wood pieces. Crisscross the kindling on the top of the start-up fuel. The kindling is made of between 8-10 twigs that are 10% of moisture content. Place crumbled newspaper on top kindling (5 full sheets). Light up the paper and let the door ajar to leave a space of one inch on the door handle's side for five minutes, then close the door. The fan is always OFF. Kindling adjustment at 11 minutes

Pre-load (high burn): 14 lbs

When there is coal bed of 1.5 lb left, break ashes and level coal bed, then add pre-load in an East-West configuration divided in 2 columns: 2 logs in the back and 2 logs in the front. Leave one inch of air space between the columns. Let the door ajar to leave a space of one inch on the door handle's side for five minutes. Close the door and let burn until the weight is down to target.

Close the primary air control at the minimum when there is 3 lb remaining. When the average stove temperature gets to 305°F, stir the coal bed. Let the door ajar by one inch for one minute. There should be approximately 2 lb of coal bed and the average temperature should be around 300°F.

Loading: 17.5 lbs

For the loading, put 1 log at the back, 2 in the center and 2 in the front. The distance between the logs shall be approximately 0.5 inch. Let the door ajar for 6 minutes and then close the door with the primary air control open. Close the primary air control at 16 minutes or when 15% of the load weight has been consumed, whichever comes first. Start the fan at minimum speed at 30 minutes.

RUN #2 High burn rate

Stove lighting: 6.5 lbs

Split the start-up fuel log into 6 pieces. Crisscross the 6 pieces on the brick, leaving some space between each wood piece. Crisscross the kindling on the top of the start-up fuel. The kindling is made of between 8-10 twigs that are 10% of moisture content. Place crumbled newspaper on top kindling (5 full sheets). Light up the paper and let the door ajar to leave a space of one inch on the door handle's side for five minutes, then close the door. The fan is always OFF. Kindling adjustment at 13 min.

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Pre-load (high burn): 14 lbs

When there is coal bed of 1.5 lb left, break ashes and level coal bed, then add pre-load in an East-West configuration divided in 2 columns: 2 logs in the back and 2 logs in the front. Leave one inch of air space between the columns. Let the door ajar to leave a space of one inch on the door handle's side for five minutes. Close the door and let burn until the weight is down to target.

Close the primary air control at the targeted burn rate when there is 3.5 lb remaining. When the average stove temperature gets to 330°F, stir the coal bed. Let the door ajar by one inch for one minute. There should be approximately 2 lb of coal bed and the average temperature should be around 325°F.

Loading: 17.5 lbs

For the loading, put 1 log at the back, 2 in the center and 2 in the front. The distance between the logs shall be approximately 0.5 inch. Let the door ajar for 6 minutes and then close the door with the primary air control open. Close the air control halfway at 10 minutes. Close the primary air control at targeted burn rate (¼ inch open) at 16 minutes or when 15% of the load weight has been consumed, whichever comes first. Start the fan at a medium speed at 30 minutes.

RUN #3 Medium burn rate

Note: For this test run, according to WK47329-14, the sampling starts as soon as the kindling is ignited (cold start).

Stove lighting: 6.5 lbs

Split the start-up fuel log into 6 pieces. Crisscross the 6 pieces on the brick, leaving some space between each wood piece. Crisscross the kindling on the top of the start-up fuel. The kindling is made of between 8-10 twigs that are 10% of moisture content. Place crumbled newspaper on top kindling (5 full sheets). Light up the paper and let the door ajar to leave a space of one inch on the door handle's side for five minutes, then close the door. The fan is always OFF.

High burn: 14 lbs

When there is coal bed of 1.5 lb left, break ashes and level coal bed, then add pre-load in an East-West configuration divided in 2 columns: 2 logs in the back and 2 logs in the front. Leave one inch of air space between the columns. Let the door ajar to leave a space of one inch on the door handle's side for five minutes. Close the door. Start the fan at full speed.

Since the burn rate was smaller than the low burn rate, probably due to fallen logs during the test run, this test was rerun.

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RUN #4 Medium burn rate

Note: For this test run, according to WK47329-14, the sampling starts as soon as the kindling is ignited (cold start).

Stove lighting: 6.5 lbs

Split the start-up fuel log into 6 pieces. Crisscross the 6 pieces on the brick, leaving some space between each wood piece. Crisscross the kindling on the top of the start-up fuel. The kindling is made of between 8-10 twigs that are 10% of moisture content. Place crumbled newspaper on top kindling (5 full sheets). Light up the paper and let the door ajar to leave a space of one inch on the door handle's side for five minutes, then close the door. The fan is always OFF.

High burn: 14 lbs

When there is coal bed of 1.5 lb left, break ashes and level coal bed, then add pre-load in an East-West configuration divided in 2 columns: 2 logs in the back and 2 logs in the front. Leave one inch of air space between the columns. Let the door ajar to leave a space of one inch on the door handle's side for five minutes. Close the door. Start the fan at full speed.

II.D SUMMARY OF OTHER DATA

TABLE 1 - EMISSIONS

Run Number	Test Date	Burn Rates (kg/hr)(Dry)	Particulate Emission Rate (g/hr)	**1st Hour Emissions (g)**	CO Emissions (g/hr)	**CO Emissions (g/min)**	Heating Efficiency (% HHV)
1	27 Nov 2017	1.149	1.065	**5.14**	54	**0.9**	72
2	28 Nov 2017	2.254	1.817	**4.30**	60	**1.0**	67
3	29 Nov 2017	1.103	0.736	**3.75**	51	**0.8**	71
4	30 Nov 2017	1.346	1.639	**5.86**	69	**1.1**	68

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TABLE 2 – WEIGHTED AVERAGE CALCULATION

Test No.	Burn Rate	(E) Average Emission Rate g/hr	(CO) Average Emission Rate g/hr	Heat Output (Btu/hr)	HHV	LHV	(K) Weighting Factor	(KxE) g/hr	(KxCO) g/hr	(KxCO) g/min	(KxHHV)	(KxLHV)
1	1.1	1.07	54	15650	72	78	40%	0.43	22	0.36	29	31
3	1.1	0.74	51	14680	71	76	40% / 2	0.15	10	0.17	14	15
4	1.3	1.64	69	17180	68	73	40% / 2	0.33	14	0.23	14	15
2	2.6*[1]	1.82	60	23300	67	72	20%	0.36	12	0.20	13	14
						Totals:	1	1.26	58	0.96	70	75

***1 Data including the cold-Start**

TABLE 3 - TEST FACILITY CONDITIONS

Run	Room Temp. °F before	Room Temp °F after	Baro. Pres. In. Hg before	Baro. Pres. In. Hg after	R.H.% before	R.H.% after	Air Vel. Ft/min before	Air Vel. Ft/min after
1	86	71	30.0	30.2	16	26	0	0
3	66	72	30.4	30.2	29	25	0	0
4	89	81	29.9	30.3	18	22	0	0
2	83	82	30.1	29.9	19	20	0	0

TABLE 4 - DILUTION TUNNEL FLOW RATE MEASUREMENTS AND SAMPLING DATA

Run No.	Burn Time (min)	Velocity (ft/sec)	Volumetric Flow Rate (dscf/min)	Ave. Temp. (^{o}R)	Sample Volume (DSCF)		Particulate Catch (mg)	
					1	2	1	2
1	350	22.73	453.29	546	55.408	54.471	2.1	2.2
3	220	21.74	428.96	556	34.789	34.605	2.4	2.5
4	360	23.49	464.55	551	62.415	62.587	1.6	1.7
2	300	23.56	461.90	554	48.489	47.921	2.8	2.9

Intertek

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TABLE 5 - DILUTION TUNNEL DUAL TRAIN PRECISION

Run No.	Sample Ratios		Total Emissions (g)		% Deviation	g/kg Deviation
	Train 1	Train 2	Train 1	Train 2		
1	2863	2913	6.013	6.408	3.18%	0.79%
3	2713	2727	6.510	6.818	2.31%	0.58%
4	2679	2672	4.287	4.543	2.89%	0.72%
2	2858	2892	8.002	8.386	2.34%	0.59%

TABLE 6 - GENERAL SUMMARY OF RESULTS

Run No.	Burn Rate (kg/hr)(Dry)	Change In Surface Temp (°F)	Initial Draft (in/H_2O)	Run Time (min)	Average Draft (in/H_2O)
1	1.1	58	0.038	350	0.051
2	1.8	104	0.076	178	0.065
3	1.1	105	0.045	360	0.055
4	1.3	84	0.047	300	0.060

TABLE 7 – CSA B415.1 RESULTS

Burn Rate (kg/hr)(Dry)	CO Emissions (g/hr)	Heating Efficiency (% HHV)	Heating Efficiency (% LHV)	Heat Output (Btu/hr)
High – 1.8	60	67%	72%	23,300
Medium – 1.3	69	68%	73%	17,180
Medium – 1.1	51	71%	76%	14,680
Low – 1.1	54	72%	78%	15,650

Please note: On the high burn rate (run #2), particulate emission rate is on the full sampling time of the test run (including the cold-start). For the other parameters such as efficiency, CO emission rate and burn rate, the time is only for the loading of the high fire (excluding the cold start).

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III. PROCESS DESCRIPTION

III.A TEST SET-UP DESCRIPTON

A 6" flue is connected to a standard 6" diameter vertical single wall pipe and insulated chimney system was installed to 15' above floor level. The single wall pipe extended to 8 feet above the floor and insulated chimney extended the remaining height.

III.B AIR SUPPLY SYSTEM

Combustion air enters on the bottom of the heater, which is directed to the firebox. All gases exit through the 6" flue located on top of the heater.

III.C TEST FUEL PROPERTIES

The species of fuel used was mainly beech. The fuel was split cordwood of nominal length of 16 inches. The fuel was dried in air to average moisture content between 18% and 28% on a dry basis. Cordwood fuel was loaded from side to side into the firebox per manufacturer's instructions.

IV. SAMPLING SYSTEMS

IV.A. SAMPLING LOCATIONS

Particulate samples are collected from the dilution tunnel at point 20 feet from the tunnel entrance. The tunnel has two elbows in the system ahead of the sampling section. (See Figure 1.) The sampling section is a continuous 13-foot section of 8-inch diameter pipe straight over its entire length. Tunnel velocity pressure is determined by a type "S" Pitot tube located 100 inches from the beginning of the sampling section. The dry bulb thermocouple is located six inches downstream from the Pitot tube. Tunnel samplers are located 48 inches downstream of the Pitot tube and 36 inches upstream from the end of this section.

Stack gas samples are collected from the Stainless steel chimney section 8 feet ± 6 inches above the scale platform.

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IV.A.(1) DILUTION TUNNEL

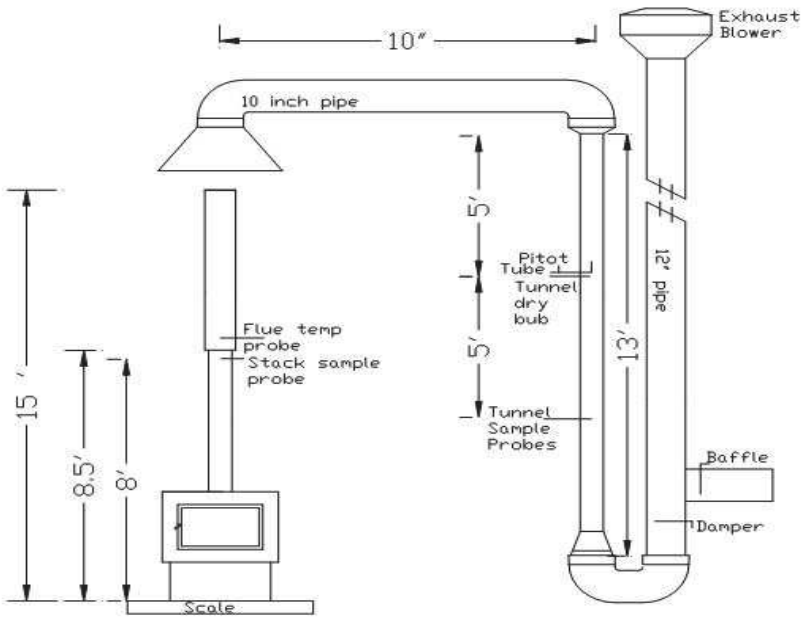

FIGURE 1

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IV.B. OPERATIONAL DRAWINGS

IV.B.(1). DILUTION TUNNEL SAMPLE SYSTEMS

IV.B. OPERATIONAL DRAWINGS

IV.B.(1). STACK GAS SAMPLE TRAI

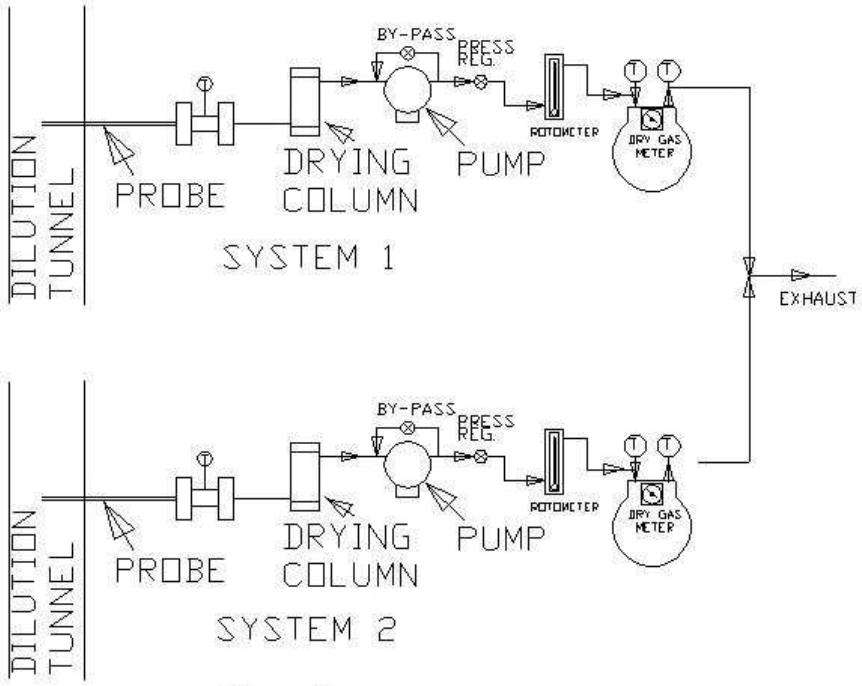

Figure 2

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V. SAMPLING METHODS

V.A. PARTICULATE SAMPLING

Particulates were sampled in strict accordance with ASTM E2515-2011. This method uses two identical sampling systems with Pall TX-40 binder free, 47-mm diameter filters. The dryers used in the sample systems are filled with “Drierite” before each test run. In order to measure first-hour emissions rates, a third sample systems with filter is used at the first hour into the test run. The two filter sets used for this train are analyzed individually to determine the first hour emissions rate.

VI. QUALITY ASSURANCE

VI.A. INSTRUMENT CALIBRATION

VI.A. (1). DRY GAS METERS

At the conclusion of each test program the dry gas meters are checked against our standard dry gas meter. Three runs are made on each dry gas meter used during the test program. The average calibration factors obtained are then compared with the six-month calibration factor and, if within 5%, the six-month factor is used to calculate standard volumes. Results of this calibration are contained in Appendix D.

An integral part of the post test calibration procedure is a leak check of the pressure side by plugging the system exhaust and pressurizing the system to 5” W.C. The system is judged to be leak free if it retains the pressure for at least 1 minute.

The standard dry gas meter is calibrated every 6 months using a Reference Dry Gas Meter. The process involves sampling the train operation for 5 cubic foot of volume. With readings made to .001 ft^3, the resolution is .1%, giving an accuracy higher than the ±2% required by the standard.

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VI.A.(2). STACK SAMPLE ROTAMETER

The stack sample rotameter is checked by running three tests at each flow rate used during the test program. The flow rate is checked by running the rotameter in series with one of the dry gas meters for 10 minutes with the rotameter at a constant setting. The dry gas meter volume measured is then corrected to standard temperature and pressure conditions. The flow rate determined is then used to calculate actual sampled volumes.

VI.A.(3). GAS ANALYZERS

The continuous analyzers are zeroed and spanned before each test with appropriate gases. A mid-scale multi-component calibration gas is then analyzed (values are recorded). At the conclusion of a test, the instruments are checked again with zero, span and calibration gases (values are recorded only). The drift in each meter is then calculated and must not exceed 5% of the scale used for the test.

At the conclusion of each unit test program, a three-point calibration check is made. This calibration check must meet accuracy requirements of the applicable standards. Consistent deviations between analyzer readings and calibration gas concentrations are used to correct data before computer processing. Data is also corrected for interferences as prescribed by the instrument manufacturer's instructions.

VI.B. TEST METHOD PROCEDURES

VI.B.(1). LEAK CHECK PROCEDURES

Before and after each test, each sample train is tested for leaks. Leakage rates are measured and must not exceed 0.01 CFM or 4% of the sampling rate. Leak checks are performed checking the entire sampling train, not just the dry gas meters. Pre-test and post-test leak checks are conducted with a vacuum of 5 inches of mercury. Vacuum is monitored during each test and the highest vacuum reached is then used for the post test vacuum value. If leakage limits are not met, the test run is rejected. During, these tests the vacuum was typically less than 2 inches of mercury. Thus, leakage rates reported are expected to be much higher than actual leakage during the tests.

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VI.B.(2). TUNNEL VELOCITY/FLOW MEASUREMENT

The tunnel velocity is calculated from a center point Pitot tube signal multiplied by an adjustment factor. This factor is determined by a traverse of the tunnel as prescribed in ASTM E2515. Final tunnel velocities and flow rates are calculated from EPA Method 2, Equation 6.9 and 6.10. (Tunnel cross sectional area is the average from both lines of traverse.)

Pitot tubes are cleaned before each test and leak checks are conducted after each test.

VI.B.(3). PM SAMPLING PROPORTIONALITY

Proportionality was calculated in accordance with ASTM E2515-11. The data and results are included in Appendix C.

VII. CONCLUSION

This test demonstrates that this unit is an affected facility under the definition given in the regulation. The emission rate of 1.26 g/hr meets the EPA requirements for the Step 2 limits.

Model 1.7 Series is representative for similar models shown in Appendix D. All models have the same internal design, electrical components, and controls. The only differences are external cosmetic designs.

INTERTEK TESTING SERVICES NA

Evaluated by: _____
Claude Pelland, P.E.
Project Engineer - Hearth

Reviewed by: _____
Brian Ziegler
Lead Engineer - Hearth

Test report 103328128MTL-001 (18 of 18)

Stove Builder International Inc. Date: December 27, 2017

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REVISION SUMMARY

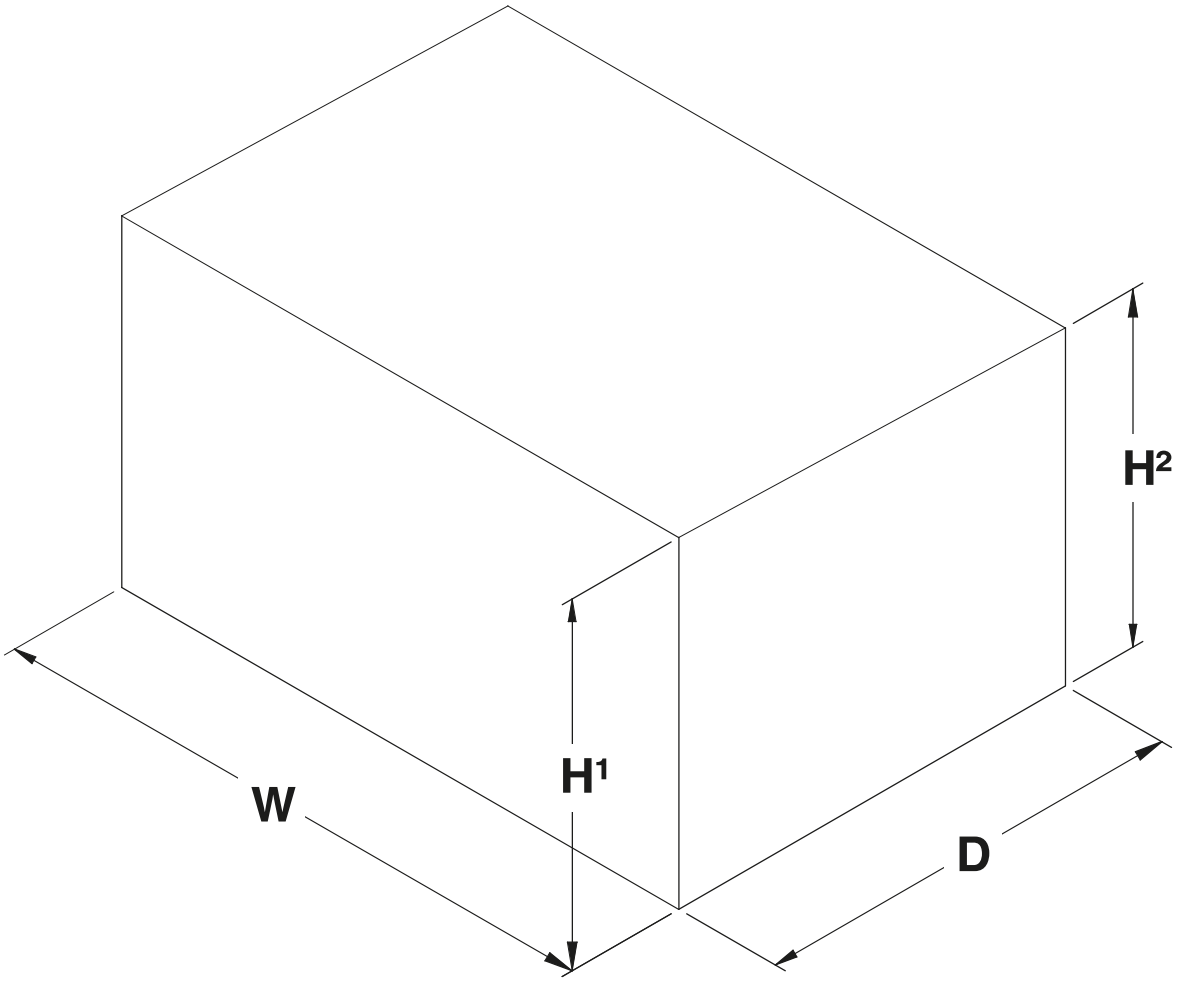
DATE	SUMMARY

Intertek

Firebox Volume For Stove

Serie: 1.7

Model: Blackcomb II, Escape 1500, Harmony 1.7, Solution 1.7, Destination 1.7-I, Osburn 1700, Matrix 1700-I, Inspire 1700, Inspire 1700-I, Gateway 1700, Escape 1500-I, Solution 1.7-I, Osburn 1700-I, and Archway 1700



W: 19.6 **in** **D:** 11.6 **in** **H¹:** 11.1 **in**

H²: 10.9 **in**

Volume: 1.44 **in³**

Volume: 1.44 **ft³**